

Originally Processed With FOIA(s):
2012-3130-S

FOIA Number:
2012-3130-S

FOIA MARKER

**This is not a textual record. This is used as an
administrative marker by the George Bush Presidential
Library Staff.**

Record Group/Collection: George H.W. Bush Presidential Records
Collection/Office of Origin: National Security Council
Series: Blackwill, Robert D., Files
Subseries: Subject Files

OA/ID Number: CF00182
Folder ID Number: CF00182-007

Folder Title:
[Resumes to Blackwill - NSC Staff Positions] [6]

Stack:	Row:	Section:	Shelf:	Position:
V	0	0	0	0

Withdrawal/Redaction Sheet (George Bush Library)

Doc. No. / Type	Subject/Title	Date	Restriction	Classification
01a. Letter	From Robert D. Blackwill, Re: Candidate for NSC staff position. (1 pp.)	02/16/89	(b)(6)	
01b. Letter	To Robert Blackwill, Re: Candidate for NSC staff position. (2 pp.)	02/11/89	(b)(6)	
01c. Letter	To Robert Blackwill, Re: Candidate for NSC staff position. (2 pp.)	12/08/88	(b)(6)	
02. Form	Re: Application for position in Bush Administration. (2 pp.)	12/08/88	(b)(6)	
03. Vitae	Re: Candidate for NSC staff position. (1 pp.)	n.d.	(b)(6)	
04. Resume	Re: Candidate for NSC staff position. (2 pp.)	n.d.	(b)(6)	
05. Vitae	Re: Candidate for NSC staff position. (1 pp.)	n.d.	(b)(6)	
06. Article	Re: Article from "Naval Intelligence Quarterly". (12 pp.)	March 1988	(b)(1)	S
07a. Memo	To Kevin Callwood and Dennis Ross, Re: The Soviets' "new political thinking" and how the Vice President should think about it [written by candidate for NSC staff position]. (1 pp.)	08/29/88	(b)(6)	

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Collection:

Record Group: Bush Presidential Records
Office: National Security Council
Series: Blackwill, Robert D., Files
Subseries: Subject Files

WHORM Cat.:

File Location: [Resumes to Blackwill - NSC Staff Positions] [6]

Pinksheet Number: RML8156
OA/ID Number: CF00182-007
Date Closed: 1/22/2013
FOIA/Sys Case #: 2012-3130-S
Re-review Case #:
P-2/P-5 Review Case #:

Withdrawal/Redaction Sheet

(George Bush Library)

Doc. No. / Type	Subject/Title	Date	Restriction	Classification
07b. Memo	To Kevin Callwood and Dennis Ross, Re: The Soviets' "new political thinking" and how the Vice President should speak to it [written by candidate for NSC staff position]. (1 pp.)	08/29/88	(b)(6)	
07c. Memo	From candidate for NSC staff position, Re: The Drug Problem. (1 pp.)	09/26/88	(b)(6)	
07d. Paper	Re: Paper written by candidate for NSC staff position. (1 pp.)	06/15/88	(b)(6)	
07e. Memo	To George Bush Campaign from candidate for NSC staff position. (2 pp.)	09/10/88	(b)(1)	
07f. Paper	To George Bush Campaign from candidate for NSC staff position [page 2 missing]. (5 pp.)	09/10/88	(b)(1)	
07g. Letter	Senator Dan Quayle to Colleagues, Re: Ballistic missile proliferation. (1 pp.)	06/24/88	(b)(1)	
07h. Paper	Ballistic Missile Proliferation Update 1988, by Dan Quayle. (2 pp.)	n.d.	(b)(1)	
07i. Paper	Re: Checking Nuclear Proliferation. (2 pp.)	n.d.	(b)(1)	
08a. Letter	To Vice President Bush, Re: INF [Intermediate-range Nuclear Forces] Treaty. (3 pp.)	12/08/87	(b)(1)	
08b. Paper	Article, Re: "The Military Balance". (7 pp.)	n.d.	(b)(1)	

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Doc. No. / Type	Subject/Title	Date	Restriction	Classification
09. Resume	Re: Candidate for NSC staff position. (2 pp.)	n.d.	(b)(6)	
10. Resume	Re: Candidate for NSC staff position. (2 pp.)	n.d.	(b)(6)	
11. Resume	Re: Candidate for NSC staff position. (4 pp.)	n.d.	(b)(6)	

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File Location: [Resumes to Blackwill - NSC Staff Positions] [6]

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AR Disposition:		MR Disposition:	
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RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
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(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

Withdrawal/Redaction Sheet

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Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01b. Letter	To Robert Blackwill, Re: Candidate for NSC staff position. (2 pp.)	02/11/89	(b)(6)	

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Series: Blackwill, Robert D., Files
Subseries: Subject Files
WHORM Cat.:
File Location: [Resumes to Blackwill - NSC Staff Positions] [6]

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01c. Letter	To Robert Blackwill, Re: Candidate for NSC staff position. (2 pp.)	12/08/88	(b)(6)	

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Office: National Security Council
Series: Blackwill, Robert D., Files
Subseries: Subject Files
WHORM Cat.:
File Location: [Resumes to Blackwill - NSC Staff Positions] [6]

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Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
02. Form	Re: Application for position in Bush Administration. (2 pp.)	12/08/88	(b)(6)	

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Record Group: Bush Presidential Records

Office: National Security Council

Series: Blackwill, Robert D., Files

Subseries: Subject Files

WHORM Cat.:

File Location: [Resumes to Blackwill - NSC Staff Positions] [6]

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03. Vitae	Re: Candidate for NSC staff position. (1 pp.)	n.d.	(b)(6)	

Collection:

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Office: National Security Council
Series: Blackwill, Robert D., Files
Subseries: Subject Files
WHORM Cat.:
File Location: [Resumes to Blackwill - NSC Staff Positions] [6]

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04. Resume	Re: Candidate for NSC staff position. (2 pp.)	n.d.	(b)(6)	

Collection:

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WHORM Cat.:
File Location: [Resumes to Blackwill - NSC Staff Positions] [6]

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торт с ~ю iced cake; 2. (на посуде) glaze.

-глазый (в сложн. словах, не приведенных особо) -eyed [-aid]; напр. быстроглазый shárp-eyed, quick-eyed.

гláнда ж. анат. tonsil.
глас м. поэт. voice; ◇ ~ вопиющего в пустыне the voice (of one crying) in the wilderness.

глас|ить (вн. и без доп.; говорить) say* (d.); (о документе и т. п.) run*; (о законе и т. п.) read*; документ ~йт (следующее) the paper runs as follows; пословица ~йт the proverb says / goes, или has it [...'prɔ- sez...].

гласно I прил. кратк. см. гласный II.

гласн|ю II нареч. públicly ['pa-], брeн|ly. ~ость ж. publicity ['pa-]; предать ~ости (вн.) give* publicity (to), make* public / known [...'pa- noun] (d.), publish ['pa-] (d.).

гласный I лингв. I. прил. vowel; ~ звук vowel sound, vowel; 2. м. как сущ. vowel.

гласный II (открытый, публичный) públic ['pa-]. брeн; ~ суд públic / open trial.

гласный III м. ссл. как прил. ист. member of the city dúma [...'si- 'du-], town-councillor.

глауберов: ~а соль тк. ед. Gláuber's salts ['gloubəz...] pl.; хим. sodium sulphate.

глаукома ж. мед. glaucóma.
глашатай м. ист. town / públic crier [...'pa-...], herald ['he-]; (перен.) herald, messenger [-'nɔʒ].

глетчер м. glácier ['glæʒɪə].

глин|а ж. clay; белая ~, фарфоровая ~ káolin, china / porcelain clay [...'sl-...]; жирная ~ pótter's clay; кирпичная ~ brick earth [...'ʒθ]; огнеупорная ~ fire-clay; мазать ~ой (вн.) clay (d.). ~истый clay|ey; argillaceous [-'fəs] научн.; ~истая почва (жирная) loam; ~истый сланец shale.

глинобитный clay (attr.); плé-walled (фр.) ['ptzei-]; ~ дом mud-house* [-s].

глинозём м. хим. alumina [a'ljux-].

глинтёйн м. milled wine.
глинян|ый clay (attr.); (о посуде) earthenware ['æθ-] (attr.); ~ая посуда earthenware crockery; ~ые изделия póttery ag., earthenware ag.

г|ипс м. тк. ед. иск. glyptics pl. ~отёка ж. иск. glyptotheca.

глиссандо с. нескл. муз. glissándò [-ən-].

г|иссер м. (судно) glíder, hýdropláne.

г|лист м. worm; helminth научн.; ленточный ~ tápe-worm; круглый ~ round-worm, áscarid (pl. -dés [-dtz]).

глистогон|ый vermífuge (attr.);

~ое средство vermífuge; (в виде порошка) worm-powder.

глице|рин м. glycerine [-en]. ~овый прил. к глицерину.

глициния ж. бот. wistária.

глобус м. globe; ~ земного шара terrestrial globe; ~ небесной сферы celestial globe.

глод|ать (вн.; прям. и перен.) gnaw (d.).

глобес|а ж. лингв., юр. gloss. ~арий м. лингв., юр. glossary.

гло|тáние с. swallowing; deglú-tition научн. ~тельный swallowing ~тельное движение swallowing movement [...'muv-], gulp.

гло|тáть (вн.) swallow (d.); (быстро) bolt (d.); (жадно, торопясь) gulp down (d.); (жадно и шумно) gobble (d.); (перен.: читать много и без разбору) разг. devour (d.); (поглотить) swallow up (d.); ◇ ~ слёзы gulp / choke down one's tears / sobs; ~ слова mumble.

гло|тка ж. I. анат. gúlet; 2. разг. (горло) throat; ◇ во всю ~ку at the top of one's voice; заткн|уть ~ку кому-л. shut* smb. up; заткн|ь ~ку shut up; hold your jaw; дра|ть ~ку (орать) yell, bawl.

глотн|уть сов. (вн., рд.) take* a sip (of).

глот|ок м. drink, mouthful; (маленький) sip; (большой) gulp; он попросил ~ воды he asked for a drink / mouthful / sip of water [...'wx-]; он выпил только один ~ he only had one sip; пить медленными ~ками sip slowly [...'ou-]; одним ~ком at a draught [...'draʃt], at one gulp; сде|лать ~ take* a sip / mouthful. гл|охнуть I, огл|охнуть become* / grow* deaf [...'grou def].

гл|охнуть II, загл|охнуть I. (о звуке) die away, abate, subside; 2. (о саде) grow* wild [-ou-...], turn into a wilderness, run* / go* to seed; (приходить в запустение) decay, grow* lifeless.

глуб|же сравн. ст. прил. см. глуб|кий и нареч. см. глубоко II.

глуби|на ж. I. depth; (перен.: чувства, переживания тк.) intensity; (мысли, ума и т. п. тк.) profúndity; на ~е десяти метров at a depth of ten metres; пять метров в ~у five metres deep; измерять ~у (рд.) sound (d.), sound the depth (of), plumb (d.); fathom [-'ð-] (d.) (тк. перен.); ~чувства intensity / depth of feeling; 2. (леса, страны и т. п.) heart [hæt]; (зала и т. п.) interior; ◇ в ~е веков in ancient days [...'eɪnf-...], in remote ages; в ~е души at heart, in one's heart of hearts; до ~и души to the bottom of one's heart; из ~и души from one's heart, from the bottom of one's soul [...'soul]; от ~и души with all one's heart, with one's whole heart [...'houl-...].

глуби|ный I. deep; (на глубине реки, озера и т. п.) deep-water ['wɔ-] (attr.); (на глубине моря) deep-sea (attr.); ~ая бомба мор. depth-charge; 2. геол. abyssal, hypogène; 3. (отдалённый от центра или дорог) remote, out-of-the-way.

глубо|кий (в разн. знач.) deep; (перен. тк.) profound; ~ая тарелка soup-plate ['sʊp-]; ~ая печат|ь deep print; ~ая печаль deep sorrow; ~ сон deep sleep; ~ тишина profound / perfect silence [...'saɪ-]; ~ое знание (рд.) deep; profound / thorough knowledge [...'θaʒ 'nɔ-] (of); ~ое невежество profound / crass ignorance; иметь ~ корни be deeply rooted; ~ой осенью it was mid-winter; была ~ая зима ~ой н|очи work far / deep into the night, work till late at night; burn the midnight oil идиом.; ~ой н|очи at the dead of night [...'ded-...], the small hours [...'auz]; ~ старик an aged man*, a very old man; ~ая старость extreme old age; пр|жить до ~ой старости live to a great / venerable age [liv... 'gret-...], live to be very old; ~ая древность hoary antiquity.

глубо|ко I. прил. кратк. см. глубо|кий; 2. предик. безл. it is deep; здесь ~ it is deep here.

глубо|ко II нареч. deep; (перен.) deeply, profoundly; ~ искорен|енный deep-rooted, inveterate; сидеть в воде (о судне) be deep in the water [...'wx-], draw* much water.

глубоководный deep-water ['wɔ-] (attr.); (о живущих в море) deep-sea (attr.).

глубокомы|сленно нареч. thoughtfully, with a thoughtful air; ирон. with a wise air, looking (very) wise ~енный profound; (серьёзный) serious, grave; ирон. wise. ~же profoundity, insight; (значительность мыслей) depth of thought.

глубокоува|жамый (как обращение) dear.

глуб|ь ж. тк. ед. см. глуб|ина; морская ~ поэт. the deep; в ~х into the depths / heart of the forest [...'hæt... 'fɔ-]; в ~х страны inland. глум|яться, поглуми|ться (наз.) mock (d.), jeer (at), scoff (at), gib (at). ~ление с. (наз.) mockery (at), jeering (at), scoffing (at), gibing (at). ~ливый mocking, jeering, scoffing, gibing; ~ливый человек mocker, scoffer.

глуп|еть, поглупе|ть become* / grow* stupid / foolish [...'grou-...].

глупе|ц м. fool, blockhead [-hed-], dolt.

глуп|ить разг. make* a fool of oneself, be foolish / silly; не глум|ь don't be foolish / silly.

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Н. Ф. РОТШТЕЙН, проф. А. И. СМЕРНИЦКИЙ, проф. А. М. ТАУБЕ

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составленных проф. А. И. Смирницким

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07c. Memo	From candidate for NSC staff position, Re: The Drug Problem. (1 pp.)	09/26/88	(b)(6)	

Collection:

Record Group: Bush Presidential Records
Office: National Security Council
Series: Blackwill, Robert D., Files
Subseries: Subject Files
WHORM Cat.:
File Location: [Resumes to Blackwill - NSC Staff Positions] [6]

Date Closed:	1/22/2013	OA/ID Number:	CF00182-007
FOIA/SYS Case #:	2012-3130-S	Appeal Case #:	
Re-review Case #:		Appeal Disposition:	
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P-1 National Security Classified Information [(a)(1) of the PRA]
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07d. Paper	Re: Paper written by candidate for NSC staff positon. (1 pp.)	06/15/88	(b)(6)	

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Office: National Security Council
Series: Blackwill, Robert D., Files
Subseries: Subject Files
WHORM Cat.:
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TO: George Bush Campaign September 10, 1988
FROM: Patrick W. Murphy, 647-6784
SUBJECT: Nuclear electric power plants as potential targets of
conventional weapons

Dukakis, who is a strong opponent of civilian nuclear power (cf. his opposition to the Seabrook, NH, plant), has apparently recently spoken out on this subject, the highest-ranking Western official of whom I am aware ever to have done so. The Soviets have brought it up privately and possibly publicly to Western interlocutors in recent years, since Chernobyl. It appears that the Soviets see this issue as one of real concern, but also as one which they can use against the West to increase even more the opposition among Western publics to nuclear power plants--thus undermining our economic, thus military, self-sufficiency. It should be pointed out that such a Soviet propaganda campaign could boomerang, because Chernobyl seriously sensitized the Soviet population to the problems of nuclear power, and glasnost has increased the influence of public opinion beyond anything previously known to Soviet policy-makers.

Until recently, amazingly enough, given that it is so obvious, no public attention, e.g., from the anti-nuclear Union of Concerned Scientists, has been given to the issue. This, in spite of the fact that the Israelis attacked an unfinished Iraqi reactor in the early 1980s, and the Iraqis themselves have also attacked uncompleted reactors in Iraq more recently (the Iranians have brought the issue up in the Geneva Conference on Disarmament, apparently without much success).

And yet, this is a serious threat, if for no other reason than that in the crowded conditions of West Europe--and East Europe!--it is probably more likely than not that nuclear power plants will be damaged in a war, intentionally or otherwise (remember the vast carpet bombings of World War II). Of course, plants elsewhere in the world could also be destroyed in a local war.

A nuclear reactor destroyed by a nuclear weapon would just mean (comparatively speaking) a bit more radioactivity than otherwise. But using a conventional weapon, say, a small rocket, on a nuclear plant could release actually more radioactivity than did the Hiroshima bomb, because of its being a ground burst (the Hiroshima bomb was an air burst). Needless to say, the terror-psychological effect of such an attack would probably be its most dangerous immediate effect. Envision the catastrophic mess that would occur if the Soviets blew up a nuclear power plant in West Germany in the early days of a war. Millions of Germans already would be fleeing, and the West German Government could not concentrate all its resources on the nuclear-plant attack the way the Soviets did at Chernobyl in peacetime, even so having to suffer terrible losses! Even Soviet threats of such attacks could have disastrous effects on Western morale.

And such an attack, though carried out by conventional means, becomes a quasi-breach of the conventional-nuclear firebreak, with the thus increased possibility of (further) nuclear escalation. Such well-armed non-nuclear states as West Germany and Japan thus become quasi-nuclear powers themselves, if they decide to attack civilian nuclear reactors or other concentrations of nuclear materials (e.g., reprocessing plants). They thus can set off nuclear escalation themselves--and, like the French, if they so choose, trigger the larger nuclear weapons of the other Western states such as the United States.

One of the most serious aspects of such an attack is exactly its ambiguity: was it a deliberate attack on a nuclear power plant as such--thus perhaps meriting a nuclear response--or only the accidental result of a large bombardment? Who could say for sure? After all, nuclear power plants represent perfectly legitimate and attractive targets as capital-intensive large-scale producers of electricity, for instance, for military factories, just as do coal power plants.

There has been some talk of a convention to outlaw such attacks, like the Geneva Convention against the use of chemical weapons. And this might be a useful approach, especially in terms of the campaign, should Dukakis bring it up again. It would be another avenue of arms control. But as with chemical warfare, probably the best deterrent to the use of conventional weapons against nuclear installations is not a piece of paper but the threat of retaliation--and Eastern Europe may well be more dependent on nuclear power--with more targets--than Western Europe.

TO: George Bush Campaign
FROM: Patrick W. Murphy, 647-6784
SUBJECT: Nuclear and missile non-proliferation

September 10, 1988

EXECUTIVE SUMMARY

I am adding some points to the excellent attached papers on nuclear and missile non-proliferation. The most important point, though the last one discussed in my memo, is that Senator Quayle has taken the lead on the missile technology control question, and should be encouraged to speak out on this increasingly significant arms control issue. I have attached a few of his comments on the problem.

Summary of comments on nuclear non-proliferation:

1. The US policy of giving a lot of aid to Pakistan in spite of the latter's continued efforts toward building a nuclear weapon, undertaken because of Pakistan's importance in the Afghan war, should be reconsidered in view of the winding down of that war and the death of US ally President Zia.
2. The US may wish to adopt a policy of using force against a terrorist state (like Libya) which gets nuclear weapons, but it should be clear in its own mind what the ramifications of such a policy would be.
3. Nuclear non-proliferation remains a fundamental US national security and foreign policy objective, but sometimes (e.g., with Pakistan or Israel) must compete with other fundamental objectives.
4. The Democrats act as if the US still had a monopoly position as a nuclear supplier; in any case they rank the goal of non-proliferation higher than that of the US's having a good competitive reputation as a reliable nuclear supplier. President Reagan and other Republicans like myself argue that, far from being mutually exclusive, these objectives are mutually reinforcing: the US does not have a nuclear monopoly, so that if it makes its nuclear export rules too restrictive, the foreigners will simply buy elsewhere. We will have no control over their possible proliferative activities, rather than at least having some such controls.
5. For reasons of national security, not altruism, the US must pay its obligatory assessments and its voluntary contributions to the International Atomic Energy Agency (IAEA), the international organization which operates the non-proliferation safeguards.
6. After a lull in the spread of nuclear weapons, there is the danger today of renewed interest in such weaponry, especially among Third World states, and often in connection with the development of ballistic missiles as delivery systems.

no longer had a monopoly as a nuclear supplier, that they not only badly damaged the US's reputation as a reliable supplier, but worse, by doing so, actually undermined the US role in the non-proliferation struggle itself. The Democrats refused to recognize that, since the US had indeed lost its monopoly position in nuclear trade, it could no longer dictate endless new, and even retroactive (parts of the Nuclear Non-Proliferation Act of 1978), rules to its nuclear exports--especially in the middle of a worldwide energy crisis.

The great tragedy of their position was that not only did it damage US commercial competitiveness in this particular growing field of international trade--a nuclear reactor is a few billion dollars of foreign exchange--but worse, it actually ran the danger of dealing the US out of the non-proliferation regime itself: better to have some US controls on nuclear imports to third countries, than none, because those countries got fed up with endless new and even retroactive rules. An example of how small our influence can be: by the year 2000 Japan alone will have accumulated about 11.3 metric tons of plutonium not subject to US control.

The Reagan Administration has tried to take account of these realities in such areas as its agreement with Japan, which allows long-term advance US consent to Japan's reprocessing of US-supplied fuel (subject to strict non-proliferation, physical security, and other rules). This provides Japan with a reasonable degree of commercial energy security, while strengthening the US's "reliable supplier" image--and thus, ultimately even more important, its non-proliferation leadership.

Along the same line, under the Reagan Administration major steps have been taken toward the development of a reduced-enriched uranium fuel to replace the weapons-grade "high enriched uranium" (HEU) used in many reactors, especially research models, in non-nuclear weapon states. The idea is that eventually these countries will have no excuse for having HEU "on the property."

But there are a couple of areas where action will be required by the next Administration. The International Atomic Energy Agency is the international organization which runs the international anti-proliferation safeguard scheme. These safeguards, and the Nuclear Non-Proliferation Treaty (NPT) of 1968 which largely implemented them, are the embodiment of a major worldwide arms control achievement. However, the IAEA is endangered as an organization, for the very simple reason that the US has refused to pay its full assessments in recent years. The reason--another example of conflicting priorities--is the unhappiness, shared by Executive and Congress alike, at the politicization of many UN agencies, not least the IAEA itself (Israel and South Africa, both key weapons threshold states, are

in regular danger of being thrown out), and the feeling that the UN and its specialized agencies are too bureaucratized and waste too much money.

But: the UN's other agencies, like the Food and Agriculture Organization or the World Health Organization, however much good they do, do not touch a fundamental US national security concern like nuclear non-proliferation. If the IAEA collapses, or if the US loses its vote, which could happen, we would lose at least our influence over the international inspection/safeguards scheme, and we could even lose the whole safeguards system itself. One of the new Administration's first priorities, as Vice President Bush, a former ambassador to the UN would understand, should be to pay up both the US's obligatory IAEA assessments and its voluntary contributions, which latter go, for instance, for improved safeguards technology. To hark back to the attached nuclear paper's first sentence: "Nuclear weapons proliferation poses a direct threat to U.S. national security." The small amounts we spend on preserving the IAEA, improving its safeguards system, and strengthening US influence in the significant national security issue of nuclear non-proliferation where we by no means have an economic-technological monopoly, are probably among the most cost-effective "defense expenditures" we make.

A couple of points to remember: non-proliferation has not been as serious as many forecast it would be, twenty years ago. The last new proven member of the nuclear explosives club was India in 1974. However, a new wave of "semi-" or "almost"-weapons states, may be in the offing. We are all aware of Israel, South Africa, and Pakistan as states which may very well already possess nuclear weapons, but which for a variety of good reasons have chosen not to prove it by testing them.

But the number of states which, based on their level of nuclear technology, could probably build a nuclear weapon fairly quickly, should they develop the political will to do so, continues to increase. From West Germany and Japan (highly unlikely) to Argentina and Brazil (which actually cooperate to some extent in nuclear matters, surprisingly enough, but which wave the nuclear flag mainly to get US attention rather than because of any real desire to "go nuclear") to such terrorist countries as Iran and Libya, the ability and/or the level of interest in nuclear weapons has lately been increasing. And many of these states are now in the missile business as well (see the missile attachments).

This brings up another issue for the next Administration. The US should try to enlist such emerging nuclear (and missile) suppliers as China in the existing technology control regimes. And we will very soon have to deal with the 1990 review conference of the NPT. Of much greater significance is the 1995 conference, which is not an ordinary review conference of the kind we have had

in the past, but which, according to the NPT's Article 10, will

. . . decide whether the Treaty shall continue in force indefinitely, or shall be extended for an additional fixed period or periods. This decision shall be taken by a majority of the Parties to the Treaty.

In other words, unless a majority of the Treaty parties decides positively that the treaty should continue in force, it would lapse. The IAEA safeguards system might survive such a debacle in part, but its moral authority would be gravely undermined if the NPT were not extended.

Luckily, the biggest single past complaint of non-weapon treaty parties, that the US and the Soviet Union have not met their obligations under Article 6 of the NPT "to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament . . . , " have themselves been disarmed by the INF treaty and the apparent progress in the START talks. Nonetheless, there is plenty of lobbying to be done to assure that (even though most states recognize fully the importance of the non-proliferation regime and accept it) the system--and the US--do not suffer any undue embarrassment at the 1995 conference. I should perhaps emphasize at this point that the Soviet Union has always been quite cooperative in non-proliferation matters.

Finally, there is a nuclear non-proliferation subject which is very sensitive but, partly for that very reason, must at least be considered. That is that question of how the US and the other developed powers should react if a relatively stable non-terrorist Third World state "goes nuclear."

Specifically, should we actually offer aid to assure that the command and control apparatus of such a country is equal to the challenge of keeping its new nuclear weapons under a tight leash? Should we help such a country, which has already gone against fundamental US (and worldwide) policy, and has possibly broken US laws or its own treaty obligations to do so, to at least keep its new weapons under close (and hopefully reliable/rational) central governmental political authority? Would this be seen as "rewarding nuclear outlawry"? If so, would such a "reward" be the price we should pay, once the nuclear deed had been done, to at least preserve as much domestic and international stability in and around the country in question as possible? That's one to think about!

* * *

There is little to add to the paper on missile technology control, except that Senator Quayle, our vice presidential candidate has been the leader (see attached statement by the

Senator) in trying to assure the Executive Branch's concern for this increasingly important issue. Senator Quayle has every right to speak out on this "can't lose" arms control issue, and I hope he would do so.

Attachments

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
07g. Letter	Senator Dan Quayle to Colleagues, Re: Ballistic missile proliferation. (1 pp.)	06/24/88	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: National Security Council
Series: Blackwill, Robert D., Files
Subseries: Subject Files
WHORM Cat.:
File Location: [Resumes to Blackwill - NSC Staff Positions] [6]

Date Closed:	1/22/2013	OA/ID Number:	CF00182-007
FOIA/SYS Case #:	2012-3130-S	Appeal Case #:	
Re-review Case #:		Appeal Disposition:	
P-2/P-5 Review Case #:		Disposition Date:	
AR Case #:		MR Case #:	
AR Disposition:		MR Disposition:	
AR Disposition Date:		MR Disposition Date:	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

Freedom of Information Act - [5 U.S.C. 552(b)]

P-1 National Security Classified Information [(a)(1) of the PRA]
 P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
 P-3 Release would violate a Federal statute [(a)(3) of the PRA]
 P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
 P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
 P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

(b)(1) National security classified information [(b)(1) of the FOIA]
 (b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
 (b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
 (b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
 (b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
 (b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
 (b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
 (b)(9) Release would disclose geological or geophysical information

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Removed as a personal record misfile.

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
07h. Paper	Ballistic Missile Proliferation Update 1988, by Dan Quayle. (2 pp.)	n.d.	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: National Security Council
Series: Blackwill, Robert D., Files
Subseries: Subject Files
WHORM Cat.:
File Location: [Resumes to Blackwill - NSC Staff Positions] [6]

Date Closed:	1/22/2013	OA/ID Number:	CF00182-007
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AR Case #:		MR Case #:	
AR Disposition:		MR Disposition:	
AR Disposition Date:		MR Disposition Date:	

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CHECKING NUCLEAR PROLIFERATION

Nuclear weapons proliferation poses a direct threat to U.S. national security. The greater the number of fingers on the nuclear trigger, the greater the chance for accidental or deliberate attack on the U.S. Proliferation also increases the chances, however remote, that weapons will fall into the hands of terrorist groups hostile to the U.S. Nuclear technology is widespread: about 50 countries now conduct nuclear research or possess nuclear power programs. The spread of nuclear technology and the growth of worldwide trade in nuclear fuel (primarily uranium) are making proliferation easier. For the immediate future, nuclear proliferation poses a danger primarily to states involved in regional conflict rather than to the advanced industrialized nations.

The U.S. is a signatory to the 1968 Nuclear Non-proliferation Treaty (NPT), which bars it from transferring nuclear weapons to other states. Non-nuclear weapon parties to the Treaty submit to strict "safeguards" designed to prevent their nuclear power programs from being used to produce weapons. The Safeguards are administered by the International Atomic Energy Association (IAEA). In addition to the Non-proliferation Treaty, the U.S. has accepted additional export restrictions as part of the Western nation's "London Suppliers Group" and under the terms of the 1978 Nuclear Non-proliferation Act. Legislation (1976 Symington Amendment to the Foreign Assistance Act) effectively bars the U.S. from providing economic or military assistance to any country suspected of developing a nuclear bomb. The Non-Proliferation Treaty and export controls have been the foundation of U.S. non-proliferation policy.

Pakistan has an active nuclear weapons program and probably already has a bomb, although it has not exploded one. Congress has waived restrictions on security assistance to Pakistan despite its nuclear program because of its support for the Mujahideen in Afghanistan. Zia's apparent assassination raises important issues concerning Third World instability and proliferation. After Zia's death, and with the war in Afghanistan winding down, the aid question is sure to surface. Israel also has a clandestine program, is widely agreed to have a nuclear arsenal, but has not exploded a weapon. There appears to be a trend developing toward permitting U.S. assistance to a country as long as it does not actually explode a weapon.

* The five nuclear weapon states: U.S., U.S.S.R., China, Britain and France.

* The four "near-nuclear" states: Israel, Pakistan, South Africa (all may have weapons) and India (which exploded a device in 1974 but says it has no military arsenal). Down the road: Iran, Iraq, Argentina, Brazil.

THEMES

1. Maintain Strict Adherence to Obligations Under the Non-proliferation Treaty and Non-Proliferation Act

- * We should continue to maintain strict safeguards on the export of nuclear-related equipment and technology to any country that is not a full party to the Non-proliferation Treaty. Any government receiving U.S. assistance for nuclear power programs must accept international safeguards at all nuclear facilities, and must provide verifiable assurances that it is not engaged in nuclear weapons development.**

2. Reduce Incentives for Countries to Build or Use Nuclear Weapons

- * Nuclear weapons "races" tend to develop in areas of high regional tension. U.S. economic and military relationships with regional allies can reduce regional tension. Cutting off military and economic assistance under the Symington Amendment must be examined carefully on a case-by-case basis. In some cases, it may increase nuclear risk. In the case of Pakistan, a continuing close relationship with the U.S. probably has prevented the testing of a nuclear weapon.**

3. Use Force as a Last Resort

- * No U.S. President can permit nuclear weapons to fall into the hands of a terrorist organization or terrorist state. The U.S. must continue to devote resources to special forces and anti-terrorist units capable of acting on short notice to respond to a hijacking of nuclear material or other act of nuclear terror. The U.S. should not rule out the use of force, under extraordinary circumstances, to prevent a volatile hostile state from producing or obtaining nuclear weapons.**

4. Deploy Strategic Defenses

- * Nuclear weapons technology is spreading along with ballistic missile technology. The number of countries with the ability to build a nuclear weapon and deliver it against the U.S. will grow. The United States should take steps now to deploy a limited ballistic missile defense in the mid-1990s as the first phase of a comprehensive strategic defense system.**

power rivalry through the lenses of the two Germanies is an important addition to our understanding. As almost all of the authors—and especially the German ones—suggest, viewed from this angle, the world seems far less bipolar, with the Western alliance in particular far more under the influence of “middle level states” than what we gather in analyses from Washington or Moscow.

Second, the individual papers are very well done. Four, in particular, warrant special mention. Andrez Korbonski and Mary N. Hampton do first-rate jobs of charting the evolution of the German Democratic and Federal Republics, respectively. Werner Kalterfleiter provides an insightful analysis of the forces leading to and hindering U.S. and Federal Republic agreement, including a clear presentation of conservative German fears about the INF agreement. Finally, James Rosenau presents an intriguing argument about the ways the two superpowers have learned to adapt to each other during periods of tension as well as détente. The other articles, although providing less information and fewer new insights, do a solid job of analyzing German, Soviet, and American perceptions of and attitudes about each other.

In sum, this volume is far from a comprehensive analysis of elite perceptions and political options about East-West conflict. Nonetheless, any scholar concerned about how that conflict might involve and any student concerned about the role of the two Germanies in shaping that relationship since 1949 would be well advised to read it.

CHARLES HAUSS

Colby College and the Beyond War Foundation

Duffy, Gloria
Compliance and the Future of Arms Control

Stanford, CA: The Center for International Security and Arms Control
258 pp., ISBN 0-88730-277-7
Publication Date: 1988

This book is a review of perhaps the most critical aspect of arms control. As the book states, “Compliance with arms control agreements is arms control in practice, and it is critical for the arms control process” (p. 198). It is an extensive review of claimed noncompliance under U.S.-Soviet arms control agreements going back twenty years or more, though as it points out, most issues have arisen since the late 1970s. The report is the result of an eighteen-month study by an expert working group, under the aegis of the Stanford University Center for International Security and Arms Control. Gloria Duffy chaired the group and authored most of the book.

As a detailed record of claimed violations over the years, it is an excellent source. It

Fall 1988

goes into problems that have bothered both sides, for example, Soviet encryption of missile telemetry that makes it harder for the United States to understand the capabilities of the missiles being tested, or the question of whether new U.S. equipment at Thule and Fylingdales represents modernization or truly new radars (the latter being outlawed by SALT II).

As the book makes clear, most of these issues are based on ambiguities in the relevant treaty, or are ambiguous actions or structures themselves. The group calls the Soviet phased array radar at Krasnoyarsk an out-and-out violation of the SALT I ABM treaty, and it discusses at length the workings of the Standing Consultative Commission, the bilateral machinery set up by SALT I for the settlements of claimed violations of the treaty and used as well for SALT II.

It is at this point that the apparent preferences of the expert working group begin to appear. For although it makes clear elsewhere that SALT II was never ratified and therefore never legally binding on either party, it cannot resist stating that the United States “withdrew from the treaty in November 1986” (p. 186). There was no treaty to withdraw from. The authors speak of the “polarization of the compliance debate,” especially after 1982 (p. 192), but that is hardly surprising when they themselves admit an obvious Soviet violation at Krasnoyarsk, which is even yet unrectified. Perhaps such proarms control bias is not surprising, given that many of the members of the working group share that position: Sidney Drell, Roger Molander, Gerard Smith, and Matthew Meselson, for example.

Ironically enough, the book was apparently completed just a bit too early to take account of the fact that the Reagan administration, which the book clearly sees as a major cause of the decline of the arms control process, has actually gone further toward arms control than any of its predecessors. In cooperation with the “new political thinking” of Gorbachev regarding verification, Reagan, in the INF treaty, has achieved on-site inspection and the destruction of a whole class of weapons.

PATRICK W. MURPHY
U.S. Department of State

Adelman, Jonathan R.
Revolution, Armies, and War: A Political History

Boulder, CO: Lynne Rienner Publishers, Inc.
268 pp., ISBN 0-931477-53-0
Publication Date: 1988

Revolution, Armies, and War: A Political History by Jonathan R. Adelman, a professor at the Graduate School of International Studies at the University of Denver, is a work in the tradition of Crane Brinton, Barrington Moore, and Theda Skocpol of com-

parative analysis on revolution. It affirms the value of using the revolutions in Russia and China in direct comparison with the revolutions in England and France. The author rejects the cold war-generated model of the Russian and Chinese revolutions as atypical, the so-called “Totalitarian” approach. This work systematically analyzes the role of war and armies in the revolutions in Russia, China, England, and France.

The essence of Jonathan Adelman’s thesis, identified through his analysis of four major modern revolutions, is that war breeds revolution and that revolution is a vehicle for rapid social change. That revolutionary change in all armies is remarkably similar. The author identifies four stages in development for armies in the course of modern revolution. The first phase is one of defeat on the part of relatively traditional armies. They are hampered by serious internal restrictions on their development and poorly supported by an inefficient state. The second stage sees the emergence of a new revolutionary army. This occurs either before the seizure of power (China, Cuba, Vietnam) or after the seizure of power (England, France, Russia) to defend the achievements of the revolution. The third stage, the consolidation of the revolutionary army, is crowned with victory in the struggle against its domestic enemies and in battles abroad. It has the backing of an efficient and centralized government, which marshals resources effectively in support of the army. In the fourth stage there is a tendency toward decline. The revolutionary surge begins to subside in the army and the government that supports it.

In the course of his excellent comparative analysis, Professor Adelman stresses the similarities he identifies in the experiences of armies in modern revolution. He sees a direct correlation between revolution and enhanced power on the part of the revolutionary state in the international system, which is manifested in the four great revolutions and also in other revolutions such as the Cuban and Vietnamese. He posits a correlation between the ideological energy of the socialist revolutions with the avoidance of the restoration of the old systems in Russia and China, unlike England and France.

This work is an excellent synthetic study that ought to be in the collection of all academic libraries and of those who are interested in modern revolution.

LEE WILLIAMES
University of Scranton

Pechman, Joseph A., ed.
World Tax Reform: A Progress Report
Washington, DC: The Brookings Institution
294 pp., \$11.95, ISBN 0-8157-6999-7
Publication Date: April 1988

This volume is part of a continuing series on important contemporary public policy issues published by the Brookings Institution. The

Perspective

WEST EUROPEAN NUCLEAR ENERGY
DEVELOPMENT: IMPLICATIONS FOR THE
UNITED STATES

PREPARED FOR THE
SUBCOMMITTEE ON EUROPEAN AFFAIRS
OF THE
COMMITTEE ON FOREIGN RELATIONS
UNITED STATES SENATE

BY
THE FOREIGN AFFAIRS AND NATIONAL
DEFENSE DIVISION
CONGRESSIONAL RESEARCH SERVICE

LIBRARY OF CONGRESS

The entire country analysis section, and about 65 percent of the entire report, was written by Dr. Patrick W. Murphy. Much of the rest was authored by Dr. Warren Donnelly, nuclear expert at CRS.

Warren can be



reached at 287-7226.

JUNE 1979

Printed for the use of the Committee on Foreign Relations

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oliferation. And in principle her to reprocess spent fuel or dis- be worked out. Since public oppo- so strong, the Austrian Govern- by President Carter in October sal in the United States. If waste overment sees little alternative sident Carter is opposed to re-

actor: 1975.

77: 1,650.
83: 5,475.

for a total of 1,650 megawatts 5. Four additional reactors are 475 MWe by 1983.⁶ The country of cutting back on imports of al mines are well known, even 1.⁷ The country expects to build use of the economic slowdown gium will probably not build a st by the U.S. Department of

m enrichment firm EURODIF, will be entitled to enrichment on when EURODIF operations any major reprocessing projects gue and the British Windscale nt at Mol, which was formerly onomic Cooperation and Develo- nic is quite small, compared to short-term disruptions such as

SNR-300 fast breeder reactor, participation in this project is set up a joint marketing orga- 1977, Belgium also joined that

nponents for all of Belgium's ctors and generators, and the It is a potential exporter in port of experimental breeder

for a relatively small country. sition as has been the case in overnments in the Energy Indus-

ews Buyers Guide, mid-February energy Program," (Washington),

r. 14, 1978. n Governmental Affairs and House "Nuclear Proliferation Factbook, 04. many: Nuclear Energy Program,"

93.

at persuading the public that nuclear in an extensive way.¹⁵ Belgium has its branch of the Friends of the Earth,¹⁶ and the European Environmental Bureau, an all-European confederation of environmental groups, is located in Brussels to lobby the European Community headquartered there.¹⁷ But such organizations do not seem to have been particularly effective in stopping or slowing down the Government's nuclear program.

On the international front, Belgium has continued to back the rapid breeder reactor. And, as a member of Euratom, it participated in that organization's refusal to indicate within the thirty days required by the legislation its willingness to renegotiate the agreement for cooperation EURATOM has with the United States, in order to bring them in line with the U.S. Nuclear Non-Proliferation Act of 1978.¹⁸ Such positions would seem to indicate that Belgium is standing firm with other European countries in resisting certain aspects of the nuclear non-proliferation policy currently being pursued by the U.S. Government under President Jimmy Carter.

3. DENMARK

Number of power reactors, 1977: None.

Number of power reactors listed as under construction or on order: None.

Denmark has no nuclear power reactors, either in operation or on order or under construction. However, the Government is carefully considering the introduction of nuclear power, as one means of cutting down on energy imports. The biggest problem is that of radioactive waste, and the Government will not decide definitely on nuclear power until that issue is resolved. The implication of one recent report from Denmark is that the Danes do expect to have their spent fuel processed, which goes against present official U.S. policy on the subject.¹⁹

Denmark has an important nuclear research facility at Riso, which is carrying on research in such fields as reactor technology and safety, the nuclear fuel cycle, and materials research.²⁰ The country is prospecting for uranium in Greep-land, but without much success so far.²¹

4. FEDERAL REPUBLIC OF GERMANY

Year of first power reactor: 1962.

Number of power reactors, 1977: 10.

Number of power reactors, 1986: 29.

Dominant reactor type: BWR/PWR.

Total output of power reactors (net MWe), 1977: 6,105.

Total output of power reactors (net MWe), 1986: 26,960.

A. Current program

The Federal Republic of Germany has one of the largest nuclear power programs in Europe, covering all aspects of the fuel cycle, and including experimentation with nuclear-generated heat for chemical processing and for power for merchant shipping. The Government and private industry have been involved in peaceful nuclear research and commercial use since 1956. The current Government, a coalition of the Social Democrats (SDP) and the Free Democrats (FDP), remains committed to nuclear power in the generating field, though often against strong resistance within its own parties. By the end of 1977, about 11 percent of West German electric power was provided by ten nuclear reactors having a total production of 6,105 MWe.²² It is expected that by 1985 nuclear

¹⁵ Interview, cited.

¹⁶ "FoE Produce Tihange Scare," Nuclear News, March 1978, pp. 65-66.

¹⁷ "Brunner Hearing—Part 2," Nuclear News, March 1978, p. 67.

¹⁸ U.S. Government, "Nuclear Non-Proliferation Act of 1978, Public Law 95-242," (Washington), Mar. 10, 1978.

¹⁹ "Government Estimates Energy Needs," Berlingske Tidende, Copenhagen, Feb. 3, 1978, p. 6. English translation in the U.S. Joint Publication Research Service.

²⁰ Riso 1978/77. Annual report of the Riso National Laboratory, Roskilde, Denmark, 1977.

²¹ U.S. Congress, "Senate Committee on Governmental Affairs and House of Representative Committee on International Relations," Nuclear Proliferation Factbook, Joint Committee Print, (Washington), Sept. 23, 1977, pp. 158-159.

²² Federal Republic of Germany, "Bundesministerium für Wirtschaft, Energie-Programm der Bundes-Regierung: Zweite Fortschreibung vom 14.11. 1977, n.d., p. 5; "World List of Nuclear Power Plants," Nuclear News Buyers Guide, mid-February 1978, pp. 51-52.

excerpt

energy, nineteen additional power reactors are expected to come on line by 1985, of which five will be BWRs, twelve PWRs, one HTR, and one LMFBFR.²⁴

Whether all of this actually comes about depends in large part on the future of the West German economy, which has been relatively stagnant over the last two years, and on the degree of opposition which nuclear plants meet in the future.

B. Waste disposal

One of the main arguments of the opposition is that not enough consideration has been given to the problem of waste disposal in the Federal Republic. Opponents have used this issue both in the courts and in the political arena to slow down construction of nuclear facilities. For instance, the state governments have the final say in the licensing of nuclear plants, and North Rhine-Westphalia, the largest state, announced in early 1977, that it would issue no more construction permits until the issue of waste management was resolved. It was the first state government to take this position.²⁵ And in October, 1977, a court ruled that work on the nuclear power plant at Brokdorf, Schleswig-Holstein, could not be resumed until after arrangements for temporary storage of spent fuel had been made, and geological studies had begun on a site for permanent waste disposal.²⁶ With this background, it is not surprising that the West Germans are expending a great deal of effort, both on the technical aspects of waste disposal, and on site location. Two interim storage centers, with a total capacity of 2,100 tonnes, are being planned for Ahaus, near Munster, and for either Bavaria or Hesse. The ultimate solution is expected to be an integrated fuel cycle and waste disposal center proposed for Gorleben, in Lower Saxony.

The center will include: large pools for intermediate storage of up to 3000 tonnes of spent fuel elements for periods of about three years; the main reprocessing plant, with a capacity of about 1400 tonnes per year and with facilities for interim waste treatment and storage; a plant for processing and storing uranium; facilities for the manufacture of mixed plutonium-uranium oxide fuel rods; treatment plants for the final fixing of waste materials; and deep repositories in the salt dome for ultimate storage of solidified waste of all levels, as well as tritiated water and krypton.²⁷

The Gorleben center will have to run the gauntlet of licensing, but the prospects look good, after the favorable findings in the preliminary safety report of the West German Reactor Safety Commission and the Radiation Protection Commission in late 1977.²⁸ Once the waste disposal bottleneck has been resolved, projects that have been stopped by the issue are expected to go forward as planned.

C. Fast breeders

The Federal Republic started research on the fast breeder reactor in 1960 at the Karlsruhe Nuclear Research Center. Work on a commercial-level reactor the SNR-300 began in 1973. This reactor is a joint project with the Netherlands and Belgium, each of the smaller countries contributing 15 percent. The plant is expected to be completed in 1982.²⁹ The Germans started in the fast breeder somewhat later than the British or the French, but they feel that they will close the gap in the future, due to the fact that the SNR-300 is being developed in a commercial atmosphere, under the stringent licensing procedures applicable there.³⁰

And in fact, the Germans are moving toward full commercialization of the fast breeder. In July 1977, they signed an agreement with the French, covering collaboration on the development and commercial exploitation of sodium-cooled fast reactors. The deal incorporates the earlier German-Belgian-Netherlands cooperation, in that a joint marketing company that is being established, "Serena," will be 65 percent French, with the remaining 35 percent divided 70-15-15, just as the earlier tripartite project was. Eventually, the proportions will change to 51 percent French, 49 percent German consortium, but not until the German consortium

has built seven more reactors. Serena will have exclusive rights over the fast breeder technology developed by France and West Germany.³¹ The agreement also provides for the exchange of detailed technical information on fast reactor research and development and coordination of future work by a joint liaison committee of the French Commissariat a l'Energie Atomique (CEA), and the West German Interatom, a subsidiary of Kraftwerk Union and the Gesellschaft fur Kernforschung Karlsruhe.³²

D. Uranium enrichment

In 1970, the Federal Republic, the United Kingdom, and the Netherlands agreed to cooperate in research and commercial development in the field of uranium enrichment, using the gas centrifuge method. Two industrial companies, CENTEC and URENCO, were established, the former to construct the necessary plants, the latter to develop the equipment and to run the plants. Two demonstration plants, each with a capacity of 200 tonnes of separative work units, have been built, at Capenhurst, England, and Almelo, the Netherlands, and will reach their full capacity in 1978. None was built in West Germany, at first. This was because of fears of propaganda to the effect that the Federal Republic wished to build nuclear weapons, since enrichment is a necessary step in the process of weapons construction. Apparently those fears have been overcome, for in December 1976 it was reported that URANIT, the German partner in URENCO, intended to propose to the German Federal Government the construction in Germany of a full-scale enrichment plant, with a capacity of 1,000 tonnes of SWUs per year. Investment would amount to DM 1 billion. These plans stemmed in part from Dutch reluctance to expand enrichment capacity at Almelo, which in turn was due to questions in Dutch minds regarding the German-Brazilian deal for a complete fuel cycle.³³ German utility companies have contracts or letters of intent for enrichment services with the United States, the Soviet Union and EURODIF, as well as with URENCO.³⁴

E. Nuclear research

The Federal Republic is active in a number of nuclear research areas, several of which might be of special interest. In the field of uranium enrichment, where additional capacity will be required by 1990 it is pursuing work on the separation nozzle technique in cooperation with NUCLEBRAS, and on the laser and plasma rotation techniques, as well as on the gas centrifuge method already in use.³⁵ Waste management including reprocessing and transportation of fuels as well as actual waste treatment and disposal, is receiving a great deal of attention.³⁶ This is because, as noted earlier, both the courts and the state governments have made the licensing of new reactor construction (not to speak of operation) virtually impossible without proof of suitable waste disposal facilities being available.

The West Germans are continuing work on high temperature reactors (HTRs), after their American partner firm dropped out for financial reasons. This is because the heat the HTRs produce can be used in the gasification of coal, of which the West Germans have large reserves. They have also been working on the use of a different line of HTRs for the production of electricity, and efforts are now being made to draw together these two lines of research, to make the HTR truly dual-purpose.

One aspect of this work, which could have particular significance in terms of President Carter's non-proliferation policy, is West Germany's heavy concentration on thorium high temperature reactors.³⁷ The thorium fuel cycle is seen by some to have several technical advantages over the plutonium cycle, in terms of restraining proliferation.³⁸

One other field that should be singled out for mention is the Federal Republic's work in the field of nuclear propulsion for merchant shipping. The Otto Hahn, a

²³ "New Energy Programme Announced," Nuclear Engineering International April 1977, p. 10.

²⁴ U.S. Department of Energy, "Federal Republic of Germany: Nuclear Energy Program," (Washington), October 7, 1977, p. 4.

²⁵ "Lack of Waste Management Halts Construction Permits," Nuclear News, March 1977, p. 54.

²⁶ "Added S setback for Brokdorf," Nuclear News, December 1977, p. 61.

²⁷ "Prospects Look Good for Gorleben Center," Nuclear News, February 1978, pp. 48-49.

²⁸ Ibid., p. 48.

²⁹ U.S. Department of Energy, "Federal Republic of Germany," p. 4.

³⁰ Ibid., pp. 4-5.

³¹ "French-German FBR Ties Strengthened by New Agreement," Nuclear Engineering International, August 1977, p. 10.

³² "FBR Agreement Signed," Nuclear News, August 1977, p. 93.

³³ U.S. Department of Energy, "Federal Republic of Germany," op. cit., p. 6; on Holland, see "Dutch Debate Ultracentrifuge Program," New Scientist, Jan. 20, 1977, p. 148.

³⁴ U.S. Department of Energy, "Federal Republic of Germany," op. cit., p. 7.

³⁵ Federal Republic of Germany, Minister for Research and Technology, Energy Research and Energy Technologies Program, 1977-80, 1977, pp. 100-102.

³⁶ Ibid., pp. 103-109.

³⁷ Ibid., pp. 101-111.

³⁸ U.S. Congress, Office of Technology Assessment, "Nuclear Proliferation and Safeguards," New York, Praeger Publishers, 1977, pp. 160-161.

uclear scientists, was launched in October 1968. However, up to now, it has not proven to be a commercial success, which the West German Government blames on the difficulty in obtaining port permits and what it calls the growing worldwide reluctance to build large high-powered commercial ships.³⁰

F. Economics, opposition, and the future of nuclear power

At the beginning of 1975, one year after the OPEC oil price hike and Arab embargo, the Federal Republic reportedly was planning on a total of 52,500 MWe of nuclear power by 1985, but by July 1976, the figure was down to 39,500 MWe.³¹ On March 23, 1977, the Federal Minister for Economic Affairs, Dr. Friederichs, set the figure at 33,000 MWe.³² The major cause of the decline in the estimates was probably the recession and stagnation of the world economy after the oil price rise, which sharply slowed the West German growth rate, as well.

However, an additional factor, which may eventually cut the use of nuclear power well below what would be a simply proportionate reduction, is the opposition to nuclear power which grew rapidly during the post-1974 period in the Federal Republic, as it did elsewhere in Europe. In West Germany, which was perhaps the hardest hit of all West European countries in this regard, the opposition took two main forms. The first of these was that of Burger-Initiatives (BIs) or citizen petitions to stop power plants, usually a middle-class response to the news that a plant was to be built in the neighborhood. The BIs were an interesting and in some ways very positive proof of the vitality of post-war West German democracy. The other main source of opposition came from people, largely young and on the left, who disapproved of nuclear power because they felt it was destructive of the environment or was symbolic of the bigness and complexity of modern life which they opposed. Following the advice of the slogan, "Better to be active today than radioactive tomorrow,"³³ both the BIs and the radical protesters used the courts and demonstrations as a delaying tactic; at times violence occurred. The effect of their opposition was so drastic that by September 1977, power station contracts worth DM 10 billion were blocked by court orders, and it was expected that only 58 MWe of new generating capacity would be added to the grid system in 1978.³⁴ In September 1977, it was reported that there were as many as 50,000 citizen action groups in opposition to nuclear power, and the Interior Ministry of the state of Lower Saxony, which had been the scene of some of the biggest riots, concluded that extreme left-wing elements had penetrated the more moderate citizen groups. It warned in particular against certain neo-Marxist groups and the German Communist Party.³⁵

Construction on five, possibly more, nuclear facilities was stopped by court order in the last year and one half, at least temporarily. A typical example was that of Brokdorf, Schleswig-Holstein, near Hamburg, a 1290 MWe power reactor being built by Kraftwerk Union. The stalling tactics described below during the winter of 1976-77 have already contributed to a delay of at least six years in putting the plant into operation.³⁶ The plant was the scene of a battle in November 1976, said to be the first such in Europe, in which at least 130 were injured and \$200,000 in property damage done.³⁷ Following the incident a court gave local citizens a temporary ruling halting work on the plant, pending a further hearing in February 1977. The temporary ruling itself was a response to an earlier ruling of October 30, 1976, which for its part had a lot to do with the November riot, by allowing construction to proceed. The citizens vowed to fight the case to the West German Supreme Court, if necessary. At the same time, the activities at Brokdorf were somewhat indicative of other aspect of the struggle, the fact that the local citizen groups did not always stay enamored of their radical allies—only 19 people arrested during a November riot were from Schleswig-Holstein.³⁸ February came and the training order was continued in effect,³⁹ while in mid-month several thousand

radicals once again tried to storm the plant site, and 10,000 local citizens organized a strictly peaceful counter-demonstration at another nuclear plant a few miles away.⁴⁰ By June 1977 with construction still halted, the plant was costing its owner, the utility NWK, about DM 11 million per month, about \$5 million, half of its due to penalty clauses due to the delay.⁴¹ And in October 1977 a further appeal by the utility against the February continuance of the stay of construction was turned down.⁴²

Other events in the anti-nuclear struggle, one legal, the other illegal, were reported by the "Engineering News Record" in March 1977, under the apt headline, "German Nuclear Plants Under Siege."⁴³ The first event was the nullification by an administrative court of a two-year-old construction permit for the 1,300 MWe nuclear plant at Wyhl, on the Rhine north of Dusseldorf. The decision faulted the plants lack of an absolutely burst-proof design (rather than being proof against any credible internal explosion). It agreed that the chances of a reactor pressure vessel bursting and then breaching the outer containment were extremely remote, but stated that if such an event should occur, it would be a "national catastrophe." It added that cost considerations should not play a part in plant design, and that if technology did not allow burst-proof construction on large nuclear stations, they would simply have to be postponed. It was this kind of perfectionist approach by the courts, and in fact by many of the protesters that brought the issue onto the streets and into the courts in the first place, which made things very difficult for the West German nuclear industry.

The second event took place at the site of the 1,360 MWe Grohnde nuclear station in Lower Saxony. About 2,000-3,000 militants broke out of a much larger group of 15,000 which had been demonstrating peacefully at the site, and attacked a force of 4,500 police. The radicals carried walkie-talkies, acetylene torches, grappling hooks, and nail-studded boards, as they broke through a double fence around the site. It took helicopters, water cannons, and finally horse-mounted troops and police with rubber truncheons to quell the disorder.⁴⁴ Both the violence, and the legal delays, were the result of an intense concern on the part of a portion of the West German population with safety and environmental issues, in connection with nuclear power, to the extent that in practice they were often anti-nuclear, pure and simple.

As noted earlier, not only the courts, but also the state governments began to respond to the public outcry, with much of the emphasis put on waste disposal. Ironically, the courts made it nearly impossible to begin construction, much less operation, of a nuclear plant, unless some provision had already been made for the "back end" of the fuel cycle, waste disposal. When it was found that the only sites geologically suited for nuclear waste disposal in the Federal Republic (one of them Gorleben) were located in the state of Lower Saxony, the Minister President (or governor) of the state, Ernst Albrecht, suggested that the waste be shipped to the United States for disposition.⁴⁵ Later, he apparently relented, as Gorleben is now the leading candidate for the integrated waste disposal facility.

G. The mood changes

Meanwhile, a slight reaction began to set in against the excesses of the "antls." In one case, the Administrative Court in Koblenz had partially halted construction on a 1300 MWe plant at Mulheim-Karlrich in February 1977, pending the hearing of the main case brought by nuclear protesters. A few months later, the decision was reversed, after further arguments by the utilities.⁴⁶ And the Bavarian Administrative Court rejected a suit which would have prevented issuance of a construction permit for the construction of a 1300 MWe plant at Grafenrheinfeld. The court assessed the losers for costs, as well, which was expected to be a deterrent to some further possible plaintiffs.⁴⁷

As the year went on, there seemed to be a slight change among the public and in political circles, as well. Although there was a great deal of doubt about the wisdom of a pro-nuclear power policy among the rank and file members of the

³⁰ Federal Republic of Germany. Energy Research and Technologies Program, 1977-80, cit. pp. 118-119.

³¹ "Shadow on Nuclear Power." Vision, March 1977, p. 31.

³² "New Energy Programme Announced." Nuclear Engineering International, April 1977.

³³ "Europe: Crusading against the Atom." Time, Apr. 25, 1977, p. 48.

³⁴ U.S. Department of Energy. "Federal Republic of Germany," on cit., p. 5.

³⁵ "More Antinuclear Demonstrations Planned." Nuclear News, September 1977, p. 69.

³⁶ "World List of Nuclear Plants." Nuclear News Buyers Guide, mid-February 1978, p. 52.

³⁷ "German Nuclear Plants Under Siege." Engineering News Record, Mar. 31, 1977, p. 9.

³⁸ "Temporary Stop Ordered at Brokdorf." Nuclear News, February 1977, p. 58-59.

³⁹ "Added Setback for Brokdorf." Nuclear News, December 1977, p. 61.

⁴⁰ "German Police Stop Leftists From Invading a Plant Site." Los Angeles Times, Feb. 10, 1977.

⁴¹ "Price Rise at Brokdorf." Nuclear Engineering International, June 1977, p. 9.

⁴² Mar. 31, 1977, p. 9.

⁴³ Ibid.

⁴⁴ "The Power of Protest." The Economist, Jan. 22, 1977, p. 46.

⁴⁵ "Court Order Delaying Mulheim-Karlrich Set Aside." Nuclear Engineering International, June 1977, p. 8.

⁴⁶ "Court Rejects Suit To Block Construction." Nuclear News, June 1977, pp. 98-99.

to their position that nuclear energy was essential for an independent German nuclear policy, when the issue was debated in Parliament on June 15, 1977. To back up the government, about sixty professors of economics published a memorandum the day before the debate, in which they asked the government and political parties to back nuclear power, as it was the only presently available source of energy that could replace fossil fuels.⁵⁷

In what was a more politically potent show of strength, 14,000 pro-nuclear demonstrators marched in the streets of Bonn in the fall, shortly before the party congresses of the ruling SPD and FDP. The demonstrators, mostly nuclear workers worried about their jobs, carried banners demanding the resumption of work at the idle nuclear construction sites. This was said to be Europe's first major pro-nuclear demonstration.⁵⁸ Shortly thereafter, the FDP, which had demanded a limited construction halt in June for nuclear plants, backed down from that position and grudgingly agreed not to press for a moratorium.⁵⁹ Practically the next day, on November 10, 1977, the German Trade Union Federation (DGB), which has always had close ties to the SPD, put 50,000 people, again mostly power workers afraid for their jobs, in a soccer stadium in Dortmund. Perhaps symbolic of the slow shift in public concern away from possible dangers of nuclear power and in the direction of what would happen to the economy if nuclear power was not well established a few years hence to fill the fossil fuel gap, Eugen Loderer, president of the Metalworkers Union, the biggest in the Federal Republic, told the crowd, "We cannot and will not renounce the use of nuclear energy in our land." It was not surprising then, when a few days later, the SPD at its congress followed the wishes of the Schmidt Government and the party's union allies, and like the FDP, grudgingly accepted the need for nuclear energy, as against the alternative of a possible moratorium. The fact that it took seven hours of debate to do so indicates how powerful the issue remained in intra-party politics.⁶⁰ The more conservative CDU/CSU remained basically pro-nuclear, but all parties had their dissidents.

H. The United States-German proliferation conflict

Not all of the opposition to West Germany's commercial nuclear policy arose from within the country. Shortly before the 1976 election, and partly in response to candidate Jimmy Carter's expressed concern with non-proliferation, U.S. President Gerald R. Ford issued a lengthy policy statement on the subject, including a request for a three-year moratorium on the export of sensitive technologies.⁶¹ The new Carter Administration took immediate steps to implement a much tougher anti-proliferation policy, and as early as March 14, the West German Foreign Affairs Minister, Hans-Dieter Genscher, had direct talks with President Carter about the Brazilian deal, with no satisfactory agreement reached. Even before the meeting, West German Chancellor Helmut Schmidt had written to President Carter, making clear the Federal Republic was willing to discuss tightening up safety procedures, but would not go back on a legally signed agreement.⁶²

The German-Brazilian project

The agreement to which Schmidt was referring to was the "Agreement for cooperation in the Field of Peaceful Uses of Nuclear Energy," signed by the West German Federal Government and the Government of Brazil on July 27, 1975. West Germany has always felt a strong need to export, and it has been especially successful in high-technology industries. German political and industrial leaders see a major role for the Federal Republic in the world commercial nuclear market in the future. The Brazilian contract was practically a prototype of the kind of project they envision the Federal Republic successfully executing in other countries as well.

The intergovernmental agreement with Brazil, together with subsidiary agreements between the Brazilian nuclear energy company NUCLEBRAS and various West German concerns, included cooperation covering joint ventures, and delivery of equipment and technology, in the fields of:

(1) Prospecting, mining, and processing of uranium ores, as well as the production of uranium compounds;

(2) Production of nuclear reactors and nuclear energy facilities, as well as their component parts;

(3) Uranium enrichment and enrichment services; and

(4) Production of fuel elements and reprocessing of irradiated fuels.⁶³

The total value of the work to be done over a fifteen year period was estimated by the United States Department of Energy to be about DM 12 billion, or about \$6 billion, probably the largest single deal in the history of the Federal Republic.⁶⁴ Others placed the total amount much higher, at \$10 million.⁶⁵ Construction of eight 1,200-1,300 MWe PWRs of the German Biblis B type is planned.⁶⁶

What is particularly significant about this agreement is that West Germany has contracted to deliver a complete fuel cycle to Brazil, including the proliferation-sensitive enrichment and reprocessing technologies. Of special interest is the fact that Brazil has refused to become a party to the Nuclear Non-Proliferation Treaty, because, Brazil argues, the treaty is "of a discriminatory character."⁶⁷ Presumably in part to avoid criticism on this score, the two countries worked out a system of safeguards even more extensive than those called for in the NPT⁶⁸ and these were agreed to by both the United States (under the Ford Administration) and the Soviet Union through the IAEA in 1976.⁶⁹ Both Brazil and the Federal Republic were therefore upset and bitter, when the new Carter Administration tried to get them to call off the more sensitive portions of the deal. The sudden reversal of its stand by the United States gave rise to one of the sharpest diplomatic conflicts between the United States and the Federal Republic since World War II.

As one example of many that showed that the government and the nuclear industry were not alone in their opposition to the tougher Carter stand, the respected liberal West German weekly "Die Zeit" ran an article on March 18, 1977 that was highly critical of the U.S. stand in general and of Jimmy Carter in particular. The article was all the more significant because it was authored by the usually vehemently pro-American Theo Sommer. His arguments were pointed, but more important than his argumentation was the intensity of the emotions behind it.

Sommer argued, for instance, that the United States, in trying to put limits on the kind of civil nuclear technology which could be exported, was "unilaterally claiming the right to reinterpret the terms of the non-proliferation treaty as indisputably understood at the time of signing," i.e. was changing the interpretation of the treaty's Article IV, which deals with technology transfer and speaks of "the fullest possible exchange of equipment, . . ."⁷⁰ Another argument by Sommer was that "the Bonn government concluded the deal with Brazil primarily in order to help ensure future supplies of uranium. America has proved a most unreliable supplier." He mentioned specific examples where the United States had indeed acted in a questionable manner, such as refusing, in 1974, to renew the agreement to supply West German with enriched uranium beyond its 1980 date of expiration. "How convincing is the U.S. argument that America can be trusted, whereas Brazil cannot?" Sommer asked acidly.

Furthermore, he accused the United States of wanting to stop development of the domestic West German nuclear industry altogether, beyond the light water reactor stage. He argued that the United States would prefer that West Germany have no reprocessing units of its own, and, given the opportunity, Washington "would soonest dissuade or prohibit Bonn's development of fast breeder reactors." Finally, because the United States "refuses to appreciate" that reprocessing could save 20-30 percent on uranium, it "maintains its reputation for squandering energy resources."⁷¹

⁵⁷ "Embassy of Brazil in the Federal Republic of Germany." Das Kernenergie-Programm Brasiliens. Mar. 10, 1977. p. 7. JCRS translation.

⁵⁸ U.S. Department of Energy. "Federal Republic of Germany," op. cit., p. 9.

⁵⁹ "Brazil Embarrassed by Reactor Fire." Washington Post, Mar. 29, 1978.

⁶⁰ U.S. Department of Energy. "Federal Republic of Germany," op. cit., p. 10.

⁶¹ Embassy of Brazil, op. cit., p. 13.

⁶² Ibid., p. 10.

⁶³ "Reactor Congress in Mannheim." Nuclear News, May 1977, p. 56.

⁶⁴ Theo Sommer, "U.S. Attitude on Nuclear Deal with Brazil Upsets Bonn." Die Zeit, Mar. 18, 1977. In: The German Tribune, Apr. 3, 1977, p. 3; text of the non-proliferation treaty in: U.S. Arms Control and Disarmament Agency, "International Negotiations on the Treaty on the Nonproliferation of Nuclear Weapons," Washington, 1969, p. 168.

⁶⁵ Sommer, op. cit.

⁶⁶ "Energy Debate in Parliament." Nuclear Engineering International, July 1977, p. 10.

⁶⁷ "Workers Pro-Nuclear Demonstration." Nuclear Engineering International, November 77, p. 9.

⁶⁸ "Kernenergie-Gegner überstimmt." Süddeutsche Zeitung, Nov. 9, 1977.

⁶⁹ "Shifting Nuclear Issue Nags Bonn." Christian Science Monitor.

⁷⁰ "U.S. Arms Control and Disarmament Agency." Nuclear Policy, Oct. 28, 1976.

⁷¹ "The Brazilian-German Deal." Nuclear Engineering International, April 1977, p. 6.

Carter answered some of the objections raised by Sommer and others in his two lengthy statements on non-proliferation policy issued in April 1977. He promised to increase U.S. uranium enrichment capacity. And he explicitly stated that "We are not trying to impose our will on those nations like . . . Germany which already have reprocessing plants in operation," since they had less petroleum than the United States.⁷² Such comments would certainly be welcomed by the Federal Republic, but they came in the midst of long policy statements and discussions of new legislation attendant thereto, which could only sow continued mistrust in Bonn and in Brazil.

For their part, both Brazil and West Germany stood by their agreements, and in effect faced Washington down. About the same time that President Carter announced his new anti-proliferation policy, the West German Government issued the first export licenses for the Brazilian deal for pilot enrichment and reprocessing plants—⁷³ and the Carter Administration resumed deliveries of highly enriched uranium to the Federal Republic. This was after an interruption of eight months, reaching back to the Ford Administration, which announced its own non-proliferation policy in October 1976, after Carter had made an issue of non-proliferation during the campaign. The official U.S. reason for stopping shipments was safety problems, but many West Germans saw it only as another example of U.S. unreliability.⁷⁴ The West Germans, for their part, also backed down somewhat. Shortly after issuing the first Brazilian licenses, the West German Government announced a ban on any further exports of sensitive technology after the Brazilian deal.⁷⁵ And like the United States, the Federal Republic is a member of the London Suppliers Group, and accepts the anti-proliferation guidelines worked out by the Group.⁷⁶

But one year after the first discussions between the Schmidt and Carter governments, the Federal Republic continues to hold steadfastly to complete fulfillment of the original terms of the Brazilian deal, while the United States continues to exert pressure against parts of it. President Carter brought up the issue with the Brazilian Government during his visit there in March 1978, but without apparently changing any minds.⁷⁷

The United States has provided a powerful new tool for itself to enforce its will on the Federal Republic and other similarly situated countries in the Nuclear Non-Proliferation Act of 1978, signed into law in March of this year. The law implemented Carter's policies. The section of the law on punitive termination of U.S. exports,⁷⁸ which applies to countries which export sensitive technologies to third parties, would seem to affect West Germany. Unless the President finds that embargoing enriched uranium, equipment, etc., to the Federal Republic would be "seriously prejudicial to the achievement of United States non-proliferation objectives or otherwise jeopardize the common defense and security,"⁷⁹ such U.S. exports will presumably have to stop if Bonn persists in going through with its deal. If the United States were to embargo the shipment of enriched uranium to the Federal Republic, it could very well become impossible for the latter to fulfill its own commitments to Brazil out of uranium enriched in the United States or elsewhere. This is aside from the effect that an embargo would have on Bonn's own domestic economy. It is, of course, possible that such an American action very well could damage U.S. non-proliferation objectives or the common defense, and the President (and Congress, which can veto the President's permission to export) would have to weigh the outcome of such U.S. actions carefully.

Even with this new and very powerful law on the U.S. books, there is still hope that what one State Department official has privately termed the "learning process" will continue, a learning process by which the Federal Republic and other European countries and Japan are being sensitized to the proliferation

dangers of widespread enrichment and reprocessing facilities, while the United States becomes more aware of the importance of export sales and relatively independent energy sources to the smaller but important powers that are its allies and friends.

5. FINLAND

Year of commercial operation of first power reactor: 1977.

Number of power reactors, 1977: 1.

Number of power reactors, 1980: 4.

Dominant reactor type: BWR/PWR.

Total output of power reactors (net MWe), 1977: 420.

Total output of power reactors (net MWe), 1980: 2,160.

Finland's first power reactor, Loviisa-1, went into operation in the summer of 1977. Until recently Finland relied primarily on hydroelectric power, but it had more or less tapped all of its usable water resources. Loviisa-1, the first of a series of reactors scheduled for the next several years, has a capacity of 440 megawatts (MWe).⁸⁰ Loviisa-2, also for 440 MWe, is scheduled to go on line within the next year, and two 660-MWe plants at Olkiluoto will go into operation within two or three years. A further 1000-MWe plant at Loviisa is a strong possibility.⁸¹

An interesting aspect of the Finnish program is its use of Soviet reactors in the first two, and probably the third, Loviisa station. This may have been in part due to political considerations—Finland must continually walk a tightrope between the Soviet Union and the West—but the Soviet reactor seems to be operating quite successfully. The first Loviisa project also included equipment from Finland itself, the United States, West Germany, Britain, and Switzerland. Loviisa is being constructed by the state electric utility, IVO. In contrast, the Olkiluoto project is owned by a private utility consortium, and the reactors come from the Swedish company ASEA-Atom, which is doing the architectural and engineering work and part of the construction. Unlike in most other parts of Europe, the local communities are happy with the nuclear plants in their midst, and would likely welcome further construction.⁸²

The Loviisa project has a twenty-year fuel contract with the Soviet Union, that includes the highly desirable feature of provision for return to the Soviet Union of spent fuel.⁸³ TVO, the private utility consortium at Olkiluoto, is hoping to be able to keep open the option of recycling plutonium, but until the subject is settled internationally, it will make use of its sizable capacity for storage of spent fuel.⁸⁴

6. FRANCE

Year of commercial operation of first power reactor: 1959.

Number of power reactors, 1977: 10.

Number of power reactors, 1985: 49.

Dominant reactor type: PWR.

Total output of power reactors (net MWe), 1977: 3,398.

Total output of power reactors (net MWe), 1985: 41,818.

A. French position

France is firmly committed to nuclear power in all its forms. The country is short on coal and oil, which some other European states possess, but it is the only country in Europe with large uranium deposits of its own, and it has ready access to the uranium produced in its former colonies Gabon and Niger.⁸⁵ It is therefore perhaps not surprising that of a 1976 national energy budget of \$401 million, fully \$311 million is committed to nuclear power.

The French commercial program is heavily (but by no means entirely) centralized in the hands of the State. The Commissariat à l'Energie Atomique (CEA) is responsible for research and, through its subsidiary COGEMA (Compagnie Generale des Matieres Nucleaires), for industrial activities in regard to most aspects of the nuclear fuel cycle, e.g., mining, treatment of the ores, and enrichment. COGEMA is also eventually expected to take over the production of fuel

⁷² U.S. ACDA, Nuclear Power Policy, Apr. 7, 1977, pp. 2-3. See also U.S. ACDA, Nuclear Non-Proliferation, Apr. 27, 1977.

⁷³ "Export Licenses Granted for Brazil Deal," Nuclear News, June 1977, p. 98.

⁷⁴ "United States to Ship Highly Enriched Uranium," Nuclear Engineering International, May 1977, p. 7. Sommer, op. cit.

⁷⁵ "West Germany Bans Export of Reprocessing Technology," Nuclear Engineering International, July 1977, p. 6.

⁷⁶ For the guidelines, which were presented to the IAEA simultaneously by the Suppliers Group members, see "U.S. Permanent Mission to the International Atomic Energy Agency," Nuclear Suppliers Group Guidelines for Nuclear Transfers, Jan. 11, 1977.

⁷⁷ "Carter Reaffirms Amity for Brazil Despite Friction," Washington Post, Mar. 31, 1978.

⁷⁸ U.S. Government, "Nuclear Non-Proliferation Act of 1978," Public Law 95-242, Mar. 10, 1978, 92 Stat. 120, at 138-139.

⁷⁹ Ibid., p. 139.

⁸⁰ "World List of Nuclear Power Plants," Nuclear News Buyers Guide, mid-February 1978, p. 50.

⁸¹ "Flims Off to a Good Start," Nuclear News, October 1977, pp. 73, 75, 76.

⁸² Ibid.

⁸³ Ibid., p. 73.

⁸⁴ Ibid., p. 76.

⁸⁵ U.S. Department of Interior, Bureau of Mines, "Uranium," Reprint from the 1975 Bureau of Mines Minerals Yearbook (Washington), n.d., p. 17.

...for the most part, accept nuclear activities. Noting that many nearby residents earn their livelihood directly or indirectly from these reservations, the GAO concludes that these communities will be more receptive to the idea of living near nuclear waste repositories.

In a separate recommendation, the GAO would have Congress enact legislation to create a federal state committee and place the responsibility for developing a national waste management plan in that committee. This is counter to DOE opinion, which would place waste management authority within the Department.

The committee concept is, however, consonant with the Glenn bill (S. 742), which, the GAO report says, embodies most of its recommendations.

Finally, the GAO recommends that any waste management legislation must include provisions for the federal government's right to mandate site selections, if procedures established by the proposed legislation do not lead to the selection of waste repository sites within an established time.—John Graham

NUCLEAR POLICY

Report takes Administration to task on foreign affairs

A report prepared for the Subcommittee on European Affairs of the Senate Committee on Foreign Relations is highly critical of the Carter Administration's handling of nuclear policy, its nonproliferation goals, and the effects of these on foreign policy.

Irresolution of domestic energy policy, including nuclear power, weakens the U.S. effort to restrain the spread of nuclear weapons, the authors of this report conclude. "In fact," they say, "it could very well promote exactly the opposite effect that Mr. Carter is hoping to achieve. Abandonment or delay of the development of new nuclear technologies coupled with the present uncertainty in the U.S. as to what direction it will take in the 1980's and beyond will increase international instability and foster division in the U.S., the other industrialized nations, and the countries of the Third World."

The document, prepared by Charlotte Phillips and Warren Donnelly, of the Congressional Research Service of the Library of Congress, and Patrick Murphy, a consultant with the General Accounting Office, considers the broad spectrum of international nuclear politics, including such topics as European perspectives and European perceptions of U.S. nuclear policy.

Basically, the report concerns the polarization of attitudes between U.S.

European governments and U.S. nuclear revisionism and these attitudes as they are treated by these authors are summarized below.

- The United States is basing its nuclear policy foremost on concern over war and proliferation, while deferring the use of advanced nuclear technologies (reprocessing and breeders) in hopes that other nations will follow this example.

The Europeans, on the other hand, are basing nuclear energy policy on concern over the need for independent energy supplies to fuel their industrial economies.

- U.S. policymakers believe this country can afford to wait to develop new technologies; the Europeans believe they cannot.

These diverging policies might co-exist, but, as long as the United States continues to make its nuclear export procedures more restrictive and complex, the more vigorously the Europeans are inclined to go ahead with reprocessing and the breeder.

- The Europeans are outspoken in their criticism of the U.S. nuclear policy, and they do not feel the United States is making any kind of "magnanimous gesture" by deferring commercial reprocessing when it continues to operate the world's largest reprocessing plants to make weapons.

- As long as Europeans continue to abide by the guidelines established by the Nonproliferation Treaty (NPT) and the International Atomic Energy Agency (IAEA), they feel no need to accede to the political pressures of President Carter, whom they see as trying to act unilaterally above NPT and IAEA in a "holier-than-thou" attitude toward safeguards and proliferation.

Sen. Joseph Biden (D., Del., and chairman of the subcommittee submitting the report) said in a covering letter that he does not totally agree with the European attitudes expressed in the report, nor does he agree that these attitudes are justified. He said his purpose in submitting the report is, in the light of activities after Three Mile Island, that it would be useful for Congress to have these things in mind as it confronts the task of designing and implementing new energy programs.

Copies of the report, entitled "Western European Nuclear Energy Development: Implications for the United States," prepared for the Subcommittee on European Affairs of the Committee on Foreign Affairs, United States Senate, by the Foreign Affairs and National Defense Division of the Congressional Research Service, Library of Congress, dated June 1979, are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Europe doesn't like US policy says congressional committee

UNITED STATES: Western European nations see US nuclear policy under President Carter as self-centred, insensitive to their problems and potentially disruptive in its foreign policy aspects, the subcommittee on European affairs of the Senate Foreign Relations Committee has been warned.

The member nations of Euratom are particularly angered by American threats to ban shipments of enriched uranium to them unless they agree to US control over spent fuel from their plants, according to a report prepared by the Congressional Research Service. Under the Carter administration, the report charges, US nuclear policy has had profound impact on its foreign policy in three ways.

- While trying to show concern for the risks of nuclear proliferation, the US may have escalated international uncertainty, leading to increased pressures for proliferation.
- US credibility as a supplier of enriched uranium appears to have dropped sharply. The drop has been due to the confused and cumbersome nature of its export licensing requirements, inconsistencies in the direction of its energy policy and by passage of the Nuclear Non-Proliferation Act of 1978. The latter is seen as an attempt by the US unilaterally to change existing agreements among these nations.
- While trying to take the lead in international safeguards, the US is running the risk of isolating itself from the mainstream of world nuclear policy.

US nuclear policy may be jeopardizing good relations with European allies and the strain on these relations already is being felt, the report comments. "The issue of a secure fuel supply is vital to the Europeans, who have already been severely hurt once before in this decade by an interruption in oil supply. For that security to be jeopardized again, especially by its closest ally the United States, would be regarded as an unpardonable slap in the face."

Many Europeans feel that the US is imposing more stringent and unrealistic terms on Europe than on countries which have been outside the orbit of shared military, political and economic relationships. Some suspect that US policy is designed to improve the eroded position of US nuclear reactor exports.

Basic policy differences also are involved, the report points out. The United States bases its nuclear policy primarily on concern about war and proliferation. European nations base their nuclear policies on the need for independent energy supplies.

While the US can wait to develop new technologies, Europeans believe they cannot. If the US continues to make its nuclear export procedures more restrictive, European nations will be more inclined to go ahead with reprocessing and breeder technologies.

Finally, the report emphasizes, Europeans are not willing to hinder or stop their economic growth to support a

rigid US non-proliferation policy.

US energy policy is having a debilitating influence. "Irresolution over domestic energy policy, particularly for oil imports, and over nuclear power weakens United States efforts to restrain the spread of nuclear weapons. In fact, it could very well promote exactly the opposite effect to that Mr Carter is hoping to achieve. From Europe's viewpoint, abandonment or delay of the development of new nuclear technologies coupled with the present uncertainty in the United States as to what directions it will take in the 1980s and beyond will only increase international instability and foster division among the United States, the other industrialized nations and the countries of the Third World."

**West European Nuclear Energy Development: Implications for the United States, available from the US Government Printing Office, Washington, D.C.*

Central radiation control called for

UNITED STATES: An interagency Federal Radiation Council is needed to untangle the jurisdictional conflicts among the 15 or more federal agencies engaged in using, studying and controlling radiation, according to a White House task force.

The new council should be made up of high-level government officials and should have full power to co-ordinate efforts to improve federal research and regulation of radiation, the task force recommends. Its chairman should be appointed by the President from among the organizations comprising the task force. These include Defense, Energy, Labor, Health-Education-Welfare, Environmental Protection Agency, Veterans Administration and NRC.

Casual workers' exposures now controlled

UNITED STATES: Under new Nuclear Regulatory Commission regulations, licensees are responsible for ensuring that short-term transient workers do not receive occupational radiation doses exceeding NRC standards. It has been possible until now for a worker to be exposed in each of a number of working locations, with the combined dose possibly exceeding permissible levels.

Licensees must now obtain information from prospective employees as to doses already received during the calendar quarter. Licensees must also provide a departing employee with estimates of his total exposure during the quarter in which employment ends.

Other recommendations in the 110-page staff report call for:

- Formation of an interagency radiation research committee.
- A programme to reduce exposure from medical sources, which now account for 90 per cent of man-made radiation.
- Development of medical guidelines to help resolve claims for radiation-caused injuries.
- Re-assessment of all current exposure standards and new legislation to permit health researchers to have greater access to radiation records.

The staff report must be approved by heads of the organizations making up the task force before it goes to President Carter.

US utilities look at operator training

Industry formation of a Nuclear Operations Institute to set training and operating standards and to monitor compliance is likely.

The concept already has the tentative approval of the special Atomic Industrial Forum committee set up to compile and assess technical data from the accident. The institute could serve as a centre for accreditation of training and operations programmes for nuclear power licensees. A first step, according to an AIF spokesman, might be a review of all existing utility programmes and development of a new approach made up of the best elements of each.

This reaction is similar to that taken by industry in forming the Electric Power Research Institute.

4845 Crescent Street
Bethesda, MD 20816
December 8, 1987

The Vice President
The White House
Washington, D.C.

Dear Mr. Vice President:

Last week you held your ground in favor of what should be one of the biggest issues the Republicans have going for them next year, the INF treaty. I am proud to say that I backed you in 1980 even "FBI" (For Bush Before Iowa), spending many exciting hours in your Alexandria headquarters (and as recently as October 28 of this year I contributed to your present election campaign). Later I joined the Reagan-Bush campaign. I am currently serving as a Schedule C (political appointee) Intelligence Analyst in the Department of State, Bureau of Intelligence and Research.

As such I probably follow the difficult issue of the balance of conventional forces in Europe, the great follow-on issue to INF, at least as closely as any other Republican political appointee in the Government. I would like to present some of my thoughts on the issue to you.

First of all, you are right in defending the treaty. It is certainly true that if nuclear weapons are drawn down, conventional weapons become correspondingly more important. And it is certainly true that in every major category of military hardware except principal surface ships, the Warsaw Pact heavily outnumbers NATO (of course NATO is a largely maritime-based alliance--how but by ships would the U.S. deliver men and materiel to Europe if a war should start?). At work I have about ten sets of figures for tanks alone, some classified, others not (see enclosed Military Balance and Soviet Military Power figures, for instance). But no matter how one cuts it the Soviets have a lot more firepower than we do. However, if we are behind by most quantitative measures, we are ahead or at least equal (though probably losing ground) by such qualitative measures as quality of equipment, training, leadership, etc.

But if the Russians have more tanks to use if the war begins, this treaty, by lessening tension, decreases the overall likelihood of that horrible event's ever occurring in the first place. Equally important, the balance of the treaty itself is heavily in our favor. According to the 1986-87 Military Balance, the weapons at issue balance up as follows in July 1986:

Country	Type	Launcher Number	Warhead Number*
US	Cruise Missile	128	128
US	Pershing 2	108	108
Sov.Un.	SS-20	270	<u>810</u>

*There may be more missiles than launchers, but in any case the SS-20s have three warheads on each missile, the US missiles only one. So it is a very good deal, in terms of getting rid of Soviet nuclear warheads!

And, of course, there is great concern about verifiability. For the first time in history, this treaty includes on-site inspection. This is a precedent the US has been trying to achieve for forty years, one which could become extremely significant should we achieve a chemical arms control treaty with the Soviets, as well. Actually, the great problem is not verifiability--we regularly catch the Soviets cheating--but just that, (non-) compliance and, more especially, what to do about it! As to verifiability itself, however, we should be pleased that we now do have this powerful precedent.

Then there is the fear of "decoupling" the US from Europe by removal of these nuclear weapons. But there are still apparently about 4600 Western nuclear weapons in Europe, after removal of only 200+ US weapons (I do not know if the 4600 figure includes the few hundred British and French weapons, or not.). That should be enough.

The argument is made that the US would not use these other air-dropped or artillery-delivered weapons, as it would have done, ten years ago. But, aside from discounting the British and French weapons, something the Soviets, on the same continent with the UK and France most assuredly do not do, the political pressures on a US President either to bomb or not to bomb would be just about the same, whether the conventional balance is worse than it always was (as is the case), or not. And even the threat of one bomb on Leningrad or Moscow remains a powerful deterrent. In short, how can the nuclear deterrent situation be that much different in 1990 after INF, than it was in 1976 before INF?

But in my opinion what has coupled the US to Europe for forty years is not a certain specific level of nuclear tonnage, but the 300,000 US troops in Europe, the massive number of their dependents, and the probably even more massive number of US tourists, businessmen, and students in Europe at any one time. Even in the dead of winter this probably amounts to over a million

people, more than are in about ten states, and in the summer there are lots more. We are not about to abandon all those people if a war should begin, and there is most assuredly no way to get more than a small percentage back, so we will have to fight for them.

And the Americans in Europe are themselves only a symbol and proof for the most fundamental reason of all why we will fight: it is a vital US interest to preserve the freedom of Western Europe, the greatest concentration of economic power on earth, and the historical, religious, cultural, and philosophical root of most of our traditions and most of our citizens.

The INF treaty in no way damages the US-European nexus--in fact, it probably strengthens it, given the popularity of arms control among West European populations. The slight weakening of the West's military position, if there is any such weakening at all (remember the much larger cut in Soviet warheads) is probably more than balanced off by the decrease in US-Soviet tension and the accompanying lessening of the chances of a war, either deliberate or accidental. Decoupling is a non-issue. The only real problem I see with this treaty, as with most arms control agreements, is the sudden euphoria that "peace is at hand." But skillful public relations should help contain that problem.

Indeed, the biggest single result of this treaty will probably be to give the Republicans a tremendous peace issue--if they--if we--do not throw it away. Sometimes I wonder if I am the only person in the US (except for the Vice President, of course!) who remembers that President Reagan said repeatedly in the 1980 campaign that he would build up the US military, and then try to do an arms control deal with the Soviets. That is exactly what he has done. The liberals tend to ignore the first half of that statement, the conservative the second. Happily, you have kept the proper balance.

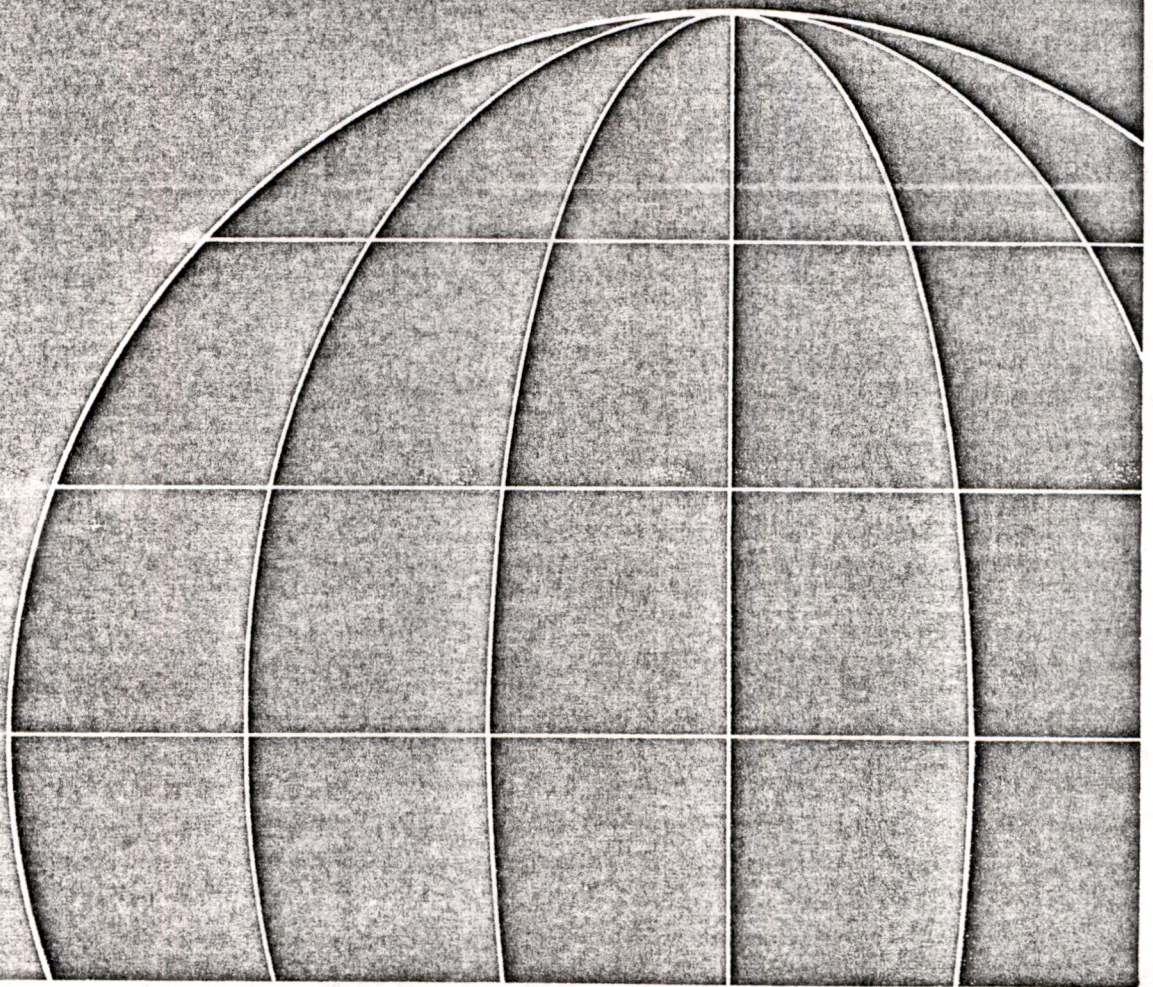
If you or your assistants have any questions, you may wish to call me at the State Department, 647-1261 or 647-2305. I will be glad to supply your office with any classified^x or unclassified material we have. And now, if I may, Good Luck next year, and your friends look forward to your inauguration on January 20, 1989.

x through proper channels

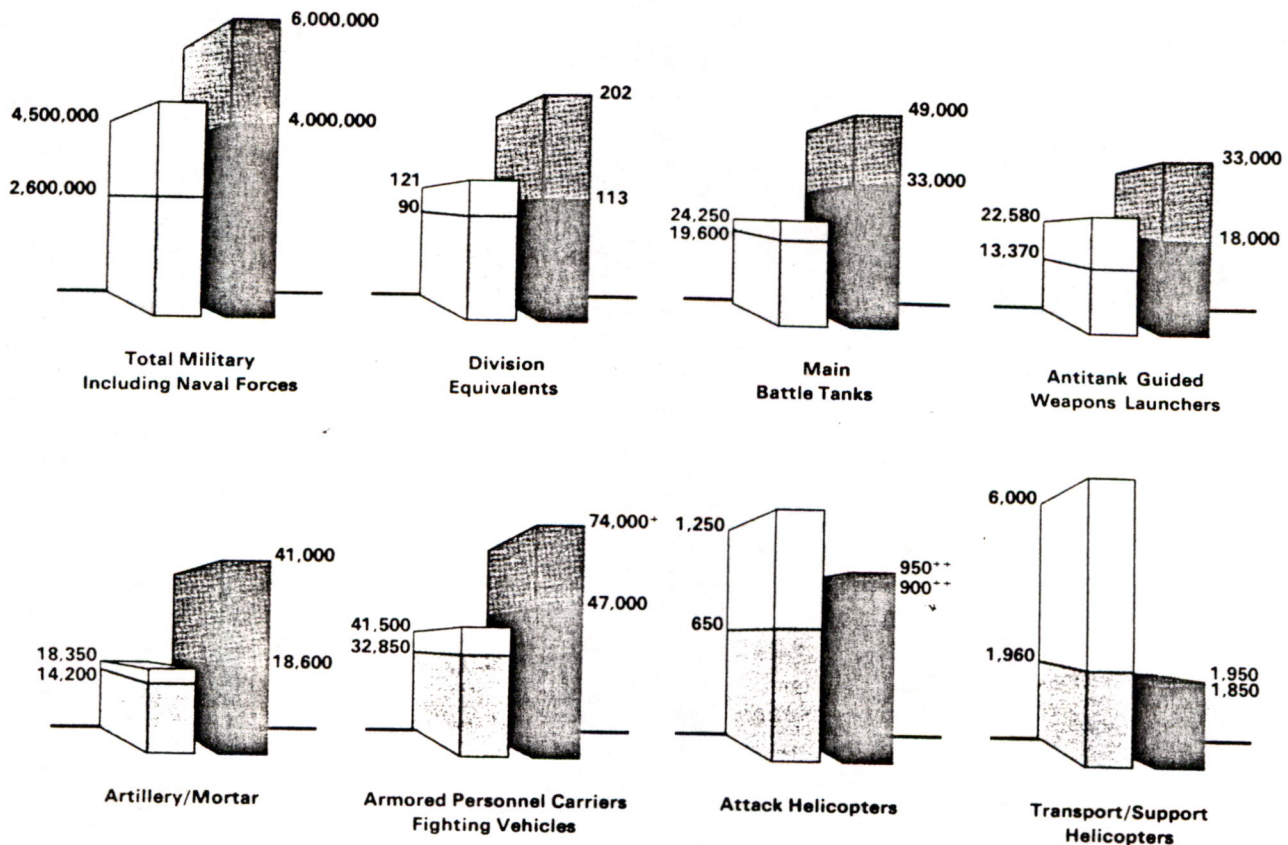
Sincerely,

Patrick W. Murphy

THE MILITARY BALANCE



NATO-WARSAW PACT Comparison*



NATO**

In Place in Europe and
Rapidly Deployable Forces

NATO***

Fully Reinforced Forces

WARSAW PACT**

In Place in Europe and
Rapidly Deployable Forces

WARSAW PACT***

Fully Reinforced Forces

Excludes France and Spain

Warsaw Pact divisions normally consist of fewer personnel than many NATO divisions but contain more tanks and artillery, thereby obtaining similar combat power.

* US estimate of 1985 data.

** Rapidly deployable forces—Include those US forces whose equipment is stored in Europe and high-readiness Soviet forces located in the Baltic, Belorussian, Carpathian, Odessa, Kiev, and North Caucasus Military Districts.

*** Fully reinforced forces—Include North American reinforcements and all Warsaw Pact forces located west of the Ural Mountains.

* Excludes armored command vehicles and other carriers.

** Excludes transport helicopters that can be configured for attack roles.

strategic submarine protection and homeland defense remain dominate themes in Soviet planned wartime operations, coordinated combined arms/joint force operations within continental TVDs, especially in the Baltic and Black Sea Fleets, are receiving increased emphasis. For the most part, these continental TVD-oriented exercises appear designed to prepare fleet units to protect the seaward flanks of the Warsaw Pact, to seize key straits and islands, and to conduct amphibious assaults in support of Soviet land operations.

Recent naval exercises in both the oceanic and continental TVDs have been conducted under realistic conditions approximating a wartime environment. In the Northern and Pacific Ocean Fleets, they have focused on command and control of multiple task groups and formations, the deployment of large numbers of warships and aircraft, and the establishment of echeloned combat zones stretching into the North Atlantic and Northwest Pacific Oceans. These exercises also reveal that Soviet naval

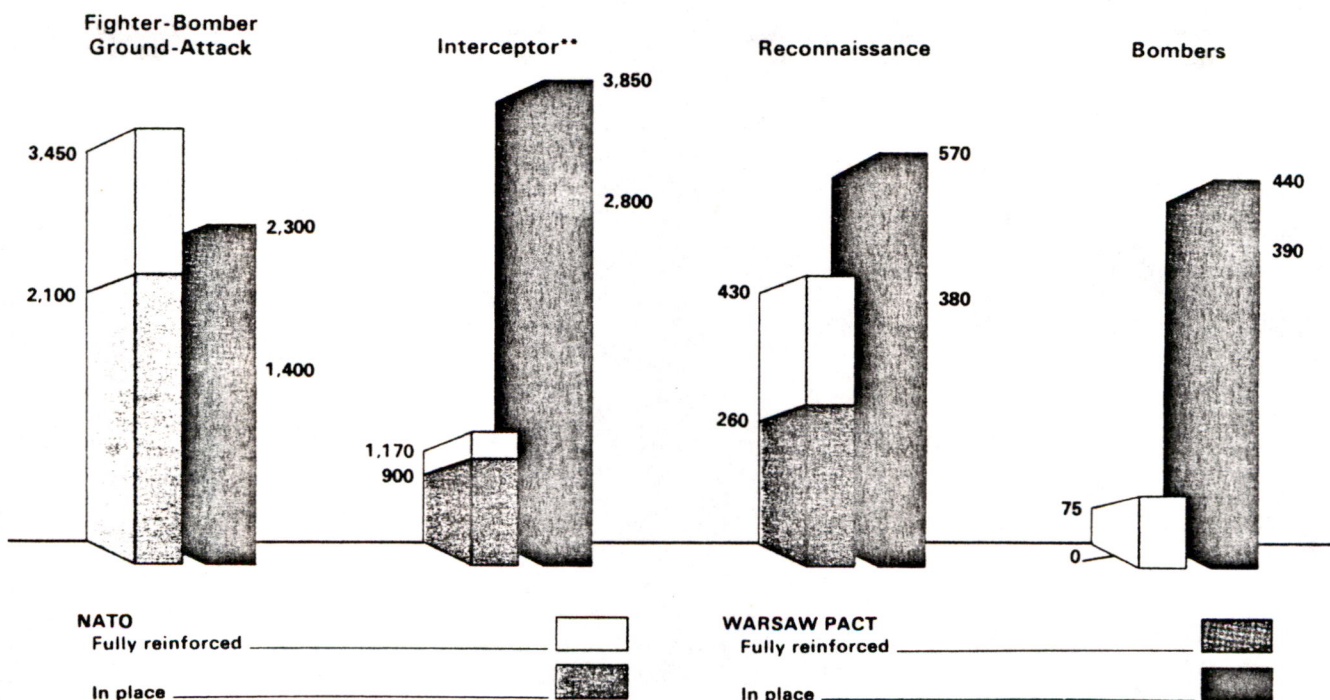
operations are being conducted with larger and more powerful forces at increasingly greater distances from the USSR.

NATO and the Warsaw Pact

In 1984, the North Atlantic Treaty Organization published the second edition of the NATO and the Warsaw Pact Force Comparisons study. Charts from the 1984 NATO study were published in *Soviet Military Power 1985*.

The following charts and tables present a US estimate of updated data for 1985. Not included in the data are forces of France and Spain. Although both nations are members of the North Atlantic Alliance, they do not participate in its integrated military structure. In an invasion of Western Europe by the Warsaw Pact, France and Spain would defend their national sovereignty with the following forces: approximately 20 divisions, 2,000 tanks, 3,000 artillery/mortars, 1,000 antitank launchers, 8,000 combat vehicles, 450 helicopters, 900 aircraft, and 100 naval warships.

NATO-Warsaw Pact Combat Aircraft*



Excludes France and Spain.

Some interceptors can be used in ground-attack roles.

* US estimate of 1985 data.

** Excludes strategic interceptors.

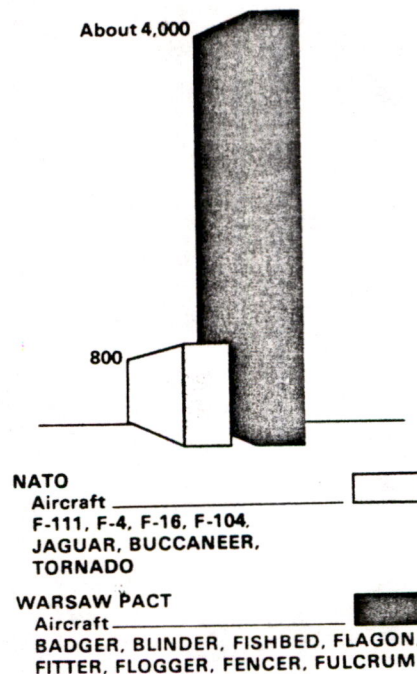
NATO and Warsaw Pact Maritime Forces in the North Atlantic and Seas Bordering Europe, 1985*

Category	NATO	Warsaw Pact
Aircraft Carriers VSTOL Carriers	10	—
KIEV-Class Ships	—	1
Helicopter Carriers	6	2
Cruisers	16	21
Destroyers, Frigates, Corvettes	303	199
Coastal Escorts and Fast Patrol Boats	269	520
Amphibious Ships - Ocean-going	50	21
- Other Ships/ Coastal Craft	69	181
Mine Warfare Ships/Craft	264	360
Total Submarines (All Types)	209	265
- Ballistic Missile Submarines	35	47
- Long-Range Attack Submarines	70	150
- Other Types	104	68
- % Submarines Nuclear Powered	50%	50%
Sea-based Tactical ASW and Support Aircraft Including Helicopters	831	145
Land-Based Tactical and Support Aircraft Including Helicopters	379	575
Land-Based Anti- Submarine Warfare Fixed- Wing Aircraft and Helicopters	462	220

Excludes France and Spain

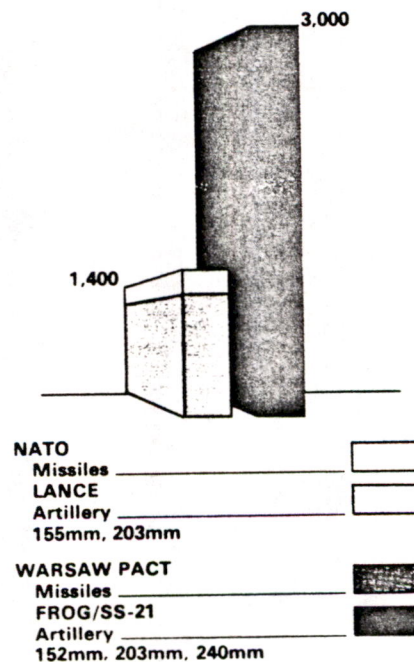
* US estimate of 1985 data

Land-Based INF Aircraft Deployed at End of 1985*



* US estimate of 1985 data
Numbers reflect NATO systems deployed in NATO Europe and Warsaw Pact systems opposite NATO

Short-Range Nuclear Forces (SNF) Deployed at End of 1985*



* US estimate of 1985 data
Numbers reflect NATO systems deployed in NATO Europe and Warsaw Pact systems opposite NATO

SOVIET MILITARY POWER

1986

Category ^a and type	First year deployed	Range (km) ^b	Max speed (Mach)	Weapon load (000 lb)	Launcher total 7/86	Warhead details ^c (aircraft: ordnance load) and comments
AIR						
Tactical/						
Land-based strike						
Su-7 <i>Fitter A</i>	1959	1,400	1.6	8.8	90	2 bombs. Czechoslovakia (50), Poland (40).
Su-20 <i>Fitter C</i>	1974	1,300	1.6	7	40	2 bombs. Poland (40).
MiG-23 <i>Flogger F/H</i>	1975/6	2,600	1.2	4.4	109	2 bombs. Bulgaria (45), Czechoslovakia (40), E. Germany (24).

^a ICBM = range of over 5,500 km; IRBM = 2,400–5,500 km; MRBM = 800–2,400 km; SRBM = 800 km or less.

Long-range = over 9,000 km; medium-range = 5,600–9,000 km; bomber = aircraft primarily designed for bombing missions.

^b Ranges given in km; for nautical miles, divide by 1.852. Use of maximum payload may reduce a missile's operational range by up to 25% of figures shown. Figures for aircraft are theoretical maximum unrefuelled range at optimum altitude and speed. Higher speeds, lower altitudes and full weapons loads reduce range, especially with strike ac; for instance an A-6, at operational height and speed and with maximum weapons load, has a combat radius of some 1,870 km, compared with max ferry range of 4,700 km.

^c Throw-weight is the weight of post-boost vehicle (warhead(s), guidance systems, penetration aids) deliverable over a given range.

^d CEP (circular error probable) = the radius of the circle around a target within which there is a 50% probability that a weapon aimed at that target will fall. For obvious reasons, this is a figure with a rather large degree of uncertainty attached to it.

^e Warhead yields vary greatly; figures given are estimated maxima. KT range = under 1 MT; MT range = over 1 MT. Yield figures for dual-capable weapons (which can deliver conventional or nuclear warheads) refer to nuclear warheads only.

^f All the types listed are dual-capable. Total actually available as nuclear strike aircraft may be lower than the figure shown.

^g Except for British and French weapons, nuclear warheads for these delivery vehicles are held in American custody. No nuclear warheads held on Canadian, Danish or Norwegian soil. In few cases is the M-109 likely to have a nuclear role.

^h All NATO missiles of US origin, except SSBS, *Pluton* and MSBS (French).

ⁱ *Nimrod* of British origin; F-4, F-16, F-104, P-3 American; *Mirage*, *Super Etendard*, *Atlantic* French; *Jaguar* Anglo-French; *Tornado* British-German-Italian.

^j Variable range; some for peripheral targeting.

^k Nuclear warheads held in Soviet custody. Ac all of Soviet origin. It is uncertain how many are nuclear capable.

2. NATO/WARSAW PACT POTENTIAL NUCLEAR WEAPONS SYSTEMS, EUROPE

NATO			WARSAW PACT		
Category and type	Countries deploying	Launcher total 7/86 ^a	Launcher total 7/86	Countries deploying	Type
LAND-BASED					
ICBM					
			^b	USSR	SS-11/-17/-19
IRBM					
SSBS S-3 D/TN-61	France	18	112	USSR	SS-4
			270	USSR	SS-20
GLCM					
BGM-109G	USA	128			
MRBM					
Pershing II	USA	108			

For notes, see p. 208.

Conventional Force Comparisons: NATO and Warsaw Pact

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NATO												Warsaw Pact			
Europe					Total (excl Spain)	Ratios of NATO: Pact Totals	Total	Soviet		Non-Soviet					
North ^a	South ^b	(Spain)	US	North ^c				South ^d	North ^e	South ^f					
Manpower (000)															
Total uniformed manpower ^e	1,629	1,319	(320)	2,144	5,092	1:1.23	6,290	5,130		717	443				
Reserves (all services)	2,292	2,344	(1,085)	1,683	6,319	1:1.29	8,149	6,265		1,181	703				
Total ground forces	990	1,017	(230)	771	2,779	1:1.02	2,827	1,991		498	338				
Total ground force reserves ^f	1,737	1,809	(800)	1,057	4,603	1:1.10	5,080	3,500		995	585				
Total ground forces deployed in Europe	624	1,017	(230)	217	1,858	1:1.46	2,704	1,170 (500)	698 (65)	498	338				
Divisions ^g															
Divs deployed in Europe manned in peacetime	Tk ^h	12	2	—	2½	16½	1:1.94	31½	15	6	8	2½			
	Mech	6	8	—	2½	16½	1:2.94	48	23	9	10	6			
	Other	2½	2	—	1½	5½	1:1.82	10½	5	½	2½	2			
Divs for reinforcement manned or on mobilization of reserves ⁱ	Tk	5	2	(1)	4½	11½	1:2.23	26	16	4	4	2			
	Mech	13½	21	(1)	8½	43½	1:1.48	64	16	26	7	15			
	Other	16½	16	(3½)	15½	46½	35.0:1	1½	—	1½	—	—			
Total divs, war mobilized ^j	Tk	17	4	(1)	6	27	1:2.14	57½	31	10	12	4½			
	Mech	21½	29	(1)	11	61½	1:1.82	112	39	35	17	21			
	Other	19½	18	(3½)	16½	54	4.76:1	11½	5	1½	2½	2			
Ground Force Equipment															
Main battle tanks	8,981	6,333	(883)	5,000	20,314	1:2.29	46,610	19,500	12,700	9,770	4,640				
Arty, MRL	4,086	4,218	(1,300)	670	8,974	1:2.68	24,035	10,000*	6,300*	4,300*	3,435*				
Mor (over 120mm)	1,760*	500*	(400)	—	2,149	1:2.83	6,072	4,000*	1,000*	422*	650*				
SSM launchers (dual-capable)	165	6	—	216	387	1:3.19	1,235	693	185	203	154				
ATK guns	280	—	—	—	280	1:5.54	1,550	570*	420*	190	370				
ATGW launchers (crew-served, AFV-, hel-mounted)	885	126*	—	800*	1,811	1:1.95	3,525	1,300*	1,035*	750	440				
AA guns	1,429	1,850*	(414)*	100	3,379	1:1.04	3,525*	1,100*	1,120*	1,350	1,250				
SAM launchers (crew-served, ground forces only) ^k	522	100	(33)	164	786	1:6.83	5,365*	2,500*	1,620*	1,000	245				
Armed helicopters	312	174	(44)	228	714	1:2.92	2,085	1,580	505	114	70				
Naval Units															
Submarines	cruise missile attack	—	—	—	—	—	37	35	2	—	—				
		84	48	(8)	51	183	1.19:1	154	108	40	3				
Carriers		4	4	(1)	5	13	4.33:1	3	1	—	—				
Cruisers		—	2	—	12	14	1:1.5	21	14	7	—				
Destroyers		32	38	(11)	34	104	2.17:1	48	29	18	—				
Frigates		91	51	(11)	48	190	3.52:1	54	33	13	3				
Corvettes/large patrol craft		29	42	(18)	—	71	1:1.62	115	41	29	30				
FAC (G/T/P)		93	55	(12)	6	154	1:1.95	300	45	100	76				
MCM ^l		142	67	(12)	3	212	1:1.45	308	185	65	54				
Amphibious ^m		85	140	(24)	25	250	1.72:1	145	73	37	35				
Naval and Maritime Aircraft															
Bombers		—	37	—	—	37	1:5.41	200	100	100	—				
Attack		97	10	(10)	170	277	1.51:1	184	50	100	34				
Fighters		—	12	—	105	117	—	—	—	—	—				
ASW		8	12	—	50	70	1:2	70	20	50	—				
MR/ECM		100	36	(20)	55	191	1.24:1	154	99	45	10				
ASW hel		238	115	(25)	30	383	4.67:1	82	30	40	—				
Land Combat Aircraft ⁿ															
Bombers		72	—	—	150	222	1.06:1	210	210	—	—				
FGA		873	841	(40)	444	2,158	1:1.03	2,216	1,025	540	421				
Fighters		118	238	(107)	96	452	1:2.38	1,075	590	315	135				
Interceptors		44	—	—	18	62	1:20.89	1,295	—	—	810				
Reconnaissance		142	156	(20)	51	349	1:1.27	443	221	72	90				
ECM		—	—	—	—	—	—	60	55	5	—				

* Estimated figures.

^a Comprises Norway, Denmark, W. Germany, Luxembourg, Netherlands and Belgium, and includes forces actually deployed from Britain, Canada, US (Atlantic), France (Army, Navy, Atlantic-deployed elms incl Naval air).

^b Comprises Turkey, Greece, Italy, Portugal, France (Navy), US Sixth Fleet and forces deployed in Southern Europe.

^c Comprises Poland, E. Germany and Czechoslovakia, and includes Soviet forces in those countries and in the Leningrad, Baltic, Belorussian and Carpathian md.

^d Comprises Hungary, Romania and Bulgaria, and includes Soviet forces in Hungary and in the Odessa, Kiev, North Caucasus and Trans-Caucasus MD.

^e 'Uniformed manpower' refers to main forces only and excludes para-military forces.

^f 'Reserves': Many countries have Reserve obligations into middle age, where not otherwise stated in the country entry, a five-year post-conscript period has arbitrarily been selected in calculating the numbers. In Pact countries a large proportion of these older reservists are probably assigned to 'shadow' formations and units with stored obsolete equipment, potentially doubling the mobilizable forces from those shown but necessarily at very low standards of efficiency. This table, however, shows equipment totals for listed Category 1, 2 and 3 divisions only.

^g Divisions are not a standard formation between Armies; 3 brigades or regiments are considered to be a divisional equivalent.

^h 'Tk' includes tank and armoured divs; 'Mech' includes mechanized, motorized and motor rifle; 'Other' includes airborne, air-portable, mountain, amphibious, light infantry and naval infantry.

ⁱ Mobilization and reserve reinforcement systems vary considerably. A distinction between the two categories of immediate reinforcement and 'when mobilized' must of necessity be judgmental, especially for NATO. See country entries for detail.

^j Figures in part on unit organization.

^k Field forces only; Soviet Air Force and APVO equipment is considered primarily to be for airfield defence and not for use by field formations.

^l Excludes support craft and inshore boats.

^m Excludes LCUs, LCVP, LCA, small craft.

ⁿ OCU aircraft are included in these totals.

^o Included in the figure above.

227

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
09. Resume	Re: Candidate for NSC staff position. (2 pp.)	n.d.	(b)(6)	

Collection:

Record Group: Bush Presidential Records
Office: National Security Council
Series: Blackwill, Robert D., Files
Subseries: Subject Files
WHORM Cat.:
File Location: [Resumes to Blackwill - NSC Staff Positions] [6]

Date Closed:	1/22/2013	OA/ID Number:	CF00182-007
FOIA/SYS Case #:	2012-3130-S	Appeal Case #:	
Re-review Case #:		Appeal Disposition:	
P-2/P-5 Review Case #:		Disposition Date:	
AR Case #:		MR Case #:	
AR Disposition:		MR Disposition:	
AR Disposition Date:		MR Disposition Date:	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
 P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
 P-3 Release would violate a Federal statute [(a)(3) of the PRA]
 P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
 P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
 P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

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Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
11. Resume	Re: Candidate for NSC staff position. (4 pp.)	n.d.	(b)(6)	

Collection:

Record Group: Bush Presidential Records

Office: National Security Council

Series: Blackwill, Robert D., Files

Subseries: Subject Files

WHORM Cat.:

File Location: [Resumes to Blackwill - NSC Staff Positions] [6]

Date Closed: 1/22/2013

OA/ID Number: CF00182-007

FOIA/SYS Case #: 2012-3130-S

Appeal Case #:

Re-review Case #:

Appeal Disposition:

P-2/P-5 Review Case #:

Disposition Date:

AR Case #:

MR Case #:

AR Disposition:

MR Disposition:

AR Disposition Date:

MR Disposition Date:

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

Freedom of Information Act - [5 U.S.C. 552(b)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

(b)(1) National security classified information [(b)(1) of the FOIA]
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C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Removed as a personal record misfile.