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5th May, 1977

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NOTICE

NPG/N(77)2

NUCLEAR PLANNING GROUP

DUAL-CAPABLE AIRCRAFT STUDY

Transmittal note by the Secretary

In March 1977, limited advance distribution of the SHAPE Dual-Capable Aircraft (DCA) Study which included, as an integral part, a letter of promulgation by SACEUR, was distributed to COSMIC TOP SECRET Registries in NATO Headquarters.

2. Attached are two papers related to the above-mentioned document:

(a) a cover note, dated 5th May, 1977, by the Secretary NPG, designating the SHAPE Dual-Capable Aircraft Study as NPG/Study/49;

(b) CMCM-17-77, dated 28th April, 1977 which provides Military Committee comments on the Study.

3. These two papers should be attached permanently on top of the Dual-Capable Aircraft Study. Additional complete sets of the study will be distributed in the near future, to make up to the normal NPG Study distribution. The three documents(1) will, from this time forward, be referred to as NPG/Study/49.

4. Recipients are requested to return to the International Staff COSMIC Registry all unneeded copies of this Study. These documents should not be destroyed until after the NPG Ministerial meeting in June.

5. This transmittal note should be separated from its attachments when they are joined with the basic study.

NATO,
1110 Brussels.

(Signed) E.G. LUFF

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(1) - The cover note by the Secretary, NPG/Study/49, 5th May, 1977
- CMCM-17-77, 28th April, 1977, (CTS)
- SACEUR's DCA Study - SHAPE 040/77, 7th March, 1977, CTS

This note consists of: A transmittal letter of 1 page, plus
- Note by the Secretary NPG of 1 page
- CMCM-17-77 of 2 pages

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ORIGINAL: ENGLISH
5th May, 1977

STUDY
NPG/Study/49

NUCLEAR PLANNING GROUP

DUAL-CAPABLE AIRCRAFT STUDY

Note by the Secretary

At their June 1976 meeting, NPG Ministers invited(1) the NATO Military Authorities (NMAs) to prepare a study, in accordance with Terms of Reference (TOR) to be established by the Permanent Representatives, of the rôle and numbers of dual-capable aircraft (DCA) required in the light of the additional POSEIDON warheads allocated to the ACE Scheduled Strike Programme (SSP). The TOR(2) were circulated on 14th September, 1976 and SACEUR was tasked to do the study.

2. The study was finished in response to the above-mentioned TOR and circulated on 22nd March, 1977, under reference SHAPE/040/77 (CTS), 7th March, 1977. This Study includes a letter of promulgation by SACEUR.

3. On 28th April, 1977, the Chairman, Military Committee, circulated related comments by Military Representatives of NPG nations under cover of CMCM-17-77 (CTS).

4. The two documents together with this cover note constitute NPC/Study/49 for consideration at the Ottawa NPG Ministerial meeting in June 1977.

NATO,
1110 Brussels.

(Signed) E.G. LUFF

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(1) NPG/D(76)7, 15th June, 1976, paragraph 10
(2) NPG/D(76)8, 15th July, 1976, Annex B, circulated as an Addendum on 14th September, 1976

This Study consists of:
- cover note of 1 page
- CMCM-17-77 of 4 pages (CTS)
- SHAPE/040/77 (CTS) of 108 pages

This cover note may be downgraded to ~~NATO RESTRICTED~~ PUBLIC DISCLOSURE when separated from attachments.

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CMCM- 17 -77

1988

28 April 1977

1989

MEMORANDUM FOR THE SECRETARY GENERAL, NORTH ATLANTIC TREATY ORGANISATION

1990

SUBJECT : Dual-Capable Aircraft Study

2005 1995

References : a. NPG/D(76)7, 15 Jun 76
b. NPG/D(76)8, 15 Jul 76
c. SHAPE/040/77, 7 Mar 77

1. (NS) Reference a. invited the NMAs to conduct a study of the role and numbers of dual-capable aircraft (DCA) required in the light of the additional POSEIDON warheads allocated to the ACE SSP. Subsequent to the establishment of Terms of Reference by NPG Permanent Representatives (reference b, Annex B), the Military Representatives of NPG Nations tasked SACEUR to do the Study which was distributed on 22 March (reference c).

Scope of the Study

2. (NS) Study Objectives. The main objectives of the DCA Study are :

a. To determine the number of aircraft scheduled for targets in SACEUR's 1978 SSP (ACE Strike File 1978 (ASF-78), in the light of the additional commitment of POSEIDON RVs.

b. To determine the number of aircraft required for Peacetime Quick Reaction Alert (QRA).

c. To assess the degree to which substitution of missiles for aircraft in the SSP is possible.

d. To determine the number of aircraft that might support more limited operations and selective release of nuclear weapons.

3. (NS) Analytical Limitations. The multi-role capability and the infinite number of possible war scenarios compared to the time available

for completing the study placed analytical limitations on the authors. Thus, as is stated in the Introduction, no definitive numerical answer could be given to the unqualified question - "What is the required number of DCA ?" as any such attempt would not be valid under all circumstances. Therefore the Study concentrated on two main objectives :

a. To examine the numbers and role of DCA in general nuclear response plans (SACEUR's SSP), together with the associated question of peacetime QRA and the possibilities for missile substitution in the SSP.

b. To assess the degree of reliance being placed on DCA to support conventional and selective release operations, and to examine the interplay between the multi-role commitment of DCA and the ability of ACE to execute its part in NATO's general nuclear response or to undertake limited nuclear and conventional operations.

Views of Military Representatives of NPG Nations

4. (NS) The Military Representatives of NPG Nations note such limitations and others mentioned in the Study, acknowledging the constraints of time, resources and data available to SHAPE, and consider that the Study is a clear and authoritative statement of the requirements for, and the role of DCA and that it will provide a valuable contribution to the wider Alliance consideration of improving NATO's Theatre Nuclear Forces (TNF).

5. (CTS) The Military Representatives of NPG Nations take note of SACEUR's comments in his forwarding letter and would wish to endorse the following points :

a. That the combination of effectiveness and flexibility provided by DCA, together with their utility in each of the conventional, tactical nuclear and strategic elements of the Triad, make the weapons-systems unique and indispensable to NATO's TNF.

b. That DCA make an essential contribution to, first, the otherwise inadequate conventional offensive air capability in theatre; secondly, the execution of many of ACE's critical selective nuclear attack options, particularly on the flanks and against deeper ACE-wide targets; thirdly, the shared Allied responsibility for execution of SACEUR's SSP. The Military Representatives of NPG Nations note that DCA represent the principal means by which Allied nations participate in the SSP, thus in the context of risk-sharing, DCA became even more important to the Alliance as a whole.

c. That DCA constitute a vital ingredient in deterrence and in displaying Alliance solidarity and resolution.

d. While the POSEIDON RVs tasked for QRA have contributed to a reduction in DCA committed to QRA from 83 to 66, this is probably the minimum level prudent for deterrence, adequate to ensure broad-based Alliance participation in nuclear readiness and capable of immediate response against the highest threat targets.

e. That coordination of the SSP and US SIOP be improved to achieve higher effectiveness of the combined assets. It is to be noted that SACEUR intends to pursue this matter with US Authorities.

f. That DCA possess the requisite flexibility and responsiveness to engage many lucrative targets for Selective Release (SELREL) strikes, namely, the enemy second echelon and supporting forces.

6. (CTS) The Military Representatives of NPG Nations note the relationship between the improved coverage of the SSP given by the additional POSEIDON RVs and ACE Damage Expectancy (DE) goals.

7. (NS) They have studied with great interest the results of the 21 day wargame simulation analysis (DCA in conventional operations, paragraphs 21-26 and Annex G) and especially the attrition/loss-rate

figures of own and enemy aircraft. They believe such analyses and statistics aid greatly the management of deterrent and war-fighting assets. It should be remembered when using such statistics that the study does not examine loss-rates in other systems and that DCA should not be highlighted without wider analyses. A point of note is that DCA represent the only nuclear strike system for which provision is made for some replacement of losses.

8. (NS) They view with concern the situation on the flanks of ACE, where the shortage of ground organic systems will, in some phases of possible war scenarios, place the main burden on DCA. It is in these vulnerable areas where DCA assets are fewest.

9. (NS) Finally, the Military Representatives of NPG Nations endorse SACEUR's view that current DCA assets in the ACE area are indispensable, being not only flexible, effective, wide-ranging and quick to react, but unique in their utility for all phases of deterrence and war-fighting. They also believe that early reinforcement of in-theatre DCA and conventional aircraft assets is essential if NATO is to cope with the almost certain onslaught of Warsaw Pact air attacks at the beginning of hostilities.

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H.F. ZEINER GUNDERSEN
General, NOAR
Chairman
Military Committee

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SUPREME HEADQUARTERS ALLIED POWERS EUROPE

SHAPE/040/77

7 MARCH 1977

SACEUR'S DUAL-CAPABLE AIRCRAFT STUDY

(NU)

CTS CONTROL NUMBER
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SUPREME HEADQUARTERS ALLIED POWERS EUROPE CY No 048

GRAND QUARTIER GENERAL DES PUISSANCES ALLIEES EN EUROPE

BELGIUM

SHAPE/040/77 (7 Mar 77) 1988 16 MAR 1977

SUBJECT: SACEUR's Dual-Capable Aircraft Study

TO: Chairman, Military Committee
North Atlantic Treaty Organization
Autoroute Brussels - Zaventem
B-1110 Brussels

1978

REFERENCES: a. NAMILCOM Msg 201900Z Jul 76, In-Place Dual-Capable Aircraft Study (NS)
b. Annex to NPG/D (76)8, Terms of Reference for the NPG Dual-Capable Aircraft Study, 15 Jul 76 (NS)

1. (NU) As requested by reference a, I am forwarding herewith the SHAPE study on Dual-Capable Aircraft (DCA). The study was conducted in accordance with the guidance contained in reference b.

2. (NS) The study clearly demonstrates the indispensable functions performed by DCA across the spectrum of ACE defense tasks. As a unique system with utility in each of the conventional, tactical nuclear, and strategic elements of the Triad, DCA combine effectiveness with flexibility in a way which no other component of the theater nuclear force posture can:

- They make an essential contribution to what would otherwise be a wholly inadequate conventional offensive air capability in-theater, effectively constituting half of ACE's available ground attack aircraft.

- They are essential to the execution of many of ACE's critical selective nuclear attack options, particularly on the flanks of ACE and against deeper targets in all areas.

- They constitute a major element of the shared Alliance responsibility for execution of SACEUR's Scheduled Strike Programs (SSP).

These capabilities depend upon the immediate availability of DCA in the forward area, supported by modern nuclear weapons deployed in-theater, and backed up by planned reinforcements.

3. (NS) The wisdom of continued reliance on tactical aircraft for a significant portion of ACE's nuclear delivery capability turns critically on three issues addressed in the study: first, the capacity of alternative systems to accomplish the nuclear delivery tasks currently assigned to DCA; second, the impact of such tasks on the availability of tactical aircraft for conventional air operations; and finally, the survivability of both the aircraft and their associated weapons in potential conflict scenarios.

THIS DOCUMENT CONSISTS OF 108 PAGES

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SHAPE/040/77 (7 Mar 77)

4. (CTS) Substitution of Alternative Systems for DCA. The study examines two broad categories of DCA mission requirements:

a. General Nuclear Response Requirements. In support of NATO's General Nuclear Response, DCA constitute a vital ingredient in deterrence and in displaying Alliance solidarity and resolution. However, in a purely military context, their full utilization in the SSP is not an overriding factor in the successful execution of General Nuclear Response. SACEUR's SSP and the US SIOP are targeted in the same geographical area, and are coordinated to insure against mutual interference. Except for the small number of Priority Strike Program (PSP) targets that are assigned solely to DCA assets, ACE DCA targeted against the PSP primarily increase damage expectancy against these targets. On the other hand, in the case of the Tactical Strike Program (TSP), which supports Major Subordinate Commanders, targets are covered primarily by DCA weapons.

The assignment to ACE of additional Poseidon RVs and additional aircraft such as the F-111 has significantly reduced but not completely eliminated the shortfall in meeting ACE targeting objectives. ACE systems in coordination with the SIOP still cannot fully achieve the required damage expectancy goals against all priority targets. While the Poseidon RVs tasked for Quick Reaction Alert (QRA) have contributed to a reduction in DCA committed to QRA from 83 to 66, this is probably the minimum level prudent for deterrence, adequate to insure broad-based Alliance participation in nuclear readiness, and capable of immediate response against the highest threat targets.

Better integration of the SSP and the US SIOP would enhance the use of available weapons and systems, and might make possible the use of more Poseidon RVs in the SSP. The result would be greater flexibility to employ DCA in conventional and selective nuclear release missions. Such integration would require an earlier and more effective apportionment of tasks during each annual planning cycle. I intend to pursue this matter with US national authorities.

b. Selective Nuclear Release (SELREL) Requirements. While DCA continue to play an important role in meeting SSP commitments, their most valuable contribution is to enhance the credibility of ACE's threat to escalate deliberately a conflict in which direct defense has failed to convince an adversary to cease his aggression and withdraw. Such a threat requires the demonstrable capacity to employ nuclear weapons in a way which produces a tactical advantage and denies the Warsaw Pact an equally damaging response unless it is willing to risk a significant further escalation of the conflict. At the same time, the selective use of nuclear weapons must not be so confined that it risks interpretation as a sign of weakness rather than resolve. On the contrary, while conveying NATO's desire to limit mutual damage, it must also signal the Alliance's determination to escalate as far as necessary to induce the adversary to terminate his aggression.

Selective use of nuclear weapons thus constitutes the hinge on which Flexible Response turns. In that regard, evolving Warsaw Pact conventional and theater nuclear capabilities emphasize that battlefield weapon systems, while needed, cannot alone satisfy the selective use objectives just described. From both a deterrent and a warfighting perspective, the most lucrative targets for selective nuclear attack appear to be provided by those second echelon and supporting forces which -- because they can be committed in advance of any comparable Western formation -- both underwrite the momentum of an initial Warsaw Pact attack and pose the greatest risk of its success.

Such targets could be attacked by PERSHING and SLBM systems. But both the nature of the targets themselves and the technical characteristics and relative targeting inflexibility of these systems combine to limit their utility in such a role. Only tactical aircraft (and perhaps ultimately cruise missiles) possess the requisite flexibility and responsiveness to engage such targets.

5. (NS) Impact on Conventional Air Operations. The study demonstrates that careful management of SSP Force Generation Levels (FGLs) can minimize the withholding of DCA from the conventional air battle without jeopardizing nuclear contingency requirements. At the minimum FGL, no more than 7 percent of DCA assets would be unavailable for commitment to conventional operations, while even full generation, in a situation of imminent general nuclear war, would require withholding only 30 percent of ACE's in-place conventional offensive air capability. Within these broad constraints, conventional/nuclear trade-off decisions would depend both on DCA attrition and replacement rates.

The study makes clear, however, that early reinforcement of in-theater DCA and conventional aircraft assets is essential for coping with the almost certain onslaught of Warsaw Pact air attacks at the beginning of hostilities. This would allow adequate apportionment of aircraft to the various conventional roles, result in maximum attrition of Warsaw Pact aircraft early in the war and enhance retention of our capability to execute selective release options or the full SSP.

6. (NS) DCA Survivability. The question remains whether DCA are sufficiently survivable to permit confidence in their ability to execute SSP/SELREL commitments. "Survivability" in this regard comprises vulnerability both to conventional attrition and to preemptive nuclear attack. As to the first, the study points out that DCA commitments to ACE-wide SSP requirements are relatively low and can therefore withstand relatively high losses. Indeed, DCA assets can be degraded up to 42 percent without penalty to their ability to execute SSP missions. The study notes, however, a significant variation by region, with SSP commitments in the Southern Region most immediately affected by DCA attrition.

SHAPE/040/77 (7 Mar 77)

The impact of attrition on DCA SELREL capabilities is more difficult to estimate, since it would depend on the level of SELREL chosen for execution. Again, however, FGLs provide a significant degree of management flexibility to evaluate trade-off decisions on conventional and SELREL requirements. On the other hand, the use of an SLBM in SELREL might risk disclosure of the SSBN position and thus jeopardize the survivability of the SSBN and its remaining missile systems.

Finally, it is clear that there is no simple utility/survivability trade-off between DCA and sea-based SLBM systems. While the expectation of DCA attrition is high, their nuclear capability could nonetheless be preserved because of their large initial numbers, their anticipated reinforcement rate, and potentially modest attrition rates. In contrast, while the probability of SSBN loss to conventional ASW is low, the impact of such a loss on SSP requirements could be extremely high.

As to survivability against nuclear preemption, clearly DCA are inherently more vulnerable than sea-based SLBM systems. This fact leads to frequent assertions that by providing a preemptive opportunity, DCA automatically provide a preemptive inducement. Such a view, in my judgment, treats far too lightly the difficulty of a Soviet preemptive decision. The very magnitude of a preemptive attack, and the escalatory risks associated with it, constitute a major deterrent to preemption. Accordingly, to the extent that neutralization of DCA is viewed by Soviet planners as essential to successful conventional attack, DCA serve to emphasize the escalatory risks associated with such an attack. Finally, Soviet planning is further complicated by the fact that to assure preemptive neutralization of DCA, the Soviets would almost certainly be impelled to take preparatory measures which would themselves provide NATO additional warning and reaction time.

7. (NS) In sum, notwithstanding certain analytical limitations fully described in the introduction, the study clearly demonstrates that current DCA assets in the ACE area are indispensable to the credible performance of ACE's deterrent and warfighting tasks. As in the case of other weapon systems, continuing improvements are needed, particularly in such areas as target acquisition, penetration capability and weapon effectiveness. However, DCA cannot be viewed in isolation, but must rather be considered as part of a broader concern for ACE offensive capabilities. Modernization of the full ACE TNF arsenal, incorporating new weapons technology, urgently needs to be assessed in the context of the emerging and highly disturbing trends in the Soviet TNF posture.

8. (NU) Reproduction of this document is not authorized without approval from the originator.

ALEXANDER M. HAIG, JR.
General, United States Army
Supreme Allied Commander

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See Page v

SHAPE/040/77 7 March 1977

SACEUR'S DUAL-CAPABLE AIRCRAFT STUDY (NU)

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SHAPE/040/77 7 March 1977

SACEUR'S DUAL-CAPABLE AIRCRAFT STUDY (DCAS)

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SUPREME HEADQUARTERS ALLIED POWERS EUROPE

7010 SHAPE, BELGIUM

SHAPE/040/77 7 March 1977

SACEUR'S DUAL-CAPABLE AIRCRAFT STUDY (DCAS)

INTRODUCTION

Background

1. (NS) At the 18th meeting of Nuclear Planning Group (NPG) Ministers, in January 1976, the United States Secretary of Defense introduced a paper titled "Improving the Effectiveness of NATO's Theater Nuclear Forces." Included in this paper was a discussion of the potential benefits of assigning additional POSEIDON re-entry vehicles (RVs) for targeting within SACEUR's Scheduled Strike Programs (SSP), anticipating that this action would allow some aircraft with missions in the SSP to be utilized in a more flexible manner for conventional and selective release operations. In addition, the introduction of more survivable systems to execute the SSP was viewed as strengthening deterrence. In response to a request from the NATO Military Committee (NAMILCOM), SHAPE provided an initial military assessment of the US paper, welcomed the POSEIDON offer from the US, and stated that the degree of additional flexibility and improved effectiveness which would accrue from the additional commitment could only be determined by detailed study.

2. (NS) Shortly before the Spring 1976 NPG meeting the US formally offered to provide SACEUR an additional 250 POSEIDON RVs for target assignment in the SSP. The offer was accepted, bringing the total number of SACEUR-assigned POSEIDON RVs to 400 with an effective assignment date of 1 November 1976. At the Spring meeting, NPG Ministers requested that NATO Military Authorities (NMAs) conduct a study to determine the role and numbers of Dual-Capable Aircraft (DCA) required in light of the additional POSEIDON warheads allocated to the ACE SSP. Based on this request the NPG Permanent Representatives established Terms of Reference (TOR) for the study, which are attached as Annex A.

Scope of Study

3. (NS) Study Objectives. In response to the TOR, the main objectives of the DCA Study are:

a. To determine the number of aircraft scheduled for targets in SACEUR's 1978 SSP (ACE Strike File 1978 (ASF-78)), in light of the additional commitment of POSEIDON RVs.

b. To determine the number of aircraft required for Peacetime Quick Reaction Alert (QRA).

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c. To assess the degree to which substitution of missiles for aircraft in the SSP is possible.

d. To determine the number of aircraft that might support more limited operations and selective release of nuclear weapons.

4. (NS) In attempting to meet the study objectives it was quickly apparent that no definitive numerical answer could be given to the unqualified question - "What is the required number of dual-capable aircraft?" Given the multi-role capability of DCA and the infinite number of possible war scenarios which could involve them, no study would be capable of determining a "required" number of DCA which would be valid under all circumstances. Therefore, the study has concentrated on two main objectives. Firstly to examine the numbers and role of DCA in general nuclear response plans (SACEUR's SSP), together with the associated questions of Peacetime QRA and the possibilities for missile substitution in the SSP. The second objective was to assess the degree of reliance being placed on DCA to support conventional and selective release operations, and to examine the interplay between the multi-role commitment of DCA and the ability of ACE to execute its part in NATO's general nuclear response or to undertake limited nuclear and conventional operations.

5. (NS) Study Approach. The approach taken in the various sections of the study was as follows:

a. SACEUR's SSP. The number of aircraft scheduled in SACEUR's SSP was derived from actual operational planning data being used to develop the Single Integrated Operational Plan (SIOP) 5B and ASF-78 plan. This coordinated plan, to be effective 1 October 1977, coordinates the application of US strategic and ACE nuclear strike forces in general nuclear response, and includes the additional 250 SACEUR-designated POSEIDON RVs, which were targetted in the Non-Soviet Warsaw Pact (NSWP) countries. To show the effect of targetting these additional POSEIDON, the plan is compared with the ASF-76 plan which did not include them. While POSEIDON are included in ASF-77, the timing of the US offer in relation to the planning cycle for that plan year did not allow a laydown considered valid for comparison purposes. It should be noted that the full 1978 SIOP 5B data are not yet available from the US and SSP tasking is subject to change as both programs become fully developed and coordinated. Data used in this study represent that available as of March 1977 and much of the SIOP data used are based on the 1977 SIOP 5A.

b. QRA Requirements. The number of aircraft required for QRA pre- and post-POSEIDON increase is shown by comparison of the ASF-76 and ASF-78 cases.

c. Missile/Aircraft Substitution. Full analysis of the scope for substitution of missiles for aircraft in the SSP was not possible within

the resources and time limitations of the study effort. However, it was possible to identify the main factors affecting the feasibility and advisability of substitution, and to draw broad conclusions about these aspects.

d. DCA Support for Limited Operations and Selective Release. This section of the study was not amenable to such precise analysis as was possible in the more well-defined case of the SSP, outlined above. To provide a basis for some quantitative assessment of DCA requirements outside the general release context, the conventional and selective nuclear roles of DCA were considered as follows:

(1) Conventional Role. An assumption was made that DCA would be fully utilized in the conventional role except where required to meet nuclear QRA commitments. Based on a limited Central Region scenario of an air battle between NATO and WP air forces, a SHAPE Technical Center (STC) computer simulation of a conventional air war was performed in order to derive DCA operational and attrition data for various lengths of conventional warfare, up to a 21-day battle. This time period was arbitrarily selected for illustration purposes and does not represent any judgment regarding the probable length of a conventional battle. Since attrition factors are notoriously difficult to estimate with confidence, a range of possible attrition values is presented and planned reinforcements for in-place aircraft are also taken into account. The effect of possible attrition is then considered in relation to the TNF capability to support selective or general response tasks in order to examine the interplay between these conventional and nuclear roles.

(2) Selective Release Role. No criteria are available on which to base an assessment of the likely scale, scope or duration of selective release (Selrel) operations. Moreover any attempt to quantify DCA requirements for Selrel would have to consider the possible WP response to NATO's use of nuclear weapons and its impact on the total warfighting capability of NATO forces, including DCA. Since such a line of analysis would be highly conjectural, and therefore unprofitable, it was decided to restrict this section of the study to an examination of the role of DCA in Selrel as compared to the roles of other systems, thereby allowing an assessment to be made as to the degree of reliance being placed on DCA to provide nuclear options.

WARSAW PACT THREAT

6. (NS) The Intelligence assessment of the Warsaw Pact (WP) threat to ACE projected to 1980 is at Annex B. From the viewpoint of DCA employment, the potential targets representing this threat range from high priority, fixed, nuclear threat targets facing ACE to mobile land battle or maritime targets. Because of their multi-role capability, DCA could be employed against this wide spectrum of targets in conventional, selective nuclear release or general nuclear response operations depending on the circumstances.

7. (NS) The fixed targets scheduled for strike by DCA in the SSP are mainly located in Non-Soviet Warsaw Pact (NSWP) countries. The distribution

of targets and the employment of DCA in the SSP are fully discussed in Annexes D and E. The threat represented by deployed enemy forces enlarges the target spectrum considerably when DCA roles in conventional and selective release operations are considered. Given the options open to the WP ACE-wide, the WP advantage of the initiative, and the enemy forces available as portrayed in Annex B, it is evident that the threats against which DCA would have a major role to play would include:

a. The enemy air order of battle: Long Range and Frontal Aviation pose a major threat both to rear area installations and to the mobility and effectiveness of NATO forces. Early neutralisation of this threat by attacks on enemy airfields would be a high priority task.

b. A major assault by enemy land forces: The reaction capability of air power could be vital in the early stages of a major WP assault in any Region for direct support of land forces, in interdiction of enemy lines of communication, and against the deployment of 2nd echelon forces and their support.

c. The deployment of air-transportable WP land forces and naval/ amphibious forces, particularly on the flanks of ACE.

THEATER NUCLEAR FORCES (TNF)

8. (NS) Within the NATO Triad of forces, Theater Nuclear Forces (TNF) provide a capability for contributing to both general nuclear response and for the employment of nuclear weapons in selective release. As an element of TNF, DCA contribute to ACE capability in both these roles and, in addition, can undertake conventional operations in the ground attack role.

9. (NS) Nuclear strike systems and land force nuclear ground organic systems constitute the two main categories of TNF. Only the strike systems (POLARIS, POSEIDON, PERSHING, VULCAN and DCA) participate in the SSP. Together with ground organic systems they also provide a range of options for selective release of nuclear weapons. The characteristics and distribution of TNF (excluding purely defensive systems which are not considered in this study) are shown at Annex C.

10. (NS) Nuclear Strike Force Concept. In considering the roles of DCA, note must be taken of the guidance(1) for planning the use of ACE strike forces which requires, inter alia, that:

a. Force Generation Levels, including Peacetime QRA, be established, to include broad-based Alliance participation.

b. If necessary, all DCA should be available for conventional operations.

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(1) DPC/D(70)/59(Revised), Concept for the Role of Theater Nuclear Strike Forces in ACE, 21 Dec 72 (CTS).

c. Attrition of ACE strike forces in conventional operations to the point where NATO could not carry out deliberate escalation to selective release or general nuclear response should not be allowed to occur.

d. Over-commitment of strike forces to the general response role should be avoided since it might critically reduce the weight of effort that could be brought to bear in a conventional or tactical nuclear phase of a conflict.

e. Commitment of ACE strike forces for general nuclear release at R-Hour should only be considered in conjunction with US SIOP execution; the ACE strike forces still operational at the time would participate with external strategic forces.

11. (NS) DCA are the only SSP nuclear strike system with a conventional capability. They are also unique amongst TNF in being the only system capable of playing a role in conventional war, limited nuclear operations and the SSP. Against this background the following sections of the study examine the DCA contribution to each of these roles and the interplay between them.

DISCUSSION

Force Generation Levels (FGL) and Peacetime QRA

12. (CTS) FGL. For a complete understanding of how commitment of DCA to the SSP affects their availability for other tasks, Annex D explains the concept of FGL. This discussion shows that:

a. DCA represent the principal and except for POLARIS, PERSHING and VULCAN the only means by which Allied nations participate in the SSP.

b. Commitment of DCA to the SSP does not, by itself, affect their availability for other tasks:

(1) They are readily available for short-notice Selrel operations when at nuclear alert status; more can be made available, if necessary, by reconfiguration from the conventional to the nuclear role with some additional time penalty.

(2) Their availability for conventional operations depends essentially on how the FGL system is used. It is sufficiently flexible to allow changes to be made in the numbers of nuclear systems on alert either ACE-wide, by individual region, sub-region or unit, or by type of system. DCA on Peacetime QRA represent only about 3 percent of the total ACE in-place conventional ground attack capability (66 out of about 1900 DCA and FBA (conventional Fighter-Bomber Aircraft)).

13. (NS) As the FGL system is flexible enough to allow precise control of the numbers of nuclear systems on alert by type and location, decisions can be reached on DCA commitment to the nuclear role in the light of prevailing conditions and anticipated requirements. These decisions could

also be taken with respect to the effect of possible trade-offs between conventional war-fighting capability and SSP coverage.

14. (CTS) Peacetime QRA (FGL(Q)). Overtasking of DCA for Peacetime QRA would cause undue reliance to be placed on an inadequate number of conventional ground attack aircraft (see Annex G) to meet conventional war contingencies and would create difficulties in providing enough opportunities for aircrew training in the dual role. Undertasking of DCA limits the opportunities for Allied participation, degrades the deterrent posture and reduces NATO's flexibility whilst simplifying the WP's military problems of targetting high priority strike systems. A simplistic view of NATO's QRA posture based solely on survivability considerations in general nuclear war would fail to take account of other possible scenarios in which the availability of the options provided by nuclear alert aircraft in ACE could be decisive, particularly in the escalation context (see Annex F). Therefore a judicious mix of systems at FGL(Q) is necessary.

15. (CTS) In ASF-78 there are 66 DCA required at FGL(Q), a reduction of 17 as compared to ASF-76. Annex D contains details of the various systems involved at each generation level in both plan years. The requirement is derived from a consideration of the factors discussed above, the introduction of a more equitable tasking formula based on Unit Establishment (UE), and differences in force availability over the two plan years. The planned ASF-78 commitment of DCA probably represents the minimum that can or should be required, considering the national resources available in the different regions of ACE.

DCA Commitment to the SSP

16. (CTS) Contribution of DCA to the SSP.

a. As shown in Annex D (Table D-1), 660 strikes are scheduled for execution by DCA at Maximum Posture (FGL(MP)) in 1978, representing about half of total SSP strikes. However, to take account of the need for flexibility in the employment of DCA, their commitment at each FGL is minimized to the extent possible. Thus, they cover one-fifth of the planned strikes at FGL(Q) and one-third at Advanced Readiness (FGL(AR)). The number of DCA involved at each of these FGLs represent about 7 percent of ACE-wide DCA assets at FGL(Q), 26 percent at FGL(AR) and 58 percent at FGL(MP). These proportions are not reflected evenly throughout ACE because the assets available vary by Region and within Regions, and target distribution is not uniform. For example, as indicated in Appendix E-5, Southern Region land-based DCA are tasked to a level of 74 percent at FGL(MP) compared with 54 percent for the Central Region, though to some extent this tasking represents contingency planning to cover the particular problems affecting the Southern Region. Forty out of 72 sea-based DCA in the South are also tasked, but none of these are committed before FGL(MP) in order to allow the fullest flexibility in carrier operations.

b. Expressed in terms of the contribution which these DCA strikes make to the achievement of SSP objectives:

(1) In the Priority Strike Program (PSP), 42 out of a total of about 500 targets are covered by DCA alone at FGL(AR). The remainder are covered by a mix of missiles, strike-only aircraft and DCA, with DCA contributing to the achievement of the Damage-Expectancy (DE) against a large percentage of these targets.

(2) The coverage of Tactical Strike Program (TSP) targets relies almost exclusively on DCA generated at FGL(MP). These assets provide necessary support to Major Subordinate Commanders (MSCs) in the conduct of tactical operations.

(3) From the above it can be seen that if DCA are not generated in the nuclear role beyond the Peacetime QRA level of 66 aircraft, virtually all scheduled program support to the MSCs would be lost (i.e., the TSP). Compared to the TSP, the PSP would suffer a relatively limited degree of degradation because of cross-targetting. With this information available it is, therefore, possible for trade-off decisions to be made as between continued use of DCA in conventional operations and acceptance of a known degree of scheduled program degradation.

17. (NS) The DCA contribution to the SSP must be viewed in the total context of NATO's general response including the US SIOP. The DCA commitment is derived from a variety of factors which have to be considered in order to maximize the effectiveness of general response and the deterrent value of the force posture. In addition to target coverage and FGLs, some of the more important of these factors are:

a. The inclusion of DCA throughout the spectrum of force generation as evidence of wide Alliance participation.

b. The requirement to cover important threat targets by multiple strikes from systems with differing characteristics in order to avoid over-reliance on any single system and to optimize the probability of successful target engagement (cross-targeting).

c. The advantages of in-place assets, such as DCA, which are responsive to the theater alerting system and can be fully available in the nuclear role within 12 hours (as opposed to 240 hours for some POSEIDON) if needed in circumstances of an attack with little warning. On the other hand, in a period of tension it is possible to maintain POSEIDON assets on a high degree of alert for an extended period, before degradation of training and maintenance occurs.

d. The significant US SIOP contribution to the SSP as discussed in Annex E. In recent years much progress has been made towards better coordination of these two plans. However it should be noted that the full SIOP plan does not become available to ACE until late in the planning cycle. In addition, DE information on SIOP strikes is not provided to ACE. Thus Annex E indicates that more integration of the two plans from the outset of the planning process is needed if redundancy is to be avoided and the most effective use of combined assets achieved.

e. The need to make the best use of systems like DCA which can strike time-sensitive targets earlier than North American-based bombers or POSEIDON that are out of launch position, in relation to the effective time of R-Hour.

f. The superior flexibility offered by aircraft (speed-up and delay) in the planning of SSP/SIOP strikes free of mutual conflicts.

18. (CTS) Availability of DCA for Other Tasks. In the light of the above and the earlier discussion of the FGL system (paragraphs 12 and 13), the relationship between the DCA commitment to the SSP and their availability for other tasks can be seen. With 66 alert aircraft at FGL(Q), covering high priority, time-sensitive SSP targets and providing a capability for selective release, 876 land and sea-based DCA are potentially available for other operations (Table D-1). To some extent a need for expanded SSP target coverage by alert vehicles can be met without affecting DCA availability by generating to alert status up to the maximum number of nuclear-only systems (POLARIS, POSEIDON, PERSHING, VULCAN). With ASF-78 assets this would increase the number of available strikes from a Peacetime QRA level of 386 to 713(1). In this posture, 92 percent of the Priority Strike Program (PSP) targets scheduled to be struck at FGL(AR) would be covered, though in many cases to a lower Damage Expectancy (DE). To fully cover the PSP at FGL(AR) would require the generation of 175 additional DCA; their withdrawal from conventional operations would have the effect of reducing the unreinforced and unattrited ACE conventional ground attack capability by about 10 percent(2) whilst enhancing the selective release capability. At FGL(MP), about 30 percent(3) of the ACE conventional capability would be committed in the nuclear role; but this posture would only be directed if general nuclear response were imminent, in which case, clearly ACE's conventional and selective nuclear release operations would have failed to halt WP aggression. The influence of losses and reinforcements on the above figures is considered later, in paragraphs 23 to 26.

19. (CTS) ASF-78 Tasking of DCA in the SSP. A full discussion of the factors affecting SSP tasking is at Annex E. From this it can be seen that the number of DCA required in the SSP is essentially unchanged in 1978 as compared to 1976, notwithstanding the assignment to ACE of additional POSEIDON RVs. The principal reasons for this are:

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(1) This latter figure includes 186 SLBM RVs (POLARIS and POSEIDON) whose availability would depend on sufficient warning having been available to enable the submarines to assume a readiness posture in a suitable launch position.

(2) Maximum potential ground attack capability of ACE at FGL(Q) is 950 FBA and 876 DCA (excluding 66 nuclear alert DCA). In reality some lower proportion of the total assets would be available depending on such factors as warning time, etc.

(3) This includes 549 land and sea-based DCA out of the total of about 1900 aircraft. See Annex G for aircraft available to ACE by role.

a. The DE goals have not been met in the past and are not yet being met against all targets of interest to ACE in the SSP (see Annex E, Appendix E-6).

b. The total 1978 SIOP 5B/ASF-78 POSEIDON application in the NSWP will result in an expected net increase of 102 RVs over those applied in 1976. A total of 444 SIOP POSEIDON RVs were scheduled in the NSWP in 1976 compared with an anticipated ACE/SIOP total of 546 in 1978 (see Annex E, paragraph 9).

c. POSEIDON's yield and accuracy characteristics and the technical "footprint" limitations of the system limit planning flexibility in the application of scheduled strikes and do not offer a "one-for-one" substitution for other systems.

d. Other system changes over the two plan years, mainly the replacement of F-4 by F-111 and JAGUAR aircraft and the availability of more VULCAN bombers, contributed to better coverage of the SSP but did not permit withdrawal of other types of DCA, again because all DE goals have not been met.

e. The sum of the changes in system capability and availability allowed more targets to be covered in 1978 (715) than in 1976 (596) to an improved average Compound Damage Expectancy (CDE) level (53% in 1978 as against 42% in 1976).

20. (NS) In summary, DCA fulfill a number of essential requirements in SSP planning and contribute, in a way that other strike systems cannot, to achieving overall objectives. But their contribution is so planned that DCA availability for other tasks is maximized, with nuclear-only systems bearing a greater share of the burden of the lower FGL's and therefore of the higher priority target coverage.

DCA in Conventional Operations

21. (NS) In a conventional war scenario it would be necessary for ACE to deploy its maximum strength in conventional air power. In this case all DCA in excess of FGL(Q) requirements could be engaged in conventional operations, with the associated need for careful monitoring of the situation for its effect on the general nuclear response and selective release capability.

22. (NS) The Contribution of DCA to Conventional Operations. Annex G gives details of ACE in-place tactical combat aircraft and their planned reinforcements. Since DCA would be used in ground attack operations in the conventional role, their contribution must be related to FBA aircraft availability(1). As Annex G shows, 950 FBA are available in-theater at

(1) Many DCA could also be used in a contingency for an air defense role; however, this is regarded as a bonus DCA contribution.

the end of 1976. With ASF-78 availability and Peacetime QRA conditions, they could be augmented by 804 land-based and 72 sea-based DCA (Table D-1). Even if carrier-based aircraft are assumed to be committed to maritime operations, the land-based DCA still represent 46 percent of the available ACE conventional ground attack capability. The planned 1980 forces would not significantly affect either total numbers or the relative proportions of each category. Comparison of the total in-place ground attack capability with that of the WP threat (over 5,000 aircraft) shows clearly the NATO dependence on DCA and on external reinforcements which, over a 30 day period, are planned to increase FBA assets by about 50 percent and DCA by about 70 percent.

23. (NS) Losses of DCA. The results of a 21 day wargame simulation analysis by the SHAPE Technical Center (STC) of a conventional air battle in Central Region are indicated in Annex G and Appendix G-1. Three attrition rates were assumed which covered a spectrum of losses anticipated from low to high intensity warfare. The STC evaluation was not conducted to try to predict the outcome or length of a conventional war. Instead the study gives an indication of how the numbers of aircraft can vary under a typical range of attrition rates and lengths of battle. Other STC and Central Region results were utilized to develop attrition analyses for Northern and Southern Regions. Thus an ACE-wide view of the impact of losses and reinforcements on DCA availability was possible.

24. (NS) The STC analysis showed the sensitivity of attrition estimates to the numbers and location of attack-capable aircraft available and to decisions affecting their employment.

a. Enough warning was assumed for RAPID REACTOR and dual-based CRESTED CAP reinforcements to be in-theater, and the airlift and other resources on which augmentation depends were assumed to be available. Had most of the 30-day reinforcements discussed in paragraph 22 above been available prior to the outbreak of hostilities, the starting balance of forces would not have been so unfavorable. On the other hand, a minimum warning attack could prevent timely reinforcement of in-place aircraft and could have had the reverse effect.

b. The apportionment of the available attack sorties could only be analyzed in relation to their effects on the air battle. About 25 percent of the available attack sorties were devoted to airfield attacks; combat attrition was rated about midway between that for close air support (highest) and interdiction (lowest). However, when more sorties were available in the airfield attack role (low attrition case) a significant increase in enemy aircraft destroyed on the ground was achieved over 21 days of the air war; but most WP aircraft destroyed on the ground were lost in the first 7 days of the air war at relatively low cost in terms of Allied losses in the counter-air role. Although these figures are conditioned by the study methodology, they do serve as an indication of what might have been achieved if more conventional attack-capable aircraft had been in-theater at the outbreak of

hostilities and assigned in similar proportions to the three main roles or, alternatively, if employment decisions had resulted in different apportionments between the roles. The net effect of earlier and greater destruction of enemy aircraft on their bases is, of course, a reduction in DCA losses to enemy offensive air attack as well as a reduction in the air threat to NATO forces and rear area installations.

25. (NS) In considering the possible effects of attrition it is important to keep a balanced perspective. First, all nuclear systems would be at risk in war and the loss of strikes from the disabling of even one POSEIDON submarine (160 RVs) would have a major effect on the SSP; but the study has focused on DCA losses only and has not quantitatively addressed either the probability or the effect of attrition of other systems. It is important to note in this context that DCA are the only nuclear strike system for which provision is made for some replacement of losses. Secondly, DCA attrition overall is the sum of aircraft lost in combat operations and those lost to enemy attacks on friendly bases. No estimate was made of the effects of the unlikely eventuality of all DCA being withheld from conventional operations; therefore it is not possible to make an accurate estimate of the degree of extra risk, if any, incurred in committing DCA to conventional operations(1).

26. (NS) The results of the STC analysis showed the significant role that in-place DCA have in supporting conventional operations by augmenting the capability of conventional ground attack aircraft, especially in the initial stages of warfare (see Figures G-1 and G-2). If conventional operations continue for an extended period of time, in-place DCA losses will begin to impact on ACE's nuclear capability, and could result in degradation of ACE's ability to execute selective release operations or the SSP. For example, the ability of Southern Region DCA systems to meet tasked commitments (68 aircraft) at FGL(AR) could be degraded after about 15 days of conventional warfare if attrition occurs at average rates (see Figure G-3).

a. The effect of DCA and FBA reinforcements becomes important in augmenting conventional warfare assets and permitting conventional operations to be extended without seriously degrading ACE's nuclear capability. As shown in Figure G-4, the attrition of DCA at the rates

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(1) A recent study of levels of NIKE Hercules concluded that even at maximum efficiency the ACE air defense system as a whole could not prevent 70-80 percent of enemy aircraft from penetrating to their targets if a maximum air offensive were launched against the Central Region of ACE. This study did not, however, take account of the possible effects of a NATO counter-air offensive against WP airbases. (See reference 29, Annex H.)

postulated could result in progressive degradation of their contribution to the SSP after about a week of full scale air operations unless reinforcements are available. The extent of degradation of the SSP would of course depend on the distribution of the remaining DCA ACE-wide and the scope available for reassignment of priority taskings between units.

b. Within the context of a specific scenario it is possible to gain an insight into the total number of DCA required to fully meet ACE objectives in the SSP. However, such a determination would be conjectural, based on several postulated actions. An example, based on the STC scenario, is shown in Figure G-5. Assuming that only DCA attrition must be considered, the number of DCA lost on a daily basis is added to the DCA requirement in the SSP. Thus if it were postulated that combat operations would last 10 days prior to execution of the SSP, DCA requirements would number from about 820 to 950 aircraft depending on the assumed attrition rate. However, as noted in the section which follows, determination of DCA requirements cannot be made by reference to SSP criteria alone.

DCA in Selective Release

27. (NS) The selective employment of nuclear weapons is, by definition, a controlled application of force designed to achieve a cessation of hostilities and withdrawal of enemy forces from NATO territory. Theater Nuclear Forces provide a range of capabilities which offer a choice of Selective Release (Selrel) options. The role of DCA within this spectrum depends on what options are offered by other systems and what degree of choice exists between systems.

28. (NS) To assess the degree of reliance currently being placed on DCA to provide Selrel options, Annex F compares DCA characteristics with those of other nuclear systems in the context of overall target and weapon system distribution. Targets which might be struck in Selrel operations represent a much wider array than those covered by the SSP, and include deployed enemy forces. Therefore it is necessary to look at the ACE nuclear capability represented by land force ground organic systems as well as by the SSP strike systems. Annex C outlines the characteristics of these systems.

29. (NS) DCA Contribution to Selective Release. Ground organic system capability is limited on the flanks of ACE. In the Northern Region it consists of only a few LANCE and nuclear artillery in LANDJUT, with nothing to the north. In the Southern Region, LANCE is not planned for Greece or Turkey and nuclear artillery is relatively thinly spread, although an HONEST JOHN capability does exist there. It follows that options for ground organic support of the land battle in these areas would either not be available or may be available only to a limited extent especially when possible battle damage and restrictions on deployment mobility are taken into account. Of the available nuclear strike systems which might be considered for giving direct support to the flanks,

the PERSHING range is too limited; the characteristics of POSEIDON render it largely unsuitable for most missions in direct support of land forces, and for many fixed targets in a Selrel situation. It is therefore likely that heavy reliance would be placed on DCA to provide this option, with sea-based DCA having an important role to play against land, naval and amphibious force targets, particularly those at distant ranges.

30. (NS) The operational range of organic systems provides very little capability in any region against interdiction targets or important elements of deployed enemy land forces such as nuclear capable SSM (FROG, SCUD, SS12), 2nd echelon reserve formations and supporting HQ and logistic facilities. It would require a strike system to range most of these targets and, because of strike system characteristics, DCA would be the preferred choice in most cases.

31. (NS) For the attack of fixed targets on Warsaw Pact territory there would be more scope for choice between POSEIDON, PERSHING and DCA. PERSHING is not, of course, available against most of the targets facing Northern and Southern Regions, and its yield could limit its utility in a Selrel situation against targets which it can range in the Central Region. POSEIDON could be used in any region provided that Selrel targetting objectives could be accommodated within the MIRV characteristics of the system (footprint problem) and that the fixed yield and accuracy of the system enable target damage objectives to be achieved without unacceptable collateral effects. In general, POSEIDON would not be suitable against a low density target distribution, hard targets, or targeting requiring a low yield or good delivery accuracy. In addition, the disclosure of a submarine's position by the launch of a missile could jeopardize the survivability of the submarine and its remaining missile systems. Furthermore, an important factor in the choice of systems for Selrel is that of escalation control. A limited use of nuclear weapons in selective release must be perceived as such by the Soviets if the risk of uncontrolled escalation is to be avoided. Quite apart from the characteristics of POSEIDON so far discussed, the system is generally regarded as strategic and the implications of using it must be taken into account in the escalation context.

32. (NS) DCA themselves have some limitations in that they are more susceptible to attack and attrition on their bases, and are more vulnerable than PERSHING or POSEIDON during penetration of enemy defenses and are more affected by weather conditions. In addition, their ranges do not match that of POSEIDON. On the other hand, the variety of yields offered by their weapons, and their ability to discretely and rapidly engage either fixed or mobile targets of various types provide a flexibility and a range of options which no other TNF system can match.

33. (NS) Influence of Losses and Reinforcements. In contrast to the SSP, the effect of losses of in-theater DCA on Selrel capability cannot be viewed solely in terms of the total numbers of DCA available

to ACE. The assymetries in the distribution of other systems, which partly lead to reliance being placed on DCA, are reflected in much the same way in the distribution of DCA themselves. Thus, as shown in Annex C, for ASP-78 only 198 land-based DCA will be in-place in the Southern Region, and none in the Northern Region. Most aircraft (672) are concentrated in Central Region with the bulk of these (480) in 4ATAF (including those based in UK). As already noted, there are also substantial differences in the levels of tasking of regional DCA in the SSP and in the characteristics of regional aircraft types. For example, without placing too much emphasis on the attrition examples in Annex G, it is obvious that Southern Region DCA could quickly be reduced by losses to the stage where their capability to support Selrel operations could be severely limited or where the need to configure aircraft for nuclear operations could have major implications for the conventional capability remaining. This is illustrated by the regional DCA availability shown in Annex G, Figure G-3. Over the period to 1980 the combined DCA/FBA assets in Southern Region are planned to be reduced both for in-place and reinforcement aircraft, with fewer DCA in-place and DCA reinforcements arriving later than in 1976.

34. (NS) Although Selrel operations can be undertaken by aircraft on alert covering SSP tasks, Annex D (Table D-2) shows the limits of the FGL(Q, posture so far as the ability of individual ATAFs to give immediate support to the flanks of ACE is concerned. Because of the need to optimize the limited conventional capability in Southern Region, Selrel operations of any magnitude there would almost certainly require re-configuration of DCA to the nuclear role. On both flanks there could be requirements for Selrel which could only be met, or could best be met, by sea-based DCA.

35. (NS) For these reasons the effects of attrition and reinforcements on land and sea-based DCA in individual areas of ACE could have a greater impact on the availability of Selrel options than on the SSP. This could place a premium on inter-regional support capabilities, including the ability to redeploy in-place or reinforcement aircraft for operations away from their main or initial deployment bases when targets are outside their nominal radius-of-action from those bases. This capability is currently limited by the need for dedicated nuclear communications and support facilities.

36. (NS) Given the reliance being placed on DCA to provide Selrel options it is obvious that decisions concerning force mix, which might affect DCA availability, should not be made solely in the context of general response plans.

The Substitution of Missiles for Aircraft

37. (NS) The study shows (Annex E) that there would appear to be scope for an additional POSEIDON contribution to the SSP before considering substitution for DCA. An examination of the theoretical number of POSEIDON RVs needed to replace some strikes currently allocated to DCA

showed that substitution would probably have to be on a greater than a one-for-one basis. However, the practical limit for substitution would be determined by such factors as POSEIDON footprint and constraint/withhold limitations, an analysis which was beyond the scope of the resources available for this study.

38. (NS) Assuming that a detailed analysis reveals some substitution to be possible without degrading SSP target coverage or DE, the desirability of making substitutions would then have to be examined in a wider context. While it is undeniable that POSEIDON characteristics and its dedication to the nuclear role make it uniquely suited to the general nuclear response role, it is equally obvious that the reliance currently being placed on DCA to provide a theater capability for selective release and conventional operations could not be transferred to POSEIDON which is not particularly suited to the first and unusable in the latter.

39. (NS) The study has shown that the "release of DCA for other tasks" which might be thought to accrue from missile substitution is more apparent than real. About 42 percent of in-place DCA are currently uncommitted to the SSP. Those which are committed are readily available for Selrel operations. Their availability for conventional operations is within the flexible control of SACEUR's FGL system. It is true that a requirement to raise generation levels in an increased alert situation could result in fewer DCA being available for conventional operations; however, as already shown, the highest priority (PSP) targets can be substantially covered without the need for withdrawal of DCA from conventional operations, and only a tenth of the unattrited in-place conventional capability is lost for full PSP coverage. As previously stated, full generation to FGL(MP) would not be undertaken unless a decision had been made to execute general nuclear response, when theatre systems would be contributory to the much larger external strategic response.

40. (NS) Missile substitution would nevertheless provide an insurance against the possibility of degradation of the SSP due to losses of DCA. It would allow commanders to use DCA without the need to closely balance the priority of conventional operations in relation to conserving DCA for general response missions. However, as many selective employment options rely for their feasibility on DCA being available to execute them, any reductions of DCA which might be thought possible as a result of missile substitutions in the SSP would have to be carefully evaluated in relation to the ACE selective nuclear capabilities. Furthermore, DCA attrition in war would continue to require careful monitoring for its effects on Selrel option availability which the study shows could be more sensitive to DCA losses in some circumstances than the SSP would be.

41. (NS) Two further important factors already discussed also impact on determining the possibilities for missile substitution. First, DCA currently represent the principal means by which Allied nations participate in nuclear operations and thereby share the associated risks and responsibilities. It would be essential to preserve this participation. Secondly, in-theatre DCA are capable of meeting SACEUR's requirements for increased generation to alert status (FGL(AR) or FGL(MP)) within 12 hours, and decisions resulting in their displacement by POSEIDON would have to ensure the maintenance of an equivalent generation time capability.

42. (NS) In summary, while there may be possibilities for introducing more POSEIDON into the SSP, DE objectives should first be attained before substitution for DCA is considered. If detailed analysis shows some substitution to be feasible within system and targetting constraints, the desirability of making substitutions would have to be assessed in the light of its effects on the ACE conventional and selective release capability, and on the implications for NATO's force posture overall.

SUMMARY

43. (NS) The requirements for DCA within the overall theater force posture have to be considered in the context of the Alliance strategy of flexible response. The SSP is a plan for using theatre nuclear strike forces to support NATO's ultimate deterrent, strategic nuclear response. It attempts to achieve coverage of the principal threat targets facing ACE, and in terms of the numbers of strikes and the targets covered, it forms the lesser of the two elements represented by the SIOP/ACE general response plans. Considerable reliance is placed on the SIOP to cover targets of ACE interest which, for a variety of reasons, cannot be adequately covered by theatre strike systems. At the same time Alliance strategy aims at providing a sufficient military capability to prevent war, or, if war should start, to bring it to a successful conclusion without the need to invoke general nuclear response. This strategy clearly calls for an assured NATO capability in general response together with adequate theatre forces in the selective nuclear and conventional roles.

44. (NS) It is apparent that there is close interplay between the number and roles of DCA, the distribution and capabilities of other nuclear systems and the force posture requirements for conventional, selective nuclear and general nuclear war. Whereas weapon systems for general nuclear response require good survivability, adequate range and relatively higher yields, Selrel requirements tend to emphasize in addition those characteristics which optimize the chances of escalation control, such as accuracy, the availability of a wide range of yields, and delivery profiles which are unlikely to be mistaken for strategic response. It could be argued that systems considered

as primarily tactical should be characterised by an ability to execute nuclear options short of general nuclear response. This characteristic is clearly present in ground organic systems, but those systems are not fully available ACE-wide and they are limited in their ability to strike targets on Warsaw Pact territory. Of the nuclear "strike systems", land and sea-based missiles offer selective options only at the higher levels of escalatory risk. DCA fill the gaps -- in the capabilities of strike systems, by also providing selective use options at the lower escalatory risk levels; and in the ground organic system coverage, by providing nuclear options in areas where few or no ground organic system options are available.

45. (NS) There are good reasons why TNF systems should have a capability for general response, as well as for selective response. The concept of risk-sharing within the Alliance dictates the broadest possible national participation in all elements of nuclear planning and execution. Also, theatre strike systems complicate the enemy's strategic targetting problem and act as a counter to his tactical nuclear systems while adding significantly to NATO's overall deterrence and general response capability. Moreover, if systems are needed to provide the capability for a range of selective use options, it is sensible to plan to use any contribution that such systems can make in general nuclear response.

46. (NS) Of the available TNF, DCA are the only system capable of playing a role in conventional war, selective nuclear operations, and the SSP. This multi-mission flexibility represents what is almost certainly a cost-effective solution to force requirements as compared to the alternative of providing individual systems specifically for each or any two of the three missions. But the capability of DCA to support any one mission is obviously affected by their commitment to either or both of the other missions.

47. (NS) The study has shown that a great deal of scope exists in the FGL system for controlling DCA in such a way that nuclear options can be kept open whilst the much-needed DCA support in the conventional ground attack role is maintained. This flexibility would be reduced by over-commitment of DCA to Peacetime QRA, but the 66 aircraft currently committed probably represent the minimum contribution consistent with political and operational needs and involve only about 7 percent of DCA assets. With the remaining DCA being relied upon to provide almost half of the ACE conventional ground attack capability, the need for maximum flexibility is obvious. Even with this support, ACE is at more than a 2 1/2 to 1 disadvantage in offensive air power compared to the WP. In conventional operations DCA are best suited for the role of interdiction and the attack of rear areas, including airfields.

48. (NS) Losses of DCA in conventional war could degrade the SSP and the ACE ability to undertake limited nuclear operations. But losses of any strike system could impact on the SSP and, since the high priority targets are primarily covered by missiles, the loss of missile systems could be potentially more damaging to SSP coverage. Conversely, as missiles are less useful than DCA in selective release, losses of DCA could more critically affect the options available for Selrel. This is particularly the case on the flanks of ACE where the shortage of ground organic systems places the main burden on DCA to provide these options, but where DCA assets are fewest.

49. (NS) To a considerable extent DCA losses can be offset by planned reinforcements from the US, a feature which is unique amongst TNF and which can delay the time at which DCA attrition would start to cause degradation of the SSP. The study also shows the major impact that timely reinforcement could have on the balance of opposing air forces and, therefore, on the vulnerability of DCA to enemy attack.

50. (NS) DCA currently provide essential flexibility in the planning of the SSP and a ready and responsive system in-theatre. The possibilities for substituting POSEIDON would be restricted by "footprint" limitations, SACEUR's Nuclear Constraints, and the need to maintain withhold options; only a lengthy and detailed analysis could determine the extent of these limitations. Whether it would be desirable to make any feasible substitutions would have to be decided in the total context of TNF and the impact on selective release and conventional capability, as well as in the political context. While some substitution in the SSP could theoretically improve general response capability, this would be influenced by whether the missiles are as responsive as DCA are now; i.e., available within 12 hours. The loss of the important DCA selective release capability could not be compensated; POSEIDON cannot offer comparable flexibility in Selrel. The net result of any major substitution could be more rigidity and a reduced ACE capability in situations less than general nuclear war.

51. (NS) A multi-role system like DCA gives maximum flexibility across the spectrum of possible war scenarios by providing forces which would have utility in most of these circumstances. At the same time it implies an acceptance of the risks associated with the use of the system in any of its roles. The study has not been able to quantify these risks for DCA, or for any other TNF system, since they are entirely scenario-dependent and in any single scenario could vary widely according to the assumptions made, with the consequent danger of misleading conclusions. The study has, however, shown the considerable reliance being placed on DCA, both in their nuclear and conventional roles. This dependence results primarily from the limitations of other nuclear systems, the uneven distribution of TNF within ACE, and the inadequacy of dedicated conventional offensive air assets.

CONCLUSIONS

52. (CTS) The study does not support any reduction of in-place DCA or of those planned for reinforcement because:

a. Although the additional POSEIDON RVs have significantly improved SSP coverage and Damage Expectancies (DEs) against targets of interest to ACE, ACE DE goals are still not being fully met.

b. Theatre land-based and sea-based aircraft are still needed to provide essential responsiveness and flexibility in SSP planning.

c. DCA provide an indispensable capability for selective release operations which is not available from other systems, especially on the flanks of ACE.

d. DCA provide a vital contribution to an otherwise inadequate ACE conventional offensive air capability.

53. (CTS) Other major conclusions of the study are as follows:

a. The planned ASF-78 level of Peacetime QRA (66 DCA) probably represents as low a level of tasking as it would be prudent to consider, and its effect on DCA availability is minimal.

b. The planned requirement for 549 DCA in the SSP in 1978 is essentially the same as it was in 1976; their commitment to the SSP does not, however, have a major impact on their availability for other tasks.

c. While some future substitution of missiles for aircraft in the SSP appears feasible, its potential effect on the ACE conventional/selective release capability and on deterrence would first have to be carefully evaluated. Meantime there appears to be scope for the further use of POSEIDON RVs in contributing to the full achievement of ACE DE goals in the SSP.

d. Early reinforcement of in-place DCA supports the strategy of flexible response, allows fuller flexibility in the employment of aircraft in their various roles, and could delay degradation of the selective and general response capability of ACE due to losses of DCA. No other strike system can compensate for losses in this way.

e. Better integration of the SIOP and the SSP at the beginning of the planning cycle poses the possibility of preventing redundancy and ensuring the most effective use of available weapons and systems.

54. (NS) In the politico-military context, DCA constitute an essential part of the ACE capability to counter the spectrum of threats posed by the Warsaw Pact. As well as representing the principal means by which the NATO allies participate in maintaining deterrence, they are also the strike system most likely to be able to undertake selective nuclear operations with discrimination and limited collateral damage. The planned ACE contributions to NATO's general nuclear response

cannot be entirely safeguarded so long as any theatre strike system is vulnerable to enemy action. However, within the guidance established by the "Concept for the Role of Theatre Nuclear Strike Forces in ACE", there does not exist an over-reliance on DCA to make this contribution. Indeed, in-place DCA are an important element in the mix of systems needed for ACE to play its part in general nuclear response under all circumstances.

8 ANNEXES

A. Terms of Reference for the NPG DCA Study
B. Intelligence Assessment for SACEUR'S DCA Study
C. Theater Nuclear Force Characteristics
D. Quick Reaction Alert and Strike Force Generation
E. DCA in the ACE Scheduled Strike Programs
   7 Appendices
F. Employment of DCA in Selective Release Operations
G. DCA in Conventional Operations
   Appendix G-1: STC Study
H. References

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ANNEX A

SACEUR'S DUAL-CAPABLE AIRCRAFT STUDY

TERMS OF REFERENCE FOR THE NPG DUAL-CAPABLE AIRCRAFT STUDY (1)

I. MINISTERIAL TASK

1. (NS) At their June 1976 meeting, NPG Ministers invited(2) the NATO Military Authorities (NMAs) to prepare a study, in accordance with terms of reference to be established by the Permanent Representatives, on the role and number of in-place dual-capable aircraft required in the light of the commitment by the United States of additional POSEIDON warheads into the ACE Scheduled Strike Programme (SSP).

II. ARRANGEMENTS

2. (NS) General Approach. These terms of reference provide guidance to the NMAs for the NPG study on the role and numbers of in-place dual-capable aircraft (NPG Dual-Capable Aircraft Study). This guidance is not intended to determine all the details of the study work. The NMAs have wide discretion, within the guidance and the time limits indicated below, to arrange their own detailed working procedures. It is recommended to the NMAs that they should ensure the maximum exploitation of available material, manpower and other national and international resources. Coordination with other bodies engaged in related studies or analyses should be arranged in order to complete the work in a timely and efficient manner. Basic military assumptions and specific military factors to be considered are left for the NMAs to determine.

3. (NS) Political Guidance. The political framwork of the study is determined by the guidance given by NPG Ministers with regard to TNF improvement at their last meeting. In this connection, it is pointed out that:

(a) Ministers agreed that these POSEIDON warheads would be in addition to an appropriate number of modern in-place dual-capable tactical aircraft(3);

(b) TNF improvements must be pursued in relation to their impact on the force structure as a whole(4);

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(1) Annex to NPG/D(76)8
(2) NPG/D(76)7, 15th June, 1976, paragraph 10
(3) NPG/D(76)7, paragraph 10
(4) NPG/D(76)7, paragraph 6

(c) TNF improvements should be governed by the following broad goals(1):

- an unquestioned ability to execute its part in NATO's general nuclear response under all circumstances;

- an ability effectively to carry out limited nuclear operations, with discrimination and limited collateral damage;

- security of nuclear weapons;

- assurance that best use of resources is being made;

(d) the broadest possible participation of countries in NATO nuclear affairs is to be maintained in the interest of cohesion within the Alliance and of enhancing NATO's defence and deterrence posture(2);

(e) there is a need to maintain the theatre nuclear force balance in Europe and that the NATO Triad requires the possession of a broad range of capabilities to counter the spectrum of threats posed by the Warsaw Pact(3);

(f) the importance of modernising NATO's capabilities for ground force nuclear support to the battlefield was agreed(4);

(g) effective command and control systems which are responsive to the requirements of both political and military authorities and aim at facilitating inter-connection between them should support NATO's TNF(5);

(h) decisions on consolidation in nuclear weapons storage sites should be consistent with operational requirements(6);

(i) the relevance of ongoing MBFR negotiations in conjunction with TNF improvement issues was reiterated.

III. SCOPE

4. (NS) While remaining within the guidance laid down above, the NPG Dual-Capable Aircraft Study should lead to:

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(1) NPG/D(76)7, paragraph 8
(2) NPG/D(76)7, paragraph 9
(3) NPG/D(76)7, paragraph 11
(4) NPG/D(76)7, paragraph 12
(5) NPG/D(76)7, paragraph 16
(6) NPG/D(76)7, paragraph 20

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(a) a determination of the number of aircraft scheduled for targets in SACEUR's SSP, in light of the additional commitment of POSEIDON re-entry vehicles (RVs) by the United States. The number of aircraft required for peacetime QRA should also be indicated;

(b) a determination of the number of aircraft that might support more limited operations and selective release of nuclear weapons (e.g. for battlefield support, interdiction, etc.). A range of possibilities under a range of assumptions should be presented.

5. (NS) The study should take into account that broad-based participation of Allied forces in the SSP, including peacetime QRA, and other nuclear employment options will be continued.

6. (NS) The study should consider the current and potential threat from the Warsaw Pact projected to 1980.

7. (NS) The study should entail a detailed analysis in accordance with ACE Damage Expectancy (DE) goals of the target array to permit an assessment of the degree to which substitution of missiles for aircraft in the SSP is possible.

8. (NS) The study should consider utilisation of SIOP-5B/SSP as developed by the Director Strategic Target Planning (DSTP) and SACEUR in order to optimise the employment of additional POSEIDON RVs, as a base case.

9. (NS) The study should take account of planned changes in force availability, as reflected in DPQ-76.

10. (NS) The study should give due consideration to the guidance and principles outlined in DPC/D(70)59(Revised), Concept for the Role of Theatre Nuclear Strike Forces in ACE, 21st December, 1972.

11. (NS) The study should assume a range of appropriate response times, attrition rates factors, force mixes, etc., to provide a spectrum of dual-capable aircraft requirements under various conditions, to include consideration of land and sea-based systems.

12. (NS) The study should provide one of the bases for a thorough analysis of the nuclear bomb levels which would support the aircraft numbers/missions developed therein.

IV. REPORTING TO MINISTERS

13. (NS) NPG Permanent Representatives will prepare a report on the study results to accompany the study which will be submitted to

Ministers at their Spring 1977 meeting. This requires that the study be presented to NPG Permanent Representatives not later than the end of March 1977.

V. POLITICO-MILITARY COOPERATION

14. (NS) In order for Permanent Representatives to fulfil their function of monitoring and coordinating, in close cooperation with the NMAs, all relevant national and other examinations and ongoing studies(1), they whould be given, on a continuing basis, related information, e.g. specific military guidance for the study on the role and numbers of dual-capable aircraft, to be developed in line with these terms of reference. Related papers or briefings to this extent would be welcome for regular discussion at Permanent Representatives' meetings.

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(1) NPG/D(76)7, paragraph 26

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INTELLIGENCE ASSESSMENT FOR
SACEUR'S DUAL-CAPABLE AIRCRAFT STUDY

INTRODUCTION

1. (NS) This Annex is based on information contained in SACEUR'S General Defense Plan (Annex C, Intelligence). It describes likely operations which might be carried out by the Warsaw Pact (WP) in the area of Allied Command Europe (ACE) and adjacent areas. The way the campaigns are described illustrates SHAPE's assessment of how WP forces might be used in an attack against ACE. Figure B-1 summarizes likely WP operations during major aggression against ACE, as discussed in this Annex.

WP OBJECTIVES.

2. (NS) It is assessed that the principal aims of the WP in a war against ACE (not necessarily in true order of priority) would be to:

a. Destroy ACE nuclear delivery means;

b. Destroy opposing ACE forces;

c. Destroy NATO will to fight;

d. Further their own, and hamper NATO's, operations by seizing key areas of military importance such as North Norway, the Baltic and Black Sea exits, and the Channel and Atlantic ports; and

e. Prevent reinforcement of Europe.

3. (NS) WP Contingency Plans

a. It is assumed that the WP has plans to cover a great variety of contingencies. There is little evidence as to what these plans might be, and no conclusive evidence as to WP preference for any particular form of attack. Despite the fact that Central Europe would probably be the main Theatre of Military Operations (TVD) in case of major aggression between NATO and the WP simultaneous attacks on all other regions concurrent with the campaign in Central Europe are highly probable.

b. The WP might also opt to start a war with little preparation and before reinforcements have become available. The Pact forces are deployed and structured to meet this requirement, initially using those ready forces that are, in peacetime, located close to NATO borders.

c. The WP might also decide to initiate a limited aggression. This could be the case if NATO fails to maintain a credible cohesion and capability to deal with the whole spectrum of aggression. Such an action against an individual NATO country could have the aim of gaining quick possession of some important geostrategic areas.

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GENERAL

4. (NS)

a. It is assumed that in case of major aggression between NATO and WP, all WP operations would be carried out as nearly simultaneously as possible.

b. It is assumed that WP divisions would be directed against NATO countries closest to their peacetime locations, and mobilised forces which have not reached standard combat effectiveness would not be withheld from forward movement on that account.

c. The effect of wartime Allied interdiction on movement and supply has not been considered, nor have the possible effects of hostile action by disaffected indigenous elements or clandestine and subversive operations within the WP. Isolated and local acts of aggression are not addressed.

d. It is estimated that forces normally facing China would not be committed against ACE. A concurrent attack on Iran as well as against the whole of NATO is unlikely but, since the Soviets must provide for the possibility of hostilities within that area, appropriate forces have been allotted.

LIKELY OPERATIONS AGAINST NORTH NORWAY

5. (NS) Aims. The successful occupation of North Norway would be of great strategic value to the WP: WP forces operating from this area would enable air cover to be given to Soviet Naval Forces operating in the Norwegian Sea, additional ice-free sheltered anchorages would be available to the Northern Fleet, and thus facilitate further operations against South Norway. Therefore, it is estimated that WP aims in a campaign against North Norway would be:

a. To improve access to the North Atlantic by establishing advanced bases on the Northern coast of Norway thus extending their own defensive and offensive capabilities.

b. To destroy NATO forces and facilities there.

c. To deny to ACE forces the use of bases and early warning facilities in the area.

6. (NS) Forces. In case of major aggression the following forces would be available:

a. Ground Forces - Those forces normally located in the Leningrad Military District (MD), including one airborne division (ABD), could be committed (9 divisions).

b. Air Forces - Frontal Aviation (FA) of Leningrad MD would temporarily be used in operations against North Norway, with additional FA units drawn from other Military Districts if required. Long Range Aviation (DA), Soviet Naval Aviation (AVMF) and Military Transport Aviation (VTA) would provide necessary support.

c. Naval Forces - The Northern Fleet, including one Naval Infantry regiment, would be available. The assault lift capability is one Naval Infantry Regiment.

7. (NS) Logistics. Lines of communications would be severely affected by climatic conditions. In an advance direct from USSR into North Norway about one Motorised Rifle Division (MRD) could be moved per day, and about two divisions could be moved through Finland per day. The main coastal road through North Norway has a movement capability of at least one division per day. In addition a seaborne force of one and a half divisions could be administratively landed in North Norway. The roads into and through North Norway have a daily resupply capacity for three Frontal Divisional Slices (FDS). Stocks in Leningrad MD are more than adequate to initiate and support operations with the aforementioned aims.

8. (NS) Likely Courses of Action. To achieve their initial objectives the Soviets could be expected to mount a simultaneous land, sea and air attack. The land forces could, due to the terrain, conduct two different thrusts, the first into Finnmark with focus on the Tana and Kirkenes area, and another through the Finnish wedge toward the Alta-Bardufoss area. Simultaneously, Soviet seaborne forces could be landed in the area of Troms and the neighbouring fjords with the task of establishing bridgeheads, then breaking out through the Troms area to link with the forces approaching Bardufoss through the Finnish wedge. Airborne assaults and amphibious landings could be launched in support of the land operations as far south as Bodo.

9. (NS) A major aggression on South Norway is unlikely until control of the Baltic Straits has been gained; however, limited areas on the Norwegian south and west coasts might be attacked by WP landing forces deployed at sea prior to the outbreak of hostilities. An operation against Norway through Sweden would require sizable land, air and missile forces. It is beyond the capacity of Leningrad MD alone to supply the necessary forces.

LIKELY OPERATIONS AGAINST THE BALTIC AREA AND CENTRAL EUROPE

10. (NS) Composition of Forces. These campaigns may be undertaken under the command of a single TVD stretching from the Baltic to the Austrian Alps. Operations could be initiated by three fronts:

a. A Northern Front - comprising Soviet, GDR and Polish forces, responsible for operations against Schleswig-Holstein, Denmark, the German and Dutch North Sea ports, and perhaps later South Norway.

b. A Western Front - comprising Soviet, GDR and Polish forces responsible for operations against Western Germany. Their objectives would be to form bridgeheads across the Rhine from which to launch the theatre reserve forces/ second echelon forces.

c. A South Western Front - comprising Soviet and Czech forces responsible for operations against the Southern part of the FRG. Their objectives would also be to form bridgeheads across the Rhine from which to launch the theatre

reserve forces/second echelon forces. If the WP decided to violate Austrian neutrality it could commit forces taken from units stationed in the CSSR and Western USSR as well as from units located in Hungary.

d. The organisation of WP forces is flexible, and subsequent to the initial days of a conflict, the operational organisation may change. For example, it could well be that a fourth Front, comprising some of the force initially engaged and some of those arriving from USSR, might be constituted at a later stage.

LIKELY OPERATIONS OF THE NORTHERN FRONT

11. (NS) Aims. Since the shipping lifelines across the North Atlantic which link the US and Canada with Western Europe would probably play a key role in a future war, WP prospects of success would be greatly enhanced by the possession of the Danish territories and the German and Dutch North Sea coast. Such possession would remove many of the major ports at the European end of this lifeline. Additionally, the early possession of the German and Dutch harbours would provide the WP with a significant docking capacity, which could be used before the Baltic Straits are in their hands. Therefore, it is believed that the Northern Front's aims would be to:

a. Protect the flank of the Western Front and to seize the North Sea ports in Germany and the Netherlands.

b. Control the exit to the North Sea from the Baltic.

c. Destroy NATO forces in Schleswig-Holstein and Denmark to pave the way for operations against South Norway at a later stage.

d. Eliminate Denmark from the war.

12. (NS) Forces. In case of major aggression the following forces would be available:

a. Ground Forces - up to 14 divisions, of which four are Soviet and ten are NSWP, could be employed. Two ABD would be available to conduct operations as required.

b. Naval Infantry - one Soviet Naval Infantry Regiment could be committed to these operations. One GDR reinforced MRR and the Polish Sea Landing Division (SLD) are also available. Total WP simultaneous assault lift capability in the Baltic is 3.2 regiments.

c. Air Forces - aircraft in support of ground forces operations could be drawn from the 37 TAA (NGF), 30 TAA (Baltic MD) and the Polish Air Forces, with, if necessary, support from units of the 16 TAA (GSFG), GDR AF, DA, AVMF and VTA.

d. Naval Forces - Units of the Soviet Baltic Fleet augmented by Polish and GDR naval units would be made available.

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13. (NS) Likely Courses of Action. In pursuit of the general objectives, the tasks of the Northern Front in association with naval forces would be:

a. Support of the Western Front operating in the main strategic direction, and protection of its right flank.

b. Opening of the Baltic exits and occupation of Denmark.

c. Seizure of the German and Dutch North Sea Coast with its important seaports.

Subsequent operations against Southern Norway may follow in order to hasten Norway's defeat and to secure control of the SKAGERRAK area. The attack is likely to develop as follows: Three to four divisions located during peacetime in Northern GDR could attack in the Front first echelon against Schleswig-Holstein and Denmark. Elements of one Polish army could comprise the Front second echelon. Polish airborne and sealanding units might support this operation. Another three to four divisions from Northern GDR and some Polish divisions could conduct operations south of Hamburg against the German and Dutch North Sea ports in close co-ordination with the Western Front's thrust across the North German Plain. Major thrusts could develop along the general axis Schwerin-Neumunster-Flensburg into Jutland and south of Hamburg-Bremen. The operation described above might task the Northern Front to seize objectives in two different directions: one in Schleswig-Holstein and Denmark and another along the German and Dutch North Sea coast. It is also possible that the WP might decide to operate with the Northern Front solely against Schleswig-Holstein and Denmark, using some of the divisions stationed during peacetime in the Northern part of the GDR and some additional Polish divisions. In this case, the Western Front would also be responsible for seizing the German and Dutch North Sea ports committing the remainder of those divisions stationed in Northern part of GDR and some more Polish units.

LIKELY OPERATIONS OF THE WESTERN AND SOUTHWESTERN FRONTS

14. (NS) Aims. An assessment of WP forces, their capabilities, aims and the terrain indicate that the main WP effort would develop in the Central Region. In launching an attack against the Central Region, the WP would attempt to exploit the combined advantages of initiative and a numerical superiority sufficient to alter rapidly the initial course of the battle. Front second echelon forces would be used for rapid reinforcement and exploitation in depth of successful initial attacks. The aims of the Western and South-Western Fronts would be to:

a. Destroy the major NATO forces and their nuclear delivery systems in this area.

b. Occupy key strategic and industrial areas in Western Europe with a view to ending the war quickly.

c. Seize the Belgian and the French Channel and Atlantic ports as well as the Mediterranean coast.

15. (NS) Forces. In case of a major aggression, the following forces could be committed:

a. Ground Forces - up to 77 divisions, of which 56 (including three airborne divisions) are Soviet and 21 are NSWP.

b. Air Forces - tactical aircraft from 16 TAA, the Central Group of Forces (CGF), and the GDR, Polish and CSSR air forces would be committed initially, with reserves and additional aircraft from 1st TAA (Belorussian MD), 30th TAA and 57 TAA (Carpathian MD). The North West Bomber command of DA would support and VTA aircraft would be available for airborne operations.

16. (NS) Logistics.

a. The primary means of moving reinforcing divisions and associated equipment would be by rail. Another smaller part of the reinforcement and resupply movement would be by road. A small amount of POL would be moved by pipeline. The major rail and road routes extending east-west across Poland, GDR and CSSR have a combined maximum capacity of up to six FDS per day under average conditions for the period of the reinforcement operations. This movement rate would decrease during subsequent operations.

b. Supplies. It is estimated that the capacity of WP ground force ammunition depots within the GDR, Poland and CSSR would provide about 40 days of combat supplies for the whole force of about 90 divisions, against BALTAP and the Central Region, in addition to stocks on wheels. The capacity of WP forces POL depots within the GDR, Poland and CSSR would provide about 20 days operations at normal rates for the entire force of about 90 divisions facing BALTAP and AFCENT. POL stocks in civilian depots and refineries, of which a substantial part would be available for military use, would more than double military POL resources and therefore no supply from the USSR would be needed for about 40 days.

17. (NS) Western Front

a. Composition of Forces. The attack is likely to develop with 50 Soviet, GDR and Polish divisions. The front would comprise divisions from GSFG, NGF, Poland and GDR. The theatre reserve forces/second echelon forces would consist of some Polish forces as well as divisions from Baltic MD and Belorussian MD. Two ABD would be available to conduct operations as required.

b. Likely Courses of Action. Major thrusts, conducted by the Western Front, could develop along the general axis Magdeburg-Munster-Wesel and Eisenach-Frankfurt. The North German Plain provides in some parts suitable terrain for massive armoured operations with holding or flank protection operations in other areas. The immediate objective of the Western Front attacking through this area would probably be to establish strong bridgeheads across the Rhine between Duisburg and Wesel. The theatre reserve forces/second echelon forces would then extend the offensive to subsequent objectives, the

seizure of the Belgian and French channel ports and alternatively the French Atlantic ports. The thrust over the North German Plain is estimated to be the main effort of offensive operations against the Central Region. The aim of forces attacking along the route Eisenach-Frankfurt is believed to be a deep and rapid penetration with the immediate objective of establishing an adequate number of bridgeheads across the Rhine between Frankfurt and Karlsruhe. After the phasing in of the theatre reserve forces/second echelon forces the thrust would continue into Lorraine and further in the direction of Paris with the ultimate object of reaching the French Atlantic ports.

18. (NS) South Western Front

a. Composition of Forces. A total of 27 divisions, including one ABD, could be committed in operations against the southern part of the Federal Republic of Germany. WP forces stationed in CSSR could establish the Front. Divisions from the Carpathian MD could comprise the theatre reserve forces/second echelon forces.

b. Likely Courses of Action. An attack by the South Western Front could be made from several areas between the Erzgebirge and Czechoslovak-Austrian border. Main advances could develop along the axes Karlovy-Vary-Nurenberg-Karlsruhe and Pilzen-Stuttgart. The objective of the South Western Front might be to achieve a breakthrough and to form bridgeheads over the Rhine.

c. If the WP decided to violate Austria's neutrality, an attack from CSSR could develop along the axis Linz-Munich. If some divisions from Hungary and forces stationed in the Eastern part of the CSSR and in the Soviet Western MD's were committed, the attack could follow the favourable terrain astride the Danube River. The objective of the attack through Austria would be to outflank CENTAG and LANDSOUTH. An invasion of Austria could take place simultaneously with major aggression against ACE. On the other hand, the invasion could also start after hostilities against NATO have begun, if a WP attack against NATO were not proceeding according to plan. In this case the WP may be tempted to outflank NATO forces.

CAMPAIGNS AGAINST SOUTHERN EUROPE AND WESTERN TURKEY

19. (NS) General. These campaigns could be mounted under command of a single TVD stretching from the Austrian Alps to the Black Sea. The Theatre could comprise two, and possibly at a later stage three Fronts, including Soviet, Hungarian, Bulgarian and Romanian forces. A Hungarian Front, formed initially of Soviet and Hungarian forces in Hungary, could be responsible for operations against the industrialised areas of Northern Italy. It would necessarily require passage through Yugoslav and/or Austrian territory, but passage through Austria against North Italy is less likely than against FRG. In the worst case, which would be that of Yugoslav alignment with the WP, Yugoslavia could support the Hungarian Front with its own forces. A Balkan Front, formed initially from Bulgarian forces, supported by Soviet and Romanian forces, could be responsible for operations against Greece and

Western Turkey. As operations against these two countries diverged, the Balkan Front might be reconstituted into two separate Fronts. Theatre reserve forces/second echelon forces could be formed from divisions not initially allotted to reinforcing armies. In the case of Yugoslav alignment with the WP, Yugoslav forces could support the Balkan front.

LIKELY OPERATIONS OF THE HUNGARIAN FRONT

20. (NS) Aims. The North Italian Region contains the industrial heart of Italy and its capture would severely affect the whole Southern Region. Therefore, the aims of an attack against Northern Italy would be to:

a. Seize key areas and neutralise ACE forces in Northern Italy;

b. Separate Central and Southern Regions;

c. Occupy Italy;

d. Obtain advanced bases in the Mediterranean.

21. (NS) Forces. In case of major aggression, the following forces would be available:

a. Ground Forces - Up to 16 divisions could be committed, consisting of four Soviet divisions stationed in Hungary (SGF), six Hungarian divisions and probably six divisions from the Kiev MD. In addition, in the worst case, six Yugoslav divisions also could be committed.

b. Air Forces - Air support might consist of the tactial aircraft of 36 TAA (Southern Group of Forces) aided by units from some Soviet MD's. Medium bombers from the South Western Bomber Command and the Black Sea Fleet Air Force might also be employed. Hungarian Air Force participation would probably be limited to air defence tasks and small scale helicopter transport support. The use of Yugoslav air facilities, and the active participation of the Yugoslav Air Force would facilitate WP air operations in the area.

22. (NS) Logistics. The combined use of roads and railways could enable at least four FDS to be moved per day to Italy through Yugoslavia. Using main rail lines and highways through Austria, about three and a half FDS could be moved daily under optimum conditions. Combat supplies for forces directed against Northern Italy could be drawn initially from Hungarian and Soviet depots in Hungary, but additional logistic support would have to come from the USSR. Stocks of ammunition and POL held in Hungary are estimated to be sufficient for 40 days and 70 days respectively.

23. (NS) Likely Course of Action. An attack against Northern Italy would have to be mounted through Yugoslavia and/or Austria and should be considered in close association with the attacks against the Central Region. If operations should develop through Austria, they would be hampered by mountainous terrain and the lack of favourable axes of advance. Therefore, it is expected that only a limited number of divisions (one or two) could be employed through

Austria. Their aim would be to take Graz and further to attack in the direction of Klagenfurt and Villach arriving to conduct a flank attack against Italian forces. Transit through Yugoslavia might take place with or without Yugoslav consent, or against Yugoslav resistance. In the first case, and if Yugoslavia aligned herself with the WP, the threat to Italy would be considerably increased because the movement and deployment of the WP forces would be facilitated, and because of the active participation in combat of an additional six Yugoslav divisions. The front first echelon could consist of ten divisions and the front second echelon could comprise twelve further divisions. The main thrust would be through the Gorizia Gap along the axis Ljubljana-Gorizia-Udine, with secondary efforts through the Tarvisio Pass or through the other Austrian passes. The immediate objective would be to seize the triangle Verona-Padova-Rovigo. In the second case, where Yugoslavia stays neutral and does not resist, the front first echelon could consist of ten divisions and the front second echelon could have six divisions with the same objective as described above. In the third case, an attack through Yugoslavia against defending Yugoslav forces, WP divisions could be delayed for several days, and the WP attack would be weakened by the need to guard their lines of communication.

LIKELY OPERATIONS OF THE BALKAN FRONT

24. (NS) Aims. The historical desire of the Soviets to gain free access from the Black Sea into the Mediterranean remains unchanged. The Soviet Union's long standing quest for control of the Turkish Straits and the Aegean Sea makes it highly likely that in a war their objectives will be:

a. To seize the Turkish Straits;

b. To control thereafter the exit from the Black Sea;

c. To gain a direct outlet to the Aegean coast in Northern Greece; and subsequently

d. To seize the rest of Western Turkey, mainland Greece and those Greek islands necessary to achieve control of the Aegean and eastern Mediterranean Seas.

25. (NS) Forces. In case of major aggression the following forces would be available:

a. Ground Forces - Up to 32 divisions, comprising seven Soviet from Odessa MD, 13 Bulgarian (including the five tank brigades which would, in the case of maximum build-up, expand to divisions), 10 Romanian and two Soviet ABD (one from Odessa and one from Transcaucasus MD).

b. Naval Forces - Soviet, Bulgarian and Romanian Naval forces in the Black Sea would conduct amphibious assaults in support of the land campaign, to secure the Turkish Straits and other critical terrain in the Aegean area.

c. Naval Infantry - 2.5 WP Naval Infantry regiments with an assault lift capacity of 2.0 regiments.

d. Air Forces - Aircraft could be drawn from the 330 Frontal Aviation aircraft in the Odessa MD and Kiev MD, probably supported by Romanian and Bulgarian air forces, as well as some of the medium bombers of the South Western Bomber Division of DA, and aircraft from the Black Sea Fleet AF (BSF AF). NATO air operations would in addition be opposed by interceptors from the KIEV Air Defence District.

26. (NS) Logistics. The level of stocks available in Bulgaria is probably sufficient to support operations for up to 60 days. Once these stocks were exhausted, WP forces employed against Western Turkey and Greece would have to be maintained from South Western USSR.

27. (NS) Likely Course of Action. To attain the above aims, two major operations could be launched, either simultaneously or in quick succession: one against Turkish Thrace and Western Anatolia, and one against Greece. The two operations would probably be closely coordinated in terms of both time and space.

a. The attack against Turkish Thrace would be expected along the axis Khaşkovo-Istanbul for the seizure of the Turkish Straits, while closely coordinated airborne and/or amphibious assaults would almost certainly be made in the Bosphorous area. Immediate objectives would be the Turkish Straits and unrestricted use of the exit from the Black Sea. This area presents another classical opportunity for the use of ABD's, where a low level approach over the Black Sea beneath the normal radar cover would facilitate surprise. Subsequent operations could proceed further each with the aim of capturing Ankara.

b. The attack against Greece would be made across the Bulgarian-Greece border, with the initial objective of reaching the Aegean coast between Alexandroupolis and Thessaloniki. If the WP forces moved through Yugoslavia, an attack on Greece could also develop through the Monastir Gap, and the Vardar Valley. If Yugoslavia aligned herself with the Warsaw Pact she could contribute four additional divisions to this operation. Subsequent operations would extend throughout the whole of the Greek mainland and of the Greek islands, including Crete, with the aim of securing free passage for naval forces through the Aegean Sea and into the Mediterranean.

CAMPAIGNS AGAINST EASTERN TURKEY (AND IRAN)

28. (NS) General. A campaign against Eastern Turkey, and if necessary against Iran, could constitute either a separate Front within the Southern TVD or an additional TVD. Operations against Iran are unlikely to be undertaken voluntarily by the USSR while engaged with NATO across a broad front, but she would be obliged to maintain sufficient forces free of other

commitments to conduct at least an aggressive defence. Against Eastern Turkey, the USSR could conduct limited offensive operations designed to destroy her forces, secure the Southern flank of the Warsaw Pact, and link up with thrusts into Anatolia. In this case WP objectives would be:

a. To protect the WP's Southern flank by destroying the major part of the ACE forces in Eastern Turkey;

b. To exploit any military success in Eastern Turkey and Iran with the further aim of reaching the Mediterranean in the area of Iskenderun;

c. To disrupt the normal supply of oil to the West from the area.

29. (NS) Forces. In case of major aggression, the following forces would be available:

a. Ground Forces - Up to 23 divisions from the Transcaucasus, North Caucasus and Turkestan MD's including AB forces might be used.

b. Air Forces - 430 FA aircraft based in the Turkestan and Transcaucasus MD's could support operations, and additional forces could be provided by the DA medium bombers in the Western USSR, and the BSF AF. NATO air operations would be opposed by fighters of the BAKU Air Defence District.

c. Naval Forces - Some of the surface combatants of the Black Sea Fleet and of the Caspian Sea flotilla would support the operation along the coast.

30. (NS) Logistics. Forces could be brought forward through border areas, under optimum conditions, as follows:

a. From Transcaucasus into Eastern Turkey, the movement capability is two and a half FDS per day.

b. From Transcaucasus into Iran, the movement capability is up to one and a half FDS per day.

c. From Turkestan into Iran, the movement capability is one and a half FDS per day.

d. From Trabzon to Erzurum, the movement capability is one and a half FDS per day.

In addition, forces could be transported across the Black Sea.

31. (NS) Likely Courses of Action

a. Against Eastern Turkey. The main thrust could be expected along the axis Leninakan-Kars-Erzurum with secondary efforts along the axis Yerevan-Agri-Murat valley and along the coastal route from Batumi. Operations could be supported

by forces sea-lifted to Trabzon. Initial objectives could be the important areas of Erzurum and Diyarbakir.

b. Against Iran. An attack against Iran could develop from the Transcaucasus MD along the axis Dzhulfa-Tabriz-Zanjan, to threaten Eastern Turkey, or to link up near Teheran with a force advancing westwards from the Turkestan MD. In case of Soviet success, other countries in this area may be tempted to provide facilities for Soviet use or even support the Soviet attack.

32. (NS) An additional threat could be posed to Southern Turkey from Syria and Iraq. However, the offensive capability of Syrian and Iraqi Armed Forces are limited (see MC 255 Part IV). This threat might be augmented in special circumstances if the Soviets were to send by air some of their troops to these areas.

AIRBORNE OPERATIONS

33. (NS) The WP has nine airborne divisions, eight of which are Cat A and one Cat C, and three air mobile assault brigades. All ABD's are able to operate as a quick reaction force and therefore will have an important strategic and tactical role in war, and could provide the leading element of any Soviet foreign intervention. It is estimated that all WP ABD's would be committed against ACE, either initially or as reserves.

34. (NS) The use of airborne troops is an important feature of Soviet doctrine in high speed offensive operations. Airborne assaults could be carried out:

- to seize key points in the ACE foward area, in support of ground forces operations;

- to exploit nuclear strikes;

- to support deep armoured penetrations.

35. (NS) The use of air delivered Special Forces and Diversionary Brigades for special recce, sabotage and special operations is feasible and must be expected, during any phase, anywhere in ACE.

THE STRATEGIC RESERVE

36. (NS) The Strategic Reserve, less ABD's, consists of 21 divisions. Specific missions of these 21 divisions will probably depend on the developing situation in conjunction with their geographic locations. With this in mind, what follows is just one possible scenario for use of these forces. Five divisions of Moscow MD and the ten divisions of Kiev MD might be committed against ACE. In this case, one possible use of the Strategic Reserve might be:

a. The two TD's and three MRD's of Moscow MD, plus two TD's and two MRD's of the Kiev MD, might be committed against Central Region.

b. Four TD's and two MRD's of Kiev MD might be committed against the Southern Region.

c. The six divisions from the URAL and VOLGA MD's might be committed either against ACE or elsewhere.

MARITIME OPERATIONS

37. (NS) General. In the Baltic and Black Seas, the principal threat, which may be continuous, will be from aircraft using missiles or bombs, from small high speed craft armed with missiles or torpedoes and, in waters close to WP territory, from coastal missiles. In comparison with other NATO areas the submarine threat will be less severe because of the absence of nuclear powered submarines. Older surface ships, and in particular, the NSWP navies, would be employed in concert with amphibious ground and air forces in order to:

a. Turn NATO's flanks by landing behind the lines, particularly in North Norway and along the Turkish Black Sea coast.

b. Capture offshore islands, such as Bornholm and the Zealand Group.

c. Secure the land areas bordering the Baltic and Turkish Straits.

38. (NS) The Baltic. The main tasks of the Baltic Fleet in war will be:

a. To establish naval superiority in the Baltic;

b. To carry out amphibious and related naval operations, and

c. To secure the Baltic exits in conjunction with other forces and dominate adjacent waters.

39. (NS) The strength of the Baltic Fleet is assessed to exceed Soviet requirements for warfare in the Baltic. Some units, predominantly major surface combatants, either new construction ships or trials or units from other fleets being refitted, are better suited for operations on the high seas than in this enclosed area.

40. (NS) The Fleet contains large numbers of high speed patrol craft, many of which are missile armed, and are well suited for operations in the Baltic.

41. (NS) The Black Sea. The main tasks of the Black Sea Fleet in war will be:

a. To establish naval superiority in the Black Sea,

b. To carry out amphibious and related naval operations, and

c. To secure the Black Sea exits in conjunction with other forces, dominate adjacent waters, and reinforce the Soviet Mediterranean Squadron (SOVMEDRON).

42. (NS) The rugged coastline and many islands in the Black and Aegean Seas make this an ideal area for operations by small high speed craft such as ACV's or PBFG's.

43. (NS) The Mediterranean Sea. The main tasks of the SOVMEDRON in war will be:

a. To attack NATO's strike forces, and

b. To attack NATO sea lines of communication in the Mediterranean Sea.

Most of SOVMEDRON's surface units and their associated logistic support are drawn from the Black Sea Fleet, but the submarine component is provided from the Northern Fleet. It would not be possible in wartime for the Black Sea Fleet to reinforce the SOVMEDRON unless the Soviets succeeded first in controlling the Turkish Straits and subsequently, in establishing and maintaining maritime access to and through the Aegean Sea. However, the SOVMEDRON could be substantially reinforced prior to the outbreak of hostilities; such reinforcement would be facilitated if the USSR were able to make more extensive use of Syrian and Yugoslav air and naval facilities than they do at present and/or if they could acquire more facilities than they have a present in the North African littoral. SOVMEDRON submarines could seriously interfere with the operations of the NATO naval forces in the area by establishing submarine barriers in critical areas, such as the Sicilian Straits and south of Crete. The missile-equipped surface element of the SOVMEDRON poses a serious threat to Southern Region maritime forces and in particular the NATO Strike Forces. In addition, SOVMEDRON could assist the WP main ground effort against NATO's southern flank or in the Balkans.

44. (NS) The greatest weakness of the SOVMEDRON is a limited air defense capability. This would be alleviated by deployment of one of the Kiev class CVSC, with its organic VTOL fighters and command functions, to the Mediterranean Sea; and:

a. Deploy other ships of this class to the Mediterranean (after 1978);

b. Use of air bases in North African littoral states.

AIR OPERATIONS AGAINST THE UNITED KINGDOM

45. (NS) Air attacks upon the United Kingdom would have the following objectives:

a. The destruction of nuclear delivery means based in the UK.

b. The destruction of air and naval forces based in the UK.

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c. Interdiction of reinforcements for Allied Command Europe through the United Kingdom.

46. (NS) Medium and intermediate range bombers of Long Range Aviation based in Western USSR, and the Soviet Northern and Baltic Fleets would form the primary threat, attacking airfields, components of the UK Air Defence Ground environment, naval dockyards, civil port facilities, and other important military targets. The South East of England is also within range of FENCER and FOXBAT operating from Eastern Europe.

Figure B-1

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ANNEX C

SACEUR'S DUAL-CAPABLE AIRCRAFT STUDY

THEATER NUCLEAR FORCE CHARACTERISTICS

1. (NS) NUCLEAR-STRIKE AIRCRAFT

				Regional Distribution (ASF-78)						
				Center			South			
SYSTEM	TYPE(1)	RADIUS OF ACTION (KM) (2)	NUCLEAR WARHEAD NO./YIELDS (2,3)	2ATAF	4ATAF	UKAIR	5ATAF	6ATAF	SFS(4)	TOTAL
F-104	DCA, L	750	1/S,L,M,H	108	72		36	72		288
F-100	DCA, L	750	1/S,L,M,H					36		36
F-4	DCA, L	750	1/S,L,M,H		252		18	36		306
F-111	DCA, L	2200	2/S,L,M,H		156					156
BUCCANEER	DCA, L	930	1/L,H	24		12				36
JAGUAR	DCA, L	700	1/L,H	48						48
A-6	DCA, S	1200	2/S,L,M,H						24	24
A-7	DCA, S	750	1/S,L,M,H						48	48
			DCA TOTALS	180	480	12	54	144	72	942
VULCAN	NSA, L	2800	1/H			56				56

NOTES: (1) DCA = Dual-Capable Aircraft; NSA = Nuclear Strike-Only Aircraft; L = Land-Based; S = Sea-Based
(2) S = Subkiloton (below 1kt); L = Low (1-10kt); M = Medium (11-100kt); H = High (above 100kt)
(3) Weapon system accuracies have CEPs from 50-600 meters depending on system characteristics and delivery mode.
(4) STRIKFORSOUTH Carrier-Based assets

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2. (NS) NUCLEAR-STRIKE MISSILES

SYSTEM	TYPE (1)	RANGE (KM)	CEP (M)	NUCLEAR WARHEAD YIELDS (2)	NUMBER
POSEIDON	SLBM	3700	600	M	400(3)
POLARIS	SLBM	4600	1800	H	48
PERSHING	SSM	185-750	420-540	M, H	180(4)

NOTES: (1) SLBM = Submarine Launched Ballistic Missile; SSM = Surface-Surface Missile.
(2) M = Medium (11-100 KT), H = High (above 100 KT)
(3) Allocated to SACLANT
(4) Launchers

3. (NS) GROUND ORGANIC SYSTEMS

SYSTEM	TYPE (1)	RANGE (KM)	CEP(M) (2)	NUCLEAR WARHEAD YIELDS (3)	REGIONAL DISTRIBUTION (4) NORTH LANDJUT	CENTER NORTHAG	CENTER CENTAG	SOUTH LANDSOUTH	SOUTH LANDSOUTHEAST	TOTAL
8-Inch Howitzer (5)	Arty	14	30-180	S, L	6	52	216	16	40	330
155 mm Howitzer	Arty	15	30-130	S	6	96	450	-	36	588
LANCE	SSM	8-115	35-430	S, L, M	4	26	48	6	-	84
HONEST JOHN	SSM	5-38	170-860	S, L, M	-	-	-	-	24	24
				TOTAL	16	174	714	22	100	1026

NOTES: (1) Arty = Artillery; SSM = Surface-Surface Missile
(2) CEP is range dependent
(3) S = Sub-kiloton (below 1 KT); L = Low (1-10 KT); M = Medium (11-100 KT)
(4) Artillery Tubes; Missile Launchers; Planned 1980 assets
(5) The Improved 8-Inch Howitzer (Imp. 8" How) is scheduled to enter the stockpile in the early 1980's. The yields will not change (S,L); the range will increase to approximately 30 km.

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ANNEX D

SACEUR'S DUAL-CAPABLE AIRCRAFT STUDY

QUICK REACTION ALERT AND STRIKE FORCE GENERATION

Introduction

1. (NS) Basic requirements and standards exist for the operational readiness of forces which are assigned or earmarked to ACE. Of these operationally ready forces, a certain portion, as directed by SACEUR, are assigned responsibility as the nuclear Quick Reaction Alert (QRA) forces. This QRA capability provides SACEUR with the option to launch high priority nuclear strikes in minimum time, thereby acting as a deterrent to major aggression. This Annex will describe this nuclear strike force readiness concept to include Force Generation Levels (FGLs) and reaction times; it will also examine the current QRA composition in light of the additional POSEIDON commitment to ACE. This information should allow a better understanding of the integration of DCA in conventional and nuclear operations.

The Force Generation Level Concept

2. (CTS) Force Generation Levels. SACEUR's Nuclear Operations Plan is based on a concept of three basic Force Generation Levels (FGLs). These readiness postures are designed to provide flexibility in the generation of nuclear strike forces and to enable the maximum number of DCA to be made available for the conventional battle.

a. Peacetime QRA (FGL(Q)). This readiness posture provides a level of ready nuclear strike missiles and land-based aircraft during peacetime which will assure that certain high priority targets in the Priority Strike Program (PSP) can be struck in the event that ACE is subjected to surprise nuclear attack. Aircraft tasked at FGL(Q) are required to be at a 15 minute state of readiness. Current Peacetime QRA forces (ASF-78) consist of 66 DCA and 304 missiles. DCA commitments to FGL(Q) approximate 1 or 2 aircraft per squadron in order to provide dispersion throughout ACE and to demonstrate visible evidence of NATO solidarity. This posture complicates the WP problem considerably by this large number of dispersed QRA aircraft, which increases the responses available to NATO and subsequently reduces WP chances of a successful unreinforced offensive.

b. Advanced Readiness (FGL(AR)). This level provides for the generation of all weapons systems required to execute the PSP. Weapon systems required for other scheduled programs are generally not affected although some exceptions exist. Most forces tasked at FGL(AR) are required to have a generation time of less than 12 hours. The major exception is an additionally generated 170 "non-alert" POSEIDON RVs. Their generation time could take up to 240 hours under present assignment criteria. Current forces tasked at FGL(AR) (ASF-78) consist of 273 aircraft (including 241 DCA) and 583 missiles. Units tasked at this FGL must be capable of sustaining this degree of readiness for up to 30 days, if necessary.

c. Maximum Posture (FGL(MP)). At this generation level a sufficient number of land-based and carrier-based aircraft are added to the Advanced Readiness tasking to enable units to execute at R-Hour the PSP and the Tactical Strike Program (TSP); i.e., SACEUR's SSP. The generation time for achieving this FGL from either of the lower FGLs is 12 hours. ASF-78 forces with SSP commitments consist of 597 aircraft (549 DCA) and 583 missiles. Units must be capable of maintaining this degree of readiness for up to 48 hours.

3. (NS) The basic ACE FGL concept has further flexibility in that strike units can be generated selectively on a system, regional, or even unit basis in response to the political and military situation. For example, land-based missile systems (PERSHING) and nuclear strike-only aircraft units (VULCAN) may be directed to generate to FGL(AR) without generating DCA systems. This feature provides the option of continuing DCA support of conventional operations or of generating DCA to a nuclear configuration at the specified readiness level. Should the military situation so dictate, trade-off decisions between continuity of conventional operations and the generation of aircraft for the execution of nuclear strikes can be made.

4. (CTS) Since the FGL system is designed to allow generated forces to react in minimum time to a WP attack, only "alert" and "in-place" forces are tasked. Thus the significant number of DCA reinforcements earmarked to ACE are not considered for FGL tasking. However this does not detract from the multiple role of these reinforcements in conventional and selective release operations, and their ability to act as back-up nuclear-capable aircraft for units not able to meet their SSP commitments because of attrition. The only exception to these tasking guidelines are the 170 "non-alert" POSEIDON RVs.

FGL Tasking

5. (NR) Details of the nuclear-capable systems available for tasking in the SSP and their effect on ACE target coverage are given in Annex E. The resulting differences in FGL commitments in 1978 as compared to 1976 are diagramatically represented at Figure D-1.

6. (NS) The forces committed at each FGL accomplish an important political objective as visible evidence of NATO solidarity and of the Alliance's resolve to deter aggression by fully participating and sharing inherent risks. The extent of this participation can be seen in Table D-1 which indicates allied assets and tasking at each FGL in ASF-78. Also illustrated are the numbers of systems not tasked at each generation level, and thus available for conventional operations or as back-up for tasked systems. In particular, the essential role of DCA in achieving this balance should be noted. Also of interest is the relatively low percentage of DCA tasked at Peacetime QRA (7 percent). The option to selectively generate systems to a higher readiness posture allows SACEUR to control the proportion of alert DCA. Thus they can be utilized to a maximum extent in conventional operations.

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TABLE D-1

ACE SYSTEM TASKING (ASF-78)

SYSTEM	NATION	UE(1)	FGL TASKED SYSTEMS Q	AR	MP	FGL UNTASKED SYSTEMS Q	AR	MP
		DUAL-CAPABLE AIRCRAFT						
F104	BE	36	3	6	20	33	30	16
	NL	36	3	6	20	33	30	16
	GE	108	9	18	58	99	90	48
	IT	36	2	12	23	34	24	13
	GR	36	2	14	26	34	22	10
	TU	36	2	16	28	34	20	8
F104 Totals		288	21	72	175	267	216	113
F4	US	306	20	49	149	286	257	157
F111(2)	US	156	16(2)	72(2)	101(2)	140	84	55
F100	TU	36	2	19	27	34	15	9
BUCCANEER	UK	36	2	20	27	34	16	9
JAGUAR	UK	48	5	9	30	43	39	18
A6/A7(3)	US	72	0	0	40(4)	72	72	32
DCA TOTALS		942	66	241	549	876	701	393
		NUCLEAR STRIKE-ONLY AIRCRAFT						
VULCAN	UK	56	0	32	48	56	24	8
		LAND-BASED MISSILES						
PERSHING(5)	US	81	24	81	81	57	0	0
	GE	54	18	54	54	36	0	0
		SEA-BASED MISSILES						
POLARIS	UK	48	32	48	48	16	0	0
POSEIDON	US	400	230	400	400	170	0	0

(1) Unit Establishment; assumes 100 percent availability.
(2) Two-weapon carriers.
(3) Sea-Based systems.
(4) Ten two-weapon carriers.
(5) Only 75 percent of the 180 PERSHING launchers are available for tasking due to deployment criteria.

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Force availability in Table D-1 is based on assets planned to be available for tasking in ASF-78. Therefore minor discrepancies in force availability will exist between these figures and those based on the DPQ's shown in Annex G.

Peacetime QRA

7. (NS) The Peacetime QRA target array consists of IRBM and MRBM missile sites, nuclear-capable airfields and naval bases, major military headquarters, nuclear weapons storage facilities, and key air defense facilities. The magnitude of the target list is a function of the characteristics of the priority target elements and the numbers, types, and characteristics of available weapons systems. The Peacetime QRA target coverage is coordinated with the external efforts of the US-SIOP to provide optimum coverage with minimum forces in the shortest execution time.

8. (CTS) As shown in Figure D-1 (page D-6), DCA committed to FGL(Q) are planned to be reduced from 83 in 1976 to 66 in 1978. This reduction is the result of a number of factors including the introduction of a more equitable tasking formula based on Unit Establishment (UE) which was designed to encourage the assignment of national forces without impacting adversely on training, the 80 additional alert POSEIDON RVs, and the other changes in force availability discussed in Annex E. The net result of ASF-78 is an increase of 42 in the number of targets covered compared to ASF-76.

9. (CTS) The ability of Peacetime QRA aircraft to participate in selective release operations is dependent upon their numbers, range, and QRA locations. The type and distribution by ATAF of the 66 DCA tasked at FGL(Q) in ASF-78 is shown below in Table D-2. It is readily apparent that only the Central Region would be in a position to rapidly undertake major selective release operations. Southern Region would most likely need to generate additional nuclear resources in order to execute significant selective release operations. Northern Region has no immediate selective release capability.

TABLE D-2. DCA TASKED AT FGL(Q)

Allied Tactical Air Force (ATAF)

	Central Region		Southern Region		
Aircraft	TWO	FOUR	FIVE	SIX	TOTAL
F-104	9	6	2	4	21
F-4	-	16	1	3	20
F-100	-	-	-	2	2
F-111	-	16	-	-	16
JAGUAR	5	-	-	-	5
BUCCANEER	2	-	-	-	2
TOTAL	16	38	3	9	66

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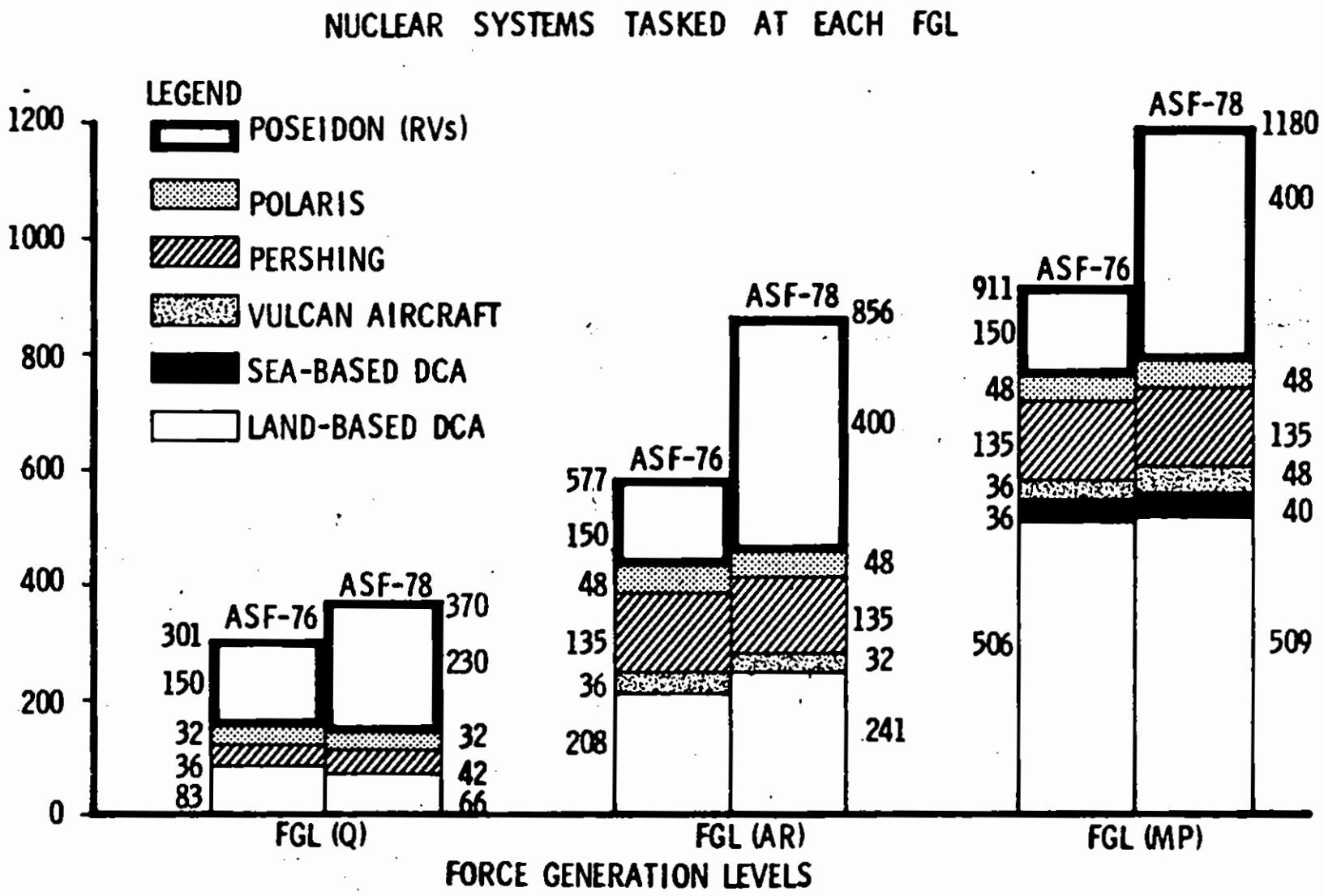
Summary

10. (NS) The FGL concept allows DCA availability for the various roles to be controlled in an optimum manner consistent with the tactical and strategic situation. DCA on QRA status at the ruling FGL would be equally available for selective release operations, which would take precedence. In cases where the geographical or numerical distribution of alert aircraft does not meet selective release requirements, DCA operating in the conventional role could be re-configured for this tasking. It can be seen, therefore, that commitment of DCA to SSP tasking would not degrade their availability for selective release operations, and their availability for conventional operations is optimised in FGL tasking and controllable within the inherent flexibility of the FGL system. Peacetime QRA requirements must take account of political as well as operational factors and the planned ASF-78 level of 66 DCA probably represents as low a level of tasking as it would be prudent to plan.

SHAPE/040/77 (Annex D)
Figure D-1

~~COSMIC TOP SECRET~~



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ANNEX E

SACEUR'S DUAL-CAPABLE AIRCRAFT STUDY

DUAL-CAPABLE AIRCRAFT IN THE ACE SCHEDULED STRIKE PROGRAMS (SSP)

1. (NS) General. The aim of this Annex is to show the number of DCA scheduled in the SSP following the assignment to SACEUR of additional POSEIDON RVs. The effect of the commitment of additional POSEIDON RVs to the SSP is shown by comparison of the 1978 plan (ASF-78) with that of 1976 (ASF-76), which did not include them. It also examines the utility of sea-based strike systems in general nuclear response, the possibilities for substitution of missiles for aircraft in the SSP, and gives an insight into the US SIOP impact on ACE planning.

2. (NS) Limitations.

a. A complete analysis of the results of the changes in force availability over the two plan years would have to take account not only of theater forces, but also of the planned employment of external US strategic (SIOP) forces against targets of interest to ACE. The planning cycle for the two plans does not provide for full SIOP data to be available until the effective date of the plans, 1 October of each calendar year. Therefore, not all the data in SIOP 5B as it relates to ASF-78 is yet known. Consequently, in accordance with normal procedure, ASF-78 is being developed based on SIOP 5A data and the comparisons herein have these same limitations. As a result, some of the figures could change prior to the effective date of the plan; however, experience has shown these changes to be minor in nature, usually involving movement of only those ACE strikes necessary to achieve deconfliction. Also, it should be noted that Damage Expectancy (DE) of SIOP strikes is not provided to ACE. This further limits analysis of plan effectiveness since DE is the fundamental factor in the determination of weapons application. This highlights the fact that, although much progress has been made in recent years towards better coordination of the SIOP and the SSP, more integration of the plans from the outset of the planning process is needed if redundancy is to be avoided and the most effective use of combined assets achieved.

b. While POSEIDONs are included in ASF-77, the timing of the US offer in relation to the planning cycle for that plan year did not allow a laydown considered valid for comparison purposes.

c. An accurate assessment of the degree to which missiles might be substituted for aircraft in the SSP was not possible within the time and analytical resources available for this study. Only a complete analysis which also considers the possible permutations of force application resulting from an examination of SIOP contribution could accurately establish the degree to which substitution would be feasible. However, the main factors affecting the feasibility of substitution are discussed and provisional estimates are derived from the limited analysis which was possible.

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SSP Targets

3. (NS) Targets for strike by ACE forces in the SSP are selected from two data bases. The ACE Critical Installation List (ACIL) is a list of targets which constitute the greatest threat to ACE. The Regional Critical Installation List (RECIL) is a list of targets ranked by the Major Subordinate Commanders of ACE. Because of the relatively large number of potential targets included within the ACIL and RECIL, SACEUR and Major Subordinate Commanders (MSCs) develop an ACE Threat Target List composed of those high priority ACIL and RECIL targets which merit nuclear strikes in the current plan year. This list consists exclusively of fixed military threat targets which are categorized by type and degree of threat into three main target categories -- nuclear threat targets, conventional threat targets, and military logistical support targets. Appendix E-1 shows the types and distribution of these main threat targets within the above categories. The highest priority time-sensitive targets are included in the Priority Strike Program (PSP) which is covered at FGL(AR) (see Annex D). Other targets are included in the Tactical Strike Program (TSP) which together with the PSP, constitute SACEUR's SSP.

Theatre Strike Forces

4. (NS) Annex C shows the distribution and characteristics of the strike systems available to ACE for ASF-78. A comparison between these assets and those which were available in 1976 is at Appendix E-2. This comparison shows that, in addition to POSEIDON, the numbers and types of aircraft varied considerably between the two plan years, resulting in a net increase of 272 aircraft and RVs available for SSP planning in ASF-78.

Force Application Methodology

5. (NS) The application of forces against targets in the SSP is a complex process. In essence, it consists of striving to achieve desired Damage Expectancies (DE) against the target array by applying ACE weapon systems in a way which will optimize the effectiveness of the program whilst remaining within planning constraints. DE is the product of the Probability of Arrival (PA) of a weapon on the target and the probability of its achieving desired weapon effects (Probability of Damage (PD)). ACE DE goals are 90, 75 and 50 percent against nuclear threat, conventional threat, and military logistical support targets, respectively. If a single weapon cannot achieve the ACE DE goal, additional weapons are targetted. Thus a Compound Damage Expectancy (CDE) is calculated and compared to the required DE goal. ACE DE goals have still not been fully achieved nor have assets been tasked against all targets simply because of insufficient resources, and because inherent system and range limitations precluded certain targets being struck with available assets. The varying characteristics of individual strike systems result in differing values for the elements which make up DE against specific targets. Variables include pre-launch survivability, penetration probability, delivery accuracy and weapon yield. Planning constraints include those necessary for limiting collateral effects, for retaining the options of withholding certain strikes, if desired, and those

associated with the timing of strikes and their mode of delivery. Factors of particular importance to the effectiveness of the SSP include:

a. The planned participation of Allied Forces.

b. The need to cross-target high priority targets with different systems in order both to avoid over-reliance on any single system and to optimize the probability of successful target engagement.

c. The requirement to ensure early strikes against time-sensitive targets.

d. The need to avoid mutual conflicts between strikes, both at targets and en-route to targets, and also between the SIOP and the SSP (deconfliction).

6. (NS) In the application of forces to the ACE target array, each weapon system has its advantages and limitations. Modern DCA have good accuracy and a wide selection of yields but are vulnerable during penetration; many are limited in range. While PERSHING has a good CEP and is very responsive it is also range-limited. Deeper targets can be struck by POLARIS, VULCAN aircraft, F-111s or POSEIDON; however, the POSEIDON yield is fairly low and each of the 10 RVs of a missile must be targetted within the geographical limits of its "footprint" and must also meet the criteria for flexibility in the withholding of certain strikes. Offsetting these limitations, Sea-Launched Ballistic Missiles (SLBMs) have good pre-launch survivability and penetration probability factors. Aircraft, on the other hand, provide most of the flexibility needed to avoid conflicts between strikes. All these factors, as well as those mentioned in the preceding paragraph, have to be taken into account in SSP development. It is obvious that a mix of systems is necessary to the achievement of overall objectives.

Comparison of ASF-76 and ASF-78

7. (NS) The forces applied in ASF-78 as compared to ASF-76 are shown by system at Appendix E-3. Appendices E-4 and E-5 give a detailed comparison of the numbers and types of DCA tasked in each of the plan years. These figures show:

a. An increase of 321 in the total number of planned strikes by all systems (from 970 to 1291).

b. Virtually no change in the number of DCA committed to the SSP (542 as against 549).

c. That essentially the same proportion of the available DCA (58%) are committed in each plan.

d. That Southern Region DCA (including sea-based aircraft) are tasked at a higher level in ASF-78 than in ASF-76 whilst the Central Region tasking level decreased slightly.

8. (CTS) Total Strikes. The increase in total SSP strikes resulted from the 250 additional SACEUR-assigned POSEIDON RVs and the additional strikes available from VULCAN, JAGUAR, F-111 and carrier-based aircraft, which more than offset the reduction caused by F-4 aircraft withdrawn from the program. The availability of those additional and more capable assets also improved the ability of ACE systems to engage high priority targets which had previously been out of range. In particular, the additional F-111 (multi-weapon carriers) and VULCAN aircraft allowed targetting of deeper targets which could not be fully accommodated within the POSEIDON footprint limitations or for which the POSEIDON yield/accuracy combination did not achieve an acceptable DE. POSEIDON was applied against targets in NSWP countries where its contribution improved DE or cross-targetting objectives and was acceptable (for time-sensitive targets) in regard to strike timing (not all SLBM can meet ACE generation requirements - see Annex D). The net result of the ASF-78 application of ACE forces was a better target coverage and improved DE against the ACE target array as shown in Appendix E-6. It is apparent from these figures that:

a. Although the target coverage was increased from 596 to 715, this still represents less than half the 1524 ACE Threat Targets shown in Appendix E-1.

b. Although the combined DE achieved against these targets showed a substantial improvement, none reached the ACE DE goals established for the various threat categories.

9. (CTS) POSEIDON Application. The 400 SACEUR-assigned POSEIDON RVs were targetted both in the USSR (150 RVs) and in the NSWP (250 RVs). In addition, the SIOP contribution to the SSP also includes a considerable number of other POSEIDON RVs. As noted in paragraph 2, it is not yet possible to quantify the total SIOP contribution to ACE target coverage and DE which must be added to the figures given in Appendix E-6. However, sufficient progress has been made with the NSWP SIOP 5B/ASF-78 POSEIDON application to determine the quantitative extent of its contribution to ACE. In 1976 the SIOP scheduled 444 POSEIDON RVs against targets in the NSWP to meet SIOP objectives. Some of these targets were of mutual ACE/SIOP interest. In these cases, POSEIDON RVs contributed significant DEs to about 200 ACE targets in ASF-76. The current combined SIOP 5B/ASF-78 POSEIDON application in the NSWP is expected to increase by 102 RVs to a new total of 546 POSEIDON RVs compared to 1976. SACEUR was given targetting authority over 250 of these RVs to specifically accomplish ACE objectives. This combined ACE/SIOP POSEIDON application (546 RVs) is now expected to contribute significant DEs to 336 ACE targets in ASF-78. Thus the net effect of these additional 250 SACEUR-assigned RVs, which were targetted in the NSWP, is an ability to contribute significant DEs against approximately 136 additional NSWP targets in 1978 as compared to 1976.

10. (NS) Commitment of DCA. Although roughly the same number of DCA are scheduled in the SSP for both plan years, there was an increase in F-111 aircraft, which can carry more than one weapon. This factor increased the number of strikes available from DCA and was instrumental in allowing more high priority targets to be included in ACE system

coverage. Because of the more favorable weapon/target ratio in the Central Region (all systems considered), it was possible to reduce DCA unit tasking levels in some cases, though the need to maintain coverage of deeper targets left some units still tasked at a relatively high level (e.g., BUCCANEER). In the Southern Region, despite the application of additional POSEIDON RVs, the weapon/target ratio remained less favorable. This, coupled with the need to plan the target coverage to take account of uncertainties as to the availability of Greek and Turkish units, resulted in a higher level of tasking of both land and sea-based DCA against Southern Region targets. The overall DCA tasking level of 58 percent in ASF-78 is a product of all the various factors so far discussed. It represents, in effect, a compromise between the efforts to reach SSP objectives and a recognition of the other roles which DCA may have to play in situations less than general nuclear war.

DCA Contribution to the SSP

11. (CTS) As shown in Annex D (Figure D-1), DCA contribute one-fifth of the total planned strikes at FGL(Q), one-third at FGL(AR) and one-half at FGL(MP) in ASF-78. The preponderance of land and sea-based missile systems included in the lower FGLs is designed to allow maximum flexibility in the use of DCA for other tasks. In effect it commits the nuclear-only systems to covering the major part of the PSP. With the PSP essentially fully covered at FGL(AR), 241 DCA are included. The TSP depends almost exclusively on DCA for its execution and provides necessary support to Regional Commanders in the conduct of tactical operations.

12. (CTS) DCA contribute to PSP coverage both in terms of the number of targets scheduled to be struck and in the achievement of DE. Out of a total of about 500 targets, 42 are covered by DCA alone. Thus a 92 percent coverage of the target array is achieved with nuclear-only systems at FGL(AR), though the DE against many of these targets would be degraded without the planned DCA contribution. The DE achieved by DCA varies according to individual target characteristics and aircraft/weapon combinations. With this information available, it is, therefore, possible to make decisions concerning a possible trade-off between retaining DCA in a conventional configuration and accepting a known degree of degradation of target coverage and/or Damage Expectancies.

SIOP Contribution to the SSP

13. (NS) The execution of the ACE SSP in general nuclear response would be simultaneous with that of the US SIOP, although due to the differences in targetting objectives, the SSP target list covers only a portion of the overall target spectrum which would be attacked in this combined and coordinated SSP/SIOP plan. However, many of the higher priority targets are of mutual interest to ACE and SIOP planners, while in other instances ACE targets would be within the weapons effects

radii of scheduled SIOP Strikes. Obviously then, the SIOP contribution to SSP objectives is an important consideration for ACE nuclear planners since, as was discussed earlier, ACE weapons alone can cover less than half the targets on the ACE Threat Target List. Unfortunately, as paragraph 2a points out, much of the data regarding specific SIOP strikes are not available to ACE until very late in the joint planning cycle, and some US planning factors (e.g., DE) are not provided to NATO. Consequently, the complementary effects of a large proportion of the SIOP laydown can only be approximated by ACE planners, based on the previous year's SIOP. Nevertheless, despite these handicaps, it has proved possible to estimate the probable SIOP laydown with sufficient accuracy to insure coverage of a major portion of the ACE Threat Target List, although some redundancy of SSP/SIOP targetting is bound to result. Under current planning procedures, once the SIOP laydown is known, time constraints and resource limitations permit the last-minute retargetting of only a few ACE strikes.

14. (NS) In order to provide some quantitative assessment of the extent to which the US SIOP contributes to overall ACE targetting objectives, one would normally examine the fully planned ASF and SIOP for the same plan year. As discussed in paragraph 2 , because ASF-77 did not properly reflect the full impact of the additional POSEIDON, this study has necessarily used the still incomplete ASF-78 as the ACE data base, even though it is recognized that some additional -- though relatively minor -- changes will be made before the plan goes into effect on 1 October 1977. At this point in the planning cycle for SIOP 5B, on the other hand, with the exception of the planned US POSEIDON impact points in the NSWP, the SIOP laydown has not been provided to ACE and will not be available for several more months. It has been necessary, therefore, to draw on SIOP 5A in attempting to gain an insight into probable SIOP/ASF interplay. A simplified methodology was developed which would integrate the estimated numbers of SIOP 5A weapons affecting the ACE target system with those ACE weapons currently targetted in ASF 78. This hybrid plan was then used to illustrate the probable total effect of the combined plan against the ACE Threat Target List and to draw some conclusions regarding their total contribution to ACE DE goals.

15. (NS) This hypothetical combined plan was developed as follows:

a. In weaponeering a specific target, a weapon yield is normally considered sufficient if it will achieve a Probability of Damage (PD) against this target of at least 90 percent. If this PD is combined with a typical Probability of Arrival (PA) of 60 percent, the resulting Damage Expectancy (DE) of a typical weapon against this particular target -- the product of these individual probabilities -- is 54 percent, which would normally satisfy the ACE requirement for a "suitable" weapon. If the assumption is made that weapons/targets are matched such that this desired DE is met, then the theoretical weapon requirements needed to meet ACE Compound

Damage Expectancy (CDE) goals against the ACE Threat Target List can be calculated as follows:

(1) Nuclear Threat Targets (DE Goal = 90%): Three "suitable" nuclear weapons are required per target.

(2) Conventional Threat Targets (DE Goal = 75%): Two "suitable" nuclear weapons are required per target.

(3) Military Logistical Support Targets (DE Goal = 50%): One "suitable" nuclear weapon is required per target.

b. Utilizing these guidelines and postulating that each weapon does not affect more than one target, it was calculated that the ACE Threat Target List could be fully targetted by a total of 3,291 "suitable" nuclear weapons(1).

c. In ASF-78 a total of 1,291 nuclear strikes are currently scheduled. Assuming that all these weapons meet the suitability criteria outlined above, there is a shortfall of 2,000 weapons required to meet ACE DE goals. In SIOP 5A an estimated 1,600 SIOP weapons (from land-based and sea-based missiles and aircraft) were either targetted on ACE targets or contributed to ACE DE goals. If this same weight of effort is applied to ASF-78, the SIOP contribution would reduce the ACE shortfall to about 400 weapons (see Appendix E-7). It is especially significant to note the SIOP coverage of high priority, nuclear threat targets in the USSR.

16. (NS) This illustrative example amply demonstrates the reliance that ACE must place on SIOP to meet ACE Damage Expectancy goals. In the hypothetical circumstances depicted above, SSP coverage increased from about 40 percent for ACE coverage alone, to 90 percent with the additional SIOP contribution. Although this example must be considered only within the context of its simplifying assumptions, its clear implication of the importance of SIOP to ACE is nonetheless valid. The 1978 SIOP-5B plan, when completed, could provide a contribution to ASF-78 of similar magnitude to that illustrated above. However, for the reasons outlined in paragraph 2a, such an effective merger of the SSP and SIOP is not possible until greater integration of the two plans from the outset of the planning process is achieved.

Substitution of Missiles for Aircraft in the SSP

17. (NS) POSEIDON missiles may deliver up to 10 warheads on the same number of aiming points. The arrangement of the aiming points, coupled with the technical characteristics of the Re-entry Vehicle, result in a

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(1) In reality, it would not be possible to select a "suitable" weapon against many targets; e.g., hard, point targets. Thus more weapons would be required than are indicated above. On the other hand, some weapons would produce significant DEs against more than one target, and thus would tend to offset a portion of this increase in weapon requirements.

"feasible POSEIDON footprint." More than one RV may be planned against the same target. If planned against different targets, all such strikes must be executed at the same time. The planner must consider these factors in selecting POSEIDON targets, developing desired ground zeros (DGZs) and applying POSEIDON forces. Consequently, these factors, as well as the missile's inability to be recalled or to abort or to speed-up or to delay along its trajectory, result in a certain degree of inflexibility in substituting missiles for aircraft. POLARIS missile systems have similar considerations. Although both SLBM systems have fixed yields, POSEIDON RV yields are comparable to medium yield aircraft-delivered bombs and POLARIS RV yields are larger than the yields delivered by ACE aircraft.

18. (NS) Since Damage Expectancy (DE) is equal to the product of a system's PA and PD, then the substitution of missiles for aircraft can be considered through this relationship. If a combination of POSEIDON RVs will achieve the same DE as one or more aircraft-delivered weapons, then on the basis of DE there is a ratio of POSEIDON RVs equivalent to DCA weapons. For this ratio to be a valid indication of the degree of substitution feasible in a specific strike plan, the following limitations would have to be considered:

a. The targets selected for missile RVs have to be positioned in a "feasible POSEIDON footprint".

b. The interaction between weapon and target characteristics must result in acceptable Damage Expectancies.

c. The risk to the civilian populace and other non-targets must not exceed SACEUR's Nuclear Constraints.

d. The combination of targets within a POSEIDON footprint must be in the same country and be generally of the same degree of urban risk so that a missile load of strikes may be withheld at the time of execution of the SSP if attacks are not desired on a country or urban area.

e. Targets selected for substitution and packages for execution by POSEIDON footprint should not decrease the capability of ACE to implement the strategy of flexible response. Selective release strikes against SSP targets should be executable against critical installations while controlling escalation. If an additional weapon system is required to support selective release operations, then the substitution of the missile system may result in increased requirements for nuclear weapon systems beyond those required for the SSP.

19. (NS) The primary factors influencing the substitution of missiles for bombs are, inter alia, those variables that can be predicted in computing the probability of successfully destroying a target. These variables include the probability of a successful launch, weapon system

reliability enroute to the target, the probability of successfully penetrating enemy defenses, and the probability of the nuclear warhead successfully accomplishing the desired degree of specified damage. As discussed in paragraph 6, each delivery system has its advantages and limitations. The planner attempts to minimize inherent limitations in one type of weapon system by assigning a different type of weapon system to the same target with offsetting advantages. This "cross-targetting" is a fundamental concept employed in developing the SSP. Theater strike forces are cross-targetted alone or with US-SIOP forces to achieve compound damage expectancy goals from all nuclear effects predicted to impact on ACE targets.

20. (NC) Targets scheduled for attack by DCA systems with accuracies and warhead yields comparable to those of the POSEIDON system result in a ratio of one POSEIDON RV to one DCA weapon. Other targets scheduled for attack by more accurate DCA systems with larger yield bombs would most likely result in a ratio of more than one POSEIDON RV for each DCA weapon. But a simple review of targets presently covered by DCA would not reveal specific POSEIDON substitution possibilities because of the factors already discussed. Only a complete analysis, taking SIOP into account, of the many permutations of force application which are possible could establish accurately the degree to which substitution would be feasible. Based on a limited examination of the ASF-78 plan (but not including SIOP), the possibilities for either additional POSEIDON RVs or substitution would appear to be limited in East Germany and Czechoslovakia due to potential conflict problems. More scope might exist for using additional POSEIDON against longer range targets in Poland and the USSR and in the WP countries facing Southern Region where the weapon/target ratio is not yet in balance. Additional POSEIDON might also offer possibilities for some substitution of missiles for aircraft where weapon/target ratios are in relative balance; but, in general, any substitution of missiles for aircraft would be likely to exceed a one-for-one ratio. Whether feasible substitutions would in fact be desirable would have to be evaluated in a wider context than general nuclear response plans alone.

Sea-Based DCA

21. (NS) The A6/A7 aircraft of the Sixth Fleet provide essential support to the SSP in an area where, as noted earlier, targets cannot be adequately covered by land-based DCA. Fleet aircraft therefore provide important cross-targetting opportunities and are in fact applied against high-priority targets which are also targetted by POSEIDON and land-based DCA. To eliminate the inhibiting effect on carrier operations of having more than 6-8 aircraft in a nuclear configuration on the flight deck, A6/A7 aircraft are not committed to the SSP at force generation levels below maximum posture. Since that posture would only be adopted when general nuclear response was imminent, and since 12 hours warning is required to reach maximum posture, the SSP commitment of Fleet aircraft

would not result in undue restrictions on the operational flexibility of the aircraft carriers prior to the declaration of FGL(MP).

7 Appendices

E-1. ACE Threat Target List

E-2. Comparison of Nuclear-Capable Forces Available to ACE for Tasking by Plan Year

E-3. Weapon System Tasking in ASF-76 and ASF-78

E-4. ACE DCA Systems Tasked in ACE Strike File 1976

E-5. ACE DCA Systems Tasked in ACE Strike File 1978

E-6. Average Compound Damage Expectancy of ACE Weapons Systems (ASF-76 and ASF-78)

E-7. Hypothetical Contribution of SIOP to ASF-78

ACE THREAT TARGET LIST

NUCLEAR THREAT	NSWP(1) GC	CZ	PL	HU	RO	BU	Total	USSR	Total
IRBM/MRBM Sites	--	--	--	--	--	--	--	155	155
Airfield Facilities	26	12	19	14	7	12	90	171	261
Nuclear Capable Ports	1	--	2	--	1	1	5	18	23
Nuclear Storage Sites	9	9	10	5	--	9	42	84	126
Nuclear Capable HQs	5	3	4	3	2	4	21	60	81
Total	41	24	35	22	10	26	158	488	646
CONVENTIONAL THREAT									
Airfield Facilities	47	35	40	13	14	17	166	88	254
Conventional HQs	13	13	20	12	3	9	70	71	141
Conventional Ports	8	--	5	--	2	2	17	20	37
Radar, Radio, ECM	4	1	3	--	--	--	8	--	8
Ground Forces	19	5	--	--	--	3	27	--	27
Chem/Bio Storage	2	1	1	2	1	--	7	1	8
Total	93	55	69	27	20	31	295	180	475
MILITARY LOGISTICAL SUPPORT									
POL Storage	10	5	8	9	9	7	48	24	72
Railroad Facilities	44	20	42	14	15	9	144	35	179
Maint/Supply Depots	4	--	--	4	1	4	13	1	14
LOCs	96	22	--	3	1	8	130	8	138
Total	154	47	50	30	26	28	335	68	403
TOTAL TARGETS	288	126	154	79	56	85	788	736	1524

(1) GC=East Germany; CZ=Czechoslovakia; PL=Poland; HU=Hungary; RO=Romania; BU=Bulgaria

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Appendix E-2 (CTS)

Comparison of Nuclear Capable Forces
Available to ACE for Tasking by Plan Year

LAND-BASED DCA	PLAN YEAR 1976	PLAN YEAR 1978	CHANGE
F-111	72	156	+84
F-4	408	306	-102
F-104	288	288	-
BUCCANEER	36	36	-
JAGUAR	24	48	+24
F-100	36	36	-
Total	864	870	+6
SEA-BASED DCA			
A6	24	24	-
A7	48	48	-
Total	72	72	-
STRIKE-ONLY AIRCRAFT			
VULCAN	40	56	+16
SLBM			
POSEIDON RVs	150	400	+250
POLARIS	48	48	-
Total	198	448	+250
SSM			
PERSHING	180	180	-
ACE TOTAL	1354	1626	+272

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Appendix E-3 (CTS)

Weapon System Tasking in ASF-76 and ASF-78

Weapon System	ASF-76	ASF-78
Land-Based DCA	506(1)	509(3)
Sea-Based DCA	36(2)	40(4)
VULCAN Aircraft	36	48
PERSHING	135	135
POLARIS	48	48
POSEIDON RVs	150	400
Total Systems Tasked	911	1180
Total Nuclear Strikes	970	1291
No. of Targets Engaged	596	715

(1) 50 two-weapon carriers

(2) 9 two-weapon carriers

(3) 101 two-weapon carriers

(4) 10 two-weapon carriers

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Appendix E-4 (CTS)

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ACE DCA Systems Tasked in ACE Strike File 1976 (ASF-76)

LAND-BASED DCA	UNIT ESTABLISHMENT (UE)	No. TASKED ASF-76 (1)	% UE TASKING
Central Region			
F-104	180	107	59.4%
BUCCANEER	36	29	80.5
JAGUAR	24	15	62.5
F-4	354	174	49.2
F-111	72	50	69.4
Sub-Total Tasked	666	375	56.3%
Southern Region			
F-104	108	70	64.8%
F-4	54	35	64.8
F-100	36	26	72.2
Sub-Total Tasked	198	131	66.1%
Total Tasked	864	506	58.5%
SEA-BASED DCA			
Southern Region			
A6/A7	72	36	50.0%
ACE TOTAL - Tasked	936	542	58.0%
ACE TOTAL - Not Tasked	394		

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Appendix E-5 (CTS)

ACE DCA Systems Tasked in ACE Strike File 1978 (ASF-78)

LAND-BASED DCA	UNIT ESTABLISHMENT (UE)	No. TASKED ASF-78 (1)	% UE TASKING
Central Region			
F-104	180	98	54.4%
BUCCANEER	36	27	75.0
JAGUAR	48	30	62.5
F-4	252	106	42.0
F-111	156	101	64.7
Sub-Total Tasked	672	362	53.8%
Sub-Total Not Tasked in ASF-78	310		
Southern Region			
F-104	108	77	71.3%
F-4	54	43	79.6
F-100	36	27	75.0
Sub-Total Tasked	198	147	74.2%
Sub-Total Not Tasked in ASF-78	51		
Total Tasked	870	509	58.5%
Total Not Tasked in ASF-78	361		
SEA-BASED DCA			
Southern Region			
A6/A7 Tasked	72	40	55.5%
A6/A7 Not Tasked in ASF-78	32		
ACE TOTAL - Tasked	942	549	58.2%
ACE TOTAL - Not Tasked in ASF-78	393		

(1) Number tasked represents initial mission assignments prior to resolution of conflicting sorties which will result in reduced tasking. Tasking may be further reduced on receipt of the 1978 US-SIOP 5B coverage.

Average Compound Damage Expectancy (CDE) of ACE Weapons Systems (ASF-76 and ASF-78)

TARGET GROUP	NSWP				USSR				TOTAL			
	ASF-76		ASF-78		ASF-76		ASF-78		ASF-76		ASF-78	
	TGTS	CDE	TGTS	CDE	TGTS	CDE	TGTS	CDE	TGTS	CDE	TGTS	CDE
Nuclear Threat DE goal=90%	115	65	115	81	148	46	204	58	263	54	319	66
Conventional Threat DE goal=75%	135	45	164	58	15	28	29	45	150	42	193	56
Military Logistical Targets DE goal=50%	177	25	197	29	6	39	6	38	183	26	203	29
Total Targets	427		476		169		239		596		715	
Overall Average CDE		42		52		43		55		42		53

NOTE: Compound Damage Expectancy (CDE) values shown are weighted averages (to the nearest percent) based on the number of ASF-78 targets struck by ACE systems and their resulting CDEs.

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APPENDIX E-7 (CTS)

Hypothetical Contribution of SIOP to ASF-78

NUCLEAR THREAT	NSWP	USSR	TOTAL(1)
Weapons Needed(2)	474	1464	1938
ASF-78 Tasking(3)	409	307	716
SIOP 5A Contribution(4)	50	1140	1190
SHORTFALL	15	17	32
CONVENTIONAL THREAT			
Weapons Needed	590	360	950
ASF-78 Tasking	318	48	366
SIOP 5A Contribution	130	150	280
SHORTFALL	142	162	304
MILITARY LOGISTIC SUPPORT			
Weapons Needed	335	68	403
ASF-78 Tasking	201	8	209
SIOP 5A Contribution	80	50	130
SHORTFALL	54	10	64
TOTAL SHORTFALL	211	189	400

(1) All weapons are assumed to achieve a minimum Damege Expectancy of 54 percent; each weapon affects one target only.

(2) A hypothetical number of weapons needed to meet ACE damage objectives based on DE goals and the ACE Threat Target List.

(3) Planned weapons application for ASF-78.

(4) The estimated number of 1977 SIOP 5A weepons that impact on or near ACE Targets.

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ANNEX F

SACEUR'S DUAL-CAPABLE AIRCRAFT STUDY

EMPLOYMENT OF DUAL-CAPABLE AIRCRAFT

IN SELECTIVE RELEASE OPERATIONS

1. (NS) All surviving nuclear-capable systems are potentially available for employment in limited nuclear operations under the procedures for selective release of nuclear weapons (Selrel). Since the scale, scope and duration of any Selrel operations cannot be predicted with confidence, and since the assets needed to conduct such operations are in some cases the same as those needed for waging conventional or general nuclear war, no attempt will be made in this section of the study to quantify DCA requirements specifically for Selrel operations. The discussion which follows is intended to illustrate the role of DCA in Selrel as compared to the roles of other weapons systems, and to arrive at conclusions as to the degree of reliance being placed in DCA to provide Selrel options.

Weapon Systems

2. (NS) The choice of weapon systems for Selrel operations is a function of system characteristics and targetting objectives as governed by any constraints which may be applicable. The principal factors affecting the choice of a weapon system for a specific Selrel task are the system's location, range, accuracy, yield, delivery mode and responsiveness. The role of DCA can best be illustrated by comparing their characteristics with those of other candidate systems in the context of the potential target array. Annex C lists existing systems, their characteristics and their distribution within ACE. The systems are categorised as strike forces or ground organic systems for the purpose of differentiating between those which have a capability for performing a preplanned mission in general nuclear response (strike forces) and those not having such a mission (organic systems). Excluded are systems such as SA, AAW, ASW, and ADM which have specialised roles.

a. Dual-Capable Aircraft. DCA are the most flexible of the nuclear-capable systems in terms of weapon yields available, particularly in the low yield range. Except for LANCE, they are the only system capable of delivering weapons of sub-kiloton or low KT yield at ranges beyond about 25 KM from the FEBA. Their responsiveness is enhanced by variable yield weapons not available in other strike systems. Weapon delivery accuracy is at best superior to, and at worst comparable with, other strike systems, but is more influenced by weather conditions; however, this latter distinction is of significance mainly in the attack of fixed targets since weather is a pervasive factor in the acquisition of mobile targets whatever engagement system may be employed. The probability of penetrating enemy defenses is in general lower for DCA than for missiles of all types.

b. POLARIS and POSEIDON. The characteristics of SLBMs make them essentially systems for general nuclear response. The fixed yields of POLARIS and POSEIDON and the MIRV footprinting characteristics of POSEIDON would limit their targetting flexibility in Selrel and could preclude their use where highly selective or low yield strikes were required. In addition, the command and control problems associated with retargetting SLBMs make them less responsive in the Selrel role. The escalatory implications or using what might be perceived by the Soviets as a strategic system in limited operations would also be a factor to be taken into account

c. VULCAN Medium Bomber. Although it could be used in a limited Selrel role, the VULCAN is regarded as being primarily a system for general response in view of its range capability and weapon field.

d. PERSHING. The responsiveness and accuracy of PERSHING is generally comparable with DCA but its medium to high yield could limit its applicability in Selrel missions. Any requirement for changing the loaded weapon yield of PERSHING would involve a time penalty of about 2-3 hours.

e. Organic Systems. These systems are outside SACEUR's FGL system and the responsiveness of individual units would depend on the tactical situation, for example on whether they were fully deployed in firing positions or on the move to new tactical locations. The LANCE and HONEST JOHN yields offer some capability against large area targets, but in the main the organic systems are designed for use against smaller deployed land force targets at relatively close range. Their effectiveness depends on the successful acquisition of mobile targets. NATO's current target acquisition systems mainly cover the area out to about 25 KMs beyond the FEBA within which range about 50 percent of unmasked targets are likely to be detected, though technological developments are likely to extend this capability out to about 100 KMs beyond the FEBA in the 1980s.

f. Carrier-Based DCA. In addition to the factors discussed in paragraph 2a, carrier-based DCA are affected by factors peculiar to maritime forces. In some circumstances they could be fully committed to the battle for control of the sea and their availability to support other Selrel operations could thereby be precluded or limited unless overriding priorities were established at the time on a basis of calculated risk. There are also physical limitations to the number of carrier-borne DCA which can be nuclear-configured and held at alert status without seriously hampering other carrier operations necessary for fleet defense. Finally, the ability of fleet DCA to reach some targets nominally within their range would depend on the carrier being properly positioned or able to reach a suitable position in time to launch the strikes required.

3. (NS) Survivability. To be available for selective employment a nuclear system must have survived, together with its warhead supply. An assessment of the probability of survival of particular weapon systems

is critically dependent on the scenario assumptions made. However, with this limitation in mind, the following broad generalisations can be made.

a. SLBM's have a high probability of pre-launch survival. Survivability could be degraded by position disclosure during a Selrel launch; should this result in the loss of the submarine, a disproportionate part of the ACE general nuclear response capability would be lost.

b. All aircraft, including land and sea-based DCA, are vulnerable to attack on their bases, and surviving aircraft could be prevented from operating by the loss of critical base facilities. DCA in the conventional role would also be exposed to the risks involved in the conduct of conventional air operations. On the other hand, on-base shelters and point defenses together with the inherent flexibility of aircraft permitting their rapid dispersal and redeployment are factors which limit vulnerability.

c. The vulnerability of land-based missile systems such as PERSHING and LANCE depends mainly on whether the system's location remains undetected. The mobility of PERSHING is limited. LANCE can use its mobility to avoid detection but at some cost to its responsiveness.

d. Where artillery has the advantage of numbers it can suffer high attrition of artillery pieces without complete loss of its nuclear capability, provided that nuclear rounds remain available. However, its necessary forward deployment exposes it to attack by a wide variety of enemy weapons and to the risk of being overrun by a rapidly advancing enemy.

e. Survivability of all systems is enhanced by deployment further to the rear but only at the expense of loss of operational effectiveness in terms of the depth at which targets can be engaged.

4. (NS) Flexibility. A vital requirement in defense planning is the ability to bring concentrated force to bear quickly in support of a threatened sector. Only SLBM have the range necessary to provide nuclear support ACE-wide from planned launch positions, but these systems are limited by the factors already discussed. While some ground organic systems are air-transportable, the time needed to redeploy them over long distances could be prohibitive. DCA have an inherent capability for rapid concentration and redeployment. However, the constraints surrounding nuclear operations do not allow for full flexibility, nor do the airbase locations/range capabilities of DCA provide equal flexibility in all Regions of ACE. An extension of the theoretical radius of action of DCA from their main operating bases can be contrived by planning aircraft turn-round at a forward airfield in the supported region, but this requires the necessary cross-servicing facilities. Redeployment of aircraft for the purpose of giving inter-regional support would necessitate the provision of custodial and communications facilities where not already available.

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ANNEX F

The Target System

5. (NS) For the nuclear delivery systems under discussion, the potential Selrel target array is limited only by considerations of escalation control in seeking to achieve the politico-military objective of selective release. Since targetting requirements could vary according to the circumstances (e.g., depending on the nature and scale of enemy action, on whether "initial" or "follow-on" use of nuclear weapons is under consideration, etc.), it is appropriate to consider the capability of theater nuclear forces against the full spectrum of targets of interest to ACE.

6. (NS) The SSP is directed against high priority fixed targets in general nuclear response. Whilst many of these targets could equally be candidates for selective nuclear attack, the potential target spectrum for Selrel operations would be substantially widened by deployed enemy land, air and maritime forces as well as by war-generated fixed targets outside the scope of the SSP.

Weapon System/Target Relationship

7. (NS) The weapon yield required for achieving a given level of damage to a target decreases with reductions in the area or hardness of the target. Increased delivery accuracy also allows a lower yield to be used except in cases where the area of a target governs yield requirements (e.g., large area targets). In all cases the objective would be to accomplish the required military task with a minimum of damage to non-military personnel and facilities. This calls for the selection of a weapon system capable of delivering on the target a warhead of the lowest yield necessary to achieve the required damage. Specific constraints would further limit the choice of warhead for targets, especially on NATO territory.

8. (NS) It is evident from a comparison of the system characteristics and the potential target array that the choice of systems is also strongly range dependent. Table F-1 shows the systems most likely to be considered against targets at various ranges.

TABLE F-1

TARGET DISTANCE (KMs)	WEAPON SYSTEM
0-4	155 MM/8" Howitzer
4-12	155 MM/8" How/LANCE/HONEST JOHN
12-24	Imp 8" How/LANCE/HONEST JOHN
24-100	LANCE/DCA
100-750	DCA/PERSHING/POSEIDON
750-2200	DCA/POSEIDON
2200-plus	POSEIDON

9. (NS) To the notional system application shown in Table F-1 must be applied the actual distribution of systems within ACE as shown in Annex C. This results in the Table F-1 being modified for the ACE Regions as follows:

a. Central Region: The decreasing availability of ground organic systems in the NORTHAG area over the next few years, especially in the NL Corps area, could limit or even preclude this option at ranges up to 100 KM in some sectors of the front. This deficiency might have to be overcome by the use of DCA, which are most numerous in the Central Region.

b. Northern Region: The lack of ground organic or other nuclear systems in the Northern Region, except for the very limited numbers in LANDJUT, would result in almost complete reliance on extra-regional DCA and POSEIDON throughout the target range spectrum. But even nominally short-range (0-100 KM) targets in the north of the region could not be reached by most land-based DCA unless aircraft were deployed or recovered to forward operating bases within the region. SACLANT carrier-based DCA could be a likely choice of system against such targets. Some limited coverage in the south might be available from Central Region Pershings.

c. Southern Region: Limited and irregular distribution of ground organic systems in the Southern Region would limit the choice of systems in the 0-100 KM ranges. The lack of LANCE in Greece and Turkey would result in considerable reliance on DCA to engage targets in the 24-100 KM range. The limited availability of nuclear artillery throughout the region could also place emphasis on DCA in the 0-24 KM range in some sectors. The limited numbers of land-based DCA available in the region and their wide geographical distribution could restrict options for their employment, though some additional flexibility could be provided by carrier-based DCA.

10. (NU) Due solely to the interaction between system distribution and range factors it is necessary to modify Table F-1 to reflect the regional choices available for the allocation of systems for Selrel operations as indicated in Table F-2.

The Role of Systems

11. (NS) In the light of the factors already discussed, the likely Selrel roles of the different systems can be considered in relation to the potential target array.

a. POSEIDON. As well as being the only system capable of striking targets at extreme range, POSEIDON could be used against closer, large-area fixed targets on Warsaw Pact territory in cases where the targetting objectives would permit all MIRV warheads of a missile to be employed within its geographical footprint. An example might be a group of enemy airfields with one or more warheads targetted against each airfield. A more discriminate attack, for example against widely separated airfields or targets requiring a lower yield or better accuracy than POSEIDON's, would require the selection of an alternative system. The possible risks attaching to

TARGET DISTANCE from FEBA (KMs)	WEAPONS SYSTEM NORTH (excluding LANDJUT	CENTRAL (and LANDJUT)	SOUTH
0-4	DCA	155(1)/8"How/DCA	155(1)/8"How/DCA
4-12	DCA	155(1)/8"How/Lance(2)/DCA	155(1)/8"How/Lance(2)/HJ(3)/DCA
12-24	DCA	Imp.8"How(5)/Lance(2)/DCA	Imp.8"How(5)/Lance(2)/HJ(3)/DCA
24-100	DCA	Lance(2)/DCA	Lance(2)/DCA
100-750	DCA/Pershing(4)/Poseidon	DCA/Pershing/Poseidon	DCA/Pershing(4)/Poseidon
750-2200(6)	Poseidon	Poseidon	Poseidon
2200 plus	Poseidon	Poseidon	Poseidon

NOTES:

(1) Except in Italy, Turkey and NL Corps
(2) Except in Greece, Turkey and NL Corps
(3) Except in Italy
(4) Limited inter-regional support available from Central Region
(5) Where acquired by national forces
(6) Also a limited DCA capability in this range bracket

the use of POSEIDON in selective release (paragraphs 2b and 3a) would have to be weighed in the light of the situation at the time. It is unlikely that POSEIDON would be considered for employment against mobile targets except, possibly, large maritime or amphibious task forces.

b. PERSHING. PERSHING could be used against fixed targets, such as airfields or hardened command centers, whose size or hardness called for the use of a medium to high yield weapon. Because of its limited redeployment capability, PERSHING could not provide this option against most of the targets facing Northern and Southern Regions. The weapon yield and range limits would probably make it unsuitable for use against most deployed land force targets though some capability against maritime/ amphibious targets in the Southern Baltic Sea might be usable.

c. Ground Organic Systems. Deployed enemy land forces would be the primary targets for ground organic systems, with LANCE having an additional capability against some longer-range fixed targets in the interdiction role to prevent or hinder the reinforcement and resupply of enemy first echelon forces. However these options either do not exist or exist only to a very limited extent outside the Central Region. Moreover, even where the systems are available, their ability to place strikes on Warsaw Pact territory is progressively eliminated if the FEBA advances significantly into NATO territory.

d. Dual-Capable Aircraft. The role of DCA would consist of undertaking those tasks for which other systems are either not available or unsuitable, or tasks for which DCA are more suitable than other systems. Some nuclear options can only be provided by nuclear-capable aircraft, either land or sea-based. Examples of these are as follows:

(1) The attack of targets requiring yields of 10kt or below which are beyond the range of ground organic systems. A high proportion of targets on WP territory such as LOC interdiction, logistic facilities, 2nd echelon or reserve force deployments and WP tactical nuclear systems such as SCUD or SS12 would come into this category as well as enemy 1st echelon troops and their supporting elements on NATO territory.

(2) Discrete attack of WP fixed targets outside the PERSHING range/ yield capability and for which MIRV weapons would be inappropriate. Given the limits of PERSHING, such targets could include most of those facing Northern and Southern Regions and those beyond about 700 Kms facing Central Region.

(3) Support of the land battle either in the close support or interdiction role where ground organic systems are inadequate or not available. Neither POSEIDON nor PERSHING are suitable for close-support operations and both have limitations in the interdiction role. In most of the Northern Region, DCA would be the only means of providing nuclear support. In the Southern Region heavy reliance

would be placed on DCA. In all regions of ACE, DCA would in many cases represent the only rapid means of bringing concentrated force to bear on a time-sensitive tactical situation.

(4) The attack of mobile targets whose precise location is unknown. Given the limitations of current and possible future target acquisition means, only DCA are capable of combining in one mission the search, acquisition and strike functions which may be required to meet a critical threat situation.

(5) The rapid deployment or reinforcement of tactical nuclear capability in areas of ACE where nuclear support is limited or non-existent, as a means of deterrence against attack.

(6) The engagement of maritime/amphibious targets which are out of range of land-based systems could only be undertaken by sea-based aircraft. Soviet major naval surface combatants would be typical targets. In the Mediterranean or Norwegian Seas fleet aircraft may also offer the only means of early neutralisation of a quickly-developing amphibious threat.

Summary

12. (NS) The role of DCA in Selrel operations is much wider than their role in general nuclear response. In the SSP the target array is more limited; there is more scope for substituting one strike system for another in seeking to achieve damage objectives; and the cross-targetting of priority targets together with the effect of the application of external strategic forces reduce reliance on the survival and launch of individual theatre systems at R-Hour. The opportunities for choosing amongst alternative systems to achieve Selrel objectives are much more limited. These limitations derive from the unequal distribution of systems within the theatre; the increased number and greater variety of possible Selrel targets; the difference between damage objectives in Selrel as compared to general nuclear response; the impact of the tactical situation and time on system choice; and, finally, the characteristics of the systems themselves.

13. (NS) Because most of the alternative strike force systems were designed for a strategic response role, DCA alone of these systems offer a reasonable range of options for employment in Selrel. These options result mainly from the inherent flexibility of aircraft and the wide range of variable weapon yields available in air-delivered bombs. In the Selrel role DCA would normally not be employed against targets which are within range (0-100 Kms) of ground organic systems. However, there are areas of ACE, particularly on the

flanks, where DCA might have to be employed in direct support of the land battle because of the lack of ground organic systems. Non-availability of land or sea-based DCA for this role could deny NATO any appropriate nuclear option in some circumstances, since neither POSEIDON nor PERSHING are suitable for the task.

14. (NS) For the engagement of fixed targets on Warsaw Pact territory POSEIDON and PERSHING could play a more active Selrel role, but the limitations imposed by the MIRV characteristics of POSEIDON, the disposition of PERSHING and the yield options available in both systems would restrict their utility. The use of POSEIDON could also have survivability and escalation implications which would require careful evaluation. For these reasons many of the nuclear options notionally available for the engagement of fixed targets in Selrel would rely on the availability of DCA, particularly in the Northern and Southern Regions.

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SACEUR'S DUAL-CAPABLE AIRCRAFT STUDY
DUAL-CAPABLE AIRCRAFT IN CONVENTIONAL OPERATIONS

INTRODUCTION

1. (NU) A portion of the tactical aircraft force which are planned to be made available to SACEUR in time of crisis and war can be used for both conventional and nuclear attack. These aircraft are referred to as Dual-Capable Aircraft (DCA). The purpose of this Annex is to indicate what part DCA play within the total tactical aircraft force in ACE and to illustrate the rate at which they might be destroyed by the enemy in a conventional conflict with the Warsaw Pact (WP).

GENERAL

2. (NS) The utilization of dual-capable aircraft (DCA) in the conventional battle is an important aspect of ACE defense. In order to meet the ACE strategy of flexible response, theater strike aircraft should be dual-capable to the maximum extent possible. This permits the most economical and effective use of aircraft, improves conventional combat power, and facilitates the response of ACE forces to any contingency.

3. (NS) Dual-capable aircraft are not reserved exclusively for the Scheduled Strike Programs (SSP). If necessary, most DCA could be made available for conventional operations. This additional conventional capability increases ACE's ability to counter limited enemy aggression and could reduce the risk of escalation to the use of nuclear weapons.

4. (NC) Planning the utilization of DCA for conventional operations must consider aircraft attrition and the capability to execute selective release operations or the SSP. However, the priority categorization of targets in the SSP and its separation into the Priority Strike Program (PSP) and the Tactical Strike Program (TSP) allows trade-off decisions between continuity of conventional and selective release operations and acceptable degradation of the SSP, should it be executed.

ACE CONCEPT OF AIR OPERATIONS

5. (NS) In a conventional conflict with the Warsaw Pact tactical air operations would generally consist of the following missions:

(1) Close Air Support

(2) Counter-Air Operations

(3) Interdiction Operations

(4) Anti-Surface Air Operations (against naval surface forces)

6. (NS) The objective of tactical air operations will be to inflict damage on the enemy that reduces his capability to continue his aggression against NATO. In the conduct of these conventional missions, dual-capable aircraft and conventional-only aircraft would have similar roles. The only DCA that normally would be withheld from the conventional battle would be those required for Quick Reaction Alert (QRA) at the specified Force Generation Level.

7. (NS) Since the Warsaw Pact has significant numerical superiority over NATO in tactical aircraft, it is necessary to optimise and preserve ACE air resources to the extent possible. An appropriate ratio of aircraft on QRA to aircraft in a conventional role must be maintained to provide substantial DCA resources to the conventional battle, while at the same time retaining the capability to undertake nuclear operations if required. Thus DCA attrition during the conventional battle is of great importance to the ability to conduct nuclear operations. Therefore the conventional battle phase of this study is oriented toward study of the attrition of DCA in the conventional role and its subsequent impact on nuclear capability.

APPROACH

8. (NR) Tactical aircraft in ACE, both in-place and reinforcements, are categorized by their primary roles and broken down by regions for this study. All statistical data is derived from the latest available national replies to the Yearly Defence Planning Questionnaires (DPQs). Additionally, operational data for DCA is given in Annex C. It should be noted that most tactical aircraft can be used for tasks outside of their primary roles. For example, several US F-4 DCA units are capable of All-Weather Intercepts (AWX) and Tactical Recce Fighters (TRF) can, to some extent, be used for ground attack or intercepts. In the opening phase of war, the tasking of all assets would be optimized. However, as aircraft attrition develops and the requirements of battle changes, tactical aircraft may have to be used in other than primary roles. For this reason all types of tactical aircraft in ACE are included in the tables of ACE aircraft assets, though for purposes of this study DCA were assumed to operate in their primary roles.

9. (NS) Approximately 28 percent of the total in-place force of tactical combat aircraft in ACE are DCA. Their characteristics make them particularly suitable for offensive counter-air and interdiction type missions. Except for those aircraft withheld from battle to cover ordered nuclear Force Generation Levels (FGLs), the DCA in the conventional battle will most likely be used to their maximum extent for these counter-air and interdiction missions.

10. (NR) Aircraft attrition depends on many factors, such as performance characteristics of the aircraft, mission to be flown, tactics, and flight profile. It depends further on electronic equipment carried, weapons to be delivered and performance characteristics of enemy defense systems, weather, terrain, concept of operations and tactics applied. SHAPE Technical Center (STC) has produced, by simulation with their NEWAIR model, a

chronology of expected NATO and WP losses during a conventional war in Central Region. The simulations are discussed in this Annex and extrapolations of the STC data are used to estimate losses of DCA throughout ACE. These results are summarized using tables which show how many DCA are computed to remain available to NATO. Data is shown in increments of five days up to Day 21 of a conventional war.

IN-PLACE ACE AIRCRAFT

11. (NS) As reported in DPQ 1976 (Belgium, Canada, Denmark, FRG, Italy, The Netherlands, Norway, UK, and US) and in DPQ 1974 (Greece and Turkey) these countries should at end 1976 have 168 squadrons with a total of 2771 land-based tactical aircraft deployed in Europe. By 1980 these assets are expected to increase to 170 squadrons and 2849 aircraft. Since the force availability utilized in this Annex is based on DPQ data, minor discrepancies will exist when compared to the ASP-78 force availability discussed in Annex D.

The number of in-place specified by primary roles and regions are as follows:

a. In-Place Forces End 1976

REGION	DCA(1)	FBA(2)	AWX(3)	IDF(4)	TRF(5)	TEW(6)	TOTAL
AFNORTH	---	9/174	3/56	---	8/118	---	20/348
AFCENT	29/570	24/380	11/180	6/96	8/134	---	78/1360
AFSOUTH	11/198	21/360	10/138	5/90	7/108	1/6	55/900
UKAIR	1/12	3/36	7/74	2/24	2/17	---	15/163
TOTAL	41/780	57/950	31/448	13/210	25/377	1/6	168/2771

b. In-Place Forces End 1980

REGION	DCA	FBA	AWX	IDF	TRF	TEW	TOTAL
AFNORTH	---	9/168	3/56	---	8/124	---	20/348
AFCENT	32/624	26/429	9/164	6/96	8/132	---	81/1445
AFSOUTH	10/180	21/364	11/156	5/90	7/102	1/6	55/898
UKAIR	1/12	3/36	7/74	---	3/36	---	14/158
TOTAL	43/816	59/997	30/450	11/186	26/394	1/6	170/2849

(1) DCA - Dual-Capable Aircraft: Capable of ground attack with both nuclear and conventional weapons.

(2) FBA - Fighter-Bomber Aircraft: Capable of ground attack with conventional weapons only.

(3) AWX - All-Weather Fighter: Capable of air defense intercepts and engagement under Instrument Meteorological Conditions and at Night.

(4) IDF - Interceptor Day Fighter: Capable of air defense intercepts and engagements under Visual Meteorological Conditions only.

(5) TRF - Tactical Reconnaissance Fighter: Aircraft equipped for photographic reconnaissance.

(6) TEW - Tactical Electronic Warfare Aircraft: Aircraft equipped with electronic equipment to disturb and/or hinder enemy's effective use of radiated electro-magnetic energy.

c. (NS) The number of land-based aircraft in these tables include units which are technically reinforcements, but are already based in Europe. Not included are STRIKFORSOUTH's 14 carrier-based tactical squadrons which total 128 aircraft, 66 of which are DCA. This is because the number of carrier-based aircraft available for conventional land-battle operations will be minimal until control of the sea with an acceptable level of risk is established.

d. (NS) The national DPQ's indicate plans for increasing the number of tactical aircraft for ACE and qualitative improvements with more effective aircraft types, improved avionics and better weapons. The most significant 1977 changes for the in-place forces as indicated by the DPQ's are as follows:

(1) The US will replace 72 F-4 DCA in UK with 84 F-111 DCA.

(2) The US will deploy back to ACE two dual-based squadrons.

(3) The US will replace 72 F-4 DCA in Germany with F-15 AWX.

(4) The UK will increase DCA squadrons in Germany with 24 aircraft.

(5) In the latter part of the period covered in the DPQ's conversion to the MRCA and the F-16 will start. However, these improvements will have their main effect after 1980.

ACE AIRCRAFT REINFORCEMENTS

12. (NS) After national mobilization orders to move are given (M-Day), tactical air reinforcements can be deployed and be available in ACE as follows:

a. CRESTED CAP: M+2 Days. These tactical squadrons are dual-based in the US and Europe. The US-based assets total 8 squadrons. They can be available in ACE in time of tension within 48 hours from the time national orders to move are given.

b. RAPID REACTOR: M+3 Days. These reinforcements consist of one tactical

reconnaissance and 10 tactical fighter squadrons from the US. They can be made available in ACE at M+3 days. Two Canadian tactical fighter squadrons can be made available between M+2 days and M+6 days.

c. SACEUR's Strategic Reserve (AIR); (SSR (A)): M+5-15 Days. This force consists of four UK and eight US tactical fighter squadrons. All squadrons have options in all three regions. Since the UK squadrons normally are based in UK, they are included with in-place forces. The US squadrons can be made available in ACE within 5 to 15 days after national orders to move are given. For this study, the US aircraft are allocated to their Initial Deployment Bases (IDB).

d. US Air Augmentation Forces: M+5-30 Days. Thirty-eight additional US tactical squadrons have been designated as "Other Forces" or "Earmarked Forces" for NATO. These assets can be made available in ACE within 5-30 days after national orders to move are given. The rate at which these forces can be made available in Europe depends mainly upon airlift resources to transport supporting personnel and equipment.

13. (NS) In addition to the scheduled reinforcements outlined above, other air assets may be available in ACE:

a. SACLANT Aircraft. A total of 192 tactical aircraft, of which 99 are DCA, are proposed to be in-place within 30 days. These may be available to support AFNORTH and AFCENT, although sea control will be a primary operational consideration.

b. Marine Amphibious Forces (MAF). Twenty-one tactical squadrons from two US MAFs with a total of 291 tactical aircraft may be present in ACE. These aircraft do not have a nuclear capability. According to the existing concept of operations MAF aircraft will only be employed with, and in support of, their respective Marine Amphibious Force.

c. B-52 Aircraft. A number of B-52 aircraft from the US Strategic Air Command may be made available to give support to ACE in conventional operations.

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ANNEX G

TOTAL ACE AIRCRAFT ASSETS

14. (NS) Northern Region Tactical Air Assets

a. End 1976 (Squadrons/Aircraft)

AVAILABILITY	DCA	FBA	AWX	TRF	TOTAL
In-Place	---	9/174	3/56	8/118	20/348
M+3	---	2/20	---	---	2/20
M+5-15	---	---	1/24(1)	---	1/24
TOTAL	---	11/194	4/80	8/118	23/392

b. End 1980 (Squadrons/Aircraft)

AVAILABILITY	DCA	FBA	AWX	TRF	TOTAL
In-Place	---	9/168	3/56	8/124	20/348
M+3	---	2/20	---	---	2/20
M+5-15	---	---	1/24(1)	---	1/24
TOTAL	---	11/188	4/80	8/124	23/392

(1) This squadron is also FBA and limited nuclear-capable.

15. (NS) Central Region Tactical Air Assets (Incl. UKAIR).

a. End 1976 (Squadrons/Aircraft)

AVAILABILITY	DCA	FBA	AWX/IDF	TRF/TEW	TOTAL
In-Place	30/582	27/416	26/374	10/151	93/1523
M+2	4/96	---	---	3/50	7/146
M+3	4/84	2/42	1/24	1/18	8/168
M+5-15	2/52	2/36	---	---	4/88
M+5-30	11/216	15/330	1/24	5/90	32/660
TOTAL	51/1030	46/824	28/422	19/309	144/2585

b. End 1980 (Squadrons/Aircraft)

AVAILABILITY	DCA	FBA	AWX/IDF	TRF/TEW	TOTAL
In-Place	33/636	29/465	22/334	11/168	95/1603
M+2	2/48	---	---	3/50	5/98
M+3	2/48	2/48	3/72	1/18	8/186
M+5-15	3/72	1/18	---	---	4/90
M+5-30	15/312	16/330	4/90	5/90	40/822
TOTAL	55/1116	48/861	29/496	20/326	152/2799

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16. (NS) Southern Region Tactical Air Assets (1)

a. End 1976 (Squadrons/Aircraft)

AVAILABILITY	DCA	FBA	AWX/IDF	TRF	TOTAL
In-Place	11/198	21/360	15/228	8/114	55/900
M+2	---	----	------	1/18	1/18
M+3	2/52	1/24	------	-----	3/76
M+5-15	1/18	1/18	------	1/18	3/54
M+5-30	----	5/102	------	1/18	6/120
TOTAL	14/268	28/504	15/228	11/168	68/1168

b. End 1980 (Squadrons/Aircraft)

AVAILABILITY	DCA	FBA	AWX/IDF	TRF	TOTAL
In-Place	10/180	21/364	16/246	8/108	55/898
M+2	-----	-----	------	1/18	1/18
M+3	1/24	1/24	1/24	----	3/72
M+5-15	1/24	1/18	------	1/18	3/60
M+5-30	3/54	3/54	------	1/18	7/126
TOTAL	15/282	26/460	17/270	11/162	69/1174

(1) Does not include 14 STRIKFORSOUTH carrier-based squadrons.

17. (NS) Summary of ACE Aircraft Assets. Based on the DPQ's, the total numbers of tactical land-based aircraft scheduled to be available in ACE within thirty days after national mobilization are summarized below. Some additional aircraft may come from national reinforcements by converting peacetime training units to tactical units, or reinforcing existing units with personnel and equipment.

a. End 1976 (Squadrons/Aircraft)

REGION	DCA	FBA	AWX	IDF	TRF	TEW	TOTAL
AFNORTH	---	11/194	4/80	---	8/118	---	23/392
AFCENT	50/1018	43/788	13/228	6/96	16/278	1/14	129/2422
AFSOUTH	14/268	28/504	10/138	5/90	10/162	1/6	68/1168
UKAIR	1/12	3/36	7/74	2/24	2/17	---	15/163
TOTAL	65/1298	85/1523	34/520	13/210	36/575	2/20	235/4145

b. End 1980 (Squadrons/Aircraft)

REGION	DCA	FBA	AWX	IDF	TRF	TEW	TOTAL
AFNORTH	---	11/188	4/80	---	8/124	---	23/392
AFCENT	54/1104	45/825	16/326	6/96	16/276	1/14	138/2641
AFSOUTH	15/282	26/460	12/180	5/90	10/156	1/6	69/1174
UKAIR	1/12	3/36	7/74	---	3/36	---	14/158
TOTAL	70/1398	85/1509	39/660	11/186	37/592	2/20	244/4365

DCA ATTRITION IN CONVENTIONAL OPERATIONS

18. (NC) STC Wargame Simulation.

a. SHAPE Technical Center (STC) has performed a simulation of the conventional air war for the DCA study using their NEWAIR model. This model has been developed for theatre level air war gaming and simulations, particularly for the Central Region. It was tested and evaluated in a war game conducted with SHAPE and NATO Central Region air staff officers in June 1975. The tactics applied by the players and the results of that game are described in STC Technical Memorandum TM-520 "NEWAIR Test Game" April 1976. The same scenario was used in the computer simulation for the purpose of this study and were assessed for end 1976 and end 1980. Additionally, the scenario was extended to accommodate a 21-day conventional war.

b. The simulation indicates the losses NATO air forces in the Central Region might suffer as a function of time. They do not attempt to predict the outcome or the length of a conventional air war. The war game considered various rates of attrition and covered two general periods, 1976 and 1980; they include the total NATO and Warsaw Pact air forces in the Central Region engaged in the conventional air battle.

c. For reasons of economy, wargame simulations consider only the major factors which influence an actual conflict. The various applications of the forces and their interaction are represented by the simulation models in a simplified and artificial way. The specific limitations and assumptions of the wargame are listed in Appendix G-1.

19. (NS) Central Region DCA Attrition

a. The results of the NEWAIR model wargame, adjusted for minor differences between the programmed STC data and current planning data, are indicated below. The DCA remaining in the Central Region at 5-day intervals are shown for a period of 21 days. Both in-place aircraft and total aircraft (reinforcements added) are illustrated at various levels of attrition. The STC study is attached as Appendix G-1 to this Annex.

b. Central Region attrition tables were developed under the following force availability guidelines:

(1) UKAIR assets are included.

(2) CRESTED CAP and RAPID REACTOR reinforcements are in-theatre on Day 1.

(3) SSR(A) reinforcements are in-theatre on Day 6.

(4) US augmentation reinforcements are made available at a rate anticipated by current contingency plans. By Day 21 all reinforcements have not yet arrived. In 1976, 24 DCA are not present in ACE; in 1980, 180 DCA have not arrived.

c. In-Place DCA Remaining in Central Region.

PERIOD	ATTRITION LEVEL	DAY 1	DAY 6	DAY 11	DAY 16	DAY 21
1976	low	582	384	340	312	289
	med	582	366	303	266	239
	high	582	330	262	219	202
1980	low	636	514	440	404	379
	med	636	481	397	343	302
	high	636	436	350	298	264

d. Total DCA Remaining in Central Region (w/reinforcements).

PERIOD	ATTRITION LEVEL	DAY 1	DAY 6	DAY 11	DAY 16	DAY 21
1976	low	762	576	611	626	630
	med	762	552	560	575	560
	high	762	510	511	508	501
1980	low	732	673	666	599	593
	med	732	635	594	514	498
	high	732	585	537	457	447

e. The reduced losses during the early days in the 1980 scenario compared to the 1976 scenario reflect more aircraft shelters expected available in 1980. Consequently, less aircraft are lost on the ground.

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20. (NS) Northern Region DCA Attrition

a. Detailed assessment, as was done for the Central Region with the NEWAIR model, is not available for Northern Region. However, a three day war in north Norway for 1980 has been studied by STC. The results of this investigation are published in STC TM-479. As a part of this study it was determined that NATO air losses will be heavy in the opening phase during attack on enemy seaborne invasion forces in addition to losses in the air defense role and losses on ground. CINCNORTH is heavily dependent upon tactical air reinforcements. The one US nuclear-capable squadron of the SSR(A) with an Initial Deployment Base in the region is the only nuclear-capable unit planned with primary options for the region.

b. Shelters for approximately 74 percent of in-place tactical aircraft are available by end 76. In addition, some aircraft can be protected in three rock installations in Norway. The number of shelters might be increased before end 1980 to cover some reinforcements.

c. For the purposes of this study it was postulated that the 24 air defense aircraft in the SSR(A) squadron will be available in Northern Region as DCA, and available on Day 6. Based on the STC study in AFNORTH it was also assumed that air defense attrition rates determined for Central Region would best approximate the aircraft losses of this squadron. This extrapolation resulted in the 24 DCA being attrited to 15, 14, and 13 aircraft by Day 21 at low, medium and high attrition levels, respectively.

21. (NS) Southern Region DCA Attrition

a. Greece and Turkey have not reported their forces to NATO since 1974 and uncertainties exist as to the numbers of available tactical combat aircraft and the number of completed shelter constructions. For this study it was postulated that the aircraft assets listed in DPQ-1974 will be available in Southern Region during 1976 and 1980.

b. Detailed analytical assessments of conventional air operations are not available for Southern Region. However, STC has made a study of the first days of a conflict in the Thrace Area in 1980 similar to the forementioned Northern Region study. The findings are published in STC TM-535. The scenario covers the first five days of a conventional war which includes deployment of RAPID REACTOR aircraft. As a part of the assessment, it was found that NATO would lose 34 percent of offensive aircraft when flying combat missions during the first five days of fighting. This is about 11 percent higher than for the medium attrition case for the Central Region. Losses on the ground are assumed similar to Central Region.

c. Southern Region attrition tables were developed under the following guidelines:

(1) Aircraft shelters for approximately 50 percent of in-place tactical aircraft are estimated available in 1976. By 1980 about 75 percent of the in-place, CRESTED CAP, and RAPID REACTOR assets can be protected.

(2) RAPID REACTOR reinforcements are available on Day 1. SSR(A) reinforcements are available on Day 6.

(3) US augmentation reinforcements planned for the region are not included since they are assumed to arrive after Day 21.

(4) DCA withheld from the conventional battle for QRA commitments are included in the tables.

(5) STRIKFORSOUTH carrier-based squadrons are not included.

d. In-Place DCA Remaining in Southern Region.

PERIOD	ATTRITION LEVEL	DAY 1	DAY 6	DAY 11	DAY 16	DAY 21
1976	low	198	117	94	79	68
	med	198	110	84	68	57
	high	198	99	71	57	48
1980	low	180	129	101	81	67
	med	180	119	86	66	52
	high	180	105	74	56	45

e. Total DCA Remaining in Southern Region (w/reinforcements).

PERIOD	ATTRITION LEVEL	DAY 1	DAY 6	DAY 11	DAY 16	DAY 21
1976	low	250	163	129	107	91
	med	250	155	114	91	75
	high	250	139	98	76	63
1980	low	204	169	132	105	87
	med	204	158	113	86	67
	high	204	143	100	75	59

22. (NS) ACE-Wide Attrition.

a. On the basis of the above regional attrition studies it is possible to develop an ACE-wide picture of the potential effect of attrition on DCA

availability. The following tables must be regarded within the limits of the NEWAIR model and the other studies and assumptions from which the tables were developed. It should also be recognized that the remaining aircraft listed below are not necessarily totally available to fly combat missions. Aircraft may be forced to divert to bases where desired operational turn-around cannot be given. Take-offs for the aircraft may also be denied by enemy attacks on runways and taxiways.

b. In-Place ACE Remaining in ACE.

PERIOD	ATTRITION LEVEL	DAY 1	DAY 6	DAY 11	DAY 16	DAY 21
1976	low	780	501	434	391	357
	med	780	476	387	334	296
	high	780	429	333	276	250
1980	low	816	643	541	485	446
	med	816	600	483	409	354
	high	816	541	424	354	309

c. Total DCA Remaining in ACE (w/reinforcements).

PERIOD	ATTRITION LEVEL	DAY 1	DAY 6	DAY 11	DAY 16	DAY 21
1976	low	1012	763	759	749	736
	med	1012	731	693	681	649
	high	1012	673	627	599	577
1980	low	936	866	817	720	695
	med	936	817	726	615	579
	high	936	752	655	547	519

IMPACT OF CONVENTIONAL OPERATIONS ON DCA AVAILABILITY

23. (NC) The number of aircraft expected to be available in ACE during a 21-day conventional scenario is shown in Figure G-1. The large contribution of DCA to conventional operations, almost half of the ground attack capability (DCA plus FBA), is readily observable. The importance of receiving timely reinforcements in-theatre is also demonstrated. At the end of the 21-day STC wargame, in-place DCA were attrited more than 50 percent at the medium loss rate. Reinforcement DCA were able to substantially alleviate these losses by replacing about half the destroyed aircraft.

24. (NC) The significant influence of attrition rates on aircraft availability is illustrated in Figure G-2. The high and low attrition lines reflect reasonable maximum and minimum loss rates. These limits indicate the boundaries of the anticipated spread in aircraft losses in conventional operations. The importance of reinforcement aircraft in maintaining relatively high DCA availability rates after a 21-day period is also illustrated.

25. (NC) The regional availability of DCA is illustrated in Figure G-3. Central Region availability is relatively high at the average attrition rates shown. However Southern Region availability is reduced to very low levels, even considering reinforcements. Northern Region DCA consist only of reinforcements which arrive on day 6 and become substantially reduced by day 21. The impact of conventional operations on DCA availability on a regional basis is readily observable in this figure.

26. (NS) The impact of conventional operations on DCA availability for the SSP is seen in Figure G-4. Depending on the attrition rate in-place DCA losses begin to degrade the SSP after one to two weeks of conventional operations. On the other hand, reinforcements will keep DCA availability above the SSP requirements, even at a high attrition rate.

27. (NS) Within the context of the STC scenario it is possible to gain an insight into the total number of DCA required to fully meet ACE objectives in a strategy of flexible response. An example is shown in Figure G-5. Assuming that only DCA attrition must be considered, the number of DCA lost on a daily basis is added to the DCA requirement for the SSP. Thus if it were postulated that combat operations would last 10 days prior to SSP execution, DCA requirements would number from about 820 to 950 aircraft, depending on the assumed attrition rate. However, it should be noted that this technique to determine requirements is highly conjectural since it is based on several assumptions.

SUMMARY

28. (NS) The utilization of Dual-Capable Aircraft (DCA) in a conventional role is an important aspect of ACE strategy and flexibility. DCA would be available for full utilization for conventional operations except where required to meet tasked QRA commitments. However, DCA attrition during conventional operations could impact on SACEUR's ability to fully conduct selective release operations and the Scheduled Strike Program (SSP).

29. (NC) An analysis of the attrition of DCA during conventional operations was made utilizing a Central Region scenario and wargaming techniques developed

by the SHAPE Technical Center (STC). This evaluation, based on their Central Region NEWAIR model, was not conducted to try to predict the outcome or length of a conventional war. Instead the study gives an indication of how the numbers of aircraft can vary under a typical range of attrition rates (low, medium, high) and lengths of battle (up to 21 days). Other STC studies and the Central Region results were utilized to develop attrition analyses for Northern and Southern Regions. Thus an ACE-wide view of the impact of losses on DCA availability was possible.

30. (NU) The STC NEWAIR analysis of DCA in conventional operations is attached as Appendix G-1 to this Annex.

31. (NU) The impact of conventional operations on DCA availability during the 21-day STC conventional battle is shown in Figures G-1 through G-5. Although the STC wargame is based on a limited scenario, the important effects of attrition and reinforcement, and their potential impact on subsequent operations are still considered valid.

1 Enclosure

APPENDIX G-1: STC Study of DCA in Conventional Operations (NC)

SHAPE/040/77 (Annex G) 7 March 1977
Figure G-1

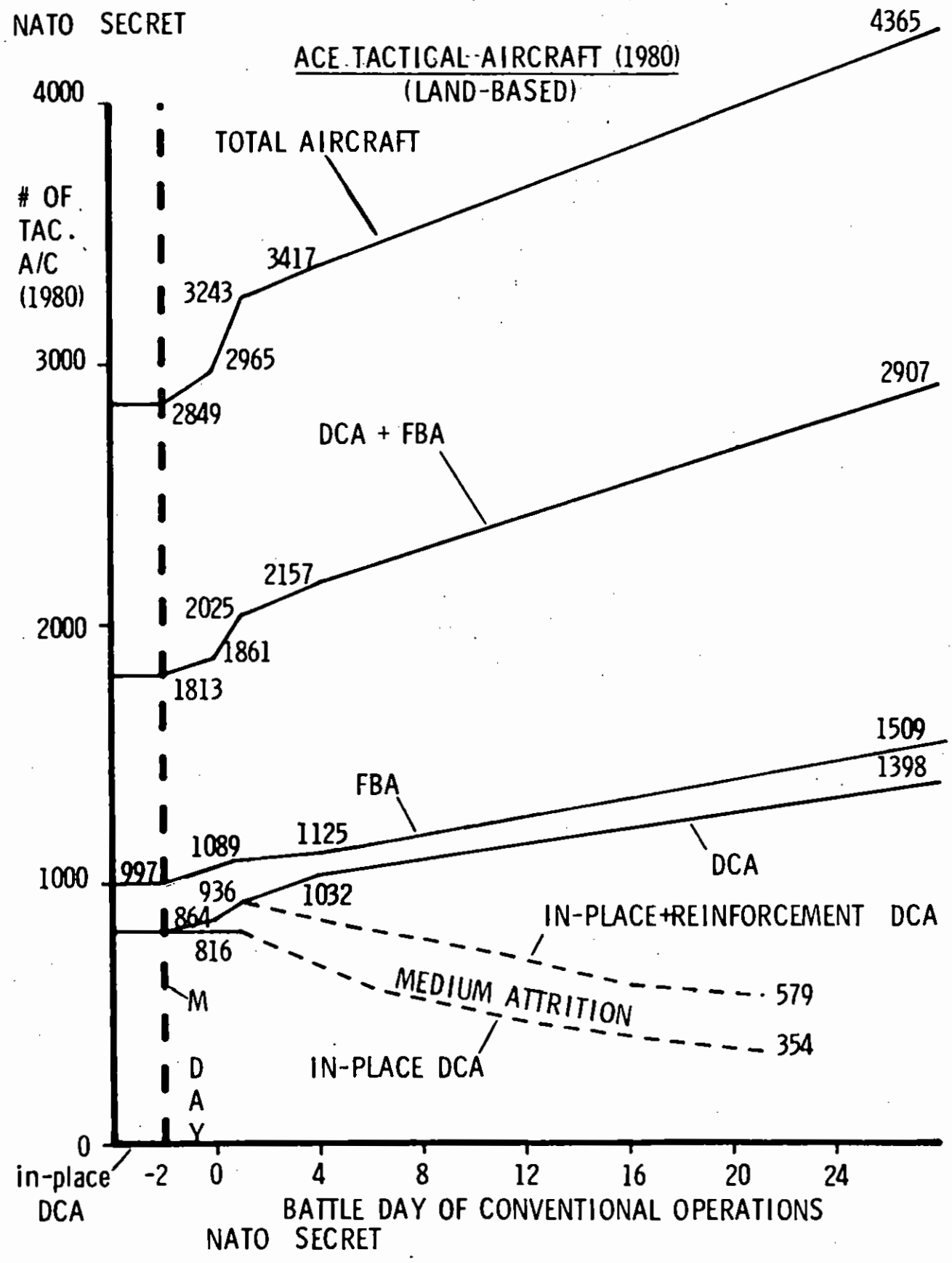


Figure G-1

NATO SECRET

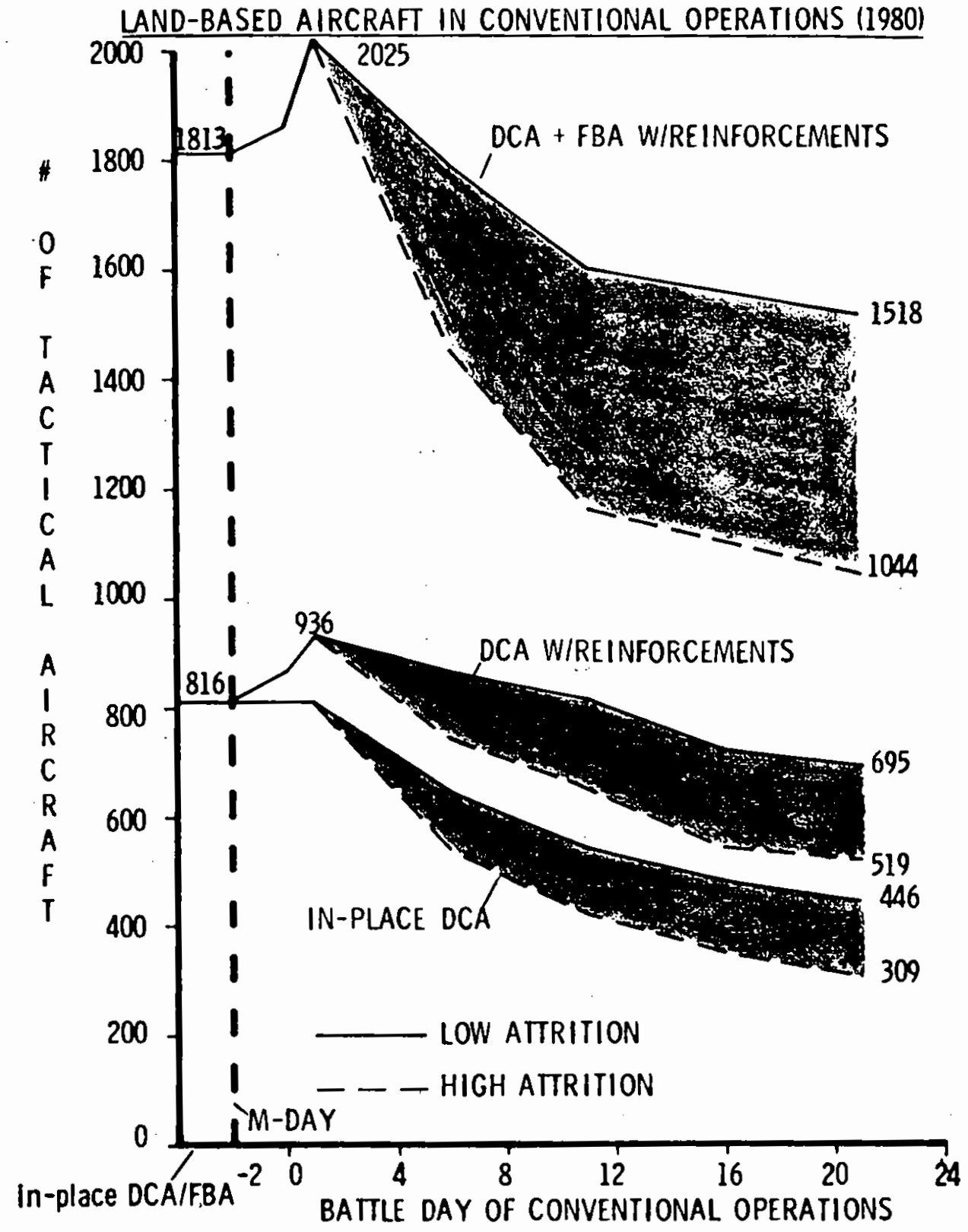


Figure G-2

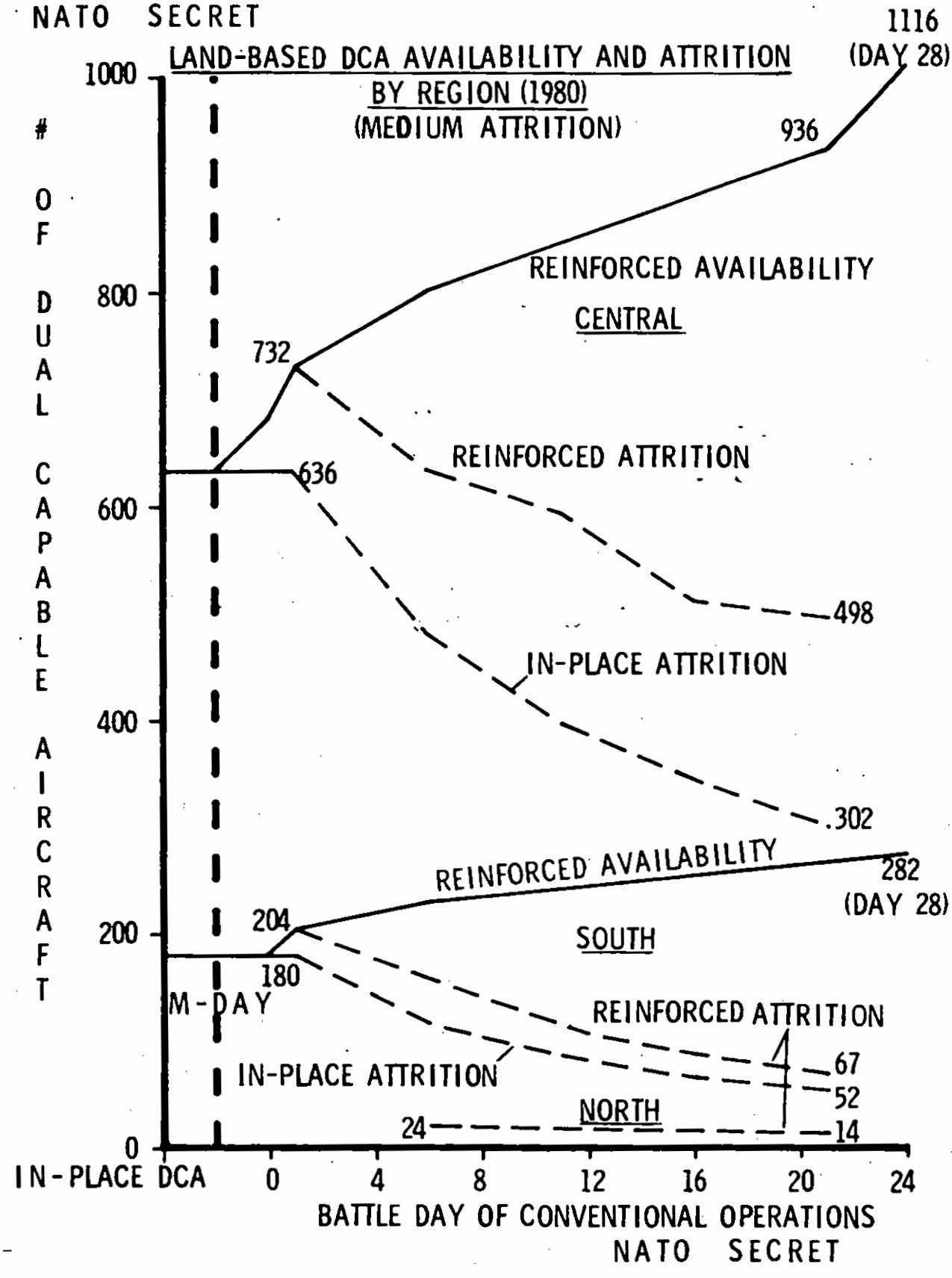


Figure G-3
G-17

SHAPE/040/77 (Annex G) 7 March 1977
Figure G-4

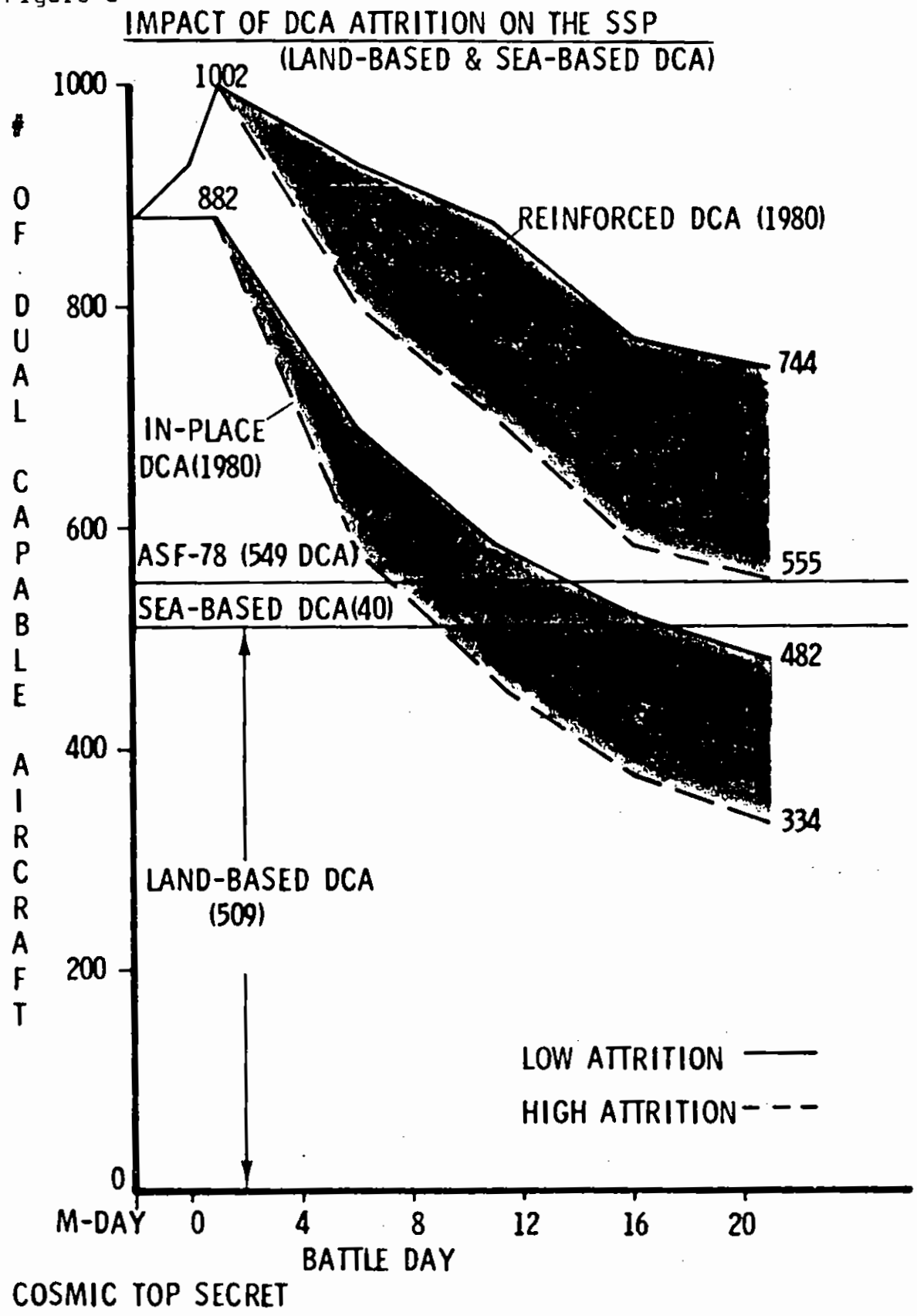
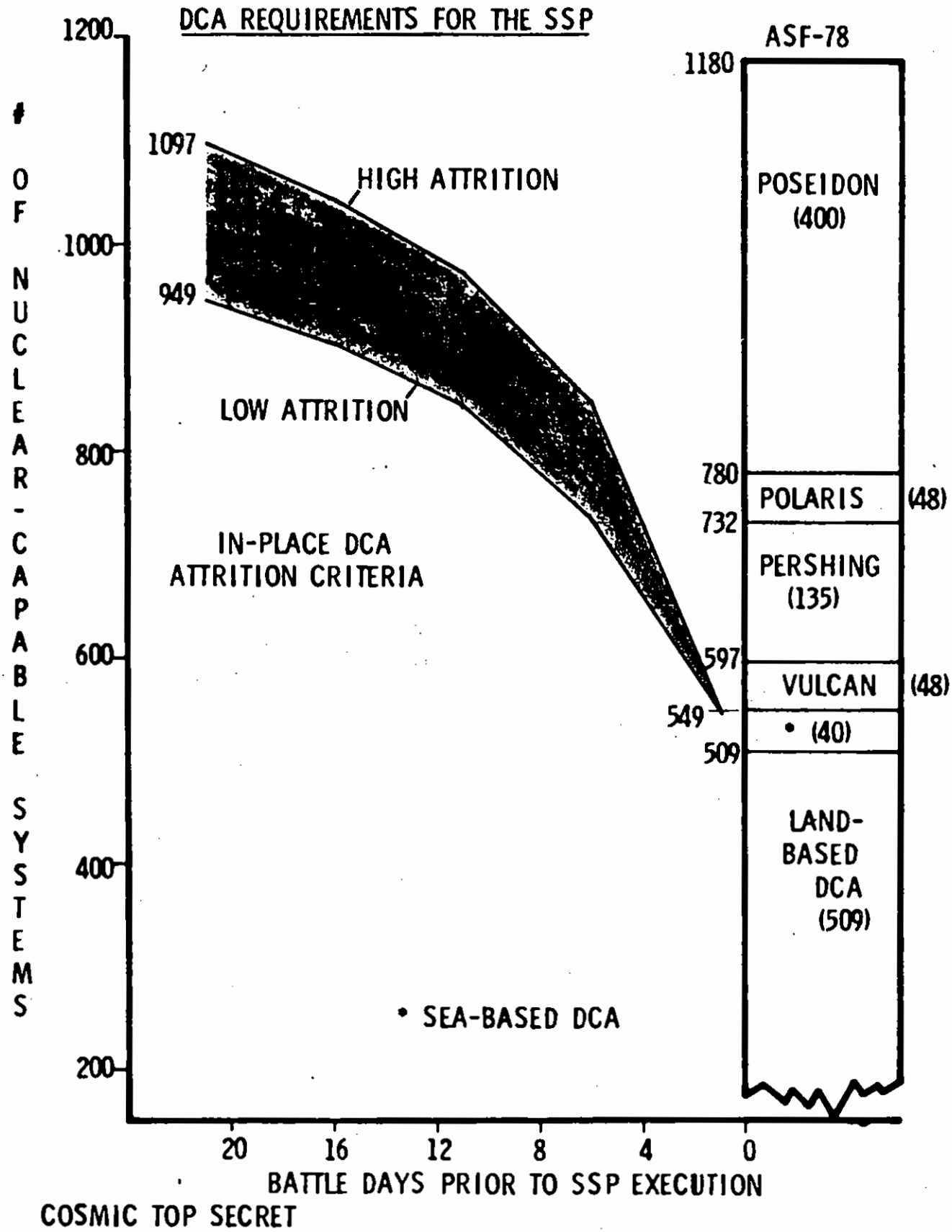


Figure G-4



COSMIC TOP SECRET

Figure G-5

SHAPE/040/77 (Annex G) 7 March 1977
Appendix G-1

SACEUR'S DUAL-CAPABLE AIRCRAFT STUDY

SHAPE TECHNICAL CENTER (STC) STUDY OF DUAL-CAPABLE AIRCRAFT IN CONVENTIONAL OPERATIONS

References:

a. STC TM-493, NEWAIR Model Description, Nov 75 (NU)

b. STC TM-520, NEWAIR Test Game, Apr 76 (NS)

c. STC ORD/D/1/77, Application of the NEWAIR Model to the DCA Study, Jan 77 (NS)

d. STC TM-439, The Development of an Analysis Capability for MBFR, May 75 (NS)

e. STC ORD/D/54/76, Appendix to DCA Study, Nov 76 (NS)

f. STC ORD/D/5/77, DCA Study Results (1980), Jan 77 (NS)

g. STC ORD/D/8/77, DCA Study Results (1976), Feb 77 (NS)

INTRODUCTION

1. (NC) The multi-role nature of Dual-Capable Aircraft (DCA) requires consideration of DCA operations in each role; in addition, the interplay of DCA roles must also be examined. Significant DCA losses at an early stage could impact on the ability of DCA to perform their mission in subsequent roles. Conversely, dedication of DCA to a specific Force Generation Level (FGL) nuclear tasking could prevent their utilization in earlier roles.

2. (NC) DCA use and attrition in conventional operations would be major factors in the numbers of DCA available for Selective Release operations or the Scheduled Strike Program (SSP). In order to gain an insight into this interplay, an analysis was undertaken at SHAPE Technical Center (STC). The purpose of this investigation was to examine the potential impact of conventional operations on DCA under a given set of circumstances. The results of this study are detailed in the references to this appendix and summarized in Annex G. This appendix outlines the major factors and assumptions which were utilized in the study and discusses the limitations which were placed on the results of the analysis. The voluminous tabular background material from which the data for Annex G was derived is not reproduced in this appendix. This information is available in the foremantioned references, and those STC documents listed in Annex H.

STC STUDY APPROACH

3. (NC) General. Because of the relatively short time frame required to compile the data for the DCA Study, it was not possible to initiate a new STC analysis specifically directed toward the DCA investigation. Instead, it was considered necessary to base the STC analysis on existing studies to the extent possible, properly modified to accommodate the NPG terms of reference, and the scope and assumptions of the DCA study. This analysis was not conducted to predict the length or outcome of a conventional battle. Its primary purpose was to give an indication of how the numbers of aircraft can vary under a typical range of attrition rates and lengths of battle. This approach was considered appropriate and adequate to provide the type of data required in the DCA study.

4. (NC) STC Wargame Model

a. STC determined that the above approach could reasonably be accomplished by performing a simulation of the conventional air war utilizing their NEWAIR model (reference a). The NEWAIR simulation technique was developed for theatre level air wargaming and simulations, particularly for the Central Region. It was tested and evaluated in a war game conducted with SHAPE and Central Region air staff officers in June 1975 (reference b). Similar tactics were used in the computer simulation wargame for the DCA Study (reference c). The wargame had to be extended to accommodate a 21-day conventional war since the NEWAIR game was limited to a 7-day war.

b. The NEWAIR model allowed a detailed assessment to be conducted only in the Central Region. This area accounts for over 75 percent of the in-place and reinforcement DCA assets. Northern and Southern Region attrition was approximated based on STC studies in those regions and on the NEWAIR model results. This approach was considered adequate to gain an ACE-wide insight into the effects of a conventional was on DCA assets.

5. (NC) Scenario

a. STC developed a limited scenario of a WP attack into Central Region based on a 1974 study (reference d) and current intelligence (Annex B). The extent of the WP penetration into ACE territory was assumed to occur over a time period which could be from 1 to 21 days. Thus only the speed of advance was variable. This penetration is illustrated in Figure G-1-1 (see page G-1-7). The FEBA battle line represents a "nuclear decision point" where nuclear operations would be initiated by ACE. This hypothetical scenario was necessary to the analysis since such factors as aircraft operating radius, sortie rate, air defense capability and airbase availability are heavily dependent on the location of the battle lines.

b. A 21-day scenario was selected as being of an adequate length such that most reinforcements would be in-theater and general trends would

be established and readily observable. This duration was also useful in looking at time periods less than 21 days. Thus an indication of how numbers of aircraft would vary after, for example, a 10-day conventional war was possible.

6. (NC) Aircraft Attrition Factors

a. The determination of the aircraft attrition that was utilized in the study was fundamental to the entire analysis. For this reason the capabilities of the enemy air defences, as represented in the NEWAIR model, were varied over a range of values to produce three different overall attrition rates per sortie to the attacking NATO aircraft. These three attrition rates (high, medium and low), which were achieved by varying the enemy air defence capability, resulted in NATO aircraft losses per sortie of about 6 percent (high), 4.2 percent (medium) and 2.5 percent (low) averaged over the three ground attack missions (Close Air Support, Interdiction and Air Base Attack). In addition, aircraft were lost in the air defence interceptor role but this was a source of lower attrition compared to the ground attack missions. The "high" and "low" rates are generally considered to represent the upper and lower bounds of aircraft attrition in a conventional war, while the medium rate is judged to be a reasonable loss figure for ground attack missions.

b. In addition to aircraft attrition suffered as a result of combat operations, unsheltered aircraft on the ground were subject to loss due to enemy air attack. Aircraft attrition resulting from WP attacks on NATO airfields was a complex problem because of the many scenario-related factors that had to be considered. These included the number of shelters available at each airbase, the resulting number of unsheltered aircraft, the location and number of airbases, and the number of airbases attacked by aircraft or captured by WP ground forces. Although the above considerations resulted in the application of several factors, the cumulative result of these factors approximated a daily attrition rate of about 1 percent of the available aircraft assets at all levels of attrition. This relatively constant attrition rate was due to more aircraft being available for attack on the ground as a result of fewer flying losses at the lower "operational mission" attrition levels.

c. Another factor which affected aircraft combat operations in the air war, in addition to aircraft lost in combat operations "on the ground," was the effect of WP air attack upon NATO runways. Runway attacks reduced the capability for ACE to generate aircraft sorties for offensive and defensive operations as well as to subject the "pinned down" NATO aircraft to being lost on the ground because of enemy airbase attack.

7. (NC) The STC analysis covered two time frames, a wargame at the end of both 1976 and 1980. It was felt that such a time span would be adequate to evaluate any major differences and trends between current

assets and those in the near future. This approach was considered appropriate to the NPG Terms of Reference.

STC MODEL LIMITATIONS

8. (NU) As indicated earlier, the STC analysis must be considered within the context of its scenario, the assumptions made in the wargame, and the subsequent limitations on the study results. In particular, it is important to emphasize the hypothetical nature of the investigation and the necessity to avoid predictions concerning the length or the outcome of a conventional battle between NATO and Warsaw Pact forces.

9. (NC) The above cautions should be readily discernible from the forementioned assumptions made on the attack scenario, the time period of the simulation and the postulated attrition rates. In addition to these restrictions on the analysis several less obvious boundary conditions were introduced into the computer simulations. The most significant of these limiting factors are as follows:

a. Aircraft flying airbase attack missions attack either the runway system or aircraft parked in the open. Collateral damage is not considered; aircraft parked in shelters will consequently never be destroyed on the ground.

b. The model assumes that a runway will be opened after a maximum of eight hours repair effort. There is no limitation on the number of runway repair units available.

c. Logistics limitations are not played. This applies to the HAWK batteries as well as to munitions for the aircraft.

d. Weather and season, and their effects on target acquisition and weapon delivery are not represented.

e. ECM and ECCM are only played in a very simplified manner.

f. Perfect intelligence is assumed in the choice of counter-air targets.

g. The simulation runs start with simultaneous operations by the two sides and not with what might be considered a more realistic assumption, a heavy counter-air attack by the WP.

RESULTS

10. (NU) The detailed results of the NEWAIR model simulation applied to the DCA study are contained in references f and g. Annex G contains information on aircraft remaining in-theater which is pertinent to the DCA Study. This information is not reproduced in this appendix.

Instead a general discussion is given, since the STC study results are useful to a better interpretation of the tables and graphs in Annex G and in the main body of the study.

11. (NC) The WP suffered a disproportionately larger number of aircraft losses than did NATO (75% vs 52% at a medium attrition rate). This unbalanced outcome occurred because of the higher proportion of WP aircraft destroyed on the ground (34% vs 14%). A principal reason for this result was the higher number of WP aircraft that were unsheltered and therefore eligible to be destroyed under the criteria of the wargame.

12. (NC) ACE losses were relatively higher in the first few days of the wargame than in the later period of the simulation. This was due to more aircraft lost on the ground because of an insufficient number of shelters. After a few days of attrition, a larger proportion of the remaining aircraft could be sheltered, resulting in progressively fewer ground losses.

13. (NC) Attrition from airbase attack, about 25 percent of the ground attack effort, was rated midway between that for close air support (highest) and interdiction (lowest). However, when more sorties were available in the airbase attack role (low attrition case) a significant increase in WP aircraft destroyed on the ground was achieved during the wargame. Most of the WP aircraft destroyed on the ground were lost in the first week of the battle, at relatively low cost in terms of Allied losses in the airbase attack role. Although these results are conditioned by the STC study methodology, they do serve as an indication of what might have been achieved if more conventional attack aircraft had been in-theater at the outbreak of hostilities. Similarly the results illustrate that significant changes in the outcome could have resulted if employment decisions had apportioned the aircraft roles differently. Obviously the net effect of earlier and greater reduction of enemy aircraft on the ground is a reduction in the air threat to NATO forces and, consequently, a reduction in DCA losses to enemy offensive air attacks.

14. (NC) There is no significant difference between the trends and results in the End 1976 and the End 1980 wargame. Therefore the utilization in the study of only the 1980 results, to be most compatible with the NPG Terms of Reference, is justified.

15. (NC) This analysis illustrated the sensitivity of attrition estimates to numbers and location of attack-capable aircraft available and to decisions affecting their employment. For example, the RAPID REACTOR and the dual-based CRESTED CAP aircraft reinforcements were in-theater at the beginning of hostilities. The airlift and other resources required for the remaining reinforcement aircraft was assumed available. Had most of the 30-day reinforcements been available prior to the outbreak of hostilities the starting ratio of the WP and NATO forces

(2.5 : 1) would not have been as unfavorable. On the other hand, a surprise attack causing difficulties in reinforcement availability would have had the reverse effect.

SUMMARY

16. (NC) This appendix has outlined the major factors and assumptions which were introduced into the STC study of DCA in conventional warfare. It also outlined the limitations of the analysis and some of the study results. From the information contained in this appendix the extreme complexity of such a simulation and the difficulty of accomplishing the stated task with a high degree of confidence should be readily apparent. Modification of only a few of the assumptions or of the scenario could significantly affect the study results. Although the data and assumptions utilized in this STC effort was based on the latest available information, the use of these results in the DCA Study should be viewed with these cautions in mind.

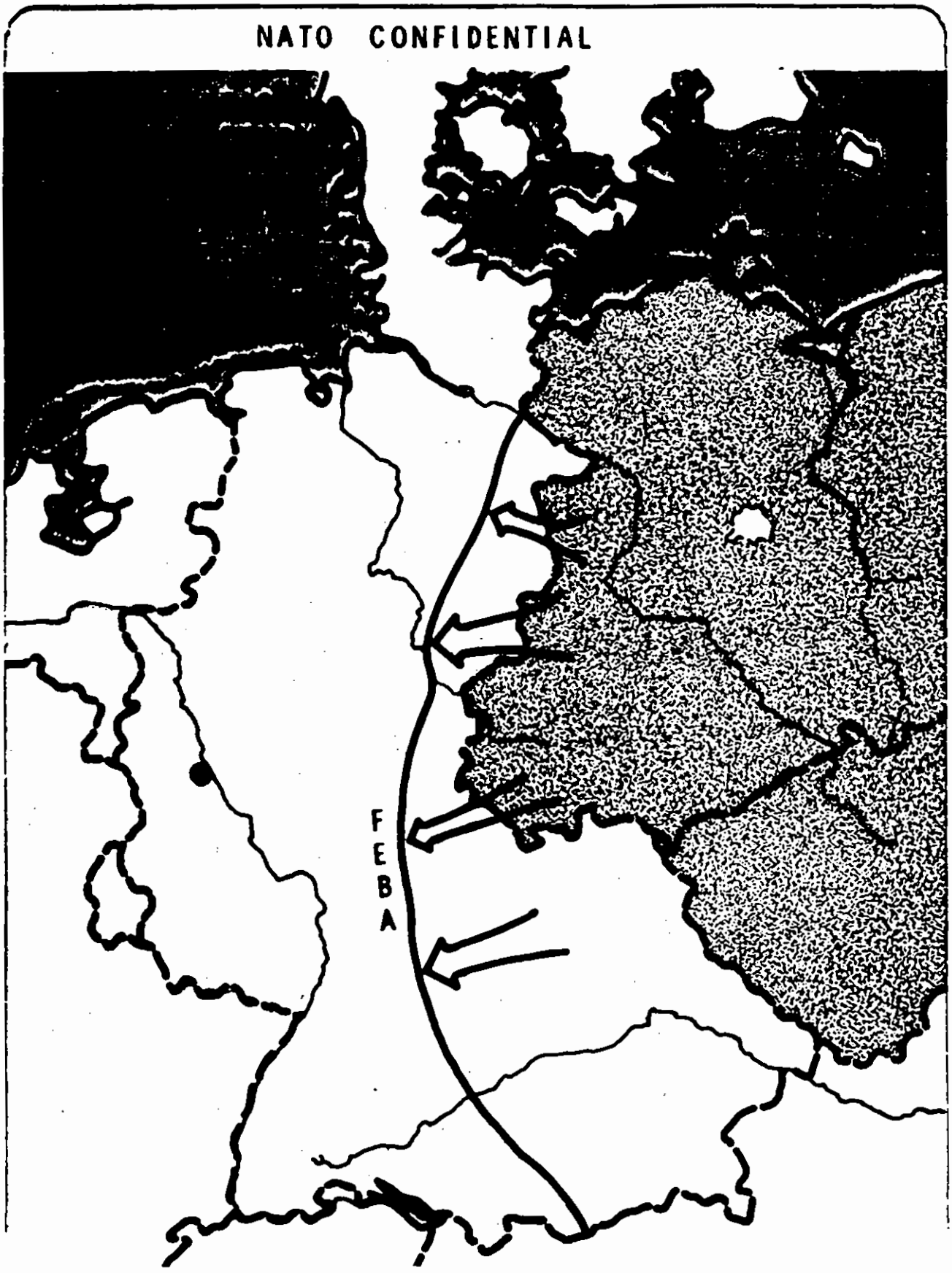


Figure G-1-1

SHAPE/040/77 7 March 1977
ANNEX H

SACEUR'S DUAL-CAPABLE AIRCRAFT STUDY

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2. SHAPE/ATOMAL/033/77, SHAPE Assessment of "Improving the Effectiveness of NATO's Theater Nuclear Forces", 3 Apr 76 (NS-A).

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5. NPG/D (76)8, Follow-Up Action to the Ministerial Meeting at NATO Headquarters on 14th and 15 June 1976, 15 Jul 76 (NS).

6. MC 161/76, The Soviet Block Strength and Capabilities, 7 May 76 (CTS).

7. MC 14/3 (FINAL), Overall Strategic Concept for the Defense of the North Atlantic Treaty Organization Area, 16 Jan 68 (NS).

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11. DPQ(76), Defense Planning Questionnaires (Belgium, Canada, Denmark, Germany, Italy, Netherlands, Norway, United Kingdom, United States), Jul-Nov 76 (NS).

12. DPQ(74), Defense Planning Questionnaires (Greece, Turkey), 1974 (CTS).

13. ACE Order of Battle-Air, 1976 (CTS).

14. ACE Order of Battle-SSR, 1976 (CTS).

15. ATP-33, NATO Tactical Air Doctrine, 11 Mar 76 (NU)

16. FOURATAF Manual 80-1, Conventional Attack Planning Guide, 15 May 76 (NS).

17. STC TM-520, NEWAIR Test Game, Apr 76 (NS).

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19. STC TM-535, The Contribution of the E-3A AWACS to ACE Operations during a Conflict in the Thrace Area, Nov 76 (NC).

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