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# U.S. Policy to Curb West European Nuclear Exports, 1974-1978

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## **Whack-A-Mole**

### **American Policy to Curb West European Nuclear Exports, 1974-1978**

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#### **ABSTRACT**

After India's 1974 nuclear test publicly demonstrated the proliferation risks of nuclear assistance, the United States increased its efforts to prevent nuclear exports to sensitive states. It faced challenges from its West European allies, France and West Germany, who pursued their commercial and strategic interests through nuclear assistance to third-party states like Pakistan, Brazil, India, and others. Despite multilateral efforts like the formation of the Nuclear Suppliers Group and bilateral negotiations with the supplier states' governments, the presidencies of Gerald Ford and Jimmy Carter, only obtained partial success on the nonproliferation front vis-à-vis these supplier states. The United States was relatively more successful with respect to Paris through concluding *quid pro quo* bargains but it was less effective with Bonn, to whom it had few 'carrots' to offer. Using newly declassified archival documents, this research sheds new light on U.S. nonproliferation policy and transatlantic relations during the superpower détente.

“We would like it to appear that our policy in this area is independent even though it is coordinated with you...So if you are going to make a statement, we would like to know beforehand so we could issue something beforehand.”

— Louis de Guiringaud to Henry Kissinger and President Ford, 1 October 1976<sup>1</sup>

“While insisting on the immutability of the agreement with Brazil, [Assistant Secretary Hans] Lautenschlager said something had to be done to meet the concerns expressed by President-elect Carter.”

— U.S. Ambassador Walter Stoessel to Henry Kissinger, 23 December 1976<sup>2</sup>

“Kissinger’s brief visit to South Asia does not have the appearance of having accomplished anything of substance. If the intention was to dramatise his and Ford Administration’s preoccupation about nuclear proliferation, this was achieved to some extent since the media generously covered his Iran and Pakistan trips.”

— Indian Embassy in Washington to Ministry of External Affairs, New Delhi, 15 August 1976<sup>3</sup>

When the news of the Indian underground nuclear explosion reached Washington on 18 May 1974, the reaction from the Nixon White House was remarkably subdued. Steeped in the Watergate scandal, the U.S. administration played down the significance of the Indian test. Yet, India’s nuclear test which it called a ‘peaceful nuclear explosion’ was a serious blow to the Nuclear Nonproliferation Treaty (NPT) that had entered into force only four years earlier in 1970. As a result, while the official U.S. reaction to New Delhi’s nuclear test was

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<sup>1</sup> White House Memorandum of Conversation with President Ford, Louis de Guiringaud, Henry Kissinger, Brent Scowcroft and Jacques Koscuisko-Morizet, 1 October 1976, National Security Adviser’s Memoranda of Conversation, Gerald Ford Presidential Library, Ann Arbor, MI (hereafter GRFL), <https://www.fordlibrarymuseum.gov/library/document/0314/1553548.pdf>, last accessed on 21 January 2018.

<sup>2</sup> Confidential telegram 21555 from the US Embassy in Bonn to the Secretary of State, NODIS, National Security Advisor Presidential Country Files For Europe and Canada, Country File: Germany - State Department telegrams (1), Box 7, folder State Department telegrams to SECSTATE-LIMIDIS (5), GRFL.

<sup>3</sup> Secret Memo, “Kissinger’s visit to Pakistan- an assessment from Washington,” prepared by K.V. Rajan, First Sec (Pol) on 13 Aug 1976, sent by A.P. Venkateswaran, Minister (Political) in Washington to I.P. Singh, Joint Secretary (Pakistan-Af), MEA, New Delhi, 15 August 1976, WII/104/48/76, MEA, Dr. Henry Kissinger’s Visit to Pakistan and France - Papers Re., 1976, National Archives of India, New Delhi (hereafter, NAI).

restrained,<sup>4</sup> Kissinger initiated a review of U.S. nonproliferation policy that led to a U.S.-led multilateral effort through the formation of the Nuclear Suppliers Group (NSG) with the goal to harmonize nuclear export policies of major supplier states. Among the seven original members of the NSG, disagreements with and opposition to U.S. goals of strengthening export controls were frequently expressed by France and the Federal Republic of Germany (FRG)— two key supplier states at the time.<sup>5</sup> Nuclear exports were lucrative, which neither Paris or Bonn were eager to accept controls on. If consensus had to be reached, multilateral summitry like the NSG meetings, had to be complemented with private bilateral negotiations between the United States and the supplier governments.<sup>6</sup> This paper is an examination of U.S. efforts to enhance export controls on nuclear transfers by two of its major European allies during 1974-1976, and their implications for the nonproliferation regime.

France and the FRG did not fully share U.S. concerns that nuclear proliferation threatened international security. Instead, they were concerned about the survival and well-being of their nuclear industry that needed exports in the face of a saturated national market (France) and declining domestic demand (FRG). Renewed interest in nuclear energy in the wake of the 1973 oil price shock was, therefore, a welcome development for these two supplier states. U.S. efforts to curb their nuclear exports were, therefore, naturally perceived by Paris and Bonn as ‘unfair.’<sup>7</sup> For Kissinger in the Ford administration, the “main concern was based on rapid spread of power reactors as a result of the recent oil price increases,” as a result of

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<sup>4</sup> Secret Memo prepared by J.S. Teja (Joint Secretary, Americans Division) at MEA, New Delhi, “India’s Peaceful Nuclear Experiment- American Reaction, 22 May 1974, WII/103(18)74, MEA, India’s peaceful nuclear experiment- 18.5.74- official American reaction, 1974, NAI.

<sup>5</sup> In this article, the terms, ‘West Germany’ and the ‘Federal Republic of Germany’ (FRG) have been used interchangeably.

<sup>6</sup> For works that underline the importance of both multilateral and bilateral approaches, see William Burr, “A Scheme of ‘Control’: The United States and the Origins of the Nuclear Suppliers’ Group, 1974–1976,” *The International History Review*, Vol. 36, No. 2 (2014), pp. 252-76; See also: Rodney W. Jones et al., *The Nuclear Suppliers and Nonproliferation: International Policy Choices* (Lanham, MD: Lexington Books, 1984).

<sup>7</sup> Michael J. Brenner, *Nuclear Power and Non-Proliferation: The Remaking of U.S. Policy*. (Cambridge: New York: Cambridge University Press, 1981), pp. 93-97.

which, some officials from the State Department began to claim that the United States had “taken a clear decision to be in the fore-front for the supply of nuclear power reactors as they felt that this would give the opportunity to exercise the maximum control.”<sup>8</sup> The argument was if the United States, “(D)id not some other country would provide the reactors and possibly not enforce equally stringent safeguards.”<sup>9</sup>

An economic logic was also at play, and the U.S. policy response was not merely a political retaliation against India’s 1974 nuclear test. During the latter half of the 1970s, U.S leverage as the most important nuclear supplier was on the decline while both French and German market shares in nuclear plant sales increased several folds.<sup>10</sup> For the period 1965-1969, the French held a market share of 5.5% of nuclear plants exported to the non-communist world, which increased to 18% in 1975-79. For the German nuclear industry, the market share for nuclear plants sold to the non-communist world increased from 7.5% in 1965-1969 to 20% in 1975-1979. In other words, while the superpowers were still the major nuclear suppliers in the world, two major industrially advanced West European countries were fast catching up. Furthermore, the U.S. Atomic Energy Commission (USAEC) took a unilateral decision in July 1974 to suspend the signing of long-term enrichment contracts that hit hard the West European and Japanese governments, which depended on U.S.-supplied low-enriched uranium to operate their light-water reactors. Although it was a commercial move by the USAEC to relinquish less lucrative activities, the USAEC decision caused much consternation among U.S. allies, and raised doubts about Washington’s reliability as a nuclear supplier. This gave additional impetus to countries like France and FRG to develop

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<sup>8</sup> Secret Correspondence No. 2004/MIN/74 from E. Gonsalves (Minister) Indian Embassy, Washington DC to V.C. Trivedi (Secretary (East), MEA, New Delhi, 22 Nov. 1974, WII/103(18)74, MEA, India’s peaceful nuclear experiment-18.5.74- official American reaction, 1974, NAI.

<sup>9</sup> Ibid.

<sup>10</sup> Jones at al., *The Nuclear Suppliers and Nonproliferation*, p. 67.

their expertise in full fuel-cycle technologies, and sell them abroad, e.g., Bonn's attempt to sell German jet-nozzle technology for uranium enrichment to Brazil.<sup>11</sup>

In this study, the term, 'whack-a-mole' has been used to convey the difficult task that U.S. policymakers faced in terms of implementing their global nonproliferation efforts on the supply side: private firms providing nuclear assistance were often in formal or informal coalitions with pro-exports government bureaucracies and national atomic energy commissions. Owing to the multiplicity of actors involved in the supply of nuclear technologies and equipment, U.S. actors struggled to impose controls eliciting the imagery of the game of whack-a-mole, where everytime the opponent is defeated or 'whacked,' it rapidly resurfaces. As the subsequent sections of this article will reveal, centralization of government-industry relations in France, and their decentralized character in the FRG posed related but different sets of problems to U.S. nonproliferation efforts. More importantly, the unique character of the city of Berlin in the Cold War's East-West divide, particularly during era of *Ostpolitik* of reduced tensions between the two German states, became a source of concern for the three occupying powers of West Berlin— was West Berlin and its private firms going to be subject to the NSG guidelines being formulated in London? This was most relevant for the Borsig deal that this paper examines involving the FRG and India.

Apart from French, German and American secondary sources, this paper uses recently declassified documents from the National Archives and Records Administration in College Park, MD, National Archives of India in New Delhi, Gerald R. Ford Presidential Library in Ann Arbor, MI, Archives Diplomatiques in La Courneuve, relevant edited volumes of the Foreign Relations of the United States, and the digitized collections such as the CIA Research

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<sup>11</sup> Michael J. Brenner, *Nuclear Power and Non-Proliferation*, p. 15.

Tool (CREST) Database, Wilson Center Digital Archive and the Digital National Security Archive.<sup>12</sup> Based on the archival evidence analyzed, the paper argues that despite extensive U.S. efforts to dissuade France and the FRG to provide nuclear transfers to sensitive states, U.S. policy only registered partial success. Washington was more successful in strengthening French nuclear export controls than German ones. The ‘Giscardist turn’ in France facilitated cooperation between Paris and Washington during the Ford administration, and Franco-American coordination on nuclear nonproliferation remained cordial during the Carter years. The Schmidt-Genscher front against restrictions on German nuclear exports stalled U.S. progress in Bonn. While both countries participated in the London-based NSG meetings and accepted the NSG guidelines broadly speaking, the implementation of those rules were imperfect, as both supplier governments understandably took a sympathetic view of the interests of their nuclear industries.

In the historiography of U.S. nonproliferation policy, Gavin argues that the United States consistently prioritized its goal of nonproliferation.<sup>13</sup> Others disagree on different grounds: one strand argues that not all U.S. administrations had the same level of commitment to U.S. nonproliferation policy<sup>14</sup> while another strand argues that U.S. geopolitical interests frequently triumphed over its nonproliferation concerns, which raises question about Gavin’s point about consistency.<sup>15</sup> That the United States had historically adopted a plethora of initiatives like the NPT, the NSG and the Euratom Treaty in order to stall, divert and prevent

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<sup>12</sup> Further archival evidence is expected to be incorporated from the UK National Archives, the French Diplomatic Archives and the German Federal Foreign Ministry Archives or Politisches Archiv des Auswärtiges Amt in Berlin by the summer of 2018. Several interviews of former policymakers have been conducted for the larger project but since those concern the later period where declassified documents are few, those have not been used for this paper.

<sup>13</sup> Francis J. Gavin, "Strategies of Inhibition: U.S. Grand Strategy, the Nuclear Revolution, and Nonproliferation," *International Security*, Vol. 40, No. 1 (Summer 2015), pp. 9-46.

<sup>14</sup> Or Rabinowitz and James Cameron, "Eight Lost Years? Nixon, Ford, Kissinger and the Non-Proliferation Regime, 1969–1977," *Journal of Strategic Studies*, Vol. 40 No. 6 (2016), pp. 839-866.

<sup>15</sup> Thomas Cavanna, "Geopolitics over Nonproliferation: The Origins of the Grand Strategy and the Implications for the Spread of Nuclear Weapons in South Asia," *Journal of Strategic Studies*, 2016, early view/online.

nuclear weapons ambitions of states has been examined by scholars in recent studies.<sup>16</sup> Some have even demonstrated that given U.S. concerns of nonproliferation and limited capability to prevent proliferation worldwide, Washington concluded ‘deals’ with proliferators in order to obfuscate public knowledge of their nuclear weapons programs.<sup>17</sup>

With the exception of William Burr’s analysis of the NSG, the historiography is rather thin on U.S. nonproliferation efforts at the international level, notably, toward industrially advanced supplier states.<sup>18</sup> Although there is a nascent body of literature in political science on nuclear suppliers, it does not yet shed light on U.S. nonproliferation policy toward supplier states.<sup>19</sup> This conforms to the larger trend in the literature on nuclear proliferation, where there is a lop-sided emphasis on recipients, namely, those countries that procure nuclear assistance to develop nuclear weapons or retain a ‘nuclear option’. The literature says little about supplier states, their nuclear industries, U.S. influence on their export controls or how the supplier governments resolve disputes between rival groups of pro-controls and pro-exports positions. Michael Brenner and J. Samuel Walker both provide insightful details on steps undertaken by the Ford and Carter administrations at the domestic level to strengthen

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<sup>16</sup> Hal Brands, "Rethinking Nonproliferation: LBJ, the Gilpatric Committee and U.S. National Security Policy," *Journal of Cold War Studies*, Vol. 8, No. 2 (Spring 2006), pp. 83-113; Francis J. Gavin, "Blasts from the Past: Proliferation from the 1960s," *International Security*, Vol. 29, No. 3 (Winter 2004/05), pp. 110-135; William Burr, "A Scheme of ‘Control’: The United States and the Origins of the Nuclear Suppliers’ Group, 1974–1976," *The International History Review*, Vol. 36, No. 2 (2014), pp. 252-276; John Krige, *Sharing Knowledge, Shaping Europe: U.S. Technological Collaboration and Nonproliferation* (Cambridge, MA: MIT Press, 2016); Francis J. Gavin, *Nuclear Statecraft: History and Strategy in America's Atomic Age* (Ithaca, NY: Cornell University Press, 2012).

<sup>17</sup> Or Rabinowitz, *Bargaining on Nuclear Tests : Washington and Its Cold War Deals* (Oxford, United Kingdom: Oxford University Press, 2014); Or Rabinowitz and Nicholas L. Miller, "Keeping the Bombs in the Basement: U.S. Nonproliferation Policy toward Israel, South Africa, and Pakistan," *International Security*, Vol. 40, No. 1 (Summer 2015), pp. 47-86.

<sup>18</sup> Burr, "A Scheme of ‘Control;” See also: William Glenn Gray, "Commercial Liberties and Nuclear Anxieties: The Us-German Feud over Brazil, 1975–7," *The International History Review*, Vol. 34, No. 3 (2012), pp. 449-474; Fabian Hilfrich, "Roots of Animosity: Bonn’s Reaction to US Pressures in Nuclear Proliferation," *The International History Review*, Vol. 36, No. 2 (2014), pp. 277-301.

<sup>19</sup> Matthew Kroenig, *Exporting the Bomb : Technology Transfer and the Spread of Nuclear Weapons* (Ithaca, N.Y.: Cornell University Press, 2010); Matthew Fuhrmann, *Atomic Assistance : How "Atoms for Peace" Programs Cause Nuclear Insecurity* (Ithaca, N.Y.: Cornell University Press, 2012); Alexander H. Montgomery, "Stop Helping Me: When Nuclear Assistance Impedes Nuclear Programs," in Adam Stulberg and Matthew Fuhrmann, eds., *The Nuclear Renaissance and International Security* (Stanford, CA: Stanford University Press, 2013).

nonproliferation norms, like, the creation of the Nuclear Regulatory Commission and the ban on commercial reprocessing.<sup>20</sup> Neither shed light on the international level, and U.S. policy challenges vis-à-vis foreign nuclear suppliers. There is a clear opportunity, therefore, for this paper to fill the above-mentioned lacunae in the literature, and bring a more holistic understanding of U.S. nonproliferation policy through examining Washington's efforts to strengthen export control regulations in France and the FRG.

The rest of the article proceeds as follows: First, it examines the multilateral nonproliferation efforts undertaken during the Ford and Carter administrations, notably, the formation of the Nuclear Suppliers Group (NSG), and domestic legislations like the Glenn and Symington amendments, and the Nuclear Nonproliferation Act. Second, it studies the character of French and West German nuclear assistance. Third, it analyses French nuclear assistance to Pakistan on reprocessing, and ensuing U.S. policy response of *quid pro quo* bargains. Fourth, it examines German assistance to India's heavy water plants, and U.S. efforts without adequate 'carrots' or incentives. Finally, the paper concludes by summarizing the findings and underlining the implications for current debates on U.S. nonproliferation policy.

## **I. Presidents Ford and Carter Harmonize Nuclear Export Controls**

Article III. 2 of the NPT underlines obligations of its signatories to accept export control measures without clearly stating the exact nature of policy requirements.<sup>21</sup> As a result, soon after the NPT entered into force in March 1970, a group of NPT signatories and prospective

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<sup>20</sup> Brenner, *Nuclear Power and Non-Proliferation*; Samuel J. Walker, "Nuclear Power and Nonproliferation: The Controversy over Nuclear Exports, 1974-1980," *Diplomatic History*, Vol. 25, No. 2 (Spring 2001), pp. 215–249.

<sup>21</sup> It simply states: "Each State Party to the Treaty undertakes not to provide: (a) source or special fissionable material, or (b) equipment or material especially designed or prepared for the processing, use or production of special fissionable material, to any non-nuclear-weapon State for peaceful purposes, unless the source or special fissionable material shall be subject to the safeguards required by this Article." See the text of the Nuclear Nonproliferation Treaty, last accessed Sep. 1, 2016: <https://www.un.org/disarmament/wmd/nuclear/npt/text>

signatories held a series of confidential meetings in Vienna from 1971 onward under the chairmanship of Swiss professor Claude Zangger to discuss the implementation of Article III.2. This grouping of states called itself the NPT Exporters Committee, and was informally known as the Zangger Committee after its first chairman. The goal of the Zangger Committee was to devise a list of commodities that would be subject to export controls through a set of common guidelines accepted by its members. These guidelines or ‘Understandings’ were not to be legally binding while upholding harmonized export policy declarations of its members.<sup>22</sup> The core precept of the Committee was two-fold: to prevent proliferation of nuclear weapons through an uncontrolled trade in nuclear materials and equipment, and to ensure that major nuclear suppliers conform to the same export control guidelines such that no exporter gets competitive advantage over another.

One major impediment remained: France was a key nuclear exporter but not a signatory to the NPT, and therefore not part of the Zangger Committee. Without bringing Paris into harmonized export control guidelines, the goal of nonproliferation would remain incomplete. By 1972, the Zangger Committee members reached consensus on the items in the “trigger list” but did not publish the guidelines until August 1974 because of Soviet delays in participating in the Committee.<sup>23</sup> It was not without reason, then, that some commentators noted that the NPT was challenged in May 1974 even before it was fully in place.<sup>24</sup> The issue of French participation in any future multilateral effort in export controls was of paramount importance.<sup>25</sup> It was by including France in the Nuclear Suppliers Group (known as the

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<sup>22</sup> Fritz W Schmidt, "The Zangger Committee: Its History and Future Role," *The Nonproliferation Review*, Vol. 2, No. 1 (1994), pp. 38- 44.

<sup>23</sup> The trigger list of the Zangger Committee consists of restricted items whose export will ‘trigger’ IAEA safeguards. They are restricted because of their deemed use in nuclear weapons development and developing nuclear fuel cycles.

<sup>24</sup> Robert Boardman and James F. Keeley, eds., *Nuclear Exports and World Politics: Policy and Regime* (New York: St. Martin's Press, 1983), p. 213.

<sup>25</sup> Burr, “A Scheme of ‘Control,’” pp. 252-76.

London Suppliers Conference at the time) that one major loophole in the nonproliferation regime could be plugged, i.e. harmonizing nuclear export controls independent of NPT membership.<sup>26</sup>

In the aftermath of the 1974 Indian nuclear test, the National Security Study Memorandum (NSSM) 202 of May 1974 and the National Security Decision Memorandum (NSDM) 255 of June 1974 together comprised the backbone of U.S. nuclear nonproliferation policy of the time. While NSDM 255 underlined the importance of a conference of nuclear suppliers to coordinate export policy to prevent proliferation, NSSM 202 called for a complete review of U.S. policy towards the NPT.<sup>27</sup> A further study by the NSC from December 1974 noted that while there was U.S. dominance as the international nuclear supplier, its leverage in global nuclear commerce was diminishing. It stated, ‘Loss of U.S. dominance in the peaceful nuclear area could allow customers to deal with other suppliers who impose less rigorous controls on sensitive material, equipment and technology.’<sup>28</sup> As a result, a ‘conference of nuclear industrialized states would provided a unique opportunity for realizing such a coordinated approach.’<sup>29</sup> It added that Soviet and French participation were crucial to the implementation of the nuclear suppliers conference.

By the end of 1974, it became clear that U.S. policy would constitute four key elements. First, a nuclear suppliers conference comprising of the major industrialized countries — mostly West European states, Japan and Australia — would be formed with the close cooperation of the United Kingdom and Canada, to help coordinate nuclear exports.

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<sup>26</sup> The Nuclear Suppliers Group (NSG) and the London Suppliers Conference have been used interchangeably throughout the text.

<sup>27</sup> “National Security Study Memorandum (NSSM) 202, 23 May 1974, last accessed 21 January 2018: [http://www.nixonlibrary.gov/virtuallibrary/documents/nssm/nssm\\_202.pdf](http://www.nixonlibrary.gov/virtuallibrary/documents/nssm/nssm_202.pdf)

<sup>28</sup> “Memorandum for President from Robert S. Ingersoll, Chairman of NSC Undersecretaries Committee, NSC-U/DM-7A, 4 December 1974,” NARA, CREST, CIA-RDP81B00080R001600010016-7.

<sup>29</sup> Ibid.

Secondly, the United States would give a major push in favor of ratification of the NPT for industrialized nations that are also major nuclear exporters, like the FRG, Italy and Japan, especially in anticipation of the 1975 NPT Review Conference. Thirdly, the ‘PNE loophole’ had to be eradicated. This was done through seeking assurances from India that U.S. shipments of fuel for Tarapur reactors would not be used in nuclear explosives, discouraging indigenous PNE programs by countries, and signing the Threshold Test Ban Treaty with the Soviet Union that prevented nuclear tests of devices of yield higher than 150 kilotons. Fourth and finally, demands of countries for enrichment and reprocessing were to be met through multilateral facilities under IAEA safeguards to offset indigenous development of capabilities and diversion of materials and technology for military purposes.<sup>30</sup>

By the time in early 1975, when the multilateral platform of exporters met as the London Suppliers Conference, it was clear that U.S.–European differences were extensive.<sup>31</sup> The European governments considered U.S. calls for strict controls to prevent proliferation as an attempt to offset their commercial gains from nuclear exports. In January 1976, when the Suppliers Conference published its guidelines, George Vest, Assistant Secretary of State for Politico-Military affairs and a key player at the negotiations, noted that while Washington was successful in getting the French and the Germans to agree in principle to restrict access to sensitive nuclear technology, indigenous development and unsafeguarded facilities continued to pose risks to US nonproliferation goals.<sup>32</sup> The formation of the London Suppliers Group did not sit well with members of the nuclear industry, and some developing countries, and both had their own line of reasoning. On the one hand, the industry was

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<sup>30</sup> “Memorandum for President from Robert S. Ingersoll, Chairman of NSC Undersecretaries Committee, NSC-U/DM-7A, 4 December 1974,” NARA, CREST, CIA-RDP81B00080R001600010016-7.

<sup>31</sup> Samuel J. Walker, “Nuclear Power and Nonproliferation,” pp. 215- 49.

<sup>32</sup> “George Vest to the Secretary, ‘Nuclear Suppliers Status Report,’” January 27, 1976, History and Public Policy Program Digital Archive, RG 59, Office of the Counselor, 1955-77, box 7, Nuclear Suppliers Conference. Obtained and contributed by William Burr. <http://digitalarchive.wilsoncenter.org/document/119821>

disdainful for commercial losses it would incur from cancellation of orders by recipients upset by the new restrictions. On the other hand, developing countries that sought nuclear assistance at the time, like Iran, Brazil, Yugoslavia and others, called the Suppliers Conference a violation of Article IV of the NPT.<sup>33</sup> They argued that the ‘grand bargain’ of the NPT whereby non-nuclear weapon states renounced the development of nuclear weapons for access to peaceful nuclear assistance was being held hostage by the supplier guidelines on export controls.<sup>34</sup> During the Carter administration, representatives from the nuclear industry (U.S. and others), developing countries and US officials would meet in Shiraz, Iran at the invitation of the Shah to voice their concerns against Carter’s nonproliferation policy in what would be known as the ‘Persepolis Declaration’ of 1977.<sup>35</sup>

During the Ford and Carter administrations, new U.S. domestic legislations played a key role in nonproliferation. These were the Symington amendment of 1976, the Glenn amendment of 1977 and the Nuclear Nonproliferation Act of 1978. The Symington amendment added section 669 to the US Foreign Assistance Act of 1961 was proposed by Stuart Symington, senator from Missouri, and passed by the Congress on 30 June 1976. This amendment prohibited all U.S. economic and military aid to any country exporting or importing reprocessing and enrichment facilities and related materials and technology without full-scope safeguards. During the Carter administration, in August 1977, the Glenn Amendment replaced the section 669 to the U.S. Foreign Assistance Act with a new section

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<sup>33</sup> Dane Swango, "The United States and the Role of Nuclear Co-Operation and Assistance in the Design of the Non-Proliferation Treaty," *The International History Review*, Vol. 36, No. 2 (2014), pp. 210-29. See also: Roham Alvandi, *Nixon, Kissinger, and the Shah: The United States and Iran in the Cold War* (Oxford ; New York: Oxford University Press, 2014), p. 157.

<sup>34</sup> Brenner, *Nuclear Power and Non-Proliferation*, p. 156.

<sup>35</sup> Secret telegram from US embassy in Tehran to State Department, 14 April 1977, 1977TEHRAN03219, RG59, NARA. See: Brenner, *Nuclear Power and Non-Proliferation*, p. 154. See also: Farzan Sabet, "The April 1977 Persepolis Conference on the Transfer of Nuclear Technology: A Third World Revolt Against US Non-Proliferation Policy?," *The International History Review*, 2017, early view/online first.

that solely dealt with uranium enrichment and transfers. In addition, the amendment added section 670 on nuclear transfers related to uranium reprocessing.<sup>36</sup>

The Carter administration's efforts to make far-reaching changes in U.S. domestic and international nuclear policies — codified in Presidential Directive 8— culminated into a multilateral study on proliferation risks of fuel cycles, particularly the viability of plutonium reprocessing and breeder reactors, known as the International Nuclear Fuel Cycle Evaluation (INFCE) launched in October 1977.<sup>37</sup> It was believed by the Carter administration that the INFCE would facilitate US nonproliferation goals by creating consciousness among suppliers and recipients (unlike the NSG that only involved suppliers) about the proliferation dangers from civilian nuclear programs. Given the extensive modifications that Washington sought from foreign countries, particularly the call to give up breeder reactors to tackle the plutonium economy, key policymakers like Joseph S. Nye Jr. and Robert Fri realized that US policy goals could only be attained through a consultative process, and not a coercive policy.<sup>38</sup> Over the next two years, INFCE would overshadow the NSG. Suppliers and recipients would be invited to come together to tackle the plutonium economy, President Carter's top priority. While the INFCE meetings were proceeding in Vienna, President Carter signed into law the Nuclear Nonproliferation Act (NNPA) in March 1978 that had a far-reaching impact on U.S. nuclear export controls. The NNPA was a watershed in U.S. nonproliferation policy on the one hand, and the cause of much consternation for suppliers and recipients, on the other. It required recipient states to accept full-scope safeguards in

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<sup>36</sup> In 1979, the Carter administration found Pakistan in violation of the Symington Amendment owing to its clandestine construction of a uranium enrichment plant. Reiss, Mitchell. *Bridled Ambitions: Why Countries Constrain Their Nuclear Capabilities*. Baltimore, MD: Johns Hopkins University Press, 1995, p. 213-214.

<sup>37</sup> Presidential Directive/NSC-8, Nuclear Nonproliferation Policy, 24 March 1977:  
<http://www.jimmycarterlibrary.gov/documents/pddirectives/pd08.pdf>

<sup>38</sup> For an analysis of the domestic and international policy changes sought by the Carter administration, see Brenner, *Nuclear Power and Non-Proliferation*, pp. 116-212.

order to receive U.S. nuclear assistance, and Washington's consent for retransfers and storage of any U.S.-origin materials even when provided by another supplier.<sup>39</sup>

## II. French and West German Nuclear Industries in the late 1970s

The 1973 oil price shock led to increasing interest in nuclear energy as an alternative source of energy leading to higher demand from several developing countries. India's nuclear test in May 1974 raised proliferation concerns for Washington but not for its allies in France and the FRG that sought to cash in on the demand for nuclear assistance. Two months later, the U.S. Atomic Energy Commission's (USAEC) unilateral decision in July 1974 to suspend the signing of long-term enrichment contracts hit hard the West European and Japanese governments that depended on U.S.-supplied low-enriched uranium to operate their light-water reactors. Taken as a commercial decision to ease burden on less financially lucrative activities, the USAEC decision was announced with little anticipation of reaction from allies. This gave an additional impetus to countries like France and the FRG to develop their own expertise in fuel-cycle technologies and sell them abroad (for example, the German attempt to sell Brazil jet-nozzle technology for uranium enrichment).<sup>40</sup> During 1975-1979, both French and German nuclear plant exports increased several folds.<sup>41</sup> For the period 1965-1969, the French held a market share of 5.5% of nuclear plants exported to the non-communist world, which increased to 18% in 1975-79. For the German nuclear industry, the market share for nuclear plants sold to the non-communist world increased from 7.5% in 1965-1969 to 20% in 1975-1979. While the superpowers were still the major nuclear suppliers in the world, the industrially advanced economies of Paris and Bonn were fast catching up.

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<sup>39</sup> Frederick Williams, Gunter Hildenbrand, P.R. Chari and Ryukicki Imai. "The Nuclear Nonproliferation Act of 1978." *International Security*, Vol. 3, No. 2 (Fall 1978), pp. 44-66.

<sup>40</sup> Brenner, *Nuclear Power and Non-Proliferation*, p. 15.

<sup>41</sup> Jones et al., *The Nuclear Suppliers and Nonproliferation*, p. 67.

The character of government-industry relations in the two countries, however, was vastly different. The French nuclear industry was heavily state-led and state-subsidized while its German counterpart developed through a combination of *laissez-faire* economy and state planning. In France, the Ministry of Industry led energy and industrial policies while the Ministries of Foreign Affairs and Defense oversaw external nuclear relations and nuclear weapons respectively. The French Atomic Energy Commission (*Commissariat à l'Énergie Atomique* or CEA) was responsible for nuclear R&D and the fuel cycle, and the Electricité de France was the state-owned utility provider.<sup>42</sup> When heavy investment was made in the early 1970s following the oil price shock, a monopoly supply structure was promoted that led to Framatome (currently, known as Areva) as the main nuclear plant contractor in France. Framatome was part of the Creuset-Loire steel and heavy engineering group. As the paper will demonstrate, the CEA enjoyed a near monopoly over French nuclear export policy until Valéry Giscard d'Estaing's government challenged it through institutional reorganization.

In the FRG, collective planning was operationalized by senior executives in firms, banks, utility providers, R&D institutions, and government branches through their meetings on supervisory boards and overlapping shareholding.<sup>43</sup> Kraftwerk Union AG (KWU), a subsidiary of Siemens, held monopoly over German nuclear contracts, particularly reactors. Nuclear export policy was influenced by various actors, namely, Hoechst for fuel cycle, Dresdner Bank for capital, RWE as utility provider, and the German Ministry of Research and Technology or the technical ministry (BMFT) for R&D funds. Nuclear export licensing was left to the Ministry of Economic Affairs (BMWf) while government-industry relations were the domain of the Ministry of Research and Technology (BMFT)— both ministries

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<sup>42</sup> William Walker and Måns Lönnroth. *Nuclear Power Struggles : Industrial Competition and Proliferation Control* (London and Boston: Allen & Unwin, 1983), p. 54.

<sup>43</sup> *Ibid*, p. 62.

avored nuclear assistance and opposed export controls.<sup>44</sup> The BMFT was also in charge of representing West Germany at the IAEA, which made the opponents of export controls also national representatives at the key international forum.<sup>45</sup> Three key factors gave nuclear exports their unique character in the West German case. First, West Germany was an export-led economy, where nuclear exports were treated like any other exports. The economic need to sell nuclear technologies and equipment abroad was therefore relatively higher for Bonn than it was for Paris. Second, an important element of *Ostpolitik* was to enhance Bonn's political influence at international fora and abroad such that nuclear exports to countries in Latin America and Asia were deemed as means to that end.<sup>46</sup> Third and finally, West Germany experienced a strong anti-nuclear grassroots movement characterized by mass protests at reactor construction sites such as the well-known site occupation in Wyhl in the upper Rhine valley in February 1975.<sup>47</sup> As a result, it became a necessity for West German firms to find markets abroad in order to tackle the political challenges of constructing nuclear facilities at home.

For the United States, getting France on board was pivotal to its multilateral efforts at harmonizing suppliers states' export policies. Paris had not signed the Nuclear Nonproliferation Treaty (NPT), was skeptical of IAEA safeguards, and had a nuclear industry that was heavily dependent on exports. On the other hand, the FRG had held off ratifying the NPT for almost five years after signing the NPT in 1969. The West Germans argued that the treaty could hamper commercial interests of its nuclear industry. American anxiety over

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<sup>44</sup> Harald Müller, *After the Scandals: West German Nonproliferation Policy* (Frankfurt: Peace Research Institute Frankfurt, 1990).

<sup>45</sup> Ibid.

<sup>46</sup> On *Ostpolitik* and West Germany's aspirations to play a major role on international platforms on issues such as terrorism see Bernhard Blumenau, *The United Nations and Terrorism: Germany, Multilateralism, and Antiterrorism Efforts in the 1970s* (New York, NY: Palgrave Macmillan, 2014).

<sup>47</sup> For a transnational history of anti-nuclear activism in West Germany and France during this period see Andrew S. Tompkins, *Better Active Than Radioactive!: Anti-Nuclear Protest in 1970s France and West Germany* (New York, NY: Oxford University, 2016).

German commitment to nonproliferation was so high that the 1974 Indian nuclear test led some State Department officials to wonder whether it could derail the German ratification of the NPT. The U.S. embassy in Bonn reassured that because the Bundestag had already completed parliamentary ratification of the treaty, West Germany was unlikely to reverse its course.<sup>48</sup> By the fall of 1974, the German nuclear industry started negotiations with India for supplying dual-use items. After some delays, Bonn ratified the NPT in May 1975, just a month or so before signing with Brasilia its nuclear ‘deal of the century.’<sup>49</sup>

### III. France as Nuclear Supplier: The Giscardist Turn

Valéry Giscard d’Estaing became the first non-Gaullist leader of the French Fifth Republic on 19 May 1974 by narrowly winning against Socialist contender François Mitterrand.<sup>50</sup> Giscard d’Estaing was a Gaullist-backed candidate in the 1974 elections but disagreements soon emerged between him and his Prime Minister Jacques Chirac (the leader of the Gaullist faction), particularly, on the question of French nuclear export policy. The French president favored a strong commitment to nonproliferation while his Gaullist prime minister was committed to an active nuclear export policy in line with the CEA and the French nuclear industry.<sup>51</sup> Faced with domestic political opposition from the Gaullists led by Chirac, and the

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<sup>48</sup> Secret telegram from US embassy in Bonn to State Department, “Indian Nuclear Testing and FRG NPT ratification,” 20 May 1974, 1974BONN08038 and Secret telegram from State Department to US embassy in New Delhi, 22 May 1974, 1974STATE106702, Central Foreign Policy Files, RG-59, State Department Telegrams created 7/1/1973 - 12/31/1979, NARA.

<sup>49</sup> On the Germany-Brazil nuclear cooperation of the 1970s see : Gray, “Commercial Liberties and Nuclear Anxieties,” pp. 449-474; Hilfrich, “Roots of Animosity,” pp. 277-301; William Lowrance, “Nuclear Futures for Sale: To Brazil from West Germany,” *International Security*, Vol. 1, No. 2 (Fall 1976), pp. 147-166; Dani K. Nedal and Tatiana Cuotto, “Brazil’s 1975 Nuclear Agreement with West Germany,” NPIHP Research Update, Nuclear Proliferation International History Project, Washington, DC, Aug. 2013; Carlo Patti, “Origins and Evolution of the Brazilian Nuclear Program (1947-2011),” NPIHP Research Update, Nuclear Proliferation International History Project, Washington, DC, Nov. 2012.

<sup>50</sup> BBC News, “On this day, 1974: Giscard d’Estaing voted as French President,” 19 May 1974, last accessed 21 January 2018, [http://news.bbc.co.uk/onthisday/hi/dates/stories/may/19/newsid\\_2510000/2510979.stm](http://news.bbc.co.uk/onthisday/hi/dates/stories/may/19/newsid_2510000/2510979.stm)

<sup>51</sup> Georges-Henri Soutou, “La France et La Non-Prolifération Nucléaire: Une histoire complexe,” *Revue historique des armées*, Vol. 262 (2011), pp. 35-45. For an overview of the evolution of French non-proliferation policy until contemporary times see also: Bruno Tertrais, “France and nuclear non-proliferation: From benign neglect to active promotion,” in Olav Njolstad, eds., *Nuclear Proliferation and International Order: Challenges to the Non-Proliferation Treaty* (New York: Routledge, 2011), pp. 217-226.

Socialists led by Mitterrand, Valéry Giscard d'Estaing's aimed to improve his relations with the United States. The French president's meeting with his American counterpart in Martinique in December 1974 initiated the process of Franco-American rapprochement. At this meeting, President Giscard d'Estaing assured President Gerald Ford that while France shared the U.S. concern of nuclear proliferation, and assured his commitment to nonproliferation.<sup>52</sup>

The Gaullists had a very particular view of the role of nuclear weapons in the international system: an increase in the number of nuclear-armed countries would challenge the nuclear dominance of the superpowers, and create much space for maneuver for middle-powers like France.<sup>53</sup> In addition to this almost Waltzian belief in 'more may be better' *albeit* for very different ends, there was a strong economic rationale in nuclear exports for the CEA and France's largely state-controlled industry.<sup>54</sup> In other words, reining in French nuclear exports was going to be an uphill task for the French president. Between 1974 and 1976, Giscard d'Estaing's nonproliferation policy would revolved around French participation in the NSG, and allowing the United States to coerce South Korea to pull out of its contract with the CEA on a plutonium reprocessing plant despite acute opposition of the CEA and the Gaullists by Chirac in the French National Assembly.<sup>55</sup>

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<sup>52</sup> Florent Pouponneau, "Les Changements De La Politique Française D'exportation Nucléaires (1974-1976): Un Triple Double Jeu," *Critique Internationale*, Vol. 58, No. 1 (2013), p. 112.

<sup>53</sup> Maurice Vaïsse, "L'historiographie française relative au nucléaire," *Revue historique des armées*, Vol. 262 (2011), pp. 3-8; Maurice Vaïsse, eds., *La France Et L'atome: Etudes D'histoire Nucléaire* (Brussels: Bruylant, 1994).

<sup>54</sup> See Kenneth N. Waltz, *The Spread of Nuclear Weapons : More May Be Better*, Adelphi Papers, (London: International Institute for Strategic Studies, 1981).

<sup>55</sup> France became the only non-NPT state to be participating in the NSG. For the differences between the diplomats at Quai d'Orsay and the CEA scientists over French participation in the NSG and the subsequent adherence to the NSG guidelines in French nuclear export policy, Florent Pouponneau and Frédéric Merand, "Diplomatic Practices, Domestic Fields, and the International System: Explaining France's Shift on Nuclear Nonproliferation," *International Studies Quarterly*, Vol. 61, No. 1 (2017), pp. 123-35. See also William Burr, "The Making of the Nuclear Suppliers Group, 1974-1976," NPIHP Research Update, Nuclear Proliferation International History Project, Washington, DC, April 2014.

By the summer of 1976, Giscard was aided by Chirac's resignation from his government. With Chirac's exit from the government in late August 1976, and his replacement by Giscard's loyalist Raymond Barre, the French President was able to better consolidate his power. Louis de Guiringaud, who replaced Jean Sauvanargues as the as the French foreign minister in 1976, was also more committed to nonproliferation. Soon after that year, President Giscard d'Estaing established the *Conseil de politique nucléaire extérieure* (CPNE or Council on Nuclear Export Policy) to institutionalize the Quai d'Orsay's oversight over the CEA's nuclear export policy. The CPNE needed to approve the CEA's foreign activities, including the nature of technology and materials pledged to recipient states and the amount and terms of loans offered to facilitate the transactions. Moreover, the goal of the CPNE was to redefine French nuclear export policy in line with the 'London Supplier Guidelines' or the NSG guidelines that had been recently finalized in the British capital.<sup>56</sup> The role of the CPNE was instrumental in the French declaration in December 1974 to not authorize any new sale of reprocessing plants to foreign countries, much to the the consternation of the West Germans. During the presidency of Jimmy Carter, the Franco-Pakistani contract for the construction of a plutonium-reprocessing plant would become a test case for both the French and the US President's commitment to nuclear nonproliferation.<sup>57</sup>

### ***French Nuclear Exports Policy and the Pakistan Plutonium Plant Contract***

In December 1974, Pakistan Atomic Energy Commission signed a contract with French firm *Saint Gobain Nouvelle Technique* (SGN) for the construction of a prototype plutonium reprocessing plant in Pakistan. SGN was a subsidiary of French state-owned Framatome

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<sup>56</sup> Georges Le Guelte, *Histoire de la menace nucléaire* (Paris: Hachette, 1997), pp. 213-214.

<sup>57</sup> The French nuclear contract with South Korea to build a reprocessing plant ended in January 1976, when after U.S. pressures, Seoul relented and cancelled its contract with France.

(present-day Areva), and the main contractor for French nuclear exports.<sup>58</sup> As the Ford administration kept mounting pressure on Paris to end the agreement, Prime Minister Jacques Chirac publicly rejected the idea of discussing the issue with Washington in the name of French national sovereignty.<sup>59</sup> In June 1976, when Henry Kissinger visited Paris, while returning from Islamabad, he faced French media storm for influencing French decisions on nuclear exports.<sup>60</sup> Nevertheless, a tripartite safeguards agreement involving France, Pakistan and the IAEA was signed in March 1976.<sup>61</sup>

Improved French relations with the United States during Giscard's presidency was noteworthy. A State Department paper on France noted that since Giscard d'Estaing's election, "Acerbic references toward US policies have been absent and a more pragmatic, unemotional approach to our relations is evident," and that contentious issues between the two states were minimal.<sup>62</sup> However, Giscard was fighting the Gaullists at home, and a certain French 'nuclear orthodoxy.' An example of this orthodoxy was manifest when in November 1974, in his conversation with ACDA Director Fred Iklé, the Secretary General of the French foreign ministry, Geoffrey de Courcel said that France believed that no amount of safeguards could prevent a country from developing nuclear weapons.<sup>63</sup> More importantly, France was a key global nuclear supplier that had not signed the Nuclear Nonproliferation Treaty. As a result, getting Paris on board was key to U.S. supply-side nonproliferation

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<sup>58</sup> SGN was also the French firm that provided French nuclear weapons assistance to Israel. On the Israeli nuclear program see : Avner Cohen, *Israel and the Bomb* (New York: Columbia University Press, 1998). *Worst-Kept Secret : Israel's Bargain with the Bomb* (New York: Columbia University Press, 2010).

<sup>59</sup> "M. Jacques Chirac rejette la proposition américaine d'une négociation tripartite sur l'accord franco-pakistanaï", *Le Monde* 12 August 1976, pp.1-4.

<sup>60</sup> Telegram from US Secretary of State to USDel Secretary entitled, "Press Material," August 1976, Electronic telegrams 1/1/1976-12/31/1976, Central Foreign Policy Files, RG59, NARA.

<sup>61</sup> Text of Safeguards Agreement of 18 March 1976 between the Agency, France and Pakistan, INFCIRC/239, IAEA, last accessed 21 January 2018, <https://www.iaea.org/sites/default/files/publications/documents/infcircs/1976/infcirc239.pdf>

<sup>62</sup> Memorandum for Major General Brent Scowcroft from George S. Springsteen, with attachment, "Paper on France," 21 August 1974, NSA, Presidential Country Files for Europe and Canada, Box 3, Folder France (1), GRFL.

<sup>63</sup> "Nuclear Exporters Conference: Conversation of ACDA Director Ikle and Quai d'Orsay Secretary General de Courcel," 29 November 1974, 1974PARIS28614. Quoted in Pouponneau.

efforts in the mid-1970s. Despite Giscard's willingness to work the issue out, challenges persisted. In April 1975, the French Foreign Minister Jean Sauvagnargues summarized his government's position to his American counterpart.<sup>64</sup> The French wanted the decisions in the NSG meetings in London to be unanimous and non-retroactive. The authority to implement the decisions was to be vested only in the supplier governments, who could also decide to withdraw from the NSG at their will. More importantly, the decisions of the NSG could not hamper French exports to the Communist world. French also opposed major change to their own export practices. France had completely rejected the U.S. proposals that sensitive nuclear exports be provided only to those that accepted IAEA safeguards, and that reprocessing be only offered on a multinational basis.<sup>65</sup>

By September 1975, while the French had agreed to participate in the NSG, they had also informed the Americans that they would not cancel their agreement to sell the reprocessing plant to Pakistan.<sup>66</sup> The French President, however, assured that France would not oppose U.S. efforts to convince Pakistan to terminate the contract. This meant that the Gaullist challenge at home made it difficult for Giscard to actively toe the U.S. line thus making it imperative for him to cooperate passively by not opposing U.S. pressure on recipients to withdraw from contracts. A State Department briefing paper from September 1975 noted that Washington had fruitful bilateral discussions with France on its nuclear cooperation with South Korea and Taiwan. Paris had expressed its willingness to not oppose U.S. pressure on both Seoul and Taipei. Giscard's government preferred that the recipient ended contracts instead of a withdrawal by France for two important reasons. First, if the recipient ended the

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<sup>64</sup> Ibid.

<sup>65</sup> State Department Briefing Paper, "Bilateral Talks During UNGA, France – Foreign Minister Sauvagnargues," September 1975, NSA, NSC Europe, Canada and Ocean Affairs Country Files 1974-1977, Box 8, Folder France, 1975 WH (5), GRFL.

<sup>66</sup> White House Memo, "Meeting with French Foreign Minister Louis de Guiringaud" from Brent Scowcroft, 1 October 1976, NSA, Presidential Country Files for Europe and Canada, Box 3, Folder France (9), GRFL.

contract, the French government could not be compelled to pay compensation to its nuclear industry for loss of business overseas.<sup>67</sup> Second, the French government could not be directly accused of giving in to U.S. pressure on nonproliferation, and thereby able to save face before its opponents in the domestic political scene. This explained French acquiescence with the U.S. veto to France-ROK agreement on reprocessing, and lack of opposition to U.S. efforts to dissuade Pakistan.<sup>68</sup>

The CEA, despite having its monopoly challenged by the Giscard government, retained a large part of its policy leverage through its technical expertise. Opinions of experts from the CEA like Bertrand Goldschmidt, Andre Giraud and others, who were themselves pro-exports, were frequently sought — especially informally— to determine whether certain exports posed proliferation risks or not. Lack of nonproliferation expertise among French foreign policy officials thus jeopardized the Giscard government's performance on curtailing proliferation risks from nuclear trade. One CEA expert even told a Quai d'Orsay that anyone could do reprocessing, and thus tried to underplay the obvious nuclear weapons dimension of the France-Pakistan agreement.<sup>69</sup>

Henry Kissinger's visit to Pakistan and France in August 1976 to discourage the Franco-Pakistan deal was watched closely by Indian policymakers, who took exception at what they called, "Kissinger's unsubtle methods of publicizing his intentions." A telegram from the

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<sup>67</sup> Such demand for compensation by the nuclear industry was not unthinkable. The Canadian government was sued by the company that lost contract in India in 1976.

<sup>68</sup> On U.S. efforts to dissuade Pakistan see: Or Rabinowitz and Jayita Sarkar, "'It Isn't Over Until the Fuel Cell Sings': A Reassessment of U.S. and French Pledges of Nuclear Assistance in the 1970s," *Journal of Strategic Studies*, Vol. 41, no. 1-2 (2018), pp. 275-300. For Pakistani perspectives on this subject see also: Feroze Khan, *Eating Grass: The Making of the Pakistani Bomb* (Stanford, CA: Stanford University Press, 2013); Rabia Akhtar, "Making of the Seventh NWS: Historiography of the Beginning of the Nuclear Disorder in South Asia," *The International History Review*, 2017, early view/online first.

<sup>69</sup> Letter from top-ranking French official in charge of scientific and technical questions at Quai d'Orsay, Document furnished by Florent Pouponneau to this author in June 2017.

Indian embassy in Washington lamented that, “A face-saving formula which will satisfy the Americans and be acceptable to the French and Pakistanis is still possible, but one wonders if Kissinger’s style during this trip has made it easier to achieve.”<sup>70</sup> The telegram went on to add:

Kissinger’s tactics in Pakistan seem to have made it more difficult for Pakistan to achieve its objective, since if it were to give up the re-processing plant it would look like abject surrender on the part of Bhutto after repeatedly reiterating his determination to go ahead with it.

### ***Quid Pro Quo Bargains with France***

Despite conciliatory gestures at the Martinique Summit in December 1974, French cooperation with the United States on nuclear export controls was far from assured. Yet, the Martinique summit paved the way for increased U.S. assistance to France in missile development and nuclear safety.<sup>71</sup> Given the need for French participation in the NSG, Henry Kissinger paved the way for *quid pro quo* bargains that would satisfy the French, and most importantly, discourage Giscard’s Gaullist critics from posing difficulties. French leaders also knew how much their American counterparts needed their cooperation. They made a series of requests to Washington, and as they had originally expected, they were not disappointed.

One of the key impediments to the *quid pro quo*, however, was NSAM 294: the April 1964 document that prohibited US governments from assisting France in nuclear weapons development and strategic delivery systems given French nuclear policy of *force de frappe* independent of NATO. Over the next years, the Ford administration adopted a series of

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<sup>70</sup> Secret Memo, “Kissinger’s visit to Pakistan- an assessment from Washington,” prepared by K.V. Rajan, First Secretary (Political) on 13 Aug 1976, sent by A.P. Venkateswaran, Minister (Political) in Washington to I.P. Singh, Joint Secretary (Pakistan-Af) at MEA, 15 August 1976, WII/104/48/76, Dr. Henry Kissinger’s Visit to Pakistan and France - Papers Re., Secret, 1976, MEA, NAI.

<sup>71</sup> Memorandum for Henry Kissinger from David Elliott, Jan Lodal and Hal Sonnenfeldt, “Meeting with the French on Non-Proliferation, Safeguards, and the Nuclear Exporters Conference,” NSA, NSC Europe, Canada and Ocean Affairs Country Files 1974-1977, Box 7, Folder France, 1974 (3) WH, GRFL.

measures that reversed the implications of this policy. The groundwork was already laid down earlier, when Kissinger formulated NSDMs 103 and 104 in March 1971 in the context of improved Franco-American ties with Nixon and Pompidou's leadership.<sup>72</sup> During the Ford administration, American nonproliferation interests were significant in guiding bilateral policy towards France.

In August 1975, U.S. company Control Data Corporation applied to the Department of Commerce for export license covering the sale of CYBER 76— a cutting-edge supercomputer— for French nuclear weapons program. In principle, sale of advanced computers for nuclear weapons development could not be allowed to France because of its lack of commitment to NATO's nuclear forces (NSAM 294), and since it was not a party to the 1963 Limited Test Ban Treaty. Control Data, however, informed the State Department that the company had negotiated the agreement despite known legal difficulties because it acted "on French advice that an exception would be made to U.S. policy."<sup>73</sup> The U.S. government had vetoed similar past requests by Control Data Corporation, and one by IBM because of the equipment's end-use in the French nuclear weapons program.

Two options were laid out in the memo from George Springsteen to Brent Scowcroft: (1) modify the interpretation of U.S. policies under NSAM 294 and the Limited Test Ban Treaty to exempt France from the embargo, or (2) make a specific exception in the case of Control Data agreement (this would have upset IBM that had made a similar request earlier).

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<sup>72</sup> National Security Decision Memorandum 103, "Military Cooperation with France," 29 March 1971, Richard Nixon Presidential Library, [https://www.nixonlibrary.gov/virtuallibrary/documents/nsdm/nsdm\\_103.pdf](https://www.nixonlibrary.gov/virtuallibrary/documents/nsdm/nsdm_103.pdf), last accessed 21 January 2018; National Security Decision Memorandum 104, "Cooperation with France in nuclear safety," 29 March 1971, Richard Nixon Presidential Library, [https://www.nixonlibrary.gov/virtuallibrary/documents/nsdm/nsdm\\_104.pdf](https://www.nixonlibrary.gov/virtuallibrary/documents/nsdm/nsdm_104.pdf), last accessed 21 January 2018.

<sup>73</sup> US Department of State Memorandum for Lieutenant General Brent Scowcroft, "Export of an Advanced Computer for French Nuclear Weapons Program," 19 August 1975, NSA Presidential Country Files for Europe and Canada, Canada-State Department Telegrams, Box 3, Folder France (5), GRFL.

Springsteen noted that the State Department preferred the second option as it would be faster and have “more impact on the French as a political gesture than a change in our policy based partly on technical factors.”<sup>74</sup> Moreover, the second option would need less interagency coordination. An exception determined by the NSC could keep the other stakeholders—Commerce, Defense, ERDA, ACDA— with their different priorities at bay. A case-specific exemption meant that the United States would retain leverage over similar future transactions, and the exemption would be less politically costly.

In May 1976, prior to Giscard d’Estaing’s state visit to the United States, Henry Kissinger advised President Ford to approve the second option: make an exception to NSAM 294 in the Control Data case without modifying the general directive.<sup>75</sup> That this U.S. exemption was a *quid pro quo* for greater French cooperation on nuclear export controls was clearly stated by Kissinger in the following words:<sup>76</sup>

This would enable us to highlight to Giscard our willingness to move forward in military cooperation as a reflection of the kind of bilateral relationship we would like to have with France, while expressing our desire for similar cooperation in related areas involving the Elysee and the French nuclear bureaucracy, such as civil nuclear export policy. For example, I believe that this forward movement could facilitate French cooperation in tightening up non-mandatory nuclear suppliers’ guidelines governing sensitive nuclear transfers such as national reprocessing facilities.

In fall 1975, as the advanced computer sale was being considered by the Ford administration, three separate ‘nuclear’ items came up for review at the State Department. This involved French request for liberalization of COCOM policy to allow French reactor sales to the Soviet Union, relaxation of US control of French light water reactor licenses (Westinghouse/Framatome), and allow depleted uranium (tails) to remain in the Soviet

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<sup>74</sup> Ibid.

<sup>75</sup> Secretary of State’s Memorandum to the President, “Control Data Corporation’s Request for Export License,” 15 May 1976, NSA Presidential Country Files for Europe and Canada, Canada-State Department Telegrams, Box 3, Folder France (7), GRFL.

<sup>76</sup> Ibid.

Union.<sup>77</sup> It was decided that the French request for reactor sale to the Soviet Union would be allowed in the same line as the West German request was in June 1975 as stated in NSDM 298.<sup>78</sup> Additionally, it was noted that for future COCOM cases involving exports to nuclear weapon states, IAEA safeguards would only be required if there was a significant risk of diversion to military uses.<sup>79</sup>

With respect to the reactor licensing issue, Washington decided to modify the Code of Federal Regulations to provide a general authorization for transfers that have already been authorized by COCOM with U.S. government concurrence. That way, French companies (in this case, Framatome) would not have to seek through their US licensor (i.e. Westinghouse) approval of the ERDA — the federal agency that succeeded the USAEC in late 1974 and was superseded by the U.S. Department of Energy in 1977— over and above U.S. approval in COCOM.<sup>80</sup>

The NSDM 275 of October 1974 had noted that the Ford administration required depleted uranium to be returned from the Soviet Union.<sup>81</sup> However, it also stated that if “significant opposition” arose in COCOM at a future date, then the United States would examine its policy to draw an acceptable compromise. NSDM 275 amply underlined the relationship

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<sup>77</sup> US Department of State Memorandum for Lieutenant General Brent Scowcroft by George S. Springsteen, “Department of State Views on US/French Bilateral Issues,” 5 September 1975, NSA Files, NSC Europe, Canada, and Ocean Affairs Staff: Files, 1974-1977, Country File: France, 1975 WH (5), Box 8, Folder France, 1975 (6) WH, GRFL.

<sup>78</sup> This policy document stated that the United States was prepared to grant an exemption to the West German reactor sale pending before COCOM if the Soviets supplied uranium and assurances that the use would be for peaceful purposes only. See: National Security Decision Memorandum 298, 14 June 1975, GRFL. <https://www.fordlibrarymuseum.gov/library/document/0310/nsdm298.pdf> (last accessed June 21, 2016)

<sup>79</sup> Ibid.

<sup>80</sup> France-Iranian nuclear cooperation contracts that were underway during this period involved reactors to be built under Framatome/Westinghouse joint licenses. On concurrent French, German and American negotiations with Iran on nuclear cooperation see Jacob Darwin Hamblin, “The Nuclearization of Iran in the Seventies,” *Diplomatic History*, Vol. 38, No. 5 (2014), pp. 1114-1135.

<sup>81</sup> National Security Decision Memorandum 275, “COCOM Position on the Return of Depleted Uranium (Tails) from the USSR,” 10 October 1974, GRFL, <https://www.fordlibrarymuseum.gov/library/document/0310/nsdm275.pdf>, last accessed 21 January 2018.

between cooperation within COCOM and US interests in securing cooperation of other nuclear supplier states for nonproliferation. In the wake of the French request that depleted uranium (or tails) remain in the Soviet Union, the State Department judged that a compromise could be drawn that was specified in NSDM 275, and that French request could be considered as “significant opposition” in the COCOM.

The State Department memo with the above decisions was sent to Brent Scowcroft prior to the nuclear suppliers meeting of September 1975. It noted that it was “highly desirable to use possible U.S. movement on French requests to maximize French responsiveness” on its nuclear export policy stance.<sup>82</sup> The memo noted that the United States should in return seek from France (1) restraint in future transfers of sensitive nuclear technology, (2) provisions in future agreements that required suppliers’ consent for end-use and obligatory no-PNE and permanent safeguards, (3) safeguards on reactors especially on natural uranium and advanced reactors, and (4) continuation of bilateral consultations with the United States on nuclear export cases of special concern.

This tit-for-tat nature of cooperation between Washington and Paris characterized Franco-American cooperation on nuclear export controls in the latter part of the 1970s. It helped to gradually dissipate the bilateral mistrust of the Gaullist era, and pave a new phase in the bilateral partnership in nonproliferation policy. Washington, however, was more successful with the French and had only mixed success with the Germans. Chancellor Schmidt and his Foreign Minister Genscher favored German nuclear exports as a source of financial profit unlike the Giscard government in France that wanted to improve relations with the United

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<sup>82</sup> US Department of State Memorandum for Lieutenant General Brent Scowcroft by George S. Springsteen, “Department of State Views on US/French Bilateral Issues,” 5 September 1975, NSA Files, NSC Europe, Canada, and Ocean Affairs Staff: Files, 1974-1977, Country File: France, 1975 WH (5), Box 8, Folder France, 1975 (6) WH, GRFL.

States and needed to ward off the opposition of the pro-exports Gaullists to its major policies. In addition, the presence of multiple actors within the German nuclear industry (instead one or two major firms) made government-to-government bargains less effective from the nonproliferation standpoint. In contrast, the state-controlled French nuclear industry (despite its discontentment over heightened export control measures) was more susceptible to oversight of the Elysee and Quai d'Orsay. The government control over the French nuclear industry ensured that the transactional understandings between the Ford administration and the Giscard government improved nonproliferation mechanisms in France.<sup>83</sup>

#### **IV. West Germany as Nuclear Supplier: The Schmidt-Genscher Front**

West Germany, like France, was also led by a new leader in May 1974. Following Willy Brandt's resignation on 7 May 1974, Helmut Schmidt became the German Chancellor, and led the SPD-FDP coalition. His was an export-oriented outlook. Both Chancellor Schmidt and his Foreign Minister Hans-Dietrich Genscher were in support of expanding German nuclear exports worldwide, as were the Ministry of Research and Technology (BMFT), and the Ministry of Economic Affairs (BMW). The influence of nonproliferation experts on West German export policy was weak.<sup>84</sup> Nuclear exports were treated as any other kind of exports, and proliferation risks from nuclear transfers to threshold states were not a source of serious concern for the Schmidt government. West German firms like Kraftwerk Union had a flexible structure such that they did not merely sell turn-key power plants but offered

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<sup>83</sup> Some scholars might argue that these transactional bargains between France and the United States were part of general improved bilateral relations and/or the outcome of U.S. secret nuclear assistance to French nuclear weapons program beginning in the Nixon years. However, it cannot be said with absolute certainty that the 'negative guidance' offered by the Americans to French nuclear weapons program as part of the Nixon-era secret assistance was indeed for French cooperation in the domain of nuclear nonproliferation. This can only be said for a handful of Franco-American agreements after 1974 as those mentioned in this article. For U.S. secret nuclear assistance to France during see William Burr, "U.S. Secret Assistance to the French Nuclear Program, 1969-1975: From "Fourth Country" to Strategic Partner," NPIHP Research Update, Nuclear Proliferation International History Project, Washington, DC, July 2011. See also: Richard H. Ullman, "The Covert French Connection," *Foreign Policy*, no. 75 (Summer 1989), pp. 3-33.

<sup>84</sup> Interview conducted by author of West German academic expert on nonproliferation questions during Schmidt-Carter era, 4 May 2016.

comprehensive sales packages that included technology transfer, financing, training of personnel and additional services to recipient states. This made West German firms quite desirable to governments in developing countries.<sup>85</sup>

During the Ford and Carter years, German nuclear assistance to countries in the developing world frequently challenged U.S. nonproliferation efforts. During 1975-1979, West German pledges of nuclear assistance involved uranium enrichment to Brazil, plutonium reprocessing to Iran and Argentina, and heavy water plants and dual-use components to India and Pakistan, among others. In other words, German nuclear exports involved both sensitive nuclear assistance (enrichment and reprocessing that are direct pathways to nuclear weapons) as well as dual-use assistance to 'sensitive' countries (states that the United States considered to possess or the desire to possess nuclear weapons capability). American officials noted in their West German counterparts a stark lack of awareness of proliferation risks from nuclear transfers to threshold states, namely, those states closest to developing nuclear weapons.<sup>86</sup>

The Ford administration did not find it easy to convince the Germans to agree to a moratorium on the sale of reprocessing plants. While the Giscard government in France cooperated *albeit* with domestic challenges, the Schmidt government in Germany was in direct opposition. In May 1976, in his conversation with German officials in Bonn, Henry Kissinger pitched the idea for a moratorium on the construction of reprocessing plants citing French interest: "We are basically against the sale of reprocessing plants. During the discussions with Giscard in Washington I got the feeling that he would be prepared to say

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<sup>85</sup> Erwin Hackel, "International Nuclear Commerce and Nonproliferation: A West German View," in Jones et al, eds., *The Nuclear Suppliers and Nonproliferation: International Policy Choices* (Lexington, MA and Toronto: Lexington Books, 1984).

<sup>86</sup> Interview conducted by author of former U.S. policymaker in the Carter administration managing key nonproliferation questions, 6 October 2015.

that they will not sell (reprocessing plants) any more. That is, they would agree to a moratorium for some period of time.”

West German foreign minister Genscher’s immediate reaction was that such a proposition was a “very difficult” one.<sup>87</sup> Kissinger, in response, made a case against binational reprocessing plants while also refuting the idea of regional or multinational reprocessing plants. He said, “Binational plants don’t help because if they try to kick you out— Brazil, Iran— what can you do?” Constructing reprocessing plants was dangerous for international stability argued Kissinger and insisted that a moratorium acceptance by France and the FRG ‘would help.’<sup>88</sup> On the West German side, neither Genscher nor Peter Hermes — Assistant Secretary for Foreign Affairs and chief negotiator on nuclear export questions— were convinced. In their response to Kissinger’s moratorium request, Bonn suggested further bilateral discussions but added that West German deals with Iran and Brazil should not be affected by such a moratorium, thus defeating their immediate purpose.<sup>89</sup> Kissinger was aware that the possibility of reaching consensus on the moratorium at the NSG seemed bleak as it could generate a confrontation between the suppliers and recipients.

By late June 1976, the West Germans were moving fast on signing their nuclear contract with Tehran on plutonium reprocessing, and had not responded to the U.S. aide memoire on that subject matter. West German intransigence worried Kissinger, who along with his advisor Helmut Sonnenfeldt, met with the West German Ambassador Berndt von Staden hoping to forestall the contract. West Germany had argued after its agreement with Brazil that the United States had not stated its opposition in advance of signing the contracts. As a result,

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<sup>87</sup> Memorandum of Conversation, Bonn, 23 May 1976, Records of the Office of the Counselor, Helmut C. Sonnenfeldt, 1955–1977, Entry 5339, Box 5, Germany 1976. Secret; Nodis, RG 59, NARA.

<sup>88</sup> Ibid.

<sup>89</sup> Memorandum from Counsellor Helmut Sonnenfeldt to Secretary of State Henry Kissinger, Washington, 28 May 1976, Records of the Office of the Counselor, Helmut C. Sonnenfeldt, 1955–1977, Entry 5339, Box 5, Germany 1976. Secret; Nodis, RG 59, NARA.

with West German cooperation with Iran and the reprocessing moratorium at stake, Kissinger wanted to make sure the West Germans did not get the chance to repeat the same reasoning.<sup>90</sup> When Helmut Schmidt met the Shah of Iran in November that year, however, U.S. nonproliferation concerns were put on the backburner.<sup>91</sup>

Over the next months, the West Germans did not show interest in declaring a moratorium while the Ford administration became preoccupied with the presidential elections, especially given the emphatic criticism of U.S. nonproliferation policy by candidate Jimmy Carter. Bonn, however, remained anxious how a French decision to accept a moratorium would affect its own policies. Could it be penalized under the Symington Amendment for exporting reprocessing facilities? How would the new U.S. administration of Carter reconcile its nonproliferation policy with the FRG's commercial interest in exporting nuclear reactors and fuel cycle facilities? After the French declaration of moratorium on future exports of reprocessing in December 1976, some high ranking officials in Bonn wondered if that were at all relevant: given Carter's proactive policy against plutonium and commercial reprocessing, it was clear that U.S. objections would make any future sale impossible. It would be not until June 1977 that West Germany would adopt a moratorium on future exports of reprocessing plants. The 1978 NNPA brought the U.S.-FRG tensions to the fore, as a high-ranking personnel at the Indian embassy in Berlin put it:

The West Germans see in the act a new threat to deals concluded independently by West German companies with third countries for the export of nuclear technology (Brazil is the classic example). The perception of the American move, as one placing obstacles in the development and exportation of nuclear technologies by other countries, was made more serious by a number of factors, including the lucrative nuclear market, an area where the FRG was well advanced and where a sudden shortage has developed in new orders being received for reactors by West Germany's

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<sup>90</sup> Memorandum of Conversation of the Secretary's Meeting with FRG Ambassador von Staden, Washington, 2 July 1976, Records of the Office of the Counselor, Helmut C. Sonnenfeldt, 1955–1977, Entry 5339, Box 5, Germany 1976. Secret; Nodis, RG 59, NARA.

<sup>91</sup> Hilfrich, "Roots of Animosity," p. 285.

nuclear industry.<sup>92</sup>

***West Germany-India Agreement: Heavy Water Plant Items***

After its nuclear test, as Canadian nuclear assistance to the Indian Atomic Energy Commission (IAEC) was becoming increasingly uncertain, India sought out more willing suppliers like West Germany. In September 1974, Homi Sethna, the chairman of the Indian Atomic Energy Commission, arrived in Bonn after IAEA meetings in Vienna. During his trip, he visited the Nuclear Research Center in Karlsruhe and held bilateral discussions on nuclear cooperation between Bonn and New Delhi.<sup>93</sup> The West Germans had agreed in 1972 to supply a heavy water plant to India to be built in Talcher.<sup>94</sup> It was not the first instance of West German nuclear assistance to India. Bonn had supplied India with its first heavy water plant in Nangal in the early 1960s. In the wake of India's PNE, Washington preferred that safeguards be sought on the Talcher heavy water plant. West Germany, however, informed that it could not oblige since the export permission had been granted over two years earlier, and Bonn could not seek new conditions retroactively.<sup>95</sup> In addition, Randermann, chief of the foreign office of the West German Atomic Energy Office feared that the federal government could be held liable by the West German firm for financial damages incurring from new restrictions. Moreover, Randermann argued that heavy water plants were not part of the 'trigger list', and were restricted under neither IAEA regulations nor the NPT. In the absence of legal obstacles, not much could be done to prevent the West German sale of heavy

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<sup>92</sup> Annual Political Report for 1978, No. BON/POL/101/1/78, Secret, Prepared by Second Secretary (Political) D.J.Bell, 15 January 1979, Folder: Annual reports, etc. for the year 1978 from the Embassy of India, Bonn (FRG), Berlin (FRG), Research and Intelligence Section (Historical Division), MEA, HI/1011/18/79, NAI.

<sup>93</sup> Secret telegram from US embassy in Bonn to State Department, 25 September 1974, 1974STATE15167, RG 59, NARA.

<sup>94</sup> India also received West German nuclear assistance for construction of the first heavy water plant in Nangal in northern India that began operation in 1962.

<sup>95</sup> Secret telegram from US embassy in Bonn to State Department, 22 October 1974, 1974STATE16577, RG59, NARA.

water plant to India. By 1975, West German firms also started negotiating to supply a heavy water plant for Pakistan much to the anguish of the Ford administration.<sup>96</sup>

A second case concerning heavy water plants caught attention of the U.S. embassy in Bonn, which gave impetus at the NSG to seek supplier consensus on industrial spare parts and dual-use items exported to ‘sensitive’ countries. After 1974 India’s nuclear test, both Canada and the United States refused to grant export licenses for the same type of compressors owing to India’s opposition to accept full-scope IAEA safeguards, and refusal to provide assurances that the items would not be used in future nuclear explosions. Consequently, New Delhi found a willing supplier in West German firm, Borsig AG. Borsig was a compressor licensee of Allis-Chalmers— the Canadian firm that failed to get export licenses for the compressors for India from both Ottawa and Washington in the wake of the Indian nuclear test.<sup>97</sup> In July 1975, the West German government granted export approval to Borsig for the supply of centrifugal compressors for Indian heavy water plant in Kota, where two CANDU-type reactors were being built with Canadian assistance.<sup>98</sup> There was some debate within the German government about this export to India but because it involved only conventional compressors, and neither a plant-specific technology nor a ‘critical component’, the license was granted.<sup>99</sup> The West German firm had not sought safeguards, and refused to request them fearing commercial losses from possible Indian abrogation of the agreement.

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<sup>96</sup> Secret telegram 040475 from State Department to US embassy in Islamabad, February 1976, EXDIS, GFRL.

<sup>97</sup> Secret telegram from State Department to US embassy in Bonn, September 1975, 1975STATE220753, RG 59, NARA.

<sup>98</sup> Secret telegram from US embassy in Bonn to State Department, September 1975, 1975BONN15439, RG59, NARA. See also Individual Atomic Law License Cases- KWU, FU, BAM, BORSIG, 1976-1978, Record Group 84, Records of the Foreign Service Posts of the US State Department, US Mission Berlin, NARA.

<sup>99</sup> Centrifugal compressors are industrial items that are not only used for nuclear weapons development. Nor are they solely used in heavy water plants. They are a kind of turbomachinery that have a wide range of uses in air compression, gas drilling, pipeline compression and other civilian-use spheres.

West German-Indian nuclear cooperation transpired almost concurrently with the West German-Brazil agreement. The latter attracted more public attention because of nature of technology being transferred to Brasilia as well as the overt defense of the agreement by the Schmidt government on commercial grounds. In June 1975, Brazil was not a signatory to the NPT when West Germany and Brazil signed an agreement hailed as the ‘deal of the century,’ under which West German firm Kraftwerk Union pledged to supply Brazil with at least eight nuclear reactors and full nuclear fuel cycle facilities. The Ford administration raised concerns regarding proliferation ambitions of Brazil’s military junta, and a trilateral safeguards agreement was signed by West Germany, Brazil and the IAEA. The Carter administration engaged in several rounds of high-level meetings with West German officials in an effort to terminate the agreement.<sup>100</sup> The Schmidt government publicly defended its nuclear agreement with Brazil: it was after all the single largest West German export order to date with a value of 10-12 billion marks.<sup>101</sup> The ‘deal of the century’, thus, became a bone of contention between Washington and Bonn that played out publicly souring U.S.-FRG relations during the Carter years. Unlike the West German-Brazil deal, Bonn had a less powerful defense for its nuclear assistance to India. India, after all, had used civilian nuclear technology obtained through foreign assistance to conduct a nuclear explosion. However, the West German government tried to protect the export rights of its firms, and its commercial interests. So while there was no overt defiance of U.S. nonproliferation efforts as in the case of Brazil, Bonn was quiet as it tried to carry on with its exports to New Delhi as if it were ‘business as usual’. More importantly, the assistance to India was of dual-use character and harder to control through existing legal mechanisms.

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<sup>100</sup> Secret Memorandum, Foreign Minister Azerado da Silveira, Information for the President of Brazil, ‘Nuclear Issues. Meeting at 13/02/78. Alvorada Palace.’ 13 February 1978, Wilson Center Digital Archive document ID 116877, Acquired by CPDOC Archives, AAS mre d 1974.03.26 pp.12361-12366. Obtained and translated by Fundação Getúlio Vargas.

<sup>101</sup> Gray, “Commercial Liberties and Nuclear Anxieties,” p. 450; Hilfrich, "Roots of Animosity," p. 279.

The West German-Indian nuclear cooperation brought to light two key issues. First, dual-use facilities like heavy water plants and their components were still getting away despite posing proliferation risks owing to the recipient's intent (Pakistan) or past actions (India). Second, the London Suppliers Conference needed to arrive at consensus on such facilities to make sure no supplier got a commercial advantage as had happened with Borsig that stepped in where Canadian firm Allis-Chalmers left. However, the dual-use issue was not affecting West German nuclear assistance alone. A similar situation arose in the United States in December 1974 with respect to a Union Carbide contract to supply unsafeguarded trays for a heavy water plant in India.<sup>102</sup> While Kissinger approved the export in January 1975 stating that each nuclear export to India should be analyzed on a case-by-case basis, heavy water plant components became the subject of serious inquiry in the Ford administration.<sup>103</sup> It was noted that although heavy water was itself a sensitive item that required IAEA safeguards, heavy water plants and their components were not incorporated into the Zangger Committee's trigger list at the time.

West German firm Borsig AG was headquartered in West Berlin, and needed export authorization from the Allied Kommandatura—the Allied governing body of the divided city of Berlin. Kissinger saw opportunity to influence the FRG through drawing the British and French into it. Both London and Paris supported the US position to oppose Borsig's sale of compressors for the Indian heavy water plant.<sup>104</sup> Undersecretary of State Joseph Sisco instructed U.S. ambassador Martin Hillenbrand to request the Kommandatura's economics

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<sup>102</sup> US State Department Action Memorandum for US Secretary of State from Alfred L. Atherton Jr. and Samuel Lewis entitled, "Nuclear Export Policy Toward India," 26 December 1974, Record Group 59. Records of the Department of State. Records of the Policy, Planning Staff, Director's Files (Winston Lord), 1969-1977, Box 368 folder: Sensitive Non-China Chron 1975; Acquired by William Burr and shared by Burr with this author.

<sup>103</sup> US State Department Briefing Memorandum for US Secretary of State from Winston Lord entitled, "Export of Trays to India," 13 January 1975, RG 59. Records of the Department of State. Records of the Policy, Planning Staff, Director's Files (Winston Lord), 1969-1977, Box 368 folder: Sensitive Non-China Chron 1975; Acquired by William Burr shared by Burr with this author.

<sup>104</sup> Secret telegram from US embassy in Bonn to State Department, December 1975, 1975BONN20807, RG 59, NARA.

committee to postpone its decision on the Borsig's export license application in order to study its full implications. Sisco advised discretion since any press report could lead to questioning of "allied commitment to West Berlin's economic viability."<sup>105</sup> In a meeting with Hillenbrand in December 1975, Werner Rouget, in charge of nuclear affairs at the FRG foreign ministry also emphasized the need for secrecy since it involved West Berlin.<sup>106</sup> Moreover, Rouget was concerned that any German interference on U.S. advice could lead to a lawsuit from Borsig. He himself was in favor of a 'compromise' solution, in agreement with Washington, whereby Bonn sought safeguards and assurances from New Delhi for a nuclear explosives-related end-use. Finally, Rouget conveyed that the West German government would like export control measures for compressors to be discussed at the upcoming NSG meetings for future transactions, irrespective of the outcome of the Borsig case. In addition, there was interdepartmental disagreement within the West German federal government on export licenses for Borsig. The technical ministry (BMFT) and the economics ministry (BMW<sub>i</sub>) gathered data to argue that compressors were conventional items and not critical, thereby not requiring safeguards. The BMW<sub>i</sub> was the main authority for export licenses. Anxious of industrial backlash, BMW<sub>i</sub> in particular did not wish to reverse its original decision of license approval for the Borsig deal with India. At the West German foreign ministry, Rouget shared U.S. nonproliferation concerns especially in the light of Canadian and US refusal to grant licenses for the same compressors for India. However, his main concern was the tough stance of BMFT and BMW<sub>i</sub>, and of a possible lawsuit by Borsig against the West German government.<sup>107</sup>

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<sup>105</sup> Secret telegram from State Department to US embassy in Bonn, September 1975, 1975STATE220753, RG 59, NARA.

<sup>106</sup> Secret telegram from US embassy in Bonn to State Department, December 1975, 1975BONN20877, RG 59, NARA.

<sup>107</sup> Secret telegram from US embassy in Bonn to State Department, December 1975, 1975BONN20633, RG 59, NARA.

By May 1976, the FRG informed the United States that it would prefer to deal with the Borsig case in Bonn and not through the Allied Kommandatura in West Berlin.<sup>108</sup> Rouget informed Hillenbrand that the firm had been informed that export license would not be granted, and the case was ‘sleeping.’<sup>109</sup> With Carter’s presidential campaign in full steam, the West Germans were anxious to find out what the new administration’s policy would be towards their own nuclear industry.

By January 1977, the West German government undertook an important step. It decided to amend the atomic energy list of its Federal Trade and Payments Act (AWG) to include heavy water plant compressors that would be “identified by a combination of technical and ‘end-use’ criteria.”<sup>110</sup> This ensured that the existing export control regulations of the Allied Kommandatura, federal German government the NSG guidelines and the trigger list were all in line with requiring safeguards for heavy water plants and components used in such plants. Borsig was subsequently informed that the West German government would apply the amendment to the Act retroactively causing ‘rumors’ that the company planned to send its shipment to India before the amendment took effect.<sup>111</sup> An alternative option that Bonn offered to New Delhi was that India provide assurance that no material produced in a reactor using heavy water from the plant that had Borsig compressors would be used in nuclear explosives.<sup>112</sup> Not surprisingly, India rejected that condition. The Bonn government continued to be under pressure from the West German industry to allow the sale of

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<sup>108</sup> Washington, however, secretly kept a licensing refusal via the Allied Kommandatura as the last option (i.e. if Germany did not cooperate) but was unwilling to use it fearing media backlash from perceived economic losses incurred by West Berlin for Allied controls. Secret telegram from US embassy in Bonn to State Department, January 1977, 1976BONN01572, RG 59, NARA.

<sup>109</sup> Secret telegram from US embassy in Bonn to State Department, May 1976, 1976BONN12368, RG 59, NARA.

<sup>110</sup> Secret telegram from US embassy in Bonn to State Department, January 1977, 1977BONN01572, RG 59, NARA.

<sup>111</sup> Secret telegram from US embassy in Bonn to State Department, February 1977, 1977BONN02103, RG 59, NARA.

<sup>112</sup> Secret telegram from US embassy in Bonn to State Department, February 1977, 1977BONN02997, RG 59, NARA.

compressors to India. Rouget informed the U.S. embassy in Bonn that the FRG was considering the possibility of manufacturing the compressors through Borsig, Germany instead of Borsig, Berlin to avoid an allied veto through the Kommandatura.<sup>113</sup>

In June 1977, Bonn declared a moratorium on commercial sale of reprocessing technology. This moratorium, six months after the similar French decision, quietly killed West German reprocessing contract with Iran. The Schmidt government, however, were adamant to keep its contract with Brazil unaffected by its moratorium decision. In other words, Bonn was warding off U.S. nonproliferation pressures to curtail its nuclear assistance to multiple countries. India was not the only one. However, India was a country that the United States was also a supplier to. Rouget was therefore curious how President Carter's January 1978 visit to India went, and if Washington was able to find a solution regarding its own shipment of fuel for India's Tarapur reactors.<sup>114</sup> The Carter administration had hoped that with the new government of Morarji Desai in power, New Delhi might yield to U.S. request for full-scope IAEA safeguards on the U.S.-supplied Tarapur reactors. Those hopes did not translate into actual policy change in New Delhi but President Carter decided to make multiple exemptions allowing U.S. fuel shipment to India raising concerns in Bonn of U.S. double standards.

Almost a year later, in May 1978, the West German foreign ministry notified the U.S. embassy that the Borsig deal was dead.<sup>115</sup> The four-year struggle to prevent the sale of unsafeguarded compressors for an Indian heavy water plant thus drew to an end. It seemed that the U.S. persistence bore fruit, and Bonn followed U.S. advice *albeit* grudgingly to prevent the sale without adequate safeguards and assurances from India. This vindication

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<sup>113</sup> Ibid.

<sup>114</sup> Secret telegram from US embassy in Bonn to State Department, January 1978, 1978BONN00521, RG 59, NARA.

<sup>115</sup> Secret telegram from US embassy in Bonn to State Department, May 1978, 1978BONN09790, RG 59, NARA.

was, however, short lived. The U.S. embassy in Bonn informed the Carter administration that the Indians had informed West German officials that Bonn's cancellation of the Borsig deal was not a "major problem."<sup>116</sup> Further inquiry revealed that New Delhi had already shelved plans for those compressors in 1976, and had focused on indigenous production of the items instead. There was additional information that East European, notably East German technical assistance was probably being used by the IAEC for manufacturing the heavy water plant compressors for Kota. The compressors for the Talcher heavy water plant that was provided by a Czechoslovak company.<sup>117</sup> It is not clear whether Borsig or any of its subsidiaries were involved in this deal but such possibilities could not be completely ruled out given the inter-German trade relations and economic cooperation as a consequence of *Ostpolitik*.<sup>118</sup> If Borsig was indeed involved, then the acquiescence of some members within the West German government, particularly technical and economic ministries, is one possibility. A second possibility is that it was undertaken primarily at the level of firms through inter-German firm coordination, i.e. Borsig in West Berlin transacting with similar East German firms. The Indian contacts of the U.S. embassy that furnished the information remarked that the Czechs could have received the technology from another East European supplier. Both Czechoslovakia and the German Democratic Republic (GDR) became NSG members in 1976-77 while the Borsig episode was in full swing, and their bilateral relations with India were more than cordial at the time.

The 1974 annual report from the Indian embassy in Prague noted, "Relations with India had reached an all-time high with the exchange of visits by Smt. Gandhi to the Czechoslovakia in

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<sup>116</sup> Secret telegram from US embassy in Bonn to State Department, September 1, 1978, 1978BONN15994, RG 59, NARA.

<sup>117</sup> Secret telegram from State Department to US embassy in Berlin, September 22, 1978, 1978STATE242694, RG 59, NARA.

<sup>118</sup> On Helmut Schmidt's management of the policy of *Ostpolitik* after Willy Brandt, see Chapter 1 in Stephan Kieninger, *The Diplomacy of Détente: Cooperative Security Policies from Helmut Schmidt to George Shultz* (London: Routledge, 2018), Forthcoming.

1972 and Dr. Gustav Husak to India in December 1973,” adding that on the “Rajasthan nuclear implosion there has been a discreet silence.”<sup>119</sup> The India-East German relationship was also on an upswing: a bilateral trade protocol was signed in 1975 providing for a turnover of Rs. 110 crores in 1976 (100 crores is 1 billion), which was a 10% increase from the figure of 1975, involving non-traditional goods, comprising mostly engineering items.<sup>120</sup> Friendly relations between New Delhi and Eastern bloc countries, like the Czech Republic and the GDR, were a product of the Indo-Soviet partnership of the 1970s. Since the 1971 Indo-Soviet Treaty of Peace, Friendship and Cooperation, political and economic ties between Moscow and New Delhi had only expanded. India’s Bhillai steel plant, built with Soviet assistance, was producing 25 million tons of steel by 1976, and the Soviet military was helping with the modernization of the Indian naval fleet.<sup>121</sup> Soviet response to India’s 1974 nuclear test was silence. Soviet technical assistance to India’s nuclear program witnessed an upswing in the wake of the test, particularly, by 1976.<sup>122</sup> After the termination of Canadian nuclear assistance in May that year, the Soviet Union agreed to supply 200 tonnes of heavy water to India to make up for Canada’s withdrawal.<sup>123</sup> This was not the first instance of Soviet heavy water supply: in 1972, Moscow had also provided to New Delhi 80 tonnes of

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<sup>119</sup> Annual reports from Prague - 1974, Research and Intelligence Section (Historical Division), Annual Political Aperçu for 1974, No. PRA/POL/101/2/75, Secret, Prepared by Amb. V. Siddharthachary, 14 Jan 1975, HI/1011(25)/75, MEA, NAI.

<sup>120</sup> Annual Political Report for 1975, No. GDR/101/1/75, Secret, Prepared by Ambassador A.R. Deo, 27 January 1976, Folder: Annual reports from Berlin (GDR) for the year 1975, Research and Intelligence Section (Historical Division), HI/1011(100)/76, MEA, NAI.

<sup>121</sup> Telegram from Ambassador Jean-Claude Winckler, French embassy in New Delhi to French Foreign Ministry (No. 1027/29), Objet : Inde-URSS, 11 December 1976, Carton 206INVA, Direction Asie-Océanie, Inde 2253, 1973-1980, Archives Diplomatiques Françaises, La Courneuve, France, (hereafter, ADF).

<sup>122</sup> Balazs Szalontai, “The Elephant in the Room: The Soviet Union and India’s Nuclear Program, 1967-1989, NPIHP Working Paper #1, Nuclear Proliferation International History Project, Washington, DC, November 2011.

<sup>123</sup> “Soviet to Sell India Heavy Water for Use In Nuclear Program,” *The New York Times*, 9 December 1976. See also: Yogesh Joshi, “Between Principles and Pragmatism: India and the Nuclear Non-Proliferation Regime in the Post-PNE Era, 1974–1980,” *The International History Review* (2018), early view/online first.

heavy water.<sup>124</sup> In other words, the Soviet Union's involvement in finding an East European solution to India's woes vis-à-vis the Borsig deal is a third possibility.

Notwithstanding the inter-German camaraderie during *Ostpolitik*, the GDR had an ideological quibble with the FRG and the West, broadly speaking. This quibble was based on GDR's standpoint that West Berlin was not "a consistent part of the Federal Republic of Germany and will continue not to be governed by it."<sup>125</sup> An Indian diplomat noted that despite Soviet advice, "GDR had made its point, namely, that it is as much an indirect party to the status-quo on Berlin as the Four Powers are to the agreement on West Berlin"<sup>126</sup> East Germany's ideological standpoint and West Berlin's unique legal character in the Cold War had consequences for nuclear nonproliferation efforts during the latter half of the 1970s.

First, the question arose in spring 1976, soon after Borsig applied for export licenses at the Allied Kommandatura to export five turbocompressors for Indian heavy water plant in Kota, whether Berlin was at all subject to the NSG guidelines. Since Borsig was headquartered in the French zone of West Berlin, the French standpoint was because both the governments of France and West Germany were participating in the NSG meetings in London, the NSG guidelines applied to Berlin.<sup>127</sup> The French joined the chorus with the Americans that without adequate IAEA safeguards on the exports, and assurances from the Indian

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<sup>124</sup> Telegram from Ambassador Jean-Claude Winckler, French embassy in New Delhi to French Foreign Ministry (No. 1027/29), Objet : Inde-URSS, 11 December 1976, Carton 206INVA, Direction Asie-Océanie, Inde 2253, 1973-1980, ADF.

<sup>125</sup> Ibid.

<sup>126</sup> Annual Political Report for 1974, No. GDR/101/2/74, Secret, Prepared by Ambassador A.R. Deo, 31 January 1975, Folder: Annual reports from Berlin (GDR) - 1974, Research and Intelligence Section (Historical Division), HI/1011(100)/75, MEA, NAI.

<sup>127</sup> Top Secret telegram from O. Wormser at the French embassy in Bonn to the 'directeurs' at the French Foreign Ministry in Paris (No. 1197/1202), Diffusion strictement réservée, Objet : Non prolifération, exportation de compresseurs par Borsig (Berlin), 21 April 1976, Carton 206INVA, Direction Asie-Océanie, Inde 2253, 1973-1980, ADF.

government that the exports of equipment by Borsig would not be used in future nuclear explosions, the deal must not go through.

Second, American U.S. policymakers restrained themselves from overtly calling out Borsig because of the sensitivities surrounding Berlin, i.e. letting Berliners manage their own affairs. There were concerns on the American side that public criticism could lead to an outcry that the Western occupying powers were standing in the way of economic development of Berlin in the name of nonproliferation. As a result, the United States involved Canada to also canvass against the Borsig deal.<sup>128</sup> The rationale was that the participation of Canada would help sanitize U.S. nonproliferation efforts from the Cold War angle, namely, Western occupation of West Berlin. It would signal to Bonn that it was not the three occupying Western powers— the United States, the United Kingdom and France— that demanded the Borsig deal be scrapped but instead four parties that were signatories to the NSG guidelines pushed against the deal on nonproliferation grounds. It was also for the sensitivities surrounding Berlin that it was decided that Borsig's export license application would not be rejected by the Allied Kommandatura but the firm would be privately discouraged from pursuing its contract with India.<sup>129</sup>

Despite the ambiguous outcome of the Borsig deal, the West German government amended its Federal Trade and Payments Act and harmonized its national regulations in line with the NSG guidelines on heavy water plants and related components. The Borsig case itself ensured that a timely consensus was reached at the NSG to incorporate heavy water plants and its components into the Zangger Committee's trigger list.

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<sup>128</sup> Secret telegram from Paul Henry at the French embassy in Bonn to the 'French high commission in Berlin (No. 1416/1425) and to French Foreign Ministry in Paris (No. 3299/3308), Diffusion strictement réservée, Objet : Demande de la firme Borsig pour l'exportation de turbo-compresseurs vers l'Inde, 5 November 1976, Carton 206INVA, Direction Asie-Océanie, Inde 2253, 1973-1980, ADF.

<sup>129</sup> Ibid.

### *Inadequate Carrots for Germany*

The *quid pro quo* bargains or ‘carrots’ for nonproliferation were more frequent in U.S.-French cooperation during the Ford administration than in U.S.-German relations. This was owing to three factors. First, Germany, unlike France, was already party to the NPT and was part of the Zangger Committee. This meant that Bonn was already participating in the key nonproliferation and export controls measures existing at the time. The Ford administration, therefore, focused its energies on France, and on seeking French participation in harmonized nuclear export controls at the NSG. Second, Bonn was dependent on American military and nuclear security guarantees, which was not the case with France that had control over its own nuclear weapons, and after 1966 had withdrawn its forces from NATO’s integrated command structure. France was a recalcitrant ally with an independent nuclear doctrine that had to be negotiated with care. German strategic dependence on the United States dwarfed any U.S. need for tit-for-tat bargaining, instead. Third and finally, the German *laissez-faire* policy contributed to a nuclear industry that had multiple independent firms that shared close ties with the economics and technical ministries of the federal government. This made the issue of tackling German nuclear exports a hydra-headed challenge. The state-controlled and heavily subsidized French nuclear industry was, therefore, easier to access through striking appropriate *quid pro quo* bargains with the Giscard government.

As a result, U.S. efforts toward Germany to convince it to adopt strict nonproliferation standards were through, (a) creating legal obstacles for exports (for instance, involving the Allied Kommandatura in the Borsig case), (b) raising opposition by Bonn’s European partners— France, Britain and the Netherlands— to create pressure to act (for instance, Giscard’s tightening of nonproliferation controls, and British and Dutch opposition to allow

URENCO's centrifuge technology from being transferred to Brazil), and (c) the multilateralism of the Nuclear Suppliers Group during the Ford years and the INFCE of the Carter era. Unlike the French case, when most nonproliferation gains were attained through bilateral *quid pro quo*, very little was accomplished on nonproliferation between Washington and Bonn at the bilateral level. During the Ford years, Kissinger expressed his discontentment privately to the German government. Under the Carter administration, the disagreements were made public, which only strained U.S.-German relations.

## V. Conclusion

The study shows that both Ford and Carter administrations were keen on tackling nonproliferation but despite their best efforts, success was only partial. Although the French contract with Pakistan was terminated, it is believed that the French company SGN transferred blueprints of the reprocessing plant to Pakistan.<sup>130</sup> West German company KWU had also decided to pass on blueprints to Brazil of reactors and reprocessing facilities in 1977, which German Foreign Minister Genscher defended to President Carter as not relevant to proliferation concerns.<sup>131</sup> Despite a four-year long effort to stop dual-use transfers to New Delhi, India was able to procure necessary components from Czech and East German firms. In other words, the proliferation risks largely remained notwithstanding the efforts of the Ford and Carter administrations. The formation of the NSG, the reprocessing moratorium, the Glenn and Symington amendments, the INFCE and the NNPA comprise the U.S. nonproliferation milestones of the time. However, despite its vast efforts, the United States was compelled to play whack-a-mole as multiple suppliers in a crowded nuclear marketplace

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<sup>130</sup> Feroz Hassan Khan. *Eating Grass*, p. 132. This claim is also made by a former French foreign ministry official, who went so far as to say that because Pakistan could not successfully build the reprocessing plant even when equipped with sensitive blueprints, it showed that the France-Pakistan cooperation posed little proliferation risks. Source: Letter from top-ranking French official in charge of scientific and technical questions at Quai d'Orsay, Document furnished by Florent Pouponneau to this author in June 2017.

<sup>131</sup> It is not known if Brazil's parallel nuclear weapons program launched in 1978 used the blueprints shared by West Germany. See: Gray, "Commercial Liberties and Nuclear Anxieties," p. 462, 465.

offered technology and materials to sensitive states. Policy coordination on export controls with its advanced industrialized allies proved to be a difficult process, and legal loopholes were aplenty, especially, in the case of dual-use items.

The study also underscores the divergent trajectories of France and Germany on nonproliferation since the latter half of the 1970s. While the Giscard government cooperated early with the United States during the Ford administration, the Schmidt government opposed U.S. nonproliferation efforts as an assault on German national sovereignty and its commercial right to export. Moreover, France was at a technologically superior position than Germany : First, it had the independent mastery of the full fuel cycle, and did not depend on authorization of the URENCO or any multilateral body to export reprocessing technology. Second, France had high domestic demand for nuclear energy unlike Germany, which depended more on exports and had an anti-nuclear movement at home to contend with. This created for Bonn multilateral disadvantages to nuclear exports like the URENCO, on the one hand, and made it more desperate to export nuclear technology and materials to whoever was willing to buy, on the other. This technological superiority allowed France to reduce commercial losses from nonproliferation-related policy changes in ways that was impossible for Germany: France was able to offer reprocessing services to clients instead of exporting proliferation risk-prone reprocessing plants.

Finally, the pro-export lobby in France never completely disappeared. Worried by U.S. nonproliferation policies, the CEA made large investments in R&D for devising technology and materials that were less proliferation-prone. An example was the Caramel fuel that was expected to be used in the Osirak reactor in Iraq instead of the highly enriched uranium

fuel.<sup>132</sup> By the 1980s, France developed the CHEMEX (uranium chemical exchange enrichment process) and AVLIS (atomic vapor laser isotope separation) techniques for uranium enrichment that were expected to pose lower proliferation risks.<sup>133</sup> The early cooperation with the United States on nonproliferation paid off for France by the latter part of the Carter period. The 1978 NNPA complicated U.S. supply commitments to multiple sensitive countries, like India and South Africa. France emerged as the ‘non-U.S., non-Soviet’ solution to U.S. supply woes. The Reagan administration would take this partnership forward by making France the supplier that kept U.S. supply commitments where the United States itself could not owing to domestic legislations. German firms would continue to exploit legal loopholes by providing dual-use assistance to sensitive states like Iraq, South Africa, and others. It would be not until the 1991 Gulf War, however, that the world would know of German firms’ involvement in the Iraqi WMD program. Not only would it lead to a complete overhaul of German nuclear export control legislations<sup>134</sup> but also provide the window of opportunity to generate consensus among supplier states to adopt the Dual-Use Guidelines of the NSG in 1992, officially known as the INFCIRC254/Part II.<sup>135</sup>

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<sup>132</sup> On the Osirak reactor see: Shai Feldman, "The Bombing of Osirak - Revisited," *International Security*, Vol. 7, No. 2 (1982), pp. 114-142; Malfrid-Braut Hegghammer, "Revisiting Osirak: Preventive Attacks and Nuclear Proliferation Risks," *International Security* Vol. 36, No. 1 (2011), pp. 101-132.

<sup>133</sup> Science and Weapons Daily Review, 9 August 1984, Top Secret, Director of Intelligence. CREST, [https://www.cia.gov/library/readingroom/docs/DOC\\_0000680140.pdf](https://www.cia.gov/library/readingroom/docs/DOC_0000680140.pdf), last accessed 21 January 2018.

<sup>134</sup> The INFCIRC254/Part I is the set of official NSG guidelines that were published by the IAEA in 1978. These 1978 guidelines complemented the original guidelines that were decided by consensus by the member nations in 1976.

<sup>135</sup> On German export controls overhaul see: Harald Müller et al, "From Black Sheep to White Angel? The New German Export Controls Policy," *PRIF Reports No. 32* (Frankfurt: Peace Research Institute Frankfurt, January 1994).