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THE 22 SEPTEMBER 1979 EVENT

Information available as of December 1979 was used in the preparation of this memorandum.

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FOREWORD

On the basis of available information, we cannot determine with certainty the nature and origin of the event on 22 September 1979. The conclusions reached in this memorandum rest largely on circumstantial evidence and on the assumption that there was a nuclear explosion.

This memorandum was prepared under the auspices of the National Intelligence Officer for Nuclear Proliferation in response to a National Security Council request. It was coordinated at the working level with NFIB representatives in the Interagency Intelligence Working Group on Nuclear Proliferation.

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KEY JUDGMENTS

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DISCUSSION

1. As requested by the National Security Council, this assessment is based on the assumption that the event detected over a portion of the southern hemisphere (see map on page 12) by optical sensors on a Vela satellite at about 0100 GMT on 22 September 1979 was a nuclear explosion. Given the assumption that a nuclear explosion occurred, the purpose of this paper is to estimate what countries may have been responsible for, or involved in, the event.

2. Technical information and analyses suggest that:

— An explosion was produced by a nuclear device detonated in the atmosphere near the earth's surface.

— It had a yield equivalent to less than 3 kilotons.

— It took place within a broad area, primarily oceans, that was generally cloudy.[1]

3. Various types of nuclear devices could have yielded the equivalent of less than 3 kilotons of high explosive. Such yields could have been obtained either by careful design of a weapon with that yield, through intentional reduction of yield of a higher yield device, or by partial failure of a higher yield device. In practical terms, the testing of a nuclear device at sea would not have needed to involve more than two or three ships or aircraft, including several dozen crewmen and technicians. Equipped with appropriate diagnostic instruments, they could have set up the test within a few hours, detonated the device, obtained required data within minutes after the explosion, and dispersed within another few hours.

4. In addition to the five countries that are acknowledged nuclear weapon states, we believe that there are five other states that have in the 1970s designed devices suitable for nuclear testing. Of these, we believe that only Israel, India, and South Africa have recently had the fissile material as well as the other components needed to fabricate nuclear explosive devices. In contrast, Pakistan and Taiwan have probably lacked sufficient fissile material for even a single nuclear explosive device. Several advanced non-nuclear-weapon states, such as West Germany, have possessed both the materials and the technical expertise; none of them, however, has had an incentive, on balance, to develop nuclear weapons, much less to test a device. Other states that might have nuclear ambitions—such as Brazil, Argentina, and Iraq—almost certainly lacked the fissile material and nonfissile components required to fabricate and test nuclear explosive devices. Neither France nor China has agreed to refrain from testing in the atmosphere, but they have recently had no known technical or political motivation to test clandestinely in the southern Indian or Atlantic Ocean. The Soviet Union would have had to assume inordinate political risks in its relations with the United States to have conducted a covert nuclear explosion in violation of the Limited Test Ban Treaty (LTBT) for any purpose.

5. The Defense Intelligence Agency believes, however, that if an atmospheric test were in the technical interest of the USSR, an anonymous test near an unwitting proxy state such as South Africa could have provided an attractive evasion method. The Department of Energy believes that, while the Soviets have had the capability to test clandestinely, they have recently had no technical reason or motivation to do so. The Department further speculates that such a test could have been seen as serving Soviet political interests by disrupting peace efforts and further polarizing moderate elements in southern Africa.

6. An unintended firing and near-surface detonation of a nuclear weapon during a military exercise could also have produced the signals that were detected.[2] The multiple safety measures that would have had to be negated, however, and the absence of any known weapons carriers in the area on 22 September would have made such an event quite unlikely. The explosion of a nuclear weapon aboard a weapons carrier would have been even less likely, because the yield of an accidental detonation almost certainly would not have been sufficient to produce the detected signals. Moreover, no nuclear weapons carriers are known to have been missing and no associated

[1] See page 13 for an assessment by the Joint Atomic Energy Intelligence Committee of all technical information received and analyses performed to date.

[2] The possibility raised in public speculations that a reactor accident might have caused the signals that were detected can be completely ruled out on technical grounds.

search-and-rescue operations have been noted. Finally it is very unlikely that any known subnational entity could have conducted a nuclear explosion or would have been motivated to do so.[3] So the following assessment considers the capabilities and motivations of only those five "non-nuclear-weapon states" that might have attempted to test secretly in a remote ocean area of the southern hemisphere during September 1979.

A Secret Test by South Africa?

8. In late 1977 the Vorster government apparently suspended preparations to test. Strong US pressure and other international reactions appeared to have deflected South Africa at least temporarily from testing. The setback probably compelled Vorster and the key officials in the nuclear weapons program to review their whole approach toward weapons development and testing. Statements made by the Vorster government at that time did not permanently foreclose future options for testing. Rather than completely stopping their weapons program, the South Africans could then have decided to prepare for a future nuclear test more securely. In any case nuclear testing was almost certainly not feasible until late 1978 at the earliest, when sufficient quantities of highly enriched uranium could have been expected to become available. In short, the Vorster administration may well have deferred any decisions on whether or when to test.

9. ***Botha's Policy.*** Arguments that nuclear testing could make an important contribution to technical confidence in and, to the extent it was disclosed, foreign respect for South Africa's military strength in all likelihood would have resonated with Prime Minister Botha and other South African officials. Botha had overseen a substantial buildup of South Africa's defense forces in the late 1960s and 1970s, following a decision in the early 1960s to achieve self-sufficiency in arms. Because of his personal convictions as well as his official responsibilities, he has advocated more than any other Cabinet officer the military components of South Africa's strategy for coping with possible external threats. He has regarded the West as unwilling to support South Africa against foreign threats that he has perceived to be growing. Moreover, he has probably sympathized with views that nuclear weapons might ultimately be needed. However, he probably has not foreseen any imminent military requirement for nuclear weapons or any political advantages to disclosing particular elements of South Africa's nuclear weapons capabilities at this time. Nevertheless, he may have been persuaded that undeclared but undenied nuclear weapons would have an important psychological deterrent effect that South Africa could better achieve through testing.

11. If P. W. Botha had decided in favor of a nuclear test, he would have evaluated alternative options for conducting it in terms of their expected effectiveness, risks, and costs. To minimize adverse foreign reactions, he would have had to assess both the chances and the consequences of discovery. While an atmospheric test over unfrequented international waters presumably would have been seen to entail some risk of being found in violation of the Limited Test Ban Treaty, to which South Africa is a party, it also would have offered a relatively quick, safe, and easy way for South African weapons designers to prove a nuclear device without creating unambiguous evidence that South Africa was responsible for a nuclear explosion. In contrast, an atmospheric or underground test in South Africa probably would have entailed higher risks of

[3] See SNIE 6-78, *Likelihood of Attempted Acquisition of Nuclear Weapons or Materials by Foreign Terrorist Groups for Use Against the United States* (especially the section on "Acquisition and Exploitation of Nuclear Weapons"), 12 December 1978.

prior detection and ultimate proof by foreign intelligence because it probably would have required site preparations and left tangible indications of a nuclear explosion. Botha's security advisers might have warned him that, if South Africa were discovered to have violated the LTBT, it might suffer more serious sanctions than if it tested underground. On the other hand, they would have raised the possibility of another international uproar and more serious threats if new underground test preparations were detected, and the likelihood of more serious sanctions if South Africa proceeded to test under such circumstances. Thus, Botha probably would have decided to minimize the risks of prior detection and certain attribution by testing secretly at sea rather than within South Africa.

12. As Defense Minister since 1966, P. W. Botha very likely supported the development of a nuclear weapons program, including military preparations for nuclear testing. As Prime Minister, Botha has retained the Defense portfolio and has continued to keep closer counsel with senior military officers than with other government officials. We have no specific evidence that senior military officers perceive any imminent, or an eventually important, role for nuclear weapons.

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18. In September 1979 some special security measures were put into effect which indicate that certain elements of the South African Navy were exercising or on alert on 22 September. The harbor and naval base at Simonstown were declared, in a public announcement on 23 August, to be off limits for the period 17-23 September. The US defense attache gathered from several reliable sources that harbor defense exercises took place there during this period.[5] Athough such a closure might not be required for a nuclear test at sea, it could have screened sensitive loading or unloading operations as well as ship movements. Also, the Saldanha naval facility, which includes a naval search-and-rescue unit, was suddenly placed on alert for the period 21-23 September. The alert was not publicly announced, no explanation for it was given to naval personnel, and no activity was observed in or around the port. While the Saldanha naval alert appears unusual, we are unable to state with confidence whether such an alert has ever happened before. Furthermore, at the same time, General Malan, Chief of South Africa's Defense Force, was reported to be touring South America, when he might have been expected to be in South Africa or at the test observation point during such an important event.

19. Prime Minister Botha has avoided public comment on the issue since the US disclosure of the Vela indications. However, on 25 September—three days after the nuclear event—he told a provincial congress of the ruling National Party that "South Africa's enemies might find out we have military weapons they do not know about." His enigmatic remark prompted speculation in the South African press that he had undeclared nuclear weapons in mind.

20. On 24 October—before the US disclosures of the technical indications of a test—the Prime Minister, addressing an anniversary dinner attended by past and present members of the AEB as well as members of the local diplomatic corps, reportedly paid tribute to the South African nuclear scientists who had been engaged in secret work of a strategic nature. He reportedly said that, for security reasons, their names could not be mentioned and that they would never gain the recognition in South Africa or abroad that they deserved.[6]

21. ***South African Responses to Nuclear Test Allegations.*** South African official commentary since the United States disclosed the Vela indications of a nuclear event have been consistent with Pretoria's longstanding practice of cloaking its nuclear intentions in ambiguity—intimating a weapons capability without saying anything that would prove a case for tightening international sanctions against South Africa.

22. Only one official has categorically denied South Africa's involvement. On 26 October, immediately following the announcement in Washington of the Vela indications, Jacobus de Villiers, President of South Africa's Atomic Energy Board, told the press, "If there was anything of the sort, my first reaction would be that some other power might have undertaken a test, but it was definitely not South Africa." De Villiers, who had been directly involved in weapons design work at the Pelindaba nuclear research center before his promotion to President of the AEB in July 1979, almost certainly would be witting if South Africa had conducted a test explosion—and prepared to parry press queries if such a test were detected. On 6 November, De Villiers issued a report of periodic atmospheric samplings that had been conducted by the AEB; the report concluded, "It is considered most unlikely that an atmospheric nuclear test has recently been conducted in this region."

23. On 25 October the Commander of the South African Navy made allegations we believe to be false

[5] The US defense attache's report played down the significance of the Simonstown closure, noting that it was a regular practice linked to internal defense.

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that a Soviet nuclear submarine had been in the vicinity of the Cape in late September, implicitly denying that the South African Navy was involved in a nuclear test conducted at sea.

24. Foreign Minister Roelof Botha's public statements have been especially ambiguous. For instance, on 25 October he ridiculed speculation that South Africa had conducted a nuclear explosion, but also declined under questioning to say unequivocally that South Africa had not done so and that it did not intend to acquire nuclear weapons. On 6 November the Foreign Minister, in a discourse on South Africa's foreign policy presented to all the foreign ambassadors in Pretoria, said he was dismayed by allegations in the UN General Assembly that South Africa had violated the Limited Test Ban Treaty, and distributed the AEB report on atmospheric samplings as evidence to the contrary. But he did not take the opportunity to deny that South Africa had a nuclear weapons program.

A Secret Test by Israel

Beyond this, the Israelis might have conceivably foreseen needs for more advanced weapons, such as low-yield nuclear weapons that could be used on the battlefield. Or they might have considered desirable a small tactical nuclear warhead for Israel's short-range Lance surface-to-surface missiles. Israeli strategists might even have been interested in developing the fission trigger for a thermonuclear weapon. If they were to have developed reliable nuclear devices for any of these weapons without access to tested designs, moreover, Israeli nuclear weapons designers would probably have wanted to test prototypes. A low-yield nuclear test conducted clandestinely at sea could have enabled them to make basic measurements of the device's performance.

27. However, Israeli authorities could not have ignored inevitable security risks. The dangers of being discovered would have posed for them serious liabilities, particularly an adverse US reaction, which could damage the special relationship between Tel Aviv and Washington. The Israelis also would have had to take account of possible Soviet reactions, including stepped-up military assistance to Arab states, the likelihood of serious damage to the peace treaty with Egypt, and an erosion of support among traditionally friendly West European states. The Department of Energy believes that for Israel to explode a device off South Africa's shore and allow South Africa to take the blame is not consistent with Israel's policy or attitude toward Pretoria.

28. In short, Israel may well have had requirements to test that have been in conflict with its basic policy of avoiding any overt demonstration of a nuclear capability. We believe this policy has been very important to Israel, and we doubt that its incentives to test would have been sufficient to overcome its disincentives as long as the leadership perceived any substantial probability of unambiguous attribution to Israel. However, this consideration would not have ruled out the possibility of a clandestine test conducted in a remote ocean area. Indeed, of all the countries which might have been responsible for the 22 September event, Israel would probably have been the only one for which a clandestine approach would have been virtually its only option.

A Secret Test by South Africa and Israel

29. If the South Africans had considered testing Israeli designs in exchange for Israeli technical assistance, the benefits of cooperation would have been carefully weighed by both parties against the security risks inherent in such joint operations. On the one hand, the Israelis would have calculated that South Africa, as a pariah state in need of reliable friends, would have had every reason to preserve security and to remain silent in the face of inevitable speculation about its complicity with Tel Aviv. The Israelis also could have counted as a high probability that responsibility for any nuclear test in the area under investigation would be attributed to South Africa. On the other hand, unless the Israelis had offered advanced weapons technology, South African weapons developers would probably have preferred to test their own design before incurring security risks in testing a foreign design. The Defense Intelligence Agency believes that South Africa would probably have had enough confidence in Israeli security to consider conducting a joint test.

30. Israelis have not only participated in certain South African nuclear research activities over the last few years, but they have also offered and transferred various sorts of advanced nonnuclear weapons technology to South Africa. So clandestine arrangements between South Africa and Israel for joint testing operations might have been negotiable.

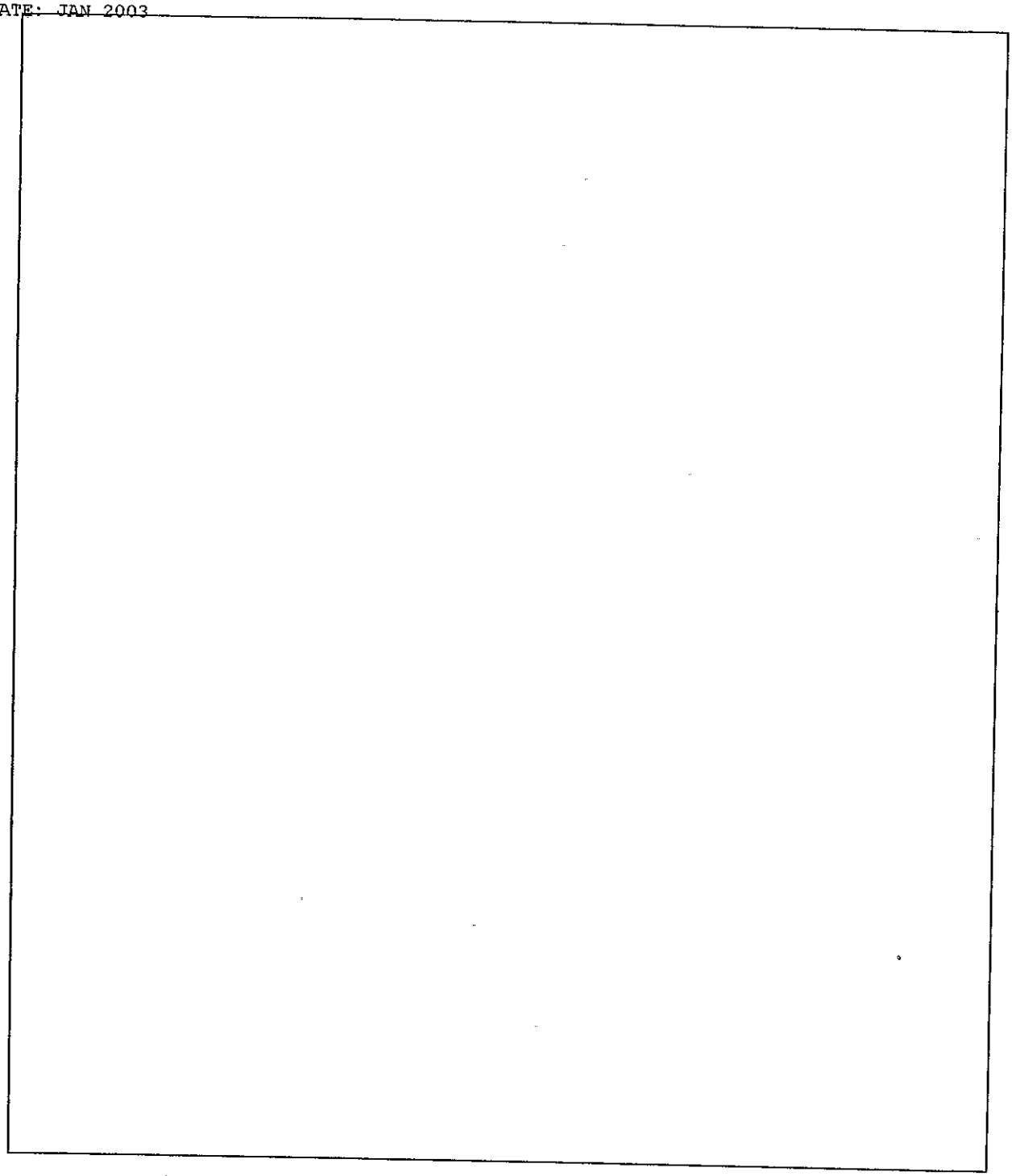
38. The purposes in conducting a test at sea under cover of clouds and darkness would have been to maximize pretest security and to reduce the presumed risks of detection, attribution, and sanctions by foreign powers.

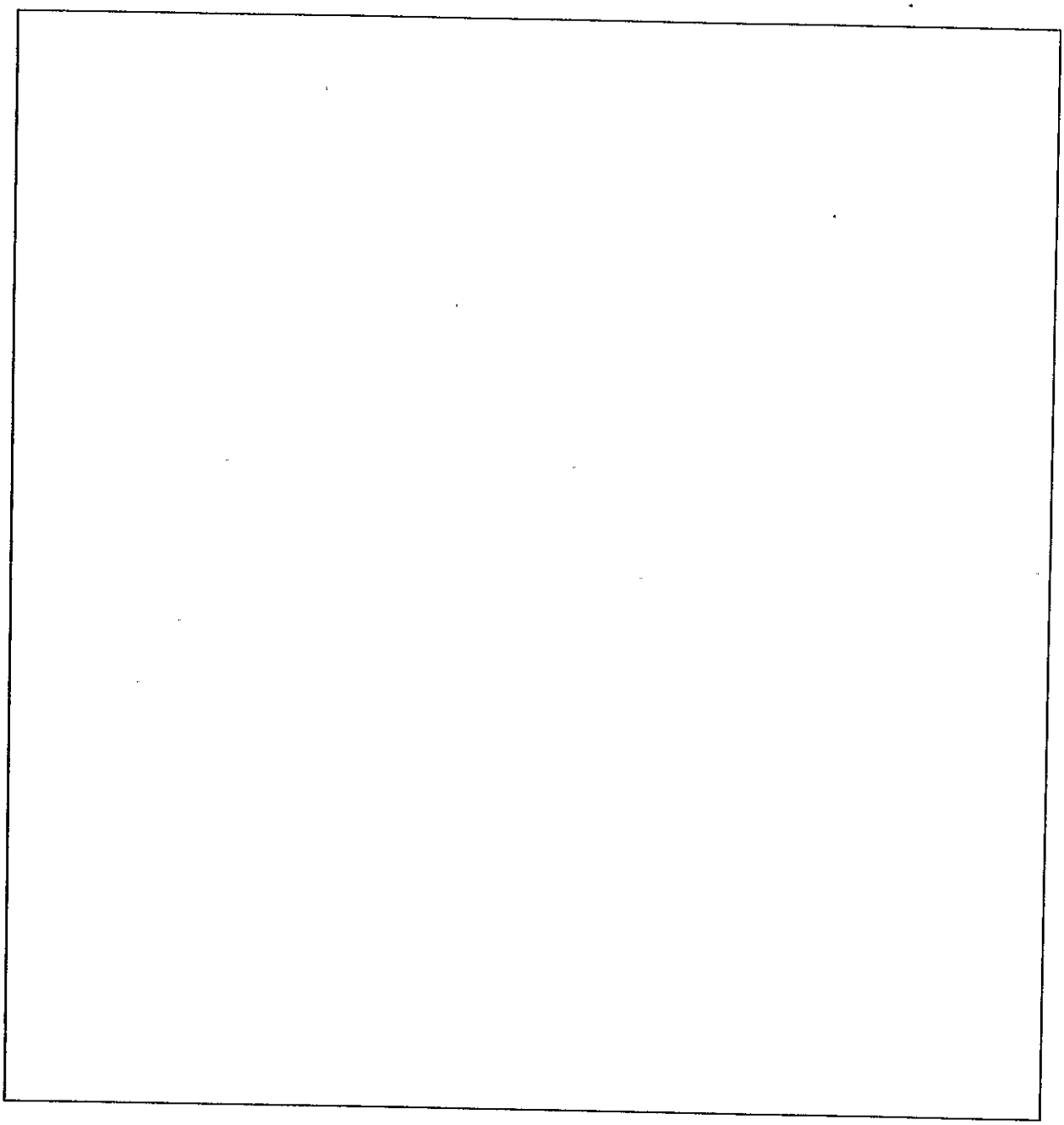
39. The Bureau of Intelligence and Research, Department of State, believes that, while South Africa is in all probability embarked on a nuclear weapons program, has by this time acquired sufficient fissile material for the fabrication of several nuclear devices, and may be willing to take the risks of testing eventually, there are sufficient political motivations to deter the Botha government from undue provocation of international criticism at this time. The arguments which the United States and other Western powers advanced to deter South Africa from proceeding with construction operations at the Kalahari site are still valid: unless South Africa is willing to relinquish a clandestine as well as overt nuclear weapons option, its access to Western technology and uranium enrichment services might be terminated.

40. State/INR differs particularly with the premise that Prime Minister Botha's government has been more ready than its predecessors to develop nuclear weapons. It points out that all South African governments have sought this option, but that until recently South Africa lacked the relevant technology and fissile material. Even now, the political constraints would outweigh technical incentives in South Africa's calculations, and therefore it is unlikely that South Africa elected to test a nuclear device. The ambiguity that surrounds South Africa's nuclear situation has provided it with substantially the same benefits— without the opprobrium—as if it had in fact tested. Elusiveness serves South Africa best at this juncture, and is in line with its previous behavior—neither to confirm nor to deny allegations about its nuclear-weapons-related activities.

41. In sum, State/INR finds the arguments that South Africa conducted a nuclear test on 22 September inconclusive, even though, if a nuclear explosion occurred on that date, South Africa is the most likely candidate for responsibility.

42. The Defense Intelligence Agency believes that the available evidence is insufficient to estimate how top South African officials have balanced the incentives and disincentives regarding a nuclear test.





EXCISED COPY FOLLOWS

Director of Central Intelligence

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The 22 September 1979 Event

Interagency Intelligence Memorandum

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December 1979

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FOREWORD

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This memorandum was prepared under the auspices of the National Intelligence Officer for Nuclear Proliferation in response to a National Security Council request. It was coordinated at the working level with NFIB representatives in the Interagency Intelligence Working Group on Nuclear Proliferation. [redacted]

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1. As requested by the National Security Council, this assessment is based on the assumption that the event detected over a portion of the southern hemisphere (see map on page 12) by optical sensors on a Vela satellite at about 0100 GMT on 22 September 1979 was a nuclear explosion. Given the assumption that a nuclear explosion occurred, the purpose of this paper is to estimate what countries may have been responsible for, or involved in, the event.[redacted]

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A Secret Test by South Africa

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A Secret Test by Israel

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