Journal of Strategic Trade Control
Vol. 3, September 2025

Finally a functional regime: the reconvening of the Nuclear Suppliers Group in the 1990s

Ian J Stewart *

Abstract

This article revisits the origins and evolution of the Nuclear Suppliers Group (NSG)—the main mechanism through which nuclear-exporting states coordinate to ensure nuclear trade does not contribute to nuclear weapons programs. The article examines newly released archive materials to argue that the NSG as it was created in the 1970s was incomplete and that the NSG was only completed as a functional regime in the 1990s. The reasons for this delay are traced through examination of archival information to France's position, and to the changing priorities of the US during the 1970s. The implications of this delayed emergence as a functional regime are examined, as is how the NSG ultimately emerged as a functional regime in the 1990s.

Keywords

Nonproliferation; Nuclear Suppliers Group; export controls; nuclear nonproliferation regime; dual-use.

* Dr Ian J Stewart is the Exective Director of the James Martin Center for Nonproliferation Studies in Washington DC. He previously ran a nonproliferation and export controls program at King's College London and was responsible for dual-use export license assessment in the British government. He holds a PhD in War Studies with a focus on the history of nuclear export controls. In addition to archival research, his work focuses on contemporary export control issues, including export control capacity building globally.

Article info

Submission date: May 29, 2025. Acceptance date: September 3, 2025. Publication date: September 18, 2025.

How to cite
Ian J Stewart, "Finally a functional regime: the reconvening of the Nuclear Suppliers Group in the 1990s," *Journal of Strategic Trade Control,* Vol. 3, (September 2025).
DOI: 10.25518/2952-7597.180

Publisher
European Studies Unit (ESU), University of Liège

Peer review
This article has been peer-reviewed through the journal's standard double-anonymous peer review, where both the reviewers and authors are anonymized during review.

Introduction

The Nuclear Suppliers Group (NSG) is today the main mechanism by which providers of nuclear items coordinate their export policies. It addresses the risk that exported nuclear reactors, or other nuclear technology could be used by a recipient state to manufacture nuclear weapons. The NSG emerged in the 1970s following India's peaceful nuclear explosion of 1974, which leveraged Canadian and US provided technology.

Existing literature on the history and origins of the NSG has largely focused on the creation of the group in the 1970s. For example, William Burr focused on the US efforts to coordinate controls among suppliers[1]—while Isabel Ansey focused on how the NSG and Zangger Committee agreed trigger lists in the 1970s.[2] Others, including Malcolm Craig, have examined aspects of how the NSG affected specific proliferation episodes, such as Pakistan's nuclear program, but without examining the underlying reasons why the NSG has proven to be a forum of limited effect.[3] Now that additional archival material is available covering the period from 1970s to the early 1990s period, it is possible to revisit existing literature on the emergence of the NSG and to re-examine the NSG's emergence itself to provide insight into questions such as how the regime was formed, whether it was effective, and how membership was decided. More specifically, the new archival materials available in the British national archives as a result of its '20-year rule' provides insight into the reconvening of the NSG in the 1990s, meaning British archive materials now hold a complete set of archive materials for the entirety of the 1970s to 1990s period.[4]

---

[1] William Burr, "A Scheme of 'Control': The United States and the Origins of the Nuclear Suppliers' Group, 1974–1976," *International History Review*, Vol. 36, n. 2 (2014), pp. 252-276.

[2] Isabelle Anstey, "Negotiating Nuclear Control: The Zangger Committee and the Nuclear Suppliers' Group in the 1970s," *International History Review*, Vol. 40, n. 5 (2018), pp. 975-995.

[3] Malcolm M. Craig, *America, Britain and Pakistan's Nuclear Weapons Programme, 1974-1980 : A Dream of Nightmare Proportions*, (Springer International Publishing AG, 2017), *ProQuest Ebook Central*, <https://ebookcentral.proquest.com/lib/miis/detail.action?docID=4887254>.

[4] Under the Public Records Act (1958), the UK systematically transfers files to the UK national archives. The UK changed the 30-year rule to a 20-year rule and has been releasing two years' worth of files to the archives as a result. However, many departments are lagging behind in this transition, meaning that files from the early 1990s have only recently appeared in the archives, and more files from that period may still be pending. See: "Twenty-year rule on public records", Gov.uk, October 9, 2014, <https://www.gov.uk/government/publications/twenty-year-rule-on-public-records>.

Based on this new material, and building on past work by the author, the main argument of this article is that while the NSG did succeed in agreeing a list of technologies whose export would require safeguards when exported, the NSG in the 1970s was an incomplete regime that left many known issues unaddressed.[5] The NSG did not fulfil the goals set by the US after India's peaceful nuclear explosion and did not reach agreement on several essential issues that were central to the NSG's discussion in this period, including full scope nuclear safeguards (FSSG) as a condition of supply, 'grey areas', which would later be known as dual-use technologies, and information exchange related to ongoing proliferation efforts.

The reason the NSG's work was left incomplete in the 1970s was a direct result of France's unwillingness to agree to FSSG as a condition of supply. While this was known to be a barrier to the emergence of an effective NSG across the 1970s, deliberate decisions were taken to pause NSG meetings, since the issue could not be resolved, rather than allow the NSG to continue functioning as a functional regime to address other known problems, such as specific proliferation episodes and the problem of dual-use goods.

The lack of meetings of the NSG in the 1978-1991 period had real-world consequences. As early as 1976, the UK had information related to Pakistan's procurement of uncontrolled dual-use goods, but lacking a forum through which to coordinate with other nuclear suppliers, it took several years to coordinate *ad-hoc* controls on specific dual-use technologies.

When the NSG reconvened in the 1990s, primarily as a result of the discovery of Iraq's clandestine nuclear program, national circumstances had changed such that the original objectives of the NSG in the 1970s could be realized. The focus of the NSG meetings in the early 1990s was thus a pragmatic filling of gaps in the NSG that had existed for more than a decade. This included the issue of dual-use goods and standardization of FSSG requirements. The NSG created practical working mechanisms, adopted criteria for membership and established information sharing arrangements.

In examining these issues, this article proceeds as follows. First, the NSG is contextualized including by introducing the drivers for the US to convene the meetings of nuclear suppliers which became the NSG. Second, the goals of the NSG as set out by the US and as emerged during the NSG discussions in the 1970s are set out. Third, the progress towards

[5] See for example, Ian J. Stewart, *International Nuclear Export Controls and Non-Proliferation: The Collective Action Problem* (London: Routledge, 1st ed., 2021).

these goals before the end of the NSG meetings in the 1970s is examined. Fourth, the proliferation implications of the failure of the NSG to meet these goals is examined in relation to Iraq and Pakistan's nuclear programs. Fifth and finally, the reconvening of the NSG in the 1990s is examined including against the goals set for the NSG in the 1970s.

The NSG in context

Before examining the convening of the NSG in the 1970s, it is useful to place the NSG in an appropriate historical context. As Anstey noted, what became described as the NSG was not the first forum of nuclear suppliers to meet.[6] In the 1960s, and as described further below, a group of western suppliers met in an effort to coordinate policy on safeguards associated with nuclear exports. This was known as the Western Suppliers Group (WSG). As such, it is necessary to examine why it was that the US felt a need to convene a new group of suppliers following the India Peaceful Nuclear Explosion in 1974. A full history of nuclear export controls before 1974 is beyond the scope of this paper and has been covered by the author elsewhere.[7] However, perhaps the appropriate starting point for this brief examination was the Atoms for Peace speech by President Eisenhower in 1953. Prior to this speech, the US had classified atomic technology and no effort had taken place to commercialize atomic energy.[8] Following the speech, information on atomic energy was declassified and, gradually, commercial activity including exports commenced. One of the first major transfers was a research reactor transferred from Canada to India. This CIRUS reactor had no safeguards associated with it, in part because the transfer was agreed before the creation of the IAEA.[9] Soon after, India began seeking a power reactor which prompted the US to intervene and organize the first meeting of nuclear suppliers, which became known as the aforementioned WSG.[10] The WSG played a useful role in building a shared understanding of the problems associated with nuclear technology transfer but did not result in a coordinated system of export controls with France, in particular, insisting that it would continue its existing policy of taking a case-by-case approach to nuclear export questions.

---

[6] Anstey, "Negotiating Nuclear Control".
[7] See for example, Stewart, *International Nuclear Export Controls and Non-Proliferation*.
[8] Stewart, *International Nuclear Export Controls and Non-Proliferation*.
[9] Duane Bratt, *The politics of CANDU exports*, IPAC Series in Public Management and Governance (University of Toronto Press: 2020), p. 94.
[10] For background on the Western Suppliers Group, see Anstey, "Negotiating Nuclear Control".

The second set of developments related to the negotiation and adoption of the nuclear Non-Proliferation Treaty (NPT) and, afterwards, the Zangger Committee, which met to build an understanding of the implications of the NPT for nuclear export controls.[11] The NPT obliged states not to assist other states in acquiring nuclear weapons while also recognizing the inalienable right of states to fully utilize the atomic energy for civil purposes. The Zangger committee met specifically to interpret what was meant in article III.2 of the NPT by 'especially designed or prepared equipment or material' for nuclear uses. The Zangger Committee agreed on a list of several nuclear items whose export would trigger a requirement for IAEA safeguards. While the NPT is an important instrument and often described today as the cornerstone of the non-proliferation regime, its coverage in the mid-1970s was limited. Several important states were hesitant about ratifying the NPT including West Germany, India, Pakistan and France. It was for these reasons that the NPT alone was not perceived as sufficient to respond to the Indian test. Indeed, one key US official, Charles Van Doren, said to the UK that:[12]

> "in the United States' view, it was not opportune to seek a follow-on to the Zangger Arrangements at the present time. The Zangger Committee had laboured under the difficulty that its work had been explicitly associated with the NPT. The fact had to be faced that this association made the Zangger approach unacceptable to some important nuclear exporters such as France. In retrospect, it might have been wiser to have drafted the Zangger conclusions in broader terms which did not specifically tie them to the NPT."

In practice, the Zangger Committee had agreed only a limited list of technologies and was described as lowest common denominator.[13] It also did not apply to non-NPT parties. It was in this context that it was hoped that a new convening of suppliers could make progress in agreeing controls to prevent another case like India where a nuclear explosive device was constructed using material and technology imported outside safeguards.

---

[11] Anstey, "Negotiating Nuclear Control".

[12] The National Archives of the UK (TNA), FCO 66/751, FM. WASHINGTON / FILE 221/3/3/1/3/1/3; Charles Van Doren was a senior US official who served at the Department of State and the Arms Control and Disarmament Agency (ACDA), including as its assistant director. See In Memoriam: "Charles Van Doren", Arms Control Association, October 8, 2008, <https://www.armscontrol.org/act/2008-10/memoriam-charles-van-doren>.

[13] "Cable: Nonproliferation From Ottawa to Canberra", TNA, FCO 66/751, February 14, 1975; The Zangger Committee trigger list is published as INFCIRC 209, accessed October 16, 2024, <https://www.iaea.org/sites/default/files/infcirc209.pdf>.

Convening a Suppliers Group: goals vs reality

The idea to convene a meeting of nuclear suppliers came from a discussion between Henry Kissinger and his policy planning staff on July 31, 1974, following on the Indian Peaceful Nuclear Explosion on May 18, 1974.[14] Kissinger's role and goals were central to the NSG until President Ford lost the presidential election in November 1976 and was replaced by President Carter. Carter was strongly committed to nonproliferation but had a different focus than Ford. Carter was primarily concerned about the problem of reprocessing.[15] This resulted in a significant shift in US thinking on nuclear export controls and the NSG over the course of the 1970s. While the US was the main driver of the development of the NSG, the views and goals of other countries were also important. For example, as this section highlights, the UK which would act as chair of the NSG in the 1970s placed emphasis on developing the NSG as a functional regime and pushed for working group meetings and continued meetings of the regime.

The overall result is that the goals of the NSG in the 1970s were somewhat complex and changeable. The following points were outlined in the *note verbale* sent by the United States to invite countries to participate in the meeting in 1974, although a caveat was included to indicate this was only an indicative list:[16]

- Nuclear cooperation would be undertaken with non-nuclear weapons states only under agreements as to peaceful uses;
- Nuclear supply would be undertaken only when covered by IAEA safeguards, with appropriate provisions for duration and coverage of produced nuclear material;
- Supply of weapons-grade material, or of uranium enrichment or chemical reprocessing equipment or technology, to non-nuclear weapon states should be subject to special restraint;
- Nuclear supply would include appropriate requirements for the physical protection of materials and facilities; and,
- Stringent conditions might be developed on the supply of sensitive nuclear material, equipment or technology to countries or regions

[14] "Analytical Staff Meeting on Non-proliferation Strategy", Memo from Winston Lord to the Secretary, July 31, 1974, The Winston Lord Files, RG59, Department of State, USNARA.

[15] See for example, Statement by the President on His Decisions Following a Review of U.S. Policy, April 7, 1977. Presidential Documents: Jimmy Carter, 1977. Nuclear Regulatory Commission, accessed November 26, 2023, <https://www.nrc.gov/docs/ML1209/ML120960615.pdf>.

[16] "Nuclear Safeguards for Indians", Memo from Winston Lord to the Secretary, November 9, 1974, The Winston Lord Files, Department of State, USNARA.

where such exports would contribute to particular risks of conflict or instability.

Despite these goals, France made clear at the outset that it would not "agree to the creation of institutions to formalize whatever agreement might be reached" and that the US should not push France to these ends.[17] There was thus considerable misalignment among key states regarding the goals for the NSG in the 1970s.

Participation in the 1970s

The question of which countries should be engaged in the discussions was a core concern throughout the 1970s. Participation can be examined in three phases: initial invitees; initial discussions, and the expanded group. For the initial invitees, the State Department desired to keep the group small in order to maximize the likelihood of success while inviting the principal nuclear suppliers of the period.[18] The US settled on invitations to the UK, USSR, West Germany, France, Canada and Japan.

As early as June 11, 1975, the UK and US had discussed how to expand the group and formalize the guidelines.[19] This was despite the French position that the group should remain informal in nature. The UK was keen to see the Netherlands added to the group as soon as possible in the context of the multinational enrichment project (URENCO). The US supported adding more countries including the Netherlands but was concerned that this would result in a need to start the discussions over unless the guidelines were first published. There was also concern that the Netherlands might push on the issue of enrichment by taking the line that such technology should only be exported to NPT parties. This line could be problematic in the context of the policy of France which insisted on not linking export policy to the NPT, as it viewed this as discriminatory.[20]

The group reached agreement on a two-step expansion approach for the group at its meeting in November 1975. The first step would involve three groups of countries: countries that had expressed interest in joining, countries that were actual or potential nuclear suppliers, and countries

[17] TNA, FCO 66/751, FM WASHINGTON 032320Z.
[18] The initially secret WSG meetings had become public knowledge, causing a degree of consternation for states such as South Africa.
[19] "Record of a Discussion about nuclear suppliers cooperation held at the State Dept on Weds 11 June 1975", TNA, FCO 66/754.
[20] "Record of a Discussion about nuclear suppliers cooperation held at the State Dept on Weds 11 June 1975", TNA, FCO 66/754.

that were likely to agree to the group's objectives. In this context, seven additional countries were invited to the group: Italy, Sweden, Belgium, the Netherlands, GDR (East Germany) and Czechoslovakia.[21] Australia was considered but not invited as it was felt inviting Australia on the grounds that it could supply uranium would result in a need to invite other countries such as South Africa, Niger and Gabon.[22]

The possible participation of all of the Zangger Committee countries was discussed at the group's 5th meeting in June 1976, with a specific discussion also taking place around the participation of Ireland, Luxembourg, Finland and Austria.[23] A compromise was reached in which Switzerland and Poland were invited to join immediately with further invites to take place after a review meeting for the NSG guidance that had been drafted to this point. Switzerland had been invited to join at the June meeting but opted to defer joining until it had ratified the NPT.[24] The group discussed extending participation to developing "customer" countries at its meeting in November 1975, which it was foreseen could include India and Pakistan, but no decisions were taken on this subject.[25]

The calculus of whether to invite additional countries to the regime was complicated by a range of geopolitical and bilateral considerations. For example, the US was hesitant to invite Brazil to the group in part because there were other fora in which the US was seeking to engage Brazil on nonproliferation topics and because the US was reluctant to expose its discussions with Brazil to the Soviet Union.[26] This came in the context of Cold War politics where the US saw South America as its sphere of influence.

Trigger list and guidelines

The core goal of the US initiative was to agree guidelines associated with the export of nuclear technology. There was no resistance to the idea that nuclear exports should have associated safeguards. The question was whether the safeguards would have to apply to all nuclear facilities and material in the country. While this was the most consequential point of discussion, the group's work covered broader topics beyond that question. Indeed, the group was able to rapidly agree on a list of nuclear technologies that should be subject to the requirements and agree on a

[21] FM FCO 061750Z, TNA, FCO 66/760.
[22] FM FCO 061750Z, TNA, FCO 66/760.
[23] FM FCO 061750Z, TNA, FCO 66/760.
[24] "Nuclear Suppliers: 3-4 June, 1976", TNA, FCO66/844.
[25] "Text of the Chairman's Notes", TNA, FCO 66/846.
[26] "Carter. NLC-7-32-1-1-7", March 14, 1977, Carter Presidential Library.

set of guidelines associated with the export of these technologies, save for the FSSG question. The 1975 version of the guidelines included the following provisions: a requirement for government to government assurances that transfers would not be used for nuclear explosions; a requirement that nuclear material and facilities be subjected to physical protection provisions; a requirement that uranium enrichment facilities not produce enrichment at greater than 20% without supplier state authorization; the exercise of restraint on the export of sensitive nuclear technology including enrichment and reprocessing capabilities; and assurances regarding retransfer of items including items derived from transferred facilities.[27] These elements were all present in the version of the guidelines the NSG members would agree to publish in 1977 as described below.[28] The main point that required further elaboration was paragraph 4 of the guidelines, which related to the nature of the safeguards that would be required on exported equipment and material.

A point to note regarding the guidelines agreed in the 1970s was that they were to apply only to exports to non-nuclear weapons states. This would be somewhat in contrast with the revised guidelines agreed in the 1990s and was done to protect the interests of the nuclear weapons states. For example, when setting out its priorities for the August and September 1975 period, the UK listed three objectives of the NSG guidelines including: being acceptable to all present participants; not affecting the UK's status as a nuclear weapon state; and not providing unnecessarily burdensome to the UK nuclear industry, bearing in mind that the UK is a customer as well as a supplier state.[29] It seems likely that the other weapons states would have set similar preconditions.

The FSSG question proved impossible for the NSG participants to agree upon in the 1970s. France had made clear even prior to the NSG meetings that it would not agree to a policy of requiring FSSG as a condition of supply. Despite France's stated position, which is examined further below, securing agreement for FSSG as a condition of supply was the main goal of several of the participants including Canada, the UK and the US. The UK and US were actively plotting how they could persuade France to accept FSSG as a condition of supply throughout the 1970s. For example, in August 1975, the UK explored an alternative to FSSG which would involve 'contamination' of fissile material in which any facility through which

[27] See for example, "Cabinet Official Committee On Nuclear Policy - General Subcommittee: Nuclear Supplier Cooperation and Safeguards Proposals - Memorandum by the Foreign and Commonwealth Office," TNA, FCO 66/758 - US Proposal for Common Nuclear Export Policies 1975, November 24, 1975.

[28] The International Atomic Energy Agency (IAEA), INFCIRC 254, February 1978.

[29] Nuclear Suppliers: UK aims and tactics for August and September 1975, TNA, FCO 66/755.

safeguarded material passed would itself become subject to safeguards.[30]

The US did not believe this particular scheme would work as the following quote demonstrates:[31]

> "We are more grateful for your suggestions on the tactics that we should employ with the French. We recognise that there is very little hope of persuading the French to come round to our proposals for full fuel cycle safeguards. However, when they realise the full implications of the contamination alternative, they may find that almost equally unattractive. We therefore have some hope that they might be persuaded to settle for an intermediate proposal whereby full fuel cycle safeguards would be triggered only by the export of sensitive equipment and technology."

Before the third meeting of the NSG in September 1975, the UK believed that four of the seven suppliers supported a system of full scope safeguards where two others would go along with this approach if France was to do so. However, it was believed that France was still firmly against the approach.[32] In defense of its position France pointed out that it had considerably tightened its safeguards provisions on technology transfer concerning the reprocessing plant transfer to Pakistan.[33] Indeed, French officials noted that the country was already departing from the Gaullist doctrine.[34] In this context, France was willing to limit itself only to, "harmonise rules concerning non-proliferation with a view to avoiding distortions between the supplier countries caused by a desire to gain commercial advantage".[35] The French officials said that they wished to avoid the creation of a CoCom-like regime for nuclear technology.[36] It was also suggested that Valéry Giscard d'Estaing, the 20th President of France, "approached the whole question of proliferation in a more positive way than his predecessors".[37]

---

[30] Thomson to Ewart-Biggs, TNA, FCO 66/755, August 15, 1975.
[31] Thomson to Ewart-Biggs, TNA, FCO 66/755, August 15, 1975.
[32] Thomson to Ewart-Biggs, TNA, FCO 66/754, July 17, 1975.
[33] Nuclear Suppliers Cooperation: the French Attitude, TNA, FCO 66/754, July 7, 2015.
[34] Nuclear Suppliers Cooperation: the French Attitude, TNA, FCO 66/754, July 7, 2015.
[35] Nuclear Suppliers Cooperation: the French Attitude, TNA, FCO 66/754, July 7, 2015.
[36] Nuclear Suppliers Cooperation: the French Attitude, TNA, FCO 66/754, July 7, 2015; CoCom was a restrictive allied regime for the coordination of exports to the Warsaw Pact. Each participating ally had a veto over the export of others.
[37] Nuclear Suppliers Cooperation: the French Attitude, TNA, FCO 66/754, July 7, 2015.

The French government agreed a version of the guidelines without FSSG on or around 28 November 1975.[38] However, in parallel to doing so it also made clear that it was concerned about its departure from Gaullist policies and wished the guidelines to be viewed as non-discriminatory. In this context, France sought confirmation that the guidelines would apply to both non-NPT states and transfers to NPT state parties.[39]

From 1975, it was recognized that it would be necessary to publish the guidelines in some way, not least so that industry could be aware of the requirements and comply with them. The matter of publication of the guidelines in the 1970s was a complex one, given that the group had sought to keep its work secret. There was a series of leaks to the press about the group's work that drove a desire to make the work of the group public to stave off criticism.[40] Many of the participants were sensitive to the diplomatic challenge associated with this framing and avoiding the appearance of acting as a cartel would drive the thinking of some member states in the 1970s and in relation to the reconstitution of the NSG in the 1990s. Despite this, a decision was taken in 1977 to publish the guidelines through IAEA Information Circular as one of the group's final acts of the 1970s. INFCIRC 254 was published by the IAEA in February 1978 based upon communications from fifteen governments: Czechoslovakia, France, German Democratic Republic, Japan, Poland, Switzerland, Union of Soviet Socialist Republics, United States of America, Canada, Sweden, Belgium, Federal Republic of Germany, Netherlands, United Kingdom of Great Britain and Northern Ireland, Italy.[41]

Reprocessing, INFCEP and the end of the NSG meetings in the 1970s

During the course of the NSG meetings in the 1970s, the issue of reprocessing spent nuclear fuel would become increasingly important. Reprocessing is one of the two pathways to acquire the fissile material needed for nuclear weapons, with the other being uranium enrichment. The initial meetings of the NSG did not focus on any specific nuclear

---

[38] FM Paris 281900Z, TNA, FCO 66/759.
[39] FM Paris 271640Z, TNA, FCO 66/759.
[40] For example, in a meeting between the UK and the US, a British official "began by expressing his surprise upon discovering that the Financial Times (Paul Lewis) had published an article dated October 16, from Washington, detailing the current state of the Nuclear Suppliers talks. He deplored the publication of this article, noting it could be particularly damaging in securing ongoing French cooperation." Record of the main points arising from the meeting on nuclear suppliers cooperation held in Washington on October 17 and 18, 1975, FCO 66/758 - US Proposal for Common Nuclear Export Policies.
[41] IAEA, INFCIRC 254, accessed October 13, 2024, <https://www.iaea.org/sites/default/files/infcirc254.pdf>.

technology over others. The guidelines that were developed covered nuclear technologies across the entire nuclear fuel cycle, including reprocessing. When the Carter administration arrived in office in 1977, the US adopted a near single-minded focus on countering the building of reprocessing facilities in the US and abroad.[42] The single technology focus of the Carter administration was thus somewhat at odds with the broader approach of the NSG. The Carter Administration's policy was to oppose reprocessing at home and abroad. It was felt that this could be justified on the economics of the so-called 'once through' nuclear fuel cycle and the relatively abundant supply of natural uranium. Carter terminated US civil reprocessing plans as well as projects to develop advanced reactor designs that would have leveraged reprocessed fuels. Carter announced his administration's policy on non-proliferation on April 7.[43] While this did not directly mean that Carter's approach was incompatible with the NSG, in practice the focus on reprocessing did constrain nuclear export control efforts and the work of the NSG. In the 1970s, this played out in relation to the priority placed in having France cancel a reprocessing plant export to Pakistan.

Even prior to the election, the domestic political debate in the US was driving changes on the broader nuclear fuel cycle. For example, the Arms Control Association interviewed both campaigns in the lead up to the debate. In those interviews, Carter advocated for a moratorium on reprocessing domestically and abroad.[44]

An NSG subgroup on reprocessing took place on October 7 and 8, 1976, shortly after the Ford Administration had announced a new policy which called for 'upmost constraint' in the export of enrichment and reprocessing capabilities. The meeting focused "on concepts of multinational fuel centres and international management of excess plutonium and spent fuel stocks as means of preventing uncontrolled and unjustified proliferation of reprocessing capability and weapons usable material to additional countries".[45] British officials noted to the (UK) Secretary of State that Ford's statement had changed at their urging to talk of a policy of restraint rather than an outright moratorium.[46] The minutes of this meeting show that a comprehensive discussion took

[42] For analysis of Carter's nonproliferation strategy and how it differed from that of Ford, see: Craig, *America, Britain and Pakistan's Nuclear Weapons Programme*.

[43] See for example, Joseph S. Nye, "Maintaining a non-proliferation regime", *International Organisation*, Vol 35, no. 1 (1981).

[44] See "Arms Control and the 1976 Election", *Arms Control Association*, accessed November 23, 2024, <https://www.armscontrol.org/act/1976-09/features/arms-control-and-1976-election>.

[45] "Text of the chairman's notes: study group on reprocessing = OCTOBER 7 - 8, 1976," TNA, FCO 66/846.

[46] "Nuclear Non-proliferation: Nuclear Suppliers Group," TNA, FCO 66/846.

place but that there was a general feeling that the subject required much greater examination including from an economics perspective. As such, no clear outcomes were reached at the meeting.

The US election took place on November 2, 1976, with Carter's inauguration taking place of January 20, 1977. It had immediate implications for the NSG. As previously stated, the Carter Administration's policy did indeed prioritize addressing the proliferation risks of reprocessing. However, the NSG would prove not to be the main forum for this effort. Indeed, British officials noted on January 21, 1977, that, "the French have now gone as far as they can to indicate their willingness to cancel the contract. But the Pakistanis will not be willing to give ground before their election on 7 March [1977]".[47]

Subsequent to this, the first meeting of the NSG during the Carter administration was scheduled to take place on March 24 and 25, 1977, but the US asked for this to be postponed until late April. In the interim the US had made progress—privately at least—on the issue of the reprocessing plant export from France to Pakistan. Ahead of the rescheduled meeting, which ultimately took place on April 28-29, 1977, the US requested one item be added to the agenda—the 'international nuclear fuel cycle evaluation programme' (INFCEP).[48] This was in addition to the other agenda items, which included: review of the guidelines, future of the suppliers group, date and place of any future meetings and any other business.[49]

It was around this period that the Carter administration's attention began to turn away from the NSG towards other forums in which it felt it could pursue restraint in reprocessing. A US working paper on INFCEP submitted to the NSG in 1977 described the purpose of INFCEP as follows:[50]

> "The purpose of the international evaluation would be to [examine] international co-operation in dealing with common concerns related to nuclear power, and to examine future proliferation risks while meeting world energy needs. The programme would include two major elements: study of current generation reactors with a view toward solving front-end problems (e.g., fuel assurances

[47] "The France-Pakistan and FRC-Brazil Reprocessing Deals," TNA, FCO 66/927 - Exports by Nuclear Supplier States – 1977.
[48] "The France-Pakistan and FRC-Brazil Reprocessing Deals," TNA, FCO 66/927 - Exports by Nuclear Supplier States – 1977.
[49] FM FCO 041035Z, TNA, FCO 66/911, 1977.
[50] "Text of US paper on the international nuclear fuel cycle evaluation programme," TNA, FCO 66/913.

> and ways to extend utilisation of uranium and other fertile/fissile material) and back-end problems (e.g., short-term and long-term spent fuel storage); and study of future generation reactors and fuel cycle with emphasis on cycles that utilise non-sensitive fuels and on international agreements for reducing proliferation risks in the more sensitive elements of the various fuel cycles."

INFCEP would ultimately demonstrate in the early 1980s that there were no 'technical fixes' to the problem of proliferation and thus did not demonstrate a lack of utility in reprocessing.[51] Its creation would shape the end of the NSG meetings in the 1970s.

The NSG had made substantial progress in its meetings in the 1975-1977 period, but agreement had not been reached on the issue of FSSG and the new US administration had placed emphasis on restraint in reprocessing rather than export controls. After 1977, the full NSG would not meet again until it was reformed in the 1990s.[52] This leads to the question of why. Joseph Nye, an esteemed academic who was the senior Carter administration official responsible for nonproliferation, said before June 1, 1977, that there was opposition to a further meeting of the NSG before INFCEP concluded.[53] By the end of June 1977, France said it would oppose further meetings of the NSG.[54]

> "He confirmed [to the US] that this was so [that France would oppose further meetings of the group], basing himself mainly on the objections which we would likely to run into from developing countries. Such countries had always been suspicious of the role of the Suppliers Group. They would wonder why it was necessary to have a meeting with the Group which might be thought to be considering changes to the published guidelines."

[51] Gerard Smith and George W. Rathjens, "Reassessing nuclear non-proliferation policy," *Foreign Affairs*, Spring 1981.
[52] No full meeting of the NSG took place after 20-21 September 1977, although a working group on the complicated concept of overlap met on 31 May and 1 June 1978.[52] Overlap concerns situations in which multiple differing and potentially competing obligations could be imposed on exported technologies. See TNA, FCO 66/1098 Nuclear Suppliers Group Working Group on Overlap.
[53] FM Washington 011735Z, TNA, FCO66/1098.
[54] Nuclear Supplier Group, TNA, FCO66/1098, June 27, 1977.

In explaining their position to the UK, the French…[55]

> "made it clear at once that if there was a general wish to have a meeting of the Nuclear Suppliers in the Autumn the French would not stand in the way of this. But they remained unconvinced of the need for such a meeting and indeed felt that the overall results would be on the minus side. Looking at it realistically it was difficult to see what progress could be made on the question of amending the Guidelines for enlargement, and the fact that a meeting had taken place with the problem of the communique etc would once more arouse all of the old feelings among the non-members that the suppliers were gaging up together."

Nonetheless, the fact that the US had initiated INFCEP meant that the NSG question of FSSG had in effect been kicked into the long grass. Indeed, this was specifically how Joseph Nye described INFCEP to the author. [56]

In strategizing with the UK, Nye set out that pushing for expansion of the group and publication of the guidelines could enable the French to resist further meetings of the group based on the notion that the group's work was completed.[57] It was in this context that the final meeting of the NSG in the 1970s took place on September 20 and 21, 1977, at which it was agreed to publish the guidelines.

While several members felt there was important work still to be done by the group and several participants pushed for more meetings including West Germany, the UK and the USSR, the September 1977 meeting effectively marked the end of the group's work in the 1970s.[58] It appears that the rationale for this was that the US felt it had pushed France as far as it could and hoped that INFCEP would provide a way to build consensus on the reprocessing issue before it was discussed again in the NSG. There were also some additional reasons to hold off further meetings of the NSG. For example, it was felt that another meeting should not take place until after the next NPT review conference, which would take place in 1980

---

[55] Nuclear Suppliers, TNA, FCO66/1098, May 31, 1978.
[56] Interview by the author, April 1, 2015.
[57] "Message Patrick Moberly from Joseph Nye," TNA, FCO 66/914, September 20, 1977.
[58] Even just prior to this meeting, the US and other countries were pushing France to accept ongoing work of the group. See for example, "State Department telegram 222114 to U.S. Embassy Paris, 'Nuclear Suppliers Meeting'," September 15, 1977, History and Public Policy Program Digital Archive, National Archives Access to Archival Databases Online collections, State Department telegrams for 1974 and other years. Obtained and contributed by William Burr, <https://digitalarchive.wilsoncenter.org/document/119825>; There was a meeting of a working group on the issue of overlap after this date.

as the topic of nuclear export controls had become a sensitive one. France itself also held the line that there should be no further meetings for fear of a negative reaction from the developing world.[59]

With this conclusion of the NSG's work in the 1970s, key issues remained unaddressed. For example, as early as 1975 the UK foresaw a need for a working mechanism through which the NSG could meet, if necessary, in the future. The UK felt this could usefully take place in Vienna so that the IAEA could participate.[60] The NSG had failed to reach agreement on FSSG, on the working mechanisms of the regime, and a plethora of other issues. The NSG also did not address the issue of dua-use items (i.e. grey areas), as will be examined in the next section. These would be key gaps in export controls in the decade that followed.

Nuclear export controls from 1977-1991

The NSG guidelines of the 1970s went some way to mitigate the risk that exported trigger list technology would be used for nuclear explosives, but the guidelines had many limitations, including not requiring FSSG, not addressing dual-use goods and not providing a mechanism to respond to emergent proliferation cases. The NSG guidelines would not address the predominant proliferation modalities of the 1980s and 1990s. This is principally demonstrated through examination of the interaction of export controls and the Pakistan and Iraq nuclear programs.[61]

As the Iraq program has been examined elsewhere and did not result in new controls in the 1990s, this section focuses on Pakistan's program.[62]

Pakistan

The status and evolution of Pakistan's enrichment nuclear program have been well documented elsewhere and are thus not examined in depth

---

[59] Moberly to Alston, TNA, FCO 66/1098, June 27, 1978.

[60] "Record of a Discussion about nuclear suppliers cooperation held at the State Dept on Weds 11 June 1975," TNA, FCO 66/754.

[61] The Iraq case is not examined in depth in this article as it has been examined extensively in existing literature and because it was not a significant driver of export control development in the 1980s like the Pakistan case was. The Iraq case is more relevant to the 1990s and could thus be worthy of examination in that context. However, given that the case has been extensively examined in existing literature and because the procurement modalities of the Iraq program were similar to the Pakistan program, it is not examined in depth.

[62] See for example, Stewart, *International Nuclear Export Controls and Non-Proliferation*.

here.[63] Malcolm Craig also examined some elements of how the NSG and Pakistan's nuclear program interacted in the 1970s, although the current account, which is complementary, goes further particularly as it relates to understanding the limited role that the NSG would ultimately play in constraining Pakistan's nuclear program.[64] Pakistan's nuclear program had been a key point of discussion during the meetings of the NSG and in the post-NSG period the program continued to be important from an export control perspective. France had agreed to cancel the transfer of the reprocessing plant, telling Pakistan of the decision in March 1977. However, while Pakistan had by this point embarked on a nuclear weapons program, it was to progress the enrichment rather than reprocessing route in the 1977-1992 period. AQ Khan provided Pakistan URENCO centrifuge designs in 1974 and returned to Pakistan to run the program in 1975.[65] Khan leveraged contacts in URENCO's supply chain in Europe and in 1977 was in the grips of international procurement of items for the enrichment program, which would produce functional centrifuges by 1978.

The Pakistan case proved to be a challenging one from an export control perspective. Pakistan's procurement approach principally focused on dual-use items rather than procurement of items that were 'specifically designed for a nuclear end use' and thus already subject to control. The NSG had discussed control of such 'grey areas' during its meetings from 1975-1977 but the NSG did not seriously discuss let alone agree control on dual-use goods in the 1970s. A British official writing at the time described grey area as items (in the nuclear context) "with respectable uses, usually outside the nuclear field, as well as more sensitive uses in the nuclear field". He went on, "… the problem with 'grey area' items is to find a balance between treating all exports as if they were intended for a sensitive use (which would seriously penalize British exports) and permitting such exports if the stated end use seems reasonable (which runs the risk that the items might be diverted to a more sensitive use)".[66]

As early as 1976, the UK was aware that Pakistan may be seeking to procure inverters for use in a uranium enrichment program.[67] These items have common industrial uses including today in elevators and many other

[63] For a broader history of Pakistan's enrichment program in this period, see: Feroz Khan, "Eating Grass: Making of the Pakistan Bomb", Stanford University Press, March 16, 2010.
[64] Craig, *America, Britain and Pakistan's Nuclear Weapons Programme.*
[65] See for example, David Albright, *Peddling Peril: How the Secret Nuclear Trade Arms America's Enemies*, (Free Press, March 16, 2010).
[66] "Nuclear Exports", TNA, FCO 96/991, January 8, 1979.
[67] UK inquiry on exports of inverters to Pakistan, memorandum from Allen Lock to Nye, March 28, 1978, accessed via the National Security Archivel, accessed July 26, 2025, <https://nsarchive.gwu.edu/document/24457-pm-npp-allen-locke-t-d-mr-nye-uk-inquiry-export-inverters-pakistan-28-march-1978>.

electrically driven mechanical devices. However, there is a certain subset of inverters that are suited to centrifuge use where the inverter has a particularly high operating frequency. From the detection of this procurement, the UK understood that Pakistan was pursuing a uranium enrichment program based upon gas centrifuge. The challenge for the UK was in how to respond to the detected procurement.[68]

A number of options were open to the UK including controlling such exports to Pakistan on its own, attempting to secure agreement of multiple states to control such items, or attempting to secure agreement through the NSG or some other forum to systematically control all relevant dual-use items. Absent meetings of the NSG, the UK opted to approach other manufacturers of inverters to request that they stop the export of these items to Pakistan while also acting under UK law to prevent transfers to Pakistan.[69] The UK also sought information from other manufacturers of inverter about whether they controlled these items when exported for nuclear enrichment purposes.[70]

An official in the British Department of Trade noted the following in October 1978.[71]

> "My reservations about the effectiveness in this case of using export controls as a means of preventing nuclear proliferation and my misgivings about the probable effect of this course of action on non-nuclear trade are as strong as they were when we discussed this matter on 21 September. However, in the light of the meeting which officials held with Emersons and the subsequent official discussion I recognise that the only practicable way of preventing this export seems to be to impose export control on inverters and therefore acquiesce in the conclusion set out in para 11 of GEN 74 (73) 9. In acquiescing I assume that export licences will be withheld in any future case only if the inverters in question could be used and are likely to be used with gas centrifuges."

He went on:

> Given the decision to bring inverters under export control it seems to me essential (as proposed in GEN 74 (78) 10) that we should try to persuade other countries which might supply inverters to Pakistan to follow our example. I would

[68] FM FCO 071225Z, TNA, FCO 37/2113.
[69] FM FCO 071225Z, TNA, FCO 37/2113.
[70] Telegram 633 of 26 October 1978, TNA, FCO 37/2114, October 30, 1978.
[71] Dell to Owen, TNA, FCO 37/214, October 1978.

> however suggest that it would be helpful if the progress of this exercise could be reviewed possibly when the responses to the early approaches to the countries in the first two categories are known and there has been some further apprises of the remaining countries probably reactions.

The UK preceded with outreach to two groups of countries. The first group concerned those assessed to manufacture the equipment. These were US, Germany, Netherlands, France and Switzerland. The second group consisted of countries which the UK thought could manufacture the items (but was unsure if they actually did). This included Canada, Japan, Australia, Austria, Sweden and Italy. A third group was not approached which included countries that the UK felt could manufacture the items if they wished and included Pakistan, Spain, India, USSR, Eastern Europe (not further defined), China, South Korea, Iran, Israel, South Africa and Brazil.[72]

The reason the UK used bilateral approaches rather than an approach through the NSG appears to be twofold. First, there was a perceived need for caution in approaching USSR countries. These were based on the fact that, "our principal concern in policy towards Pakistan is to reduce the possibility that she re-orientate her foreign policy toward closer alignment with the Soviet Union".[73] The note went on to urge "caution in making any approach to the Russians which would create temptation to exploit the situation for political reasons despite their generally tough position on non-proliferation questions".[74] Second, it was noted that France preferred informal approaches rather than formal approaches through the group.[75] The US conducted a parallel demarche campaign against Pakistan's nuclear program, but in keeping with the Carter administration's policy of restraining reprocessing plant proliferation, this focused on reprocessing technology rather than enrichment.[76]

Interestingly, in 1981, the UK did put forward a proposal for multilateral control of components for uranium enrichment centrifuges. However, the UK chose to do so in the Zangger Committee rather than in the NSG. In

---

[72] "Prevention of Export of Inverters to Pakistan – approaches to other potential suppliers," TNA, FCO 37/214, stamped October 23 1978; FM FCO 261246Z, TNA, FCO 372/113.
[73] Draft note for submission to Gen 64 by the Foreign and Commonwealth Office, TNA, FCO 372/113.
[74] Draft note for submission to Gen 64 by the Foreign and Commonwealth Office, TNA, FCO 372/113.
[75] Draft note for submission to Gen 64 by the Foreign and Commonwealth Office, TNA, FCO 37/2113.
[76] FM FCO 071225Z, TNA, FCO 37/2113.

defending putting this to the Zangger Committee rather than the NSG, the UK said that: "The Zangger Committee could be more effective because its membership was wider", that "it draws its authority from formal commitments entered into by signatories of the NPT" and that "it was consequently less open to criticism by the G77 as a discriminatory organisation of the nuclear haves and have-nots."[77] However, there are also signs that the UK chose the Zangger Committee in an effort to compel Switzerland and Professor Zangger, whose name is borne by the committee to address uranium enrichment proliferation issues.[78] The effort to control dual-use enrichment technologies through the Zangger Committee required creative thinking given that the mandate of the Zangger Committee was to interpret specifically designed for nuclear technology meaning that, ultimately, the measures adopted were somewhat limited in scope.

In the years that followed, bilateral discussions took place between the UK and US, US and Germany and likely other countries on the control of dual-use items both generally and for export to Pakistan. Some countries agreed to control dual-use items during this period. However, absent a forum such as the NSG to systematically review and agree controls on dual-use items, the adoption of controls was slow and ad-hoc, meaning that coverage was very varied.

Reconstituting the NSG in the 1990s

The NSG met again for the first time in fourteen years in The Hague in March 1991 preceded by a working group meeting in February 1991.[79] The meetings of the NSG in the 1990s would result in a fully formed regime that addressed much of the goals of the NSG in the 1970s.

The primary driver for this meeting appears to be centrally the discovery of Iraq's clandestine nuclear program. However, Carlton E. Thorne, who chaired the NSG Working Group that created the Dual-Use Regime, said that: "contrary to some accounts, the dual-use problem was not suddenly discovered and reacted to as a result of Iraqi actions. It is fair to give the War much of the credit for giving the initiative the support needed to reach early agreement".[80] Indeed, as the previous section demonstrated, there

[77] TNA, FCO 151/ 47.
[78] See for example, Stewart, *International Nuclear Export Controls and Non-Proliferation*", page 38
[79] Coordinating Committee for Multilateral Export Controls (CoCom): nuclear sensitive dual-use exports, TNA, FCO 177/94.
[80] Mr Carlton E. Thorne, "Multilateral nuclear export controls: past present and future", in International seminar of the role of export controls in nuclear non-proliferation, n.d.,

were efforts to agree controls on certain dual-use goods throughout the 1980s through the Zangger Committee mechanism. It was notable that those efforts did not center on the NSG.

The meetings in the 1990s focused on trigger list goods, a dual-use goods regime, and NSG working mechanisms. These are examined in turn. The Netherlands hosted a meeting of NSG adherents in part to coordinate controls on dual-use goods in 1991.[81]

This meeting of states adhering to the NSG was classified as informal in part to placate Russia, which held the view that the NSG should not reconvene in its existing form, but that it should instead include major customer states such as India.[82] This Russian viewpoint was put forward to the UK in bilateral meeting with the Russian representative to the IAEA board of governors in Vienna.[83] In the event, upon consulting Moscow, the UK found that Russia's view largely mirrored its own and that, while Russia regretted the absence of emerging nuclear suppliers, Russia welcomed the resumption of the NSG.[84]

The official history of the NSG notes that there was also a call in the 1990 NPT REVCON committee responsible for Article III for actions relevant to the NSG's work. This included a call for the NPT parties to consider further improvements in measures to prevent the diversion of nuclear technology for nuclear weapons; that States engage in consultations to ensure appropriate coordination of their controls on the exports of items, such as tritium, not identified in Article III.2 but still relevant to nuclear weapons proliferation and therefore to the NPT as a whole; and that nuclear supplier States require, as a necessary condition for the transfer of relevant nuclear supplies to non-nuclear weapon States, the acceptance of IAEA safeguards on all their current and future nuclear activities (i.e. full-scope safeguards or comprehensive safeguards).[85] Thus, the

---

accessed October 13, 2024, <https://nuclearsuppliersgroup.org/images/Files%20and%20Documents/Documents/Seminars/1997_1st-NSG%20International%20Seminar_NY.pdf>.

[81] Thorne, "Multilateral nuclear export controls: past present and future"; "NSG: Membership", TNA, FCO 177/95, January 4, 1991; "Possible reconvening of the Nuclear Suppliers Group (NSG)," TNA, FCO 46/8093.

[82] "Informal Meeting of the Nuclear Suppliers Group (NSG) states: the Hague, 5-7 March," TNA, FCO 177/95.

[83] "Informal Meeting of the Nuclear Suppliers Group (NSG) States: Russian Views," TNA, FCO 177/95.

[84] "FCO TELNO 309: Informal Meeting of Nuclear Suppliers Group (NSG) States, The Hague 5-7 March," TNA, FCO 177/95.

[85] INFCIRC/539/Rev 6, accessed July 26, 2025, < https://www.iaea.org/sites/default/files/infcirc539r6.pdf>.

reconstituting of the NSG in the 1990s allowed the issue of full scope safeguards to be revisited.

Full scope safeguards revisited

Following the discovery of Iraq's nuclear weapons program, a political consensus emerged around strengthening implementation of controls. A central factor was France's decision to join the NPT as a nuclear weapons state in 1991.[86] France's decision came in the context of the discovery of Iraq's program and a desire to launch new non-proliferation and disarmament initiatives, including initiatives focused on the Middle East.[87] The holdover from the foreign policy of de Gaulle on the NPT made less sense in the post-Cold War era, and could have been counterproductive for France as it would have undermined French credibility on disarmament issues in the eyes of other countries.[88] By March 1991, France let it be known that it was ready to move forward with FSSG and that it was evaluating its position with regards to the NPT.[89]

Additionally, as already mentioned, France acceded to the NPT on August 3, 1992.[90] Several other important countries, including the United States (through the Nuclear Non-Proliferation Act of 1978) and Germany, had anyway adopted a unilateral requirement for full scope safeguards as a condition of supply as noted above. With France as NPT signatory, all NSG members were now parties to the NPT. It thus became straightforward for the NSG states to set a requirement of FSSG as a condition of supply without affecting trade with members of the group. As a result, British officials noted after the 1992 NSG meeting that:[91]

> "The meeting adopted a common policy requiring the application of full-scope IAEA safeguards to all current and future activities as a necessary condition for all significant, new nuclear exports to Non-Nuclear-Weapon States. Certain exceptions will be allowed on safety grounds and existing contracts may be honoured, but with a

[86] "Treaty on the Non-Proliferation of Nuclear Weapons," opened for signature July 1, 1968.
[87] This issue was subject to intensive UK concern including given the fact that France had not consulted the UK or US about its initiative. See "France and the Non-Proliferation Treaty," TNA, FCO 177/32.
[88] "France will sign 1968 nuclear pact", *New York Times*, June 4, 1991.
[89] French Attitude to Full-scope Safeguards and NPT Accession, TNA, FCO 177/95.
[90] "Treaty on the Non-Proliferation of Nuclear Weapons."
[91] The National Archives of the UK, FCO NPN 83/12 Part B: "Meeting of Nuclear Suppliers' Group (NSG): Warsaw: 31 March-3 April.

> presumption that they will be brought into line as soon as possible.
>
> Although a majority of NSG members had already announced some form of full-scope safeguards, the terms varied and implementation has been patchy. This agreement establishes a valuable common, and reasonably high, standard for future supply. Perhaps most importantly, it marks a common public commitment."

While it was relatively straightforward for the NSG to consolidate the requirements for FSSG given that most states had already agreed this requirement at the national level, there were still topics related to the trigger list that could not be agreed. In particular, the NSG was not able to go beyond the policy of 'exercising restraint' on the export of enrichment and reprocessing technology, a topic which stayed on the NSG's agenda for much of the next two decades.[92] Agreement on FSSG also then resulted in concerns that countries were not fulfilling their commitments, such as in the case of Russia supplying enriched uranium and a nuclear power plant to India in 1994.[93]

Dual-use regime

The second and perhaps more challenging question for the NSG in the 1991-1992 meetings related to controlling dual-use items (i.e. grey areas). Control of such items had been raised in the 1970s meetings, but the meetings ended before the point at which a serious discussion of this topic was needed. The 1991 meeting took place against the backdrop of large-scale illicit procurements by Iraq and Pakistan, and the removal of certain nuclear-related items from the CoCom list, which would ultimately disband in 1994 as a result of the end of the Cold War.[94] At its 1991 meeting, the NSG created a working group to draw up multilateral arrangements to control nuclear-related dual-use exports which met four times over a nine month period to January 1992.[95] Consensus was reached by February 1992 ahead of the regime's meeting on 3 April 1992, which was the first meeting at which a public statement was issued.[96]

Various national and commercial interests appeared around many of the dual-use items that the NSG might wish to control. The participating

---

[92] The International Atomic Energy Agency, INFCIRC 254 rev 14 part 1.
[93] "Russia: Nuclear Suppliers Group", FCO 177-1814, BNA, pp 73-74.
[94] "Russia: Nuclear Suppliers Group", FCO 177-1814, BNA, pp 73-74.
[95] "Russia: Nuclear Suppliers Group", FCO 177-1814, BNA, pp 73-74.
[96] "Russia: Nuclear Suppliers Group", FCO 177-1814, BNA, pp 73-74.

states agreed that the dual-use regime should be integrated within the NSG, albeit with a separate list and freestanding guidelines.[97] At least some of the nuclear weapons states, sought to ensure the controls adopted would not impact upon their own nuclear weapons programs. For example, the UK Ministry of Defence was concerned that NSG members might apply the guidelines to transfers to nuclear weapons states as well as non-NPT states.[98] This could have made it more difficult to procure items for the UK's nuclear weapons program.

NSG working mechanisms

A final aspect of the group's work related to the creation of working procedures. A key mechanism for this was a Memorandum Of Understanding (MOU) to be circulated among participants that reflected the guidelines. This MOU foresaw practical implementation measures including at least one annual meeting, various information exchange mechanisms, and a denial notification process.[99] The regime focused on practical implementation issues. As license denials began to be issued, for example, concerns then arose about the delay in circulating notification of these among participants resulting in a move to introduce a computerized system to share denials among members.[100] It was decided to appoint a point of contact for the regime. The question here was principally which country would take this on, with at least Japan, the Netherlands and Switzerland being interested in the role.[101]

While the decision had been made to create the second regime within the NSG, the question still arose of whether the regime was one regime, or two regimes (i.e. were the trigger list regime and the dual-use regime effectively separated regimes under the auspices of the NSG?). This question drove thinking on a number of practical issues including the question of the point of contact and on criteria for membership.[102] As was seen in membership applications from countries such as South Africa and New Zealand, prospective members agreed to adhere to both sets of

[97] "Meeting of Nuclear Suppliers' Group (NSG): Warsaw: 31 March-3 April", TNA, FCO NPN 83/12 Part B.
[98] "Meeting of Nuclear Suppliers' Group (NSG): Warsaw: 31 March-3 April", TNA, FCO NPN 83/12 Part B.
[99] See "NSG Working Group On A Multi-Lateral Regime For Nuclear Sensitive Dual-Use Goods", TNA, FCO 177-104, December 11, 1991; Letter from Otis Peterson to Roland Smith, August 27, 1991, TNA, FCO 177-102.
[100] "Nuclear Suppliers Group: Report on the 45h Dual-Use Regime Consultation Meeting Madrid 11 April 1994", TNA, FCO 177-1806, pp. 2-9.
[101] Nuclear Suppliers Group, Contact Point for Nuclear-Related Dual-Use Regime, TNA, FCO 177/695, February 25, 1992.
[102] NSG Nuclear-Related Dual-Use Regime, TNA, FCO 177/695, February 20, 1992.

guidelines meaning that the distinction was somewhat academic.[103] The point of contact would also ultimately act for both regimes.

Discussion

It took two decades for the NSG to gestate as a functional regime. The goals for the NSG in the 1970s were somewhat changeable, but included agreeing a list of technology to be subject to export controls; agreeing the conditions that would be associated with exports of listed technology; and sustaining cooperation among nuclear suppliers including through ongoing meetings and information exchange. In the 1970s, the primary focus of discussions centered on FSSG as a condition of supply. After President Carter's election, the need to address reprocessing became a persistent concern.

While there was a recognition that the NSG had more work to do in the 1970s, the Carter administration ultimately took the decision to 'kick the issue into the long grass', as Joseph Nye put it to the author, by setting up INFCEP after securing an important but specific concession from France: to cancel the reprocessing plant contract with Pakistan. The NSG did not emerge as a functional regime in the 1970s because of French insistence that it could not agree FSSG as a condition of supply—a policy necessitated by France's NPT stance. The NSG of the 1970s had thus achieved some progress in developing and publishing guidelines, but the goals set for the NSG were not fulfilled and its work was incomplete.

A variety of factors in the 1990s allowed for these limitations to be addressed. The immediate driver for a new impetus to complete the work of the NSG in the 1990s was the discovery of Iraq's clandestine nuclear program. However, a variety of factors went along with this development to enable the NSG to make progress. A key factor was that with the passage of time, more countries were receptive to the need to adopt FSSG as a condition of supply. While Cold War politics were not a significant barrier to progress within the NSG, timing of the end of the Cold War, together with the discovery of Iraq's program, doubtless provided a significant impetus to act in a cooperative way and did allow French thinking to move beyond its traditional independent Gaullist approach, which was likely a key reason that France had resisted signing the NPT and agreeing FSSG in the 1970s.

[103] Dipnote from the Embassy of the Republic of South Africa, TNA, FCO 177-1814; Nuclear Suppliers Group: resolution of Membership Issues and Candidacy of New Zealand, TNA, FCO 177-1814, pp. 112-113.

The NSG's work in the early 1990s can thus be understood as completing the work leftover in the 1970s by forming the NSG into a functional regime. The adoption of FSSG as a condition of supply, the creation of a regime on dual-use goods, the expansion of the regime, and the creation of standing meetings and an information sharing mechanism were all points that were discussed but not agreed in the 1970s. It thus took nearly two decades for the NSG to emerge as a functional regime capable of effective coordination of nuclear export controls. In the meantime, however, consequential proliferation cases progressed.

Conclusions

The NSG had a slow gestation process from 1975 to 1992. The initial goal of the US was in seeing what common ground could be found among nuclear suppliers. The 1970s meetings did find some common ground particularly on an expanded list of technologies whose export would require safeguards. However, common ground was not found on a host of important issues from working mechanisms to dual-use goods and instead the group stopped meeting with no clear plan to resume meetings. The reason for this was principally the position of France which resisted the potentially discriminatory nature of the NSG and NPT, with the US ultimately shifting focus to reprocessing during the Carter Administration. INFCEP, the mechanism designed by the US to dissuade countries of the value of reprocessing, was ultimately unsuccessful and until the 1990s, there was no impetus to resume meetings of the group. While the view of existing literature and practitioners is that the NSG was formed as a functional regime in the 1970s, the reality is that the practical outcomes of the NSG in the 1970s were limited to the publication of an additional trigger list and limited agreement on conditions under which these technologies would be exported to non-nuclear weapons states.

Even without progress on FSSG as a condition of supply, had the NSG continued meeting in the 1970s, it seems likely that the NSG would have been a key forum for coordinating the control of dual-use items being sought by countries such as Pakistan and Iraq. Without such a forum, controls on dual-use items emerged in an ad-hoc and uncoordinated way in response to specific procurement activity rather than in a more systematic way. Similarly, absent meetings of the NSG, the requirement for FSSG as a condition of supply emerged gradually to meet the political impetus of specific countries.

The 1990s were the period in which the NSG actually emerged as a more functional regime. It was in this period that the NSG agreed FSSG as a condition of supply, agreed a regime for controlling dual-use goods, agreed to ongoing meetings and the establishment of an information

sharing mechanism. While the NSG would continue to face challenges after the 1990s, the consolidation of this as a functioning regime would provide the NSG and the international community with a functional mechanism to adapt to emergent nuclear export control challenges.