

# THE ZANGGER COMMITTEE: ITS HISTORY AND FUTURE ROLE

by Fritz W. Schmidt

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The following article is intended to provide some insight into the development of international nuclear export controls under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). It deals with the history of the Zangger Committee (ZAC), the Trigger List, the ZAC's practices and procedures, and its future work. In the history section, the article also touches upon parallel nonproliferation developments in order to set the ZAC in context, and refers to the relations of the ZAC to the Nuclear Suppliers Group (NSG) and to the International Atomic Energy Agency (IAEA). The concluding section, which proposes the return of full-scope safeguards into Article III.2, reflects the personal views of the author. The proposal is intended to create an awareness among experts that eventually could lead to a reconfirmation of the understanding of the wording of Article III of the NPT

and the linkage between its paragraphs 1 and 2.

## HISTORY OF THE ZAC

The text of Article III of the NPT formulated the twin obligations for safeguards and export control rather generally. Thus, there was a need to interpret this language into concrete details and further clarify the respective requirements.

In 1970, the IAEA (being entrusted by the NPT with the safeguards task) set up a committee to develop a model safeguards agreement that would satisfy the obligations of Article III.1. The Safeguards Committee formed in 1970 fulfilled its task in a rather short period of intense activity and drafted a model that—after approval by the Board of Governors and the General Conference of the IAEA—became the basis for all bilateral safeguards agreements between the IAEA and the individual non-nuclear weapon

states party to the NPT. The text of this model agreement was published as IAEA Document Information Circular 153 (hereafter "INFCIRC/153").

Immediately after the committee finished its work, a number of major supplier countries—some already party to the NPT, some only intending to become members—met in March 1971 under the chairmanship of Swiss Professor Claude Zangger on a very informal and confidential basis in Vienna to discuss how to implement Article III.2 and fulfill its obligations. This group, which became known as the "Zangger Committee," agreed that its decisions would not be legally binding upon its members but would serve as a basis for harmonized unilateral policy declarations.

The group defined its objectives as:

1. to reach a common understanding on what constituted nuclear ma-

terial, and equipment or material especially designed or prepared for the processing, use, or production of special fissionable material; and

2. to consider procedures in relation to exports of nuclear materials and certain categories of equipment and material in the light of the commitment of states pursuant to Article III.2 of the NPT with a view to establishing a common understanding as to the way in which each state would interpret and implement this commitment.

In particular, the objective was to draw up a list of commodities that should be subject to export control on a common international basis. One guiding principle of the group was that these self-imposed restrictions should not disturb fair international commercial competition. It was also agreed that each item on the list should have a specific nuclear end-use rather than a "dual-use" suitable for other conventional industrial uses.

In 1972, a consensus on the basic understandings ("Expurgated Version" of 9/27/72) was reached. However, due to delays in securing the participation of the Soviet Union, the Committee waited two years before making the understandings public in two separate memoranda both dated August 14, 1974. The first memorandum covered exports of "source and special fissionable material" (Article III.2a), and the second covered exports of "equipment or material especially designed or prepared for the processing, use or production of special fissionable material" (Article III.2b). Both are referred to collectively as the "Trigger List."

As to the question of which safeguards should be triggered by exports to non-nuclear weapon states

not party to the NPT, it was decided to require safeguards by the IAEA on the nuclear material "in accordance with its [IAEA's] safeguards system," leaving open whether this meant the "old" (facility-related) (INFCIRC 66/Rev.2) or the "new" NPT-type "full-scope safeguards" system (INFCIRC/153).<sup>1</sup> Initially, only a very few countries adopted a governmental policy of requiring full-scope safeguards for such exports. Thus, INFCIRC/66 safeguards became the standard to be applied in recipient non-nuclear weapon states not party to the NPT.

Why this solution was adopted, and what implications it had will be dealt with later.

The Committee further agreed to exchange information about actual exports or the issuance of licenses for exports to any non-nuclear weapon states not party to the NPT through its system of annual returns, which are circulated on a confidential basis among the membership each year in April.

### **Early Shock to the NPT's System**

India's detonation of a nuclear device in May 1974 not only caused a tremor in the earth but also in the foundations of the nonproliferation regime. Was the NPT inappropriate, inadequate, or even a failure?

India was not an NPT party, and the Treaty was still too young to be blamed for being unable to prevent technology transfer from a NPT party. But the explosion led to increased concern about the conditions for permitting nuclear exports. Following preliminary consultations in 1974, seven major supplier countries met in 1975 with the goal of defining what, if any, additional con-

ditions of supply should be added to those in the NPT and the Zangger Committee memoranda (which required non-explosive use assurances, safeguards, and retransfer approval rights). In 1976, these countries established a set of guidelines and criteria known as the "London Suppliers Guidelines" that identified two further conditions of supply:

1. to apply physical protection measures on nuclear material on the basis of the recommendations in IAEA document INFCIRC/225; and

2. to agree that any facility that was built on the basis of the know-how of supplied technology ("know-how clause") would be put under safeguards.

In addition, the guidelines of the London Group introduced the term "sensitive facilities," for which a transfer of technology should be handled particularly cautiously. Two categories in the Trigger List (re-processing facilities and isotope separation facilities) were understood to fall within this category. The London Group adopted the basic "Trigger List" of the ZAC, but added a few new items—such as heavy water production plants—and clarified the entries for zirconium tubes and isotope separation equipment.<sup>2</sup>

### **THE TRIGGER LIST**

The term "Trigger List" was chosen because the export of items listed on it "trigger" IAEA safeguards on the source or special fissionable material produced, processed, or used in the equipment or material in question. The ZAC Trigger List, as first issued in 1974, referred mainly to complete facilities in the nuclear fuel cycle, with the exception of reactors, where several typical components were explicitly men-

tioned (for the contents of the first list see Appendix). Attached to the Trigger List was an annex clarifying and defining the items in some detail.

In line with technological developments, the Trigger List has undergone several changes since 1974. These changes strengthened the coverage over certain areas that were initially only roughly structured or referred to only "complete" facilities. At the time of the development of the initial list, it was understood that this would be enough to hinder clandestine developments in most countries. With the further advance of technology development worldwide and with further experience in the implementation of technology transfer controls, the ZAC has constantly been engaged in monitoring the need for revisions or further clarifications of the Trigger List items. As a result, the original annex has grown considerably. Since 1974 there have been seven phases of development:

1. In November 1977, following the initiative of the London Suppliers Group, the Trigger List was amended to include heavy water production plants. While a few members of the Committee believed that these plants did not fall within the scope of Article III.2, most of the members were positive. They argued that if the export of heavy water were included, it was only logical that production plants for this material should also be subject to controls. This first amendment to the list was published as INFCIRC/209/Mod.1, issued on December 1, 1978 (and later further clarified in May 1992; see point 5 below).

2. In 1984, Trigger List clarifications were made to the entries covering isotope separation by the gas centrifuge process (INFCIRC/209/

Mod. 2, February 1984).

3. In 1985, amendments were made in the annex to clarify the coverage of fuel reprocessing plants (INFCIRC/209/Mod. 3, August 1985).

4. In 1990, clarifying amendments were adopted for isotope separation plant equipment at gaseous diffusion enrichment plants (INFCIRC/209/Mod. 4, February 1990).

5. In 1992, an amendment was introduced to further clarify plants for the production of heavy water, deuterium and deuterium compounds, and associated equipment (INFCIRC 209/Rev.1/Mod.1, May 1992).

6. The latest amendment, in 1994, adopts further clarifications to the enrichment section and a modification of the entry on "Primary Coolant Pumps" (to include "Water Pumps") (INFCIRC/209/Rev.1/Mod. 2, April 1994).

7. Finally, agreement has been reached recently to amend paragraph 6 of Memorandum A attached to INFCIRC 209/Rev.1, to prevent the unsafeguarded export of bulk quantities of source material for non-nuclear use. Member state letters to the IAEA have been sent, but the IAEA has not yet published the formal notification document.

In summary, it is fair to say that the Zangger Committee has devoted extensive efforts to adding structure and detail to the original Trigger List.

### One Area of Dispute

There has only been one major element of the nuclear fuel cycle where diverging views existed within the Committee. This was the area of conversion facilities.

While, in the past, several countries held the view that conversion facilities would not fall under the definition of Article III.2 (as they do not deal with special fissionable material but only with source material—natural uranium), a technical working group set up by the NSG showed that most of the components of conversion facilities are considered to be dual-use items and that only a few would warrant entry on the ZAC Trigger List.

It is also worthwhile to consider whether these components are only to be used in the front end or also in the back end of the conversion process, where gaseous-enriched uranium is being reconverted. Insofar as these latter components are specially designed or prepared, they would undoubtedly be covered by Article III.2 and should therefore become a part of the ZAC's Trigger List.

### Parallel Activities by the NSG

For many years, following the initial publication of its guidelines in 1977, the London Group did not see a reason to meet. Instead, it relied on the periodic amendments of the Trigger List as carried out by the ZAC. However, one of the early priorities of the newly created NSG in 1991 was to formally harmonize the old London Group trigger list with the ZAC Trigger List.

The NSG also focused on a second area of interest to the nonproliferation regime, namely dual-use items. While ZAC and the London Group only dealt with nuclear items "with a major nuclear use," the NSG elaborated a list of "dual-use" commodities characterized by their legitimate conventional end-uses, but also with a special utility for

use in nuclear applications. This list, which was established by the NSG, hence became known as the “nuclear related dual use list.” This new dual-use regime can be seen as the main reason for the revitalization of the former “London Group” in 1991 as the “Nuclear Suppliers Group,” which from its very beginning aimed at attracting all supplier countries whether or not they are members of the NPT.<sup>3</sup>

### ZAC BUSINESS PRACTICES AND PROCEDURES

Contrary to rumors (or allegations) spread in the 1970s, Zangger Committee members never attempted to deprive less developed countries of the peaceful benefits of nuclear energy. Quite the opposite is true. It cannot, in my opinion, be said too often that membership in the Zangger Committee imposes no obligations that have not already been undertaken by parties to the NPT. In fact, it is correct to say that the Zangger commitments, as they are directly derived from Article III.2 of the NPT, are shared by all members of the Treaty.

At present, membership in the Committee is identical to that of the NSG, except for Argentina—which is only in the NSG—and South Korea—which is an observer in the ZAC. There are currently 29 members in the ZAC. Since 1992, France, Spain, Bulgaria, Portugal, and South Africa have all become members. Others are under consideration.

The Committee meets twice a year, always in Vienna, in premises made available by the Austrian Federal Chancellery. From the very beginning, it has always been understood that the Committee would be an informal body and that its discus-

sions would remain confidential. It is also generally recognized that the May meeting is the main event, and that a second meeting would take place in October if business justified it. In practice, the October meeting has become a permanent feature.

The chairman is elected by employing much the same sort of quiet backstage consultative procedure that elects the Pope. The term of office is indefinite, which is perhaps an unusual arrangement, but one which works well. There have been three chairmen so far: Professor Claude Zangger, from the Committee’s inception in 1971 to 1989; Mr. Ilkka Mäkipentti of Finland from 1989 to 1993, and, since May 1993, the author of this article.

The United Kingdom’s Mission in Vienna has traditionally provided the secretary, because, so the story goes, the only record of the very first meeting was in the form of a few notes scribbled on the back of an old envelope by the U.K. delegate, which he humbly shared with all who asked.

### The Committee’s Work Routine

The meetings themselves are truly informal. Delegations do not sit behind nameplates and microphones are deliberately not used. (This may change in the future if the Committee continues to grow at its present rate.) Meetings almost never last more than a morning. This may be largely because the Committee could be said to be more or less permanently in session; the coordination between meetings is conducted through the secretary. In that way, issues can be brought to an advanced state of maturity in time for the meetings. Another contributing factor may be that the secretary pro-

duces a full and accurate record of the meetings, which is then individually confirmed by each member delegation. This provides Committee members with a clear statement of the arguments, agreements reached, and the subsequent steps to be taken on any particular issue.

### Procedures for Work on the Trigger List

Taking into account the Zangger Committee’s mandate, it is the task of the Committee to create a level safeguards playing field (within the terms laid down by the NPT) by agreeing to the rules under which its members will make nuclear exports to non-nuclear weapon states not party to the NPT.

This is done in a perpetual process of review, which tends to be activated by the initiative of the major technology holders. It usually begins with a draft proposal tabled by one or more holders of the particular technology, which asks for other capitals’ comments within a certain time frame. Thereafter, the technology holders might meet as a separate group, and usually not as members of the Zangger Committee, to prepare a revised version of the proposal, incorporating comments received. The revision is then circulated to all Committee members by the secretary, inviting further comments by a specific date. At this point, the secretary will also attach a draft note verbale that members will exchange with each other when the exercise reaches the final stage of adoption. These notes, known as “Internal Notes,” take the form of identically-worded unilateral declarations to the effect that the export of the items in question will be controlled through domestic legislation.

The secretary will also provide a model letter to be sent to the Director-General of the IAEA at the end of the exercise, asking him to inform all member states of the changes to the Trigger List through the publication of a new INFCIRC in the 209 series. This refinement procedure is repeated, with appropriate variations, until consensus is reached in the Committee. The consensus, expressed by the exchange of the Internal Notes, then becomes part of the Committee's "understandings."

The initiative by the technology holders to improve or further clarify the Trigger List and the procedure to work outside the formal framework of the Committee have an additional advantage. They make it possible to harmonize the work inside the Committee with countries outside. For example, this made it possible to achieve and implement a Trigger List clarification when such a significant technology holder as France remained a non-member of the ZAC. While remaining a non-party to the NPT, France had undertaken to act as if it were a party. Consequently, France became actively engaged in meetings of technology holders, who usually met as a separate group outside the framework of the Zangger Committee. At the final stage in the process, France adopted the same export control arrangements as the United Kingdom, through arrangements agreed to in Vienna, London, and Paris. However, this "special procedure" is now part of history, France having joined the NPT and the Zangger Committee in 1992.

## FUTURE WORK OF THE ZAC

### The ZAC and the NSG

The reemergence of the NSG has given rise to questions about the need to retain the ZAC. The usual argument for merging the two groups was that the ZAC's mandate is firmly circumscribed by the NPT (and therefore narrow), while the NSG has no such self-imposed limitations on its activities. It was, of course, an attractive and logical point of view, at first. But there were sound counter arguments for continuing the Committee, which have been well-rehearsed over the last year or so: the fact that ZAC derives its existence directly from the NPT (i.e., not just from Article III.2), that it is accepted by all members of the NPT, and that there is still flexibility for further elaborations within Article III.2 itself (as will be discussed below).

The ZAC will therefore continue to do what it was created for and what it does best: to provide a forum for interpreting supplier commitments under Article III.2 of the NPT (a view endorsed by the Committee at its meeting in October 1992). In the meantime, the NSG should take advantage of the Committee's work and relate its efforts mainly to the dual-use regime. Unnecessary duplication of work should be avoided. It is also essential to have close cooperation between the two bodies (through their chairmen).

### The 1995 NPT Conference

The 1995 NPT Review and Extension Conference features prominently in the Committee's agenda. There is no doubt that the subject

matter of Article III.2 will loom large in its considerations. I firmly believe that the Committee can bring significant influence to bear in bridging diverging group interests to the ultimate benefit of our common objective of nuclear nonproliferation. The ZAC is recognized by the membership of the NPT as the responsible body in charge of Article III.2. This was confirmed by the last NPT Review Conference in 1990 when the Main Committee II stated:

The Conference notes that a number of States Parties engaged in the supply of nuclear material and equipment have met regularly as an informal group which has become known as the Zangger Committee in order to coordinate their implementation of Article III.2. To this end these States have adopted certain requirements, including a list of items triggering IAEA safeguards, for their export to non-nuclear-weapon states not party to the Treaty, as set forth in the IAEA document INFCIRC/209 as revised. The Conference urges all states to adopt these requirements in connection with any nuclear cooperation with non-nuclear-weapon states not party to the Treaty. The Conference recommends that the list of items triggering IAEA safeguards and the procedures for implementation be reviewed from time to time to take into account advances in technology and changes in procurement practices. The Conference recommends the States Parties to consider further ways to improve the measures to prevent diversion of nuclear technology for nuclear weapons, other nuclear explosive purposes or nuclear weapon capabilities. While recognizing the efforts of

the Zangger Committee in the nonproliferation regime, the Conference also notes that items included in the "Trigger List" are essential in the development of nuclear energy programmes for peaceful uses. In this regard, the Conference requests that the Zangger Committee should continue to take appropriate measures to ensure that the export requirements laid down by it do not hamper the acquisition of such items by States parties for the development of nuclear energy for peaceful uses.<sup>4</sup>

As the Committee's work received such wide recognition in 1990, it seems appropriate to consider whether information about the Committee should be provided to the NPT Review Conference in 1995, to give an insight into the ZAC's accomplishments to date and to highlight the areas that may require further attention in the future. Such an educational exercise would help all NPT members to understand the Committee's activities better and could facilitate the drafting of language for the final document.

### RETURNING FULL-SCOPE SAFEGUARDS TO ARTICLE III.2

As mentioned above, the question of safeguards being triggered by the supply of certain items was a point of discussion in 1972 and has gained new importance in recent years. The text of NPT's Article III.2 states that NPT members do not export source or special fissionable material, or equipment or material especially designed or prepared "*unless the source or special fissionable material shall be subject to the safeguards required by this article.*"

The wording clearly requires safeguards under Article III.1, identical to those which non-nuclear weapon states parties to the Treaty have to accept: that is, full-scope safeguards. However, in 1972 the ZAC reached an understanding that, in cases of exports, the supplier "...would satisfy itself that the safeguards to that end, under an agreement with the IAEA and in accordance with its safeguards system, would be applied."<sup>5</sup>

But the term "its safeguards system" was ambiguous, since there were two kinds of safeguards in the IAEA system: the "old" facility-related safeguards (INFCIRC 66/Rev.2), and the "new" full-scope safeguards (INFCIRC/153). As both were equally acceptable, the "old" safeguards (published in 1968) were considered sufficient as a minimum.

The question arises, then, why the ZAC members in 1972 accepted such an understanding? There may have been some good reasons to do so. Some ZAC countries were not yet members of the Treaty and could have become reluctant to join. On the other hand, there were several new cooperative agreements, particularly with developing countries, which should not have been hampered unnecessarily. Others argued that existing treaties had to be honored. (Let us also not forget that this was all before the 1974 nuclear explosion in India.)

If we look at those days from the distance of 1994 and the experience gained over the past 20 years, several additional issues arise:

1. If the suppliers had foreseen this development, would they have stepped down to the lower level of safeguards?

2. If full-scope safeguards had been a condition of supply according to Article III.2, would all the activities after 1974 to strengthen conditions of supply in the nuclear export control regime have been necessary?

3. Would the establishment of the London Group in 1978 and its additional criteria have been necessary, or was it just a backup strategy to rectify the previous "safeguards decision"?

4. Couldn't it be taken as an indication of this that in the second half of the 1970s several supplier states adopted full-scope safeguards policies on a national level, until finally, in 1993, all NSG members agreed to this additional criterion in the guidelines?

A deeper exploration of these questions would go beyond the framework of this article. However, in the future, it might be useful to compile all the measures that were taken to cope with the deficiencies caused by not having had full-scope safeguards as a principal condition of supply.

These remarks are intended to create an awareness of the issue and eventually to trigger appropriate activities for the coming NPT Review Conference. The coming 1995 Review Conference will conclude the NPT's first period in force of 25 years. It seems useful to clarify unresolved points, before we embark into the next period, which may even be an indefinite period of time.

To whom should these ideas be addressed?

The 1995 Conference will be a gathering of the Treaty members. It is up to them to consider such a question and make decisions. As mentioned above, the 29 members of the Treaty, who are also mem-

bers of the NSG, have accepted full-scope safeguards for their exports. All non-nuclear weapon states parties have committed themselves to full-scope safeguards for their respective countries.

Given that there is such wide support for full-scope safeguards, I would argue that it should be possible, and certainly useful, to promote the “return” of full-scope safeguards into Article III.2 in the course of the preparation for the 1995 Conference. The text of the Article is appropriate as it stands. Therefore no change of the wording is necessary. An endorsement by the members through a resolution in the “review” part of the final document should be sufficient.

<sup>1</sup> Under the system created in INFCIRC 66/Rev. 2 (published in September 1968), safeguards are applied only to those materials or items specified in the particular safeguards agreement with the IAEA, which may include nuclear or other materials, services, equipment, facilities, and information. The scope is usually determined by the particular supplies to the recipient country, and the conclusion of a safeguards agreement for the particular activities is made a condition of supply. Under INFCIRC 153 (“NPT safeguards”), the object of safeguards is *nuclear material*. The characteristics of facilities and other locations containing this material are important factors in the design and implementation of verification activities. With respect to the scope of those safeguards agreements, document INFCIRC 153 commits a state to accept safeguards on all nuclear material in *all* its peaceful nuclear activities. (See also *IAEA Safeguards Glossary 1987 Edition*, doc. IAEA/SG/INF/1 (Rev.1) Nr. 3, (Vienna: International Atomic Energy Agency, 1987).)

<sup>2</sup> These additions, as well as further amendments made in the 1980s, are considered as normal developments in the evolution of the Trigger List and not as new areas which the original Zangger Group overlooked.

<sup>3</sup> For further information on this regime see Tadeusz Strulak, “Nuclear Suppliers Group,” *The Nonproliferation Review* 1 (Fall 1993).

<sup>4</sup> NPT Review Conference 1990, “Report of Main Committee II,” doc. NPT/CONF.IV/MC.II/1.

<sup>5</sup> See paragraph 3(b) of the ZAC-memorandum, document ZC(71)10 Final.

### *Appendix—Contents of the First Trigger List*

1. Nuclear material
  - 1.1. Source material
  - 1.2. Special fissionable material
2. Reactors and equipment therefore
  - 2.1. Reactor fuel charging and discharging machines
  - 2.2. Reactor control rods
  - 2.3. Reactor pressure tubes
  - 2.4. Zirconium tubes
  - 2.5. Primary coolant pumps
3. Non-nuclear materials for reactors
  - 3.1. Deuterium and heavy water
  - 3.2. Nuclear grade graphite
4. Plants for the reprocessing of irradiated fuel elements, and equipment especially designed or prepared therefor
5. Plants for the fabrication of fuel elements
6. Equipment, other than analytical instruments, especially designed or prepared for the separation of isotopes of uranium