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MILITARY ASPECTS OF
A STUDY OF THE IMPLICATIONS OF
A COMMUNIST CHINESE NUCLEAR
CAPABILITY (U)

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PREFACE

This is a supporting Memorandum for RAND Report R-411-PR, A Study of the Implications of a Communist Chinese Nuclear Capability. The study was undertaken at the request of the Director of Plans, Headquarters, United States Air Force. FOI

This Memorandum should be read in conjunction with R-411-PR, since the political considerations that might influence U.S., Chinese, Soviet, and other nations' actions are not discussed herein.

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SUMMARY

This Memorandum is one of a series of publications which support a RAND study of the implications of a Communist Chinese nuclear capability. It presents data on three hypothetical military conflicts which are developed and analyzed in the course of the study. The three conflicts were used to provide a rough assessment of the possible military consequences of China's possession of a modest nuclear capability, and to give some indication of the magnitude of the risks that they might face in a military confrontation with the United States.

The first situation involves U.S. nuclear retaliation from an undamaged posture following Chinese aggression against Taiwan. For the conditions and forces postulated, it indicates that U.S. theater forces augmented by a wing of B-52's on Guam and utilizing one SSB(N) with Polaris B missiles could virtually eliminate China's offensive air and missile capability while incurring very small losses.

The second situation involves U.S. retaliation following a Chinese air and missile attack with nuclear weapons on U.S. and Allied bases in the Far East. For the conditions and forces postulated it indicates that the augmented theater forces which survive the Chinese attack would be capable of substantial destruction of Chinese offensive air and missile capability. However, the U.S. forces would be severely damaged and would be capable of executing only one strike.

The third situation involves Communist Chinese nonnuclear operations in the Taiwan Strait area. Under the conditions postulated it indicates that a campaign against Quemoy could involve high manpower and materiel losses for the Communist Chinese with only a marginal chance of success, and that a campaign against Taiwan would be extremely costly with only a very remote chance of success.

The main conclusions of this study are (1) that Communist Chinese nuclear or high-level nonnuclear campaigns would involve very high risks on their part, and (2) that U.S. bases in the Far East are vulnerable to ballistic-missile and low-altitude air attack with a need for more advanced early-warning equipment and additional Hawk or Mauler SAM systems.

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I. INTRODUCTION

The growth of Communist Chinese* military power represents a threat to non-Communist Asia and to the U.S. interests in the area. This threat will take on new dimensions when China has nuclear weapons. She is likely to acquire a nuclear capability within the next decade, despite economic reverses, technical limitations, and disagreements within the Communist Bloc.

In response to a request from Headquarters United States Air Force, Director of Plans, The RAND Corporation undertook a study of the major political-military implications of a Communist Chinese nuclear capability. The study examines likely Chinese objectives and strategy, the probable state of Sino-Soviet relations, the impact of a Chinese nuclear capability on free Asia, military and technical appraisals of some hypothetical conflicts, and some major political-military implications for the United States.

The study considers the 1965-1970 time period and assumes that

- o There will be no drastic change in the U.S.-Soviet military and political balance of power.
- o There will be no drastic change in the U.S. commitments or policies in the Far East.
- o While the possibility exists that the Chinese may acquire, by concentrated effort, a token long-range strategic nuclear capability for use as a threat against the United States, such a development is considered very unlikely in the 1965-1970 time period.

Reference 1 is the major report of the study. Supporting the report are a series of studies which develop some of the aspects in greater detail. (2-6)

The study demonstrates that China's initial detonation of a nuclear device is likely to be used by the Chinese to create the impression that China possesses a military capability and is a significant nuclear power. From that time on, and increasingly as China develops a nuclear capability, the United States will be

* For brevity, Communist China and Communist Chinese will be referred to as "China" and "Chinese" except where confusion might occur.

confronted with a wider range of possible Chinese threats and actions than hitherto. By the time China possesses a modest nuclear capability, she will have the following options:

- o The direct use of nuclear weapons on U.S. Far East bases or on Asian nations
- o The use of nuclear weapons as an umbrella for overt, nonnuclear military operations and support of insurgency
- o The political and propaganda exploitation of her nuclear capability to capitalize on and to create opportunities for achieving Chinese objectives

In order to provide some indication of the military consequences of the first two options, three hypothetical conflict situations have been developed and analyzed. The objective of these case studies is to obtain a rough assessment of the magnitude of the risks that the Chinese would face in a military confrontation with the United States. For each of the cases the critical assumption is made that there will be no direct intervention or participation by the Soviet Union.

The three hypothetical conflicts which were examined during this study are

- Case I: U.S. nuclear retaliation following Chinese nuclear aggression against Taiwan, involving alternatively
- A--U.S. programmed theater forces against Chinese offensive air and missile capability, or
 - B--U.S. programmed theater forces, with augmentation against Chinese offensive air and missile capability
- Case II: Two-sided nuclear exchange, involving sequentially
- A--Chinese pre-emptive nuclear attack on U.S. air and naval forces, augmented, in the Far East, followed by
 - B--Retaliation against Chinese offensive air and missile capability by surviving U.S. forces
- Case III: Nonnuclear campaigns in the Taiwan Strait area

The purpose of this Memorandum is to present more detailed data on these three cases than is contained in Ref. 1. This Memorandum should be read in conjunction with Ref. 1, since the political considerations that might influence U.S., Chinese, Soviet, and other nations' actions are not discussed herein.

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The methodology used in the development and analysis of the hypothetical conflict situations included two-sided war gaming and military appraisals. The methodology was adapted from the war-gaming techniques described in Ref. 7.

The data presented herein are not intended to represent a prediction of U.S. or Chinese military or technical developments. They were developed solely for use in the game situations as a means of assessing some possible consequences of Chinese acquisition of a modest nuclear capability.

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II. ORDERS OF BATTLE

The orders of battle used in the three hypothetical conflicts described in this paper are assumed in all cases, but efforts have been made to use available substantiating data. Data sources are cited in the text where appropriate.

COMMUNIST CHINESE FORCES

Air Force

The Chinese Air Force composition is assumed to be as shown in Table 1. The makeup of the force will be dependent on the extent and type of support the Chinese will receive from the Soviet Union. For purposes of this study it is assumed that the Soviet Union will provide some defensive equipment but will not provide either hardware or technical help where strategic nuclear weapon systems are concerned.

The major differences between the force postulated for the 1966-1967 time period and the 1962 posture are reductions in total numbers of aircraft and the introduction of new types. It is assumed that the Chinese possess guided missiles equivalent to the USAF Falcon, Sidewinder, and Bullpup missiles. It is estimated that the fighter force will be reduced by 200 units between 1962 and 1966-1967. For the bomber force, the older Beagles are phasing out, and Badgers are being introduced in increasing numbers.

A basic premise of the study is that the Chinese possess a modest nuclear-weapon capability. For study purposes it is assumed that in the 1967 time period they will possess as many as 100 nuclear warheads with yields up to 200 KT. These warheads weigh in the neighborhood of 2000 lb. Thirty-six of these warheads have been allocated for ballistic missile delivery, and the remainder are for free-fall bombs.

The Chinese are known to be interested in ballistic missiles, and the assumption is made that by 1966-1967 they will have developed

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Table 1
ASSUMED 1966-1967 CHINA AIR OB

Type	Number
Aircraft	
Fighters	
Fresco A, B, C	1088
Fresco D&E	128
Farmer	240
Farmer (all weather)	144
Flashlight	10
Fishbed C	48
Fitter/Fishpot (new generation)	112
Total	1770
Jet Fighter Trainers	116
Bombers	
Beagle (light jet bomber)	90
Badger (medium jet bomber)	115
Total	205
Transports	
Cab/Coach/Crate (light)	205
Cub/Camp/Coat (medium)	22
Total	227
Light Helicopters	
Hound	65
Misc. Propeller (ASW)	
Madge	35
Total Aircraft	2418
Missiles	
MREB's ^a	36

^aSee text.

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a missile with 700- to 1100-n mi range, capable of delivering the warhead mentioned above. Potential development aspects are discussed in Ref. 3. The Chinese MRBM force is assumed to be stationed in three complexes,* i.e.,

- o M-1 in Kiangsi province, approximately 50 n mi north of Nan-Ch'ang.
- o M-2 in Liaoning province, approximately 100 n mi north of Mukden.
- o M-3 in Hunan province, approximately 200 n mi southwest of Changsha.

Each complex has four launch sites with three launch pads, for a total of 36 missiles. All installations are less than 5 psi hard.

The size, type, and disposition of the Chinese nuclear capability are not intended as estimates or predictions of Chinese developments. The Chinese capability was selected as a "representative threat" to the U.S. forces programmed for the 1966-1967 time period. This capability would probably strain the upper limit of the Chinese scientific, industrial, and technical capacity.

Naval Forces

It is not expected that there will be a significant change in the Chinese naval forces from the present posture⁽⁸⁾ other than modernization and replacement of a few existing types. Here again, much depends on the availability of Soviet assistance. Current reports are that construction of new ships has been severely curtailed since the withdrawal of Soviet technicians from China. The assumed Chinese naval order of battle for the 1966-1967 time period is shown in Table 2. **

*The complexes are hypothetical, and their locations are selected on the basis of the following criteria: as far inland in China as possible while still maintaining coverage of all major U.S. military installations in the Far East; permitting multiple coverage of targets when possible; on railroad routes; in appropriate terrain; and close to other military installations, especially large airfields.

**It is within the capability of the Chinese to possess a few submarines capable of launching short-range, air-breathing, cruise-type

Table 2

ASSUMED 1966-1967 CHINA NAVAL OB

Type	Number
Destroyer	4
Destroyer escort	4
Submarine	29
Patrol	
Patrol escort	10
Old patrol escort	3
Radar picket	6
Sub chaser	24
Fast patrol	
Motor torpedo boat	150
Motor gunboat	44
Old motor gunboat	2
River gunboat	5
Mine warfare	
Minesweeper, fleet	12
Minesweeper, coastal	4
Minesweeper, auxiliary	20
Amphibious	
LST	20
LSM	13
LSI	16
LCU	10
Landing craft	200
Auxiliary	
AG, AKL, AN, AD, ARL, ATA	55

The naval force shown in Table 2 has an amphibious lift capability of 20,000 to 25,000 troops supported by one armored and one artillery division less 50 per cent of their motor transport, or a total lift of 60,000 lightly armed infantry. The sealift is made up of aging U.S. World War II vessels, many of which have been converted to other missions, and all are in questionable operating condition.

This sealift can be augmented by the use of junks. The number of junks operating in China is very large, and they are capable of transporting many thousands of troops. They are not amphibious, however, and they must disembark troops and supplies in water depths of from 2 to 6 ft depending on the junk size and loading. Also, in the likely event that trained naval military crews are not available, extensive training and maneuvers are necessary in order to provide for an orderly operation. The use of untrained crews in large operations involving thousands of junks would be catastrophic. In addition, extensive retrofit in propulsion and communications would probably be necessary in order to have the fleet operate effectively.

Ground Forces

The Chinese ground forces, other than anti-aircraft defenses, have not been examined in detail, but the assumption is made that for 1966-1967 they have 2,500,000 troops in the army including security troops.⁽⁹⁾

The assumed Chinese anti-aircraft defense posture in the 1966-1967 time period is presented in Table 3. In conjunction with this rather extensive SA-2 and AAA⁽¹⁰⁾ system, the Chinese have considerable high-altitude radar coverage⁽¹¹⁾ which will be discussed later in this report. The anti-aircraft artillery (AAA) coverage parallels the

missiles with nuclear warheads in the 1966-1967 time period. Such a system could be developed by modifying existing submarines and aircraft. The purpose of such a system would be to constrain U.S. responses to Chinese actions by threats of attack against U.S. coastal cities or other targets in the Pacific. Such a system does not play a part in the hypothetical conflicts and is not assumed for the Chinese OB.

Table 3
ASSUMED CHINESE ANTI-AIRCRAFT DEFENSES

Location	Ref. ^a	No. of SA-2 Sites	No. of AA Guns	Location	Ref. ^a	No. of SA-2 Sites	No. of AA Guns	Location	Ref. ^a	No. of SA-2 Sites	No. of AA Guns
Industrial and population centers				MIDM bases				Airfields, misc.			
Shanghai ^b	A	12	225	Base No. 1	M-1	4	25		66	1	75
Peiping	B	10	100	Base No. 2	M-2	4	25		71	1	75
Tientsin	C	6	50	Base No. 3	M-3	4	25		74	1	75
Mukden	D	10	50	Bomber bases					76	1	75
Wuhan ^d	E	12	25	Chang-Shu	8	3	25		85	1	75
Canton	F	6	100	Kuang-Han	56	3			95	1	
Chungking	G	4	-	Lin-Fen	67	3			99	1	
Sian	H	4	25	Ming-Chang North	80	3			106	1	75
Nanking	I	8	-	Wu-Kung	121	3			114	1	
Dairen	J	6	100	Wu-Wei	123	3			116	1	
Tsingtao	K	6	50	Yen-Liang	127	3			117	1	
Hankow ^e	L	(12)	(25)	Missile range					126	1	
Harbin	M	4	25	Range Head	MH	4			128	1	
Changsha	N	4	25	Airfields, misc.					151	1	
Huangchow	O	6	100						186	1	
Lanchow	P	8	-						195	1	
Taiyuan	Q	6	-								
Kalgan	R	4	-								
Nan-Chang	S	6	50								
Wu-Hsien ^f	T	(12)	(225)								
Chiang-Chun	U	6	-								
Fu-Shung	V	(10)	(50)								

^aReference numbers refer to a sequential listing of Chinese airfields based on Ref. 1B.

^bSee Ref. T.

^cSee Ref. V.

^dSee Ref. L.

^eSee Ref. E.

^fSee Ref. A.

^gSee Ref. D.

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SA-2 coverage, in concentrations of both medium (85-mm and 100-mm) and light (57-mm) batteries. This assumed posture is beyond what the Chinese could provide through indigenous effort and thus is heavily dependent on Soviet willingness to provide them with defensive armament.

NATIONALIST CHINESE FORCES

The Military Assistance Program (MAP) force goals for 1966⁽¹²⁾ are used as a guide to probable Nationalist Chinese force postures in the 1966-1967 time period, with a continuing program of modernization under the aid program. The Nationalist Chinese force posture used in this study is shown in Table 4.

UNITED STATES THEATER FORCES

The U.S. forces programmed for the late 1966 time period are considered as available for operations in 1967. The Air Force posture, Table 5, is derived from the 64 Program Document Series.⁽¹³⁾ The Navy posture, Tables 6, 7 and 8, is estimated on the basis of the 1962 Navy posture and current Navy programs. The deployment of these groups will vary from time to time as a result of changing hypotheses for the various China Study war games.

No effort is made to project U.S. Army forces other than SAM battalions expected in the Far East in the 1967 time period.⁽¹⁴⁾ This information is presented in Table 9.

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Table 4

ASSUMED 1966-1967 NATIONALIST CHINESE OB

Type	Number
Air Force Posture^a	
Fighters	
F-100	225
F-104	100
F-102	25
Reconnaissance	
RF-100, 101, 104	30
ASW	12
Transport	
C-119	96
Miscellaneous	20
Total	508
Naval Posture	
Destroyer escort	12
Patrol ships	31
Motor torpedo boats	6
Mine warfare vessels	10
High-speed transport	1
Landing craft	
LSD, LST, LSM, LSSL, LSIL, LCU	53
Army Posture	
Special Forces Command	Unknown
Guided Missile Command	2 Bn Nike- Hercules
	1 Bn Hawk
Infantry divisions	15 ^b
Light infantry divisions	6 ^c
Light armored divisions	2
Airborne infantry regiments	1
Total strength	410,000

^a Aircraft types are assumed.

^b Six divisions or 64,000 troops assigned to OSI on rotational basis.

^c One experimental plus 5 reserve cadre divisions.

Table 5

ASSUMED 1966-1967 U.S. AIR FORCE OB (FAR EAST)

Base	A/C Type	Number
Japan		
Yokota	F-4C	75
	F-102	26
Misawa	F-105	75
	RF-4C	18
Itazuke	F-105	75
	F-102	20
Tachikawa	C-124	32
	C-130	16
Okinawa		
Kadena	F-4C	75
	RF-4C	18
Bolo ^a	TM-76B	9
White Beach ^a	TM-76B	9
Gimbaru ^a	TM-76B	9
Tancho ^a	TM-76B	9
Naha	F-102	33
	C-130	32
Philippines		
Clark	F-100	75
	F-102	20
	C-130	16
Guam ^b		
Anderson	B-52	45
	F-102	6

Sumner Case II

Sumner Case II = 33 F102

^aAssumed site location.

^bThe basing of B-52's in Guam is not currently programmed by the USAF, but such a force was used in the China Study war games for reasons indicated later.

Table 6
ASSUMED 1966-1967 U.S. NAVY AIR OB (PACIFIC)

Type	Pacific Fleet	Seventh Fleet
Attack Carrier Air Groups		
Light Attack Squadrons		
A-1E; A-1H; A-1G	42	14
A-4C	70	28
A-4E	224	74
A-6A	36	12
Heavy Attack Squadrons		
A-3B	60	16-24
Fighter Squadrons		
F-8C, F-8D	98	42
F-4B	154	42
Composite Detachments		
RF-8A	32	9
E-1B	18	4
E-2A	30	6
ASW Carrier Air Groups		
ASW Scouting Squadrons		
S-2C; S-2D	96	24
Helicopter ASW Squadrons		
SH-34J	48	12
Patrol Squadrons (Landplane)		
P-2V; P-2H	60	
P-3A	48	
Patrol Squadron (Seaplane)		
P-5B (Iwakuni; Sangley)	72	24
Patrol Squadron (Inshore)		
S-2A; S-2C	30	
S-2D	30	
Fleet Air Early Warning (Weather)		
EC-121K (Agana)	12	12

Table 7

ASSUMED 1966-1967 U.S. NAVY, PACIFIC FLEET/SEVENTH FLEET

Type of Vessel	Pacific Fleet	Seventh Fleet
Attack Carrier (CVA)		
59 Class	3	3
41 Class	3	
WW II Conv.	3	
ASW Carrier (CVS)	4	1
Missile Cruiser H (CAG/CG)	3	1
Missile Cruiser L (CLG)	3	1
Missile Destroyer (DDG)	15	5
Frigate (DLG)	15	5
Destroyer Leader (DL)	2	20
Destroyer (DD)	80	
Destroyer Escort (DDE)		
Escort (DE)		
Radar Picket (DDR)	16	8
Radar Picket (DER)	13	
Submarine (SS)	24	8
Submarine, Nuclear (SSN)	15	
Submarine, Missile (SSG)	-	-
Do. Nuclear (SSG[N])	-	-
Fleet RM Submarine (SSB[N])	9	7

Table 8

ASSUMED MARINE AIR OB^a (IWAKUNI, JAPAN)

Type of Squadron	Aircraft Type	Number
Fighter (1)	F-8C	20
Fighter (2)	F-8D, F-4B	40
Attack (3)	A-4E, A-4E, A-6A	60
Photographic (1)	RF-8A	20

^aSome of these units are deployed to Kadena, Okinawa.

Table 9

ASSUMED 1966-1967 U.S. ARMY SAM DEPLOYMENT (FAR EAST)

Base	Type	Number	Mission
Korea	Nike-Hercules	1-1/2 Bn	Defense of airfields and port area
	Hawk	4 Bn	Defense of port area, airfields, and supply areas
Okinawa	Nike-Hercules	2 Bn	Defense of island
	Hawk	2 Bn	Defense of island
Philippines	Nike-Hercules	1 Bn	Defense of Subic Bay and Clark area
Guam	Nike-Hercules	1 Bn	Defense of island

III. NUCLEAR CAMPAIGNS

Two separate nuclear campaigns are developed and analyzed.* As stated in Section I, they consist of

Case I: U.S. nuclear retaliation following Chinese nuclear aggression against Taiwan, involving alternatively

A--U.S. programmed theater forces against Chinese offensive air and missile capability, or

B--U.S. programmed theater forces, with augmentation, against Chinese offensive air and missile capability

Case II: Two-sided nuclear exchange, involving sequentially

A--Chinese pre-emptive attack on U.S. air and naval forces, augmented, in the Far East, followed by

B--Retaliation against Chinese offensive air and missile capability by surviving U.S. forces

The Orders of Battle assumed for these campaigns were described in the preceding section. The U.S. forces are augmented in various ways for various reasons as will be explained in the following material.

CASE I: U.S. NUCLEAR CAMPAIGN AGAINST COMMUNIST CHINA

Case I assumes a situation in which the Chinese have carried out nuclear aggression against Taiwan, and the United States launches a coordinated strike against the Chinese Mainland within 24 hours after the Taiwan attack. Certain restrictions are placed on the U.S. operations. They include the following:

- o No U.S. operations from or through Taiwan, and no use of Nationalist Chinese forces. This limitation results from the nuclear attack on Taiwan which eliminated any possibility of using Taiwan for air operations.

* The methodology used for examining these cases, and the non-nuclear case described in Section IV, is two-sided war gaming described in Ref. 7. Technical and operational characteristics are based on standard military planning factors as described in Refs. 15 through 17 and others, and the results are subject to the limitations of this material. Over-all campaign results are based on expected-value computations, with individual target kill or survival being established by random-number techniques.

- o No operations by U.S. air forces based in Japan, and no use of Japanese bases by any U.S. air operations. This restriction is based on the assumed nature of Japanese-U.S. relations at that time.
- o No U.S. overflights of North Korea, North Vietnam, or the Soviet Union. This restriction is based on the military requirement to minimize warning of the attack on China, and to avoid any possible intervention by these countries.
- o No support of U.S. operations by non-U.S. forces. This is based on an assumed U.S. desire to maintain freedom of action and the need for quick response.*
- o No Chinese government, control, industrial, or non-military targets attacked.

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so much for allied constraint

so by 1963, assume unilateral ops from Guam, no allied support. so G is anti-CH primarily for AF.

The main objectives of Case I are to evaluate the magnitude of the threat which the U.S. posture in the Far East poses for the Chinese, and conversely to evaluate the military capability of this U.S. posture against the Chinese in the 1967 time period with the assumed OB's of Section II. All operations are directed against airfields and missile sites. Table 10 is a listing of all of the targeted airfields. All known occupied airfields are targeted, as are all known unoccupied airfields with permanent runways 7000 ft in length or greater. The locations of the bomber bases and the three ballistic-missile complexes are shown in Fig. 1.**

The Chinese air-defense system consists of SA-2-type surface-to-air missiles providing overlapping coverage of the major political-industrial areas and important military installations. This coverage is shown in Fig. 2. Individual coverage along the coast opposite Taiwan is fairly heavy. SA-2 batteries also supply point-defense systems for some of the more isolated inland airfields. Antiaircraft artillery parallels the SA-2 coverage, with major concentrations of both medium (85-mm and 100-mm) and light (57-mm) batteries around government-industrial centers, along the coast opposite Taiwan, and at the more important military installations. The air-defense fighter bases are shown in Fig. 3.

*This restriction was also useful for assessing U.S. ability to attack China without allied support.

**See the inside back cover for Figs. 1 through 4.

MISSING

Table 10
CHINESE AIRFIELDS TARGETED

Airfield	Ref. No. ^a	Runway Length (ft)	Aircraft	
			Type	No.
Canton/Nan-Hai	2	7,000	Flashlight	10
Canton/White Cloud	4	6,000	Fresco ABC	32
Chang-Ch'iao	5	7,000	Farmer, Farmer AW	16 16
Ch'ang-Sha/Ta-T'ao	7	6,000	Fresco ABC	32
Chang-Shu	8	12,000	Badger	16
Ch'eng-Hsien NE	11	6,000	Fresco ABC, Fresco DE	32 16
Ch'eng-Tu/Wen-Chiang	15	7,000	Fresco ABC, Fresco DE	32 16
Chia-Hsing	16	7,000	Unoccupied	
Chiang-Wan	17	7,000	Fresco ABC, Fitter/Fishpot	32 16
Chiao-Hsien	18	8,000	Beagle	30
Chi-Nan	20	7,000	Unoccupied	
Chin-K'ai-Li	24	10,000	Unoccupied	
Ch'u-Hsien	28	7,000	Fresco ABC	32
Ch'ung-An	29	7,000	Fitter/Fishpot	16
Fu-Chou/Nan-T'ai	31	6,000	Farmer, Farmer AW	16 16
Hai-K'ou	32	6,000	Fresco ABC	32
Hang-Chow	33	6,000	Fresco ABC	32
Hankow	34	7,000	Fresco ABC, Fresco DE, Fishbed C	32 16 16
Hsi-An	36	6,000	Fresco ABC, Fresco DE	32 16
Hsin-Ch'eng	39	7,000	Beagle	30
Hsing-Ning	41	7,000	Unoccupied	
Hsi-Ning	43	7,000	Fresco ABC, Fresco DE	32 16
Hsu-Chou SE	46	7,000	Fresco ABC	32
Hui-An	49	6,000	Fresco DE, Farmer	16 16
Hung-Ch'iao	50	7,000	Unoccupied	
Kao-Mi	55	6,000	Farmer, Farmer AW	16 16
Kuang-Han	56	8,000	Badger	16
Ku-Ch'eng	57	7,000	Fresco ABC	32
K'ung-Ming	59	9,000	Fresco ABC	32
Lai-Yang	61	7,000	Unoccupied	
Lien-Ch'eng	66	7,000	Farmer, Fitter/Fishpot	16 16
Lin-Fen	67	8,000	Badger	16
Lin-T'ung	68	5,000	Fitter/Fishpot	16
Liu-Chou	69	7,000	Fresco DE	16

^a For footnote, see page 20.

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Table 10 -- Continued

Airfield	Ref. No. ^a	Runway Length (ft)	Aircraft	
			Type	No.
Liu-T'ing	70	6,000	Fresco ABC	32
Lu-Ch'iao	71	6,000	Farmer	16
Lu-Hsien	72	7,000	Unoccupied	
Lung-Ch'i	74	7,000	Fresco ABC, Farmer	32 16
Lung-Hua	75	6,000	Fresco ABC,	32
Lung-Tien	76	7,000	Fresco ABC, Farmer	32 16
Ming-Chiang North	80	9,000	Badger	16
Nan-Ch'ang New	81	7,000	Fresco ABC, Farmer	32 16
Nanking/Ta-Chiao-Chang	83	7,000	Fresco ABC	32
Peiping Central	88	8,000	Unoccupied	
Peiping/Lantien Chang	89	7,000	Unoccupied	
Peiping/Nan-Yuan	90	9,000	Fitter/Fishpot	32
Shan-P'io	93	7,000	Unoccupied	
Shih-Men	94	8,000	Unoccupied	
Shui-K'ou	95	6,000	Fresco ABC, Farmer	32 16
Sui-Ch'i	98	7,000	Fresco ABC, Farmer	32 16
Swatow NE	99	6,000	Farmer, Farmer AW	16 16
Tai-Shan	102	7,000	Unoccupied	
T'ang-Kuan-T'un	105	7,000	Unoccupied	
Tia-Hua	109	8,000	Unoccupied	
Ting-Hsing	110	7,000	Fishbed C	16
Ts'ang-Hsien	111	8,000	Fresco ABC	32
Tung-Hai West	114	7,000	Fishbed C	16
T'ung-Hsien	115	6,000	Fresco ABC	32
Wei-Hsien	116	6,000	Fresco ABC	32
Wen-Teng	117	7,000	Farmer, Farmer AW	16 16
Wu-Hsi	119	8,000	Farmer, Farmer AW	16 16
Wu-Hu	120	7,000	Unoccupied	
Wu-King	121	9,000	Badger	19
Wu-Wei	123	8,000	Badger	16
Yang-Ts'un	125	6,000	Fresco ABC	32
Yen-Ch'eng	126	7,000	Fresco ABC	32
Yen-Liang	127	9,000	Badger	16
Yen-T'ai South	128	6,000	Fresco ABC	32
Antung	151	6,000	Farmer	16
Chou-Shui-Tzu	158	6,000	Fresco ABC	32
Feng-Ch'eng East	159	6,000	Fresco ABC	32
Fu-Hsien	161	8,000	Fitter/Fishpot	16
Ka-Chia-Pa	168	7,000	Unoccupied	
Kuan-Tien West	170	7,000	Unoccupied	

For footnote, see page 20.

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Table 10 -- Continued

Airfield	Ref. No. ^a	Runway Length (ft)	Aircraft	
			Type	No.
Kung-Chu-Ling	171	8,000	Unoccupied	
Ku-Tien-Tzu	173	6,000	Fresco ABC	32
Liao-Yang West	176	7,000	Farmer AW	16
Liao-Yuan North	177	8,000	Unoccupied	
Mukden North	180	6,000	Fitter/Fishpot	16
Mukden SE	181	6,000	Fresco ABC	32
Pu-Lan-Tien	186	8,000	Farmer,	16
			Farmer AW	16
San-Shih Li-Pu	188	6,000	Fresco ABC	32
Ta-Tung-Kou	193	6,000	Fresco ABC	32
Teng-Ao-Pao	194	7,000	Unoccupied	
Tu-Cheng-Tzu	195	8,000	Beagle	30
Tung-Feng	196	6,000	Fresco DE	16
Ya-Men-Tun	197	7,000	Unoccupied	
Ying-Cheng-Tzu	199	7,000	Unoccupied	

^aReference numbers refer to a sequential listing of Chinese airfields based on Ref. 18. Airfields are listed in alphabetic order and assigned a corresponding reference number. Numbers 1 to 131 include Chinese airfields in all but the northeast portion of China; Numbers 131 to 200 cover the northeast portion. The numbering was used for bookkeeping purposes in the campaign analyses.

*Total
88 AF's*

A sizable early-warning radar network is assumed to exist with complete high-altitude coverage along the coastal regions and in the interior regions west to about longitude 100°. Low-altitude coverage exists along the entire coast to about 25 n mi offshore. In the interior, low-altitude coverage exists for selected important areas. This extensive radar coverage is shown in Fig. 4.

Reviewing the Chinese air-defense posture indicates an extensive capability against high-flying aircraft but very limited capability against low-flying aircraft. This latter condition is exploited to great advantage by the U.S. air strikes.

as w
SW

A--U.S. Programmed Theater Forces Against Chinese Offensive Air and Missile Capability

Case I-A involves a preliminary appraisal of a campaign against China in which only programmed theater forces are to be used. A brief survey of this problem indicated several difficulties that would limit the effectiveness of such a campaign:

1. A comparison of approximate aircraft range performance (Figs. 5 through 10) with the target locations (Figs. 1 and 3) shows that the attacking aircraft cannot reach the deep targets on a round-trip mission. A Chinese basing policy that took advantage of this condition would result in the survival of a force large enough to be used in a substantial counterstrike.
2. The Chinese early warning (Fig. 4) and air-defense posture (Tables 1 and 10, and Figs. 2 and 3) poses a threat to high-altitude attacks. In order to reduce losses to an acceptable level, low-altitude penetration is necessary. Such tactics would further reduce the target coverage.
3. The penetration of attacking aircraft would provide the Chinese with sufficient time to launch their MRBM force and to have part of their aircraft airborne for air-defense operations or withdrawal to secure bases in the interior. Therefore, it would be vital to the success of the U.S. operations that the missile installations and bomber bases be struck with little or no warning. Missiles could provide such a capability but were not available in appropriate quantities, ranges, and penetration speeds in the programmed force.

> key

As a result of these limitations it was presumed that an attack on the Chinese offensive air and missile capabilities would result in

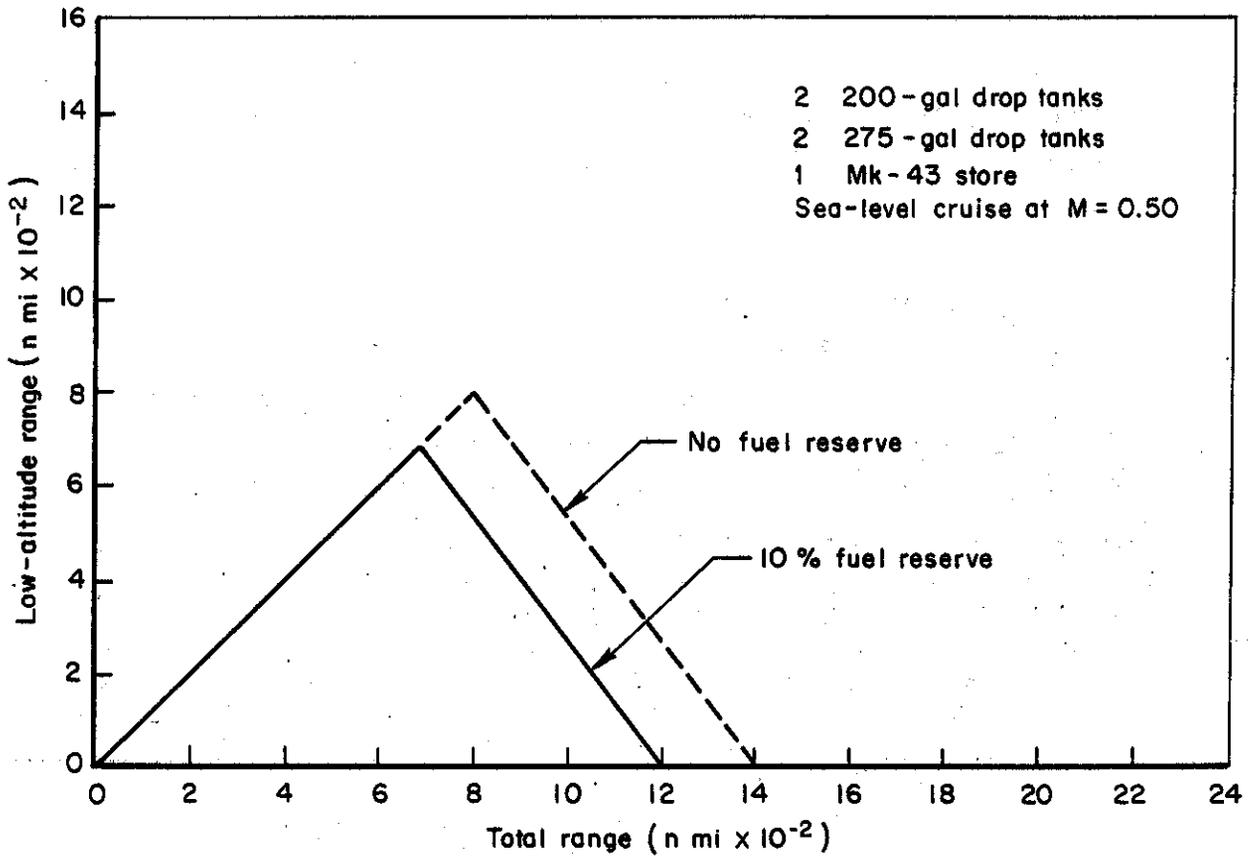


Fig. 5 — Range tradeoff for F-100D

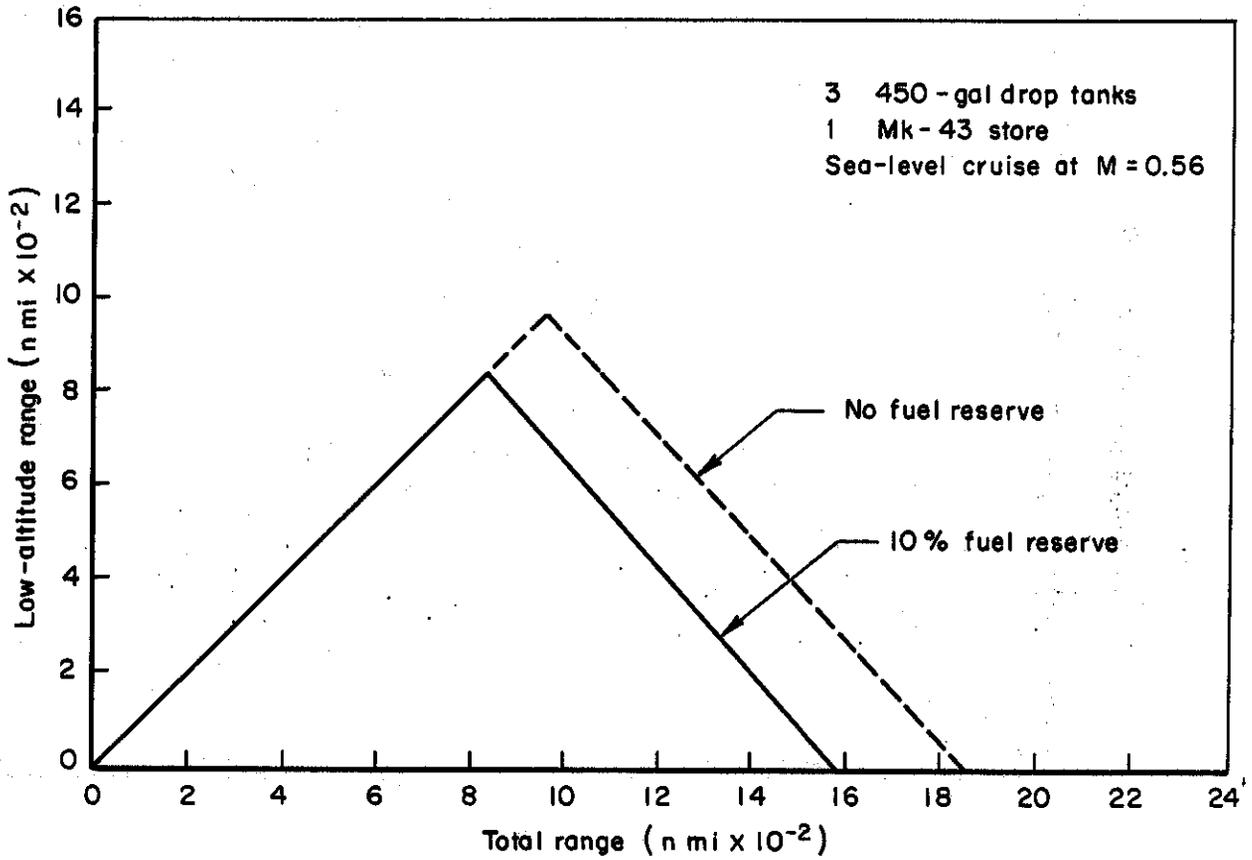


Fig. 6 - Range tradeoff for F-105 D

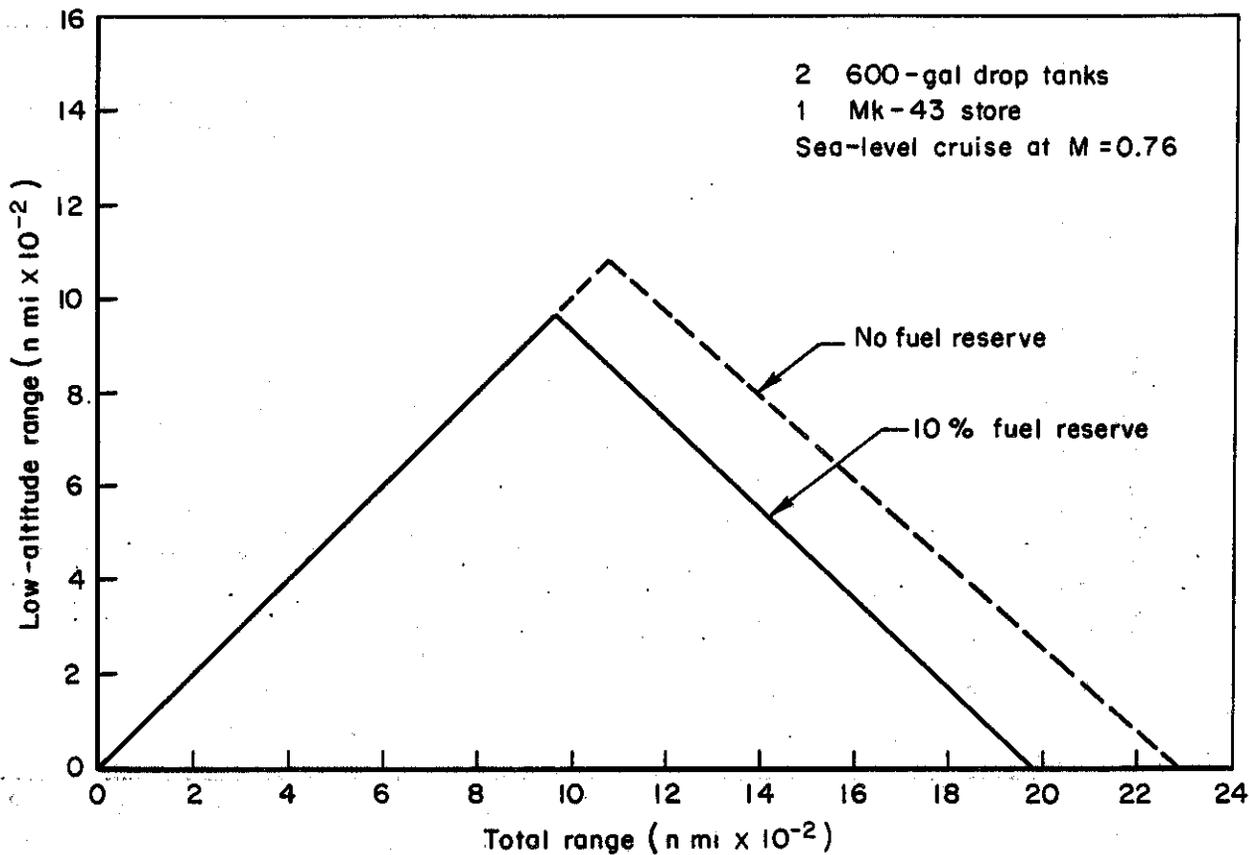


Fig. 7 — Range tradeoff for F-4C

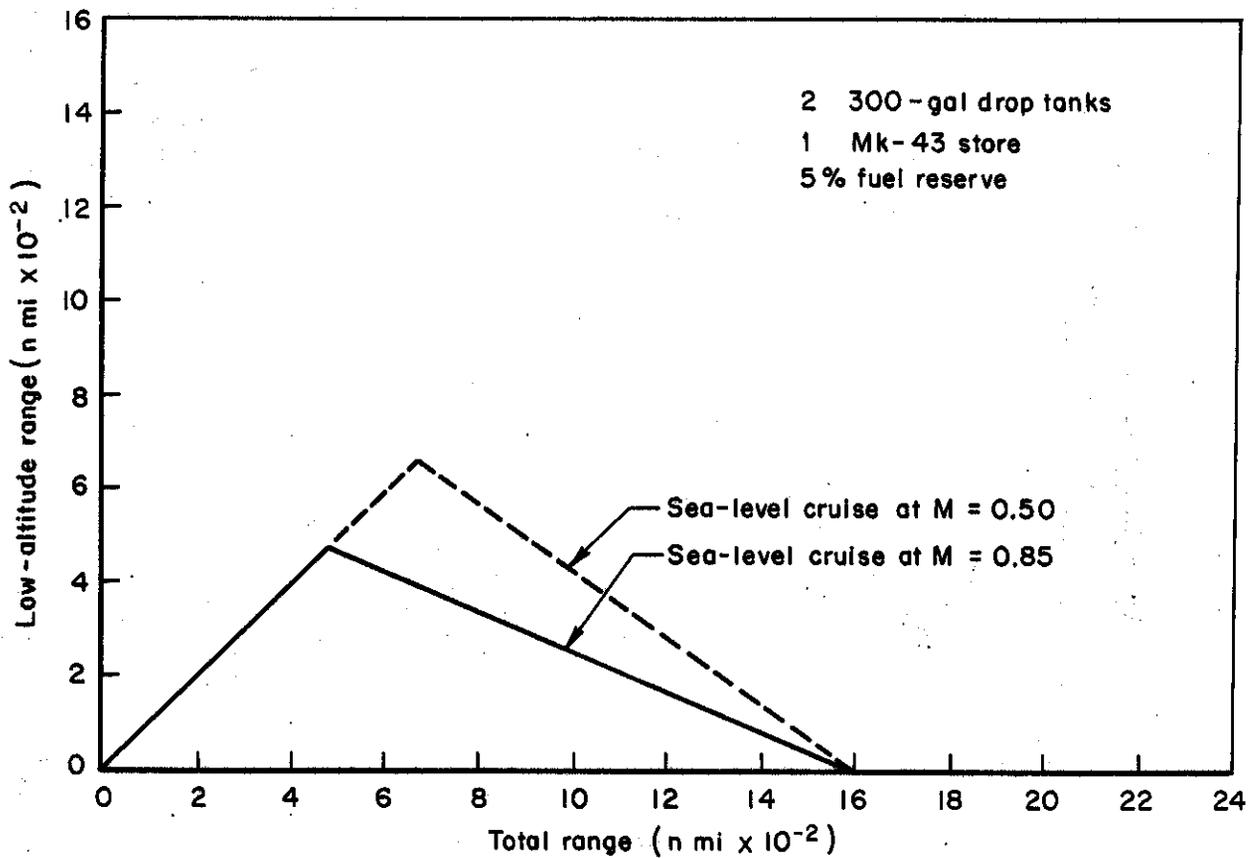


Fig. 8 - Range tradeoff for A-4E

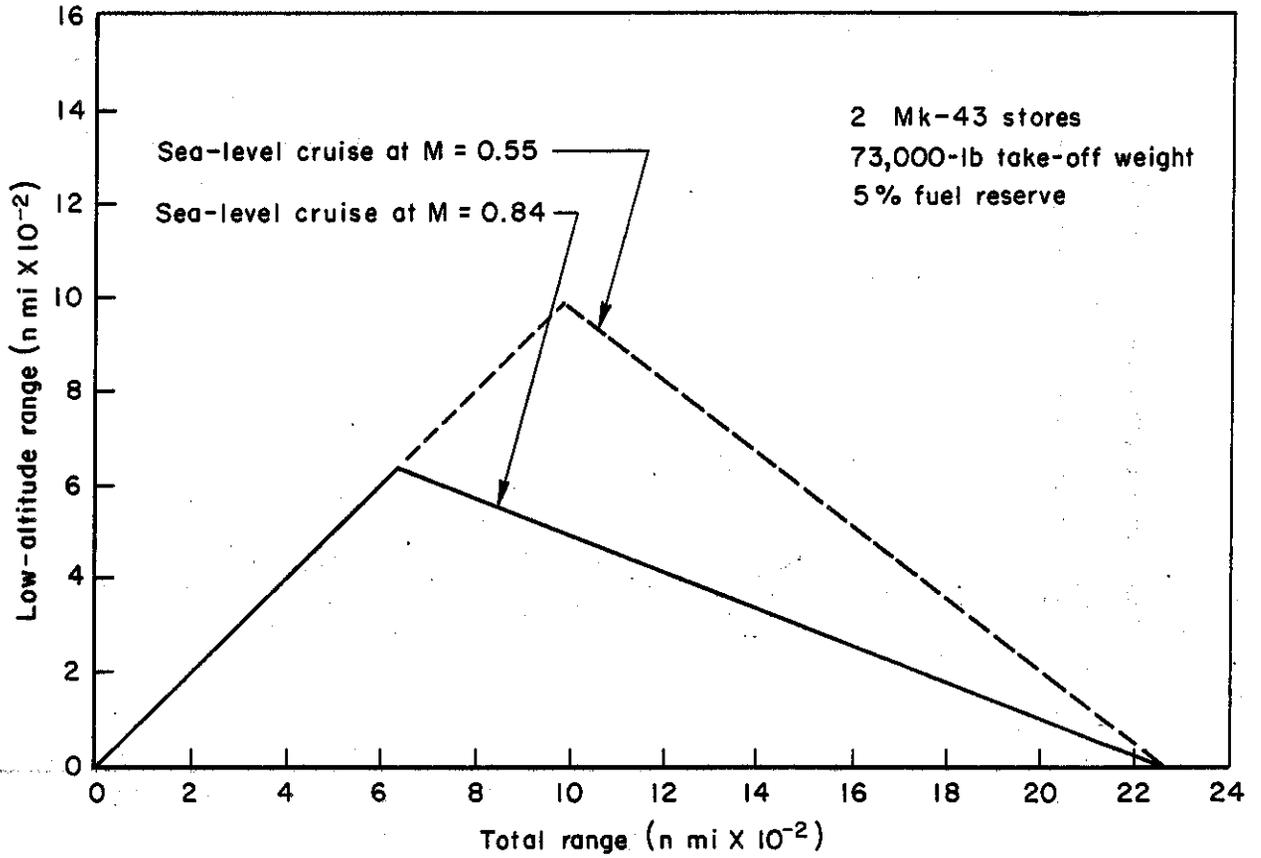


Fig. 9 — Range tradeoff for A-3B

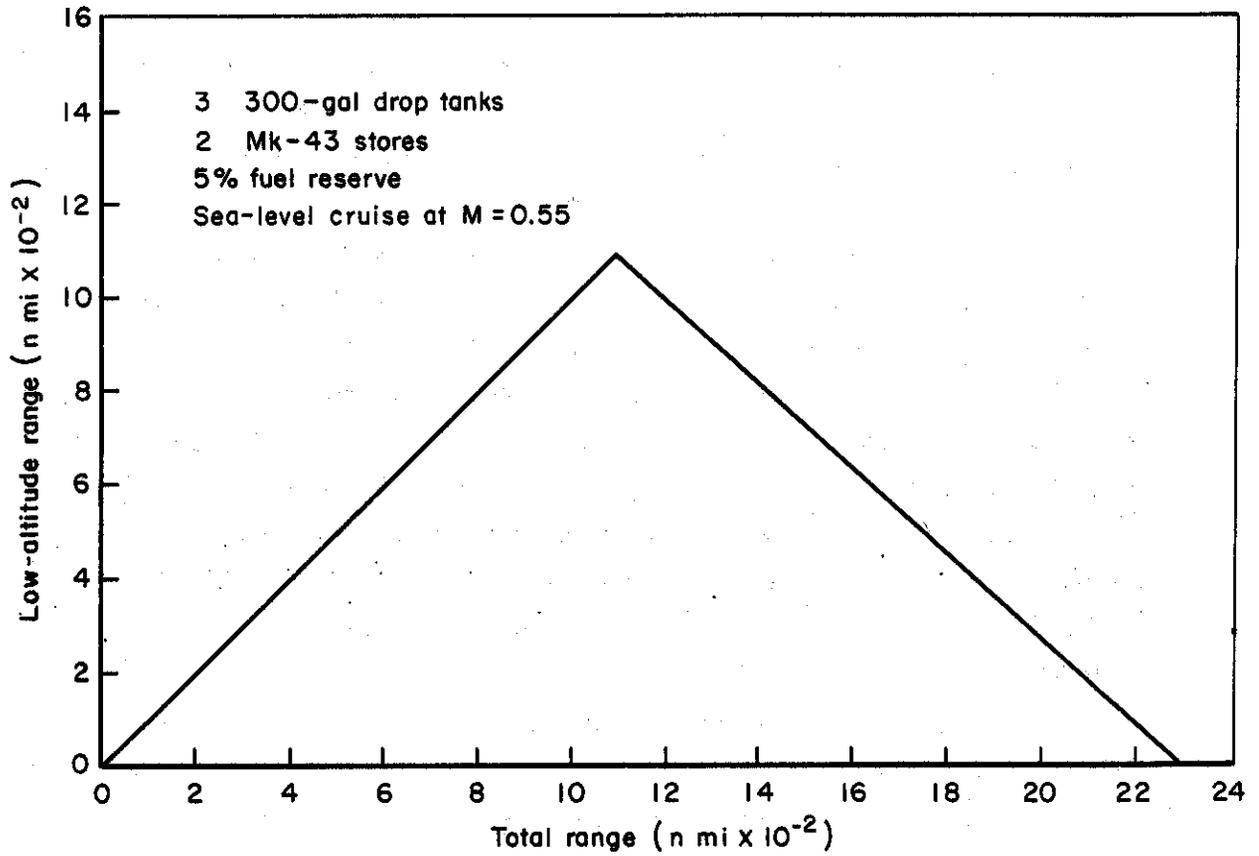


Fig. 10 — Range tradeoff for A-6A

the survival of a reasonably large portion of these capabilities. For these reasons Case I-A was not examined in detail.

B--U.S. Programmed Theater Forces, with Augmentation, Against Chinese Offensive Air and Missile Capability

The U.S. objective for this campaign is the same, i.e., to destroy Chinese offensive air and missile capability within 24 hr after a Chinese nuclear attack on Taiwan. The same target system, airfields and ballistic-missile sites, is assumed and operations are to be carried out under the same restrictions.

However, in view of the limitations on the effectiveness of the programmed force described above, the U.S. capability in the theater is augmented and improved for reasons indicated below.

The two major Chinese offensive target complexes are the MRBM sites and the bomber bases, particularly those capable of supporting Badger operations. Some of the Badger bases are 1000 n mi inland.

For the missile sites, a capability to destroy them with little or no warning is desired. This capability should also be highly invulnerable to Chinese offensive and defensive action. It is assumed that the missile sites will be "soft" in the 1967 time period and thus can be attacked with airburst weapons that lack a high degree of delivery accuracy.

Attacks on the bomber bases would need surface bursts by nuclear weapons to destroy the runways and preclude their future use. Such attacks call for highly accurate weapons; this implies air drops using laydown weapons. These attacks should also provide minimum warning to the Chinese.

Among the many possible weapon systems or combinations of systems that could provide some or all of these capabilities are the following:

- o B-52's with Hound Dogs and laydown weapons
- o MRBM's based in various countries in the Far East
- o ICBM's based in the Pacific area, e.g., Alaska, Hawaii, Australia
- o SSB(N)'s with Polaris A-3 missiles, operating in the South China Sea or the Pacific Ocean

For this campaign, programmed theater forces are augmented by one wing of B-52's based on Guam, and one SSB(N) with 16 Polaris A-3 missiles of 2500-n mi range is used.* These two systems are selected as being illustrative of the desired weapon capabilities. The selection does not imply that they are preferred systems, since no comparison was made with other combinations.

Concept of Operations. The Polaris missiles are assigned to the Chinese missile complexes because of their ability to arrive on target without significant warning. The Polaris attack is complemented by B-52 coverage using Hound Dog missiles to limit the warning time. The Okinawa-based Maces are used against the nearest missile complex (M-1), relying on saturation and surprise to penetrate the defenses.

Because the Badger bases are far inland, they are attacked by B-52's--carrying two Hound Dogs and four laydown weapons--that overfly Burma and penetrate the Chinese defenses from the southwest. Each Badger base is hit by two Hound Dogs and a follow-up laydown weapon to achieve high kill probability. The B-52's also attack the other targeted airfields which are deep inside China.

One Beagle base is attacked by B-52's. The other two near the coast are attacked by fighter aircraft with laydown weapons.

Bases with runways 7000 ft or longer within range of U.S. fighters are attacked with laydown weapons. Bases with runways less than 7000 ft generally are attacked with airburst weapons using toss-bombing techniques. All targeted airfields beyond the range of U.S. fighters are attacked by B-52's.

All missions are flown at minimum altitude over China in order to exploit weaknesses in the Chinese air defenses and thus minimize U.S. losses.

Summary of Operations. A total of 104 Chinese targets are marked for U.S. strikes. These consist of four radar picket ships, 12 missile sites, and 88 airfields. All of the missile sites and 17 airfields are covered by more than one delivery vehicle. These

* Section II shows several SSB(N)'s assigned to the Pacific Fleet in the 1967 time period. It was assumed that only one of these was assigned to Chinese targets.

airfields include all bomber bases and those airfields, occupied by substantial numbers of fighters, which lie along the major penetration routes.

From the total force available, the following forces are used:

- o 27 B-52's, each with two Hound Dog missiles and four laydown weapons
- o 29 F-4C's from Kadana (ok)
- o 34 F-105's and F-4C's from Osan
- o 16 Mace B's from Okinawa
- o 12 Polaris missiles

This provides a total attacking force of 253 weapons for use against 104 targets.

Campaign Results. All 12 missile sites, the picket ships, and 81 of the 88 targeted airfields were destroyed or severely damaged. Fourteen targets were hit by fewer than the assigned force, including seven that were not hit at all. Five of these were occupied airfields and two were unoccupied.

The missile sites were damaged sufficiently that no offensive missile capability remained. All airfields occupied by light and medium jet bombers were severely damaged, except one central-China base occupied by one-half regiment of Badger bombers. This represented the major surviving Chinese offensive capability.

Several regiments of fighters survived the attack. Some were on airfields that survived, while others were airborne in defensive operations when their home bases were attacked. These surviving fighters will be severely handicapped in any subsequent action because of extensive damage to their bases, support, and maintenance facilities. They constitute an extremely limited offensive threat, and only a minor defensive threat, to any subsequent U.S. strikes.

The U.S. losses were limited by low-altitude-approach tactics and the use of ASM's and ballistic missiles against fast-reacting and heavily defended targets. As a result, the Chinese defensive fighters and SAM batteries had restricted opportunities to engage U.S. forces, and AAA attrition was small. Only seven U.S. aircraft

were lost to enemy action, four to Chinese fighters and three to AAA.*
Two of the seven aircraft had already released their weapons.

Observations. Some observations drawn from these Case I campaigns and force postures follow:

1. Operating from an undamaged posture, U.S. programmed theater forces could destroy a considerable portion of the Chinese offensive posture, but these forces would be penalized by insufficient range, penetration, and quick response resulting in the survival of a reasonably large portion of the Chinese capabilities.
2. Augmented theater forces could reduce the Chinese offensive capabilities to a very low level.
3. The U.S. losses in an augmented-theater-force campaign could be quite low. Chinese air defenses are expected to suffer from serious deficiencies in radar coverage, SAM capability, and defensive fighter capability against high-speed, low-altitude penetration.
4. The Chinese offensive capability surviving an attack by augmented U.S. forces would be only a minor threat to the U.S. military posture in the Pacific.
5. Commitment of all of the augmented U.S. theater forces was not necessary during this campaign. Neither the Philippine-based USAF aircraft nor the Seventh Fleet aircraft were used.
6. Either surviving elements of the committed U.S. force or the U.S. forces not committed would ensure the U.S. capability for a substantial second strike.
7. With a substantial portion of their airfield complex destroyed, the ability of the Chinese to redeploy surviving or airborne aircraft is very limited. Any attempt by the USSR to supply replacement aircraft would be limited by the same destruction.

CASE II: TWO-SIDED NUCLEAR EXCHANGE

This case examines the capability of the Chinese to attack the augmented U.S. forces and a U.S. retaliatory strike. Part A analyzes an attack on the U.S. air and naval forces in the Far East, and Part B analyzes a U.S. retaliatory strike using surviving forces.

The background for this case study assumes that at the time of the Chinese attack (1967), U.S.-Soviet relations are extremely tense, to the degree that nuclear war is a strong possibility. The Chinese

* Attrition computations are based on information in Ref. 19.

believe that in the event of war they would not be spared and would be struck by U.S. theater forces. The Chinese choose to strike first in an attempt to destroy the U.S. bases in the Far East, with the presumption that the surviving U.S. theater forces could not critically damage the Chinese mainland.

The same orders of battle as were used for Case I-B are assumed for both sides, but with additional augmentation of the Seventh Fleet. As a result of the extremely tense international situation, three aircraft carriers (one of which is undergoing maintenance at Subic Bay in the Philippines) and a number of supporting ships have been added. Operating in conjunction with the Seventh Fleet are two small ASW task forces, each of which includes a CVS aircraft carrier, several destroyer types, and a number of hunter-killer submarines. In all, it has been assumed that two-thirds of the Pacific Fleet has been assigned to the Seventh Fleet.

A--Chinese Pre-emptive Attack on U.S. Air and Naval Forces, Augmented, in the Far East

Concept of Operations. The Chinese attack has three coordinated components: an aircraft attack on Guam and Iwo Jima, an aircraft and missile attack against all other U.S. land bases in the Far East including five Nationalist Chinese airfields on Taiwan, and an aircraft attack on the Seventh Fleet. The timing of these attacks must be carefully controlled to preserve the element of surprise for all targets. Table 11 is the assumed Chinese target list with nuclear-weapon assignments. As was the case with the U.S. strikes in Case I, the Chinese tactics called for all airborne attacks to be conducted at low altitude in hope of achieving maximum surprise and sustaining minimum losses.

Summary of Guam and Iwo Jima Attack. The Chinese attack Guam and Iwo Jima with five Badger bombers, each carrying a nuclear store. The first leg of their flight is at low altitude over the water gap between Taiwan and northern Luzon. On this leg the bombers are accompanied by five Badgers serving as tankers. The bombers are refueled and proceed to their assigned targets. Three bombers are assigned to Guam and two to Iwo Jima.

Table 11

CHICOM TARGET LIST

Target	Weapon Assignment	
	Missiles	Bombs (Laydown)
Okinawa		
Kadena	2	1
Naha	2	1
Hawk Batteries (2)	2	
Mace "B" Sites (4)		4
South Korea		
Fighter Base #1	1	1
Fighter Base #2	1	1
Fighter Base #3	1	1
Osan	2	1
Hawk Battery	1	
Philippines		
Clark	2	1
Basra	2	1
Subic Bay	2	1
Japan		
Yokota	1	
Itazuke	1	
Iwakuni	1	
Misawa	1	
Taiwan		
Ping-Tung	1	
Tai-Nan	1	
Chia-I	1	
Kung-Kuan	1	
Tao-Yuan	1	
Guam		
Andersen		1
Agana		1 (1 backup)
Iwo Jima		2
Seventh Fleet		30

Guam has adequate high-altitude search radar capability, but low-altitude capability is assumed to be no greater than 20 n mi, providing only 2 to 3 min of early warning against a low-altitude attack. There is a squadron of 12 EC-121K aircraft stationed at Agana on Guam. The basic mission of this squadron is weather observation, but it is assumed that in the tense situation that exists they will be functioning in an early-warning role as well. Low-altitude detection capability is marginal, and it is assumed that the patrol aircraft do not detect the incoming Chinese strike. Iwo Jima has no early-warning capability against low-altitude attack.

There are nine B-52's on airborne alert and 13 additional on ground alert as a result of the tense international situation. With 2-1/2-min early warning, it is estimated that 12 B-52's are airborne prior to detonation of the laydown bombs which destroy the targets. No Chinese aircraft are lost performing this mission.

Summary of Attack on U.S. and Chinese Nationalist Bases. The Chinese fired 27 of their stockpile of 36 missiles at the targets listed in Table 11. A compilation of the results of this strike is given in Table 12.

Six targets survive the missile strike because of various missile malfunctions. The air strike, which follows immediately, is highly successful, and only two targets ultimately survive: Naha Air Base, Okinawa, and Misawa Air Base, Japan. A summary of the Chinese air strike is presented in Table 13. Neither of the surviving bases constitutes a threat to the China mainland in that only transport and air-defense aircraft are stationed at Naha, and the aircraft in Japan are not available for nuclear operations. Because the Chinese believe that threats will suffice to forestall any Japanese action, they do not conduct an air strike against the Japanese bases.

The Chinese lose two Badgers and two Beagles to the U.S. Hawk defenses on Okinawa, Taiwan, and in South Korea.

Summary of Attack on the Seventh Fleet. The heavily augmented Seventh Fleet is divided into two task forces. Task Force 1 is located approximately 750 n mi east of Shanghai off the island of Kyushu, and Task Force 2 is located 750 n mi south-southeast of Amoy.

*Just a
missile strike on
Japan*

F102.

*no bombers
in phase 1
of J.*

Table 12
CHINESE MISSILE STRIKE

Target	Range (n mi)	Launch Site	No. of Missiles	P ^a _{k1}	P ^b _{k2}	Result	Remarks
Okinawa							
Kadena	675	1	2	.60	.84	Hit	
Naha	675	1	2	.60	.84	Miss	Impact error
Hawk Battery	675	1	1	.60	.84	Hit	
Hawk Battery	675	1	1	.60	.84	Hit	
South Korea							
Airfield #1	450	2	1	.88	.99	Hit	
Airfield #2	450	2	1	.88	.99	Miss	Missile abort
Airfield #3	450	2	1	.88	.99	Hit	
Osan	450	2	2	.88	.99	Hit	
Hawk Battery	450	2	1	.88	.99	Hit	
Philippines							
Clark	840	3	2	.42	.66	Miss	Impact error
Basra	840	3	2	.42	.66	Hit	
Subic Bay	840	3	2	.42	.66	Miss	Impact error
Japan							
Yokota	820	1	1	.44	.69	Hit	
Itazuke	670	2	1	.60	.84	Hit	
Iwakuni	670	2	1	.60	.84	Hit	
Misawa	750	2	1	.52	.77	Miss	Impact error
Taiwan							
Ping-Tung	550	3	1	.76	.94	Hit	
Tai-Nen	550	3	1	.76	.94	Hit	
Chai-I	550	3	1	.76	.94	Hit	
Kung-Kuan	500	1	1	.83	.97	Miss	Missile abort
Tao-Yuan	500	1	1	.83	.97	Hit	

^aP_{k1} = Kill probability for one missile.

^bP_{k2} = Kill probability for two missiles.

Table 13

CHINESE POST-MISSILE AIR STRIKE

Target	Beagle	Badger	Fighters	Nuclear	Conventional	Result	Remarks
Okinawa							
Kadena		1		1		Hit	Alert AMF are airborne
Naha		1		1		Miss	100 psi hard
Mace #1		1		1		Miss	100 psi hard
Mace #2		1		1		Hit	100 psi hard
Mace #3		1		1		Hit	100 psi hard
Mace #4		1		1		Hit	100 psi hard
South Korea							
Base #1	1			1		Hit	
Base #2	1			1		Hit	
Base #3	1			1		Hit	
Osan	1			1		Hit	Six AMF are airborne
Philippines							
Clark		1		1		Hit	10 F-100 & 2 AMF are airborne
Basra		1		1		Hit	
Subic Bay		1		1		Hit	Carrier sunk
Taiwan							
Ping-Tung	1		3			Hit	
Tai-Nan	1		3		X	Hit	
Chai-I	1		3		X	Hit	
Kung-Kuan	1		3		X	Hit	
Tao-Yuan	1		3		X	Hit	

The 750-n mi distance is selected to reduce the Chinese attack capability to Badger aircraft on round-trip missions. The ship complement for the two task forces is shown in Tables 14 and 15. The aircraft complement before and after the Chinese strike is shown in Table 16.

In the multiple-carrier task forces established for this operation, a decision was made that a single carrier in each force would handle the major elements of the fleet air defense, and the other carriers would be primarily concerned with offensive roles. Precedent for such assignments was established in World War II.

Only the attack against Task Force 1 was developed and analyzed for this study. The results were then assumed to apply in a similar way to an attack on Task Force 2. Task Force 1 has three attack carriers (CVA) which have a total of nine catapults. All catapults have the capability of launching one aircraft every 30 sec, and all are on the alert and manned. Because of the alert status, 50 per cent of the fighters and attack aircraft are armed and on deck ready for any emergency.* A CAP of F-4B fighters and E-2A are supplying protective cover and early warning for the task force.

The Chinese launch a strike of 30 Badger, 20 Beagle, and 20 Farmer aircraft against each task force. The Badgers are flying low and are carrying 15 nuclear weapons and 15 large nonnuclear bombs. The Beagle and Farmer aircraft are flying high and are only for decoy purposes, in that they cannot reach the task forces because of range limitations.

The assumed layout for Task Force 1 is shown in Fig. 11. Also shown is the axis of the Chinese Badger strike. The location of the task force is known to within a few miles by the Chinese, but the size of the force and the location of the carriers within the force are not known. Within the task force many ships carry radar reflectors to serve as decoys for the carriers. The 30 Badgers attack in a single wave with aircraft 1 mi apart. A single wave is stated in Ref. 20 to be most critical for Terrier and Tartar missile systems, and the

*Thirty per cent of the aircraft are assumed to be undergoing maintenance, and 20 per cent are in a nonalert status.

Table 15
DEFENSIVE ARMAMENT FOR SEVENTH FLEET, TASK FORCE 2
(t = twin mount, q = quad mount)

Ship	Dual-Purpose Guns			AA		Missiles			Directors
	5"/38	3"/50	5"/54	40mm	Terrier	Tartar	Talos		
CVA 159	7				2t			4	
CVA WW2	5	6			2t			2	
CAG	3					1t	1t	1	
CIG	2	2				1t		2	
DDG	2	2						2	
DDG	2	2						2	
DDG	2	2						2	
DIG		2	1		1t			2	
DIG		2	1		1t			2	
DIG		2	1		2t			2	
DDR ^a	3t	1t						4	
DD ^b	3t	2/3t							
DDE ^c	2t			3q/2t					

^aFive (5) ships of this class.
^bEight (8) ships of this class.
^cFive (5) ships of this class.

Table 16

SEVENTH FLEET AIRCRAFT COMPLEMENT BEFORE AND AFTER CHICOM STRIKE

Item	A/C									
	A-1H	A-1C	A-1E	A-6A	A-3B	F-8D	F-4B	RF-8A	E-1B	E-2A
Task Force 1										
Prestrike force										
CVA '59	12		36	12	12	36	12	3		4
CVA WW2			36		6	36	28	3		4
CVA '41		28					12	3	4	
Surviving force										
Airborne		14	36	6	9	18	26			
Shipborne (available)		6	7		1	2				
Task Force 2										
Prestrike force										
CVA '59	12		36	12	12	36	12	3		4
CVA WW2		14	14			24	14	3		4
Surviving force										
Airborne		7	25	6	6	12	13			
Shipborne (available)	8	4	4			5	3			

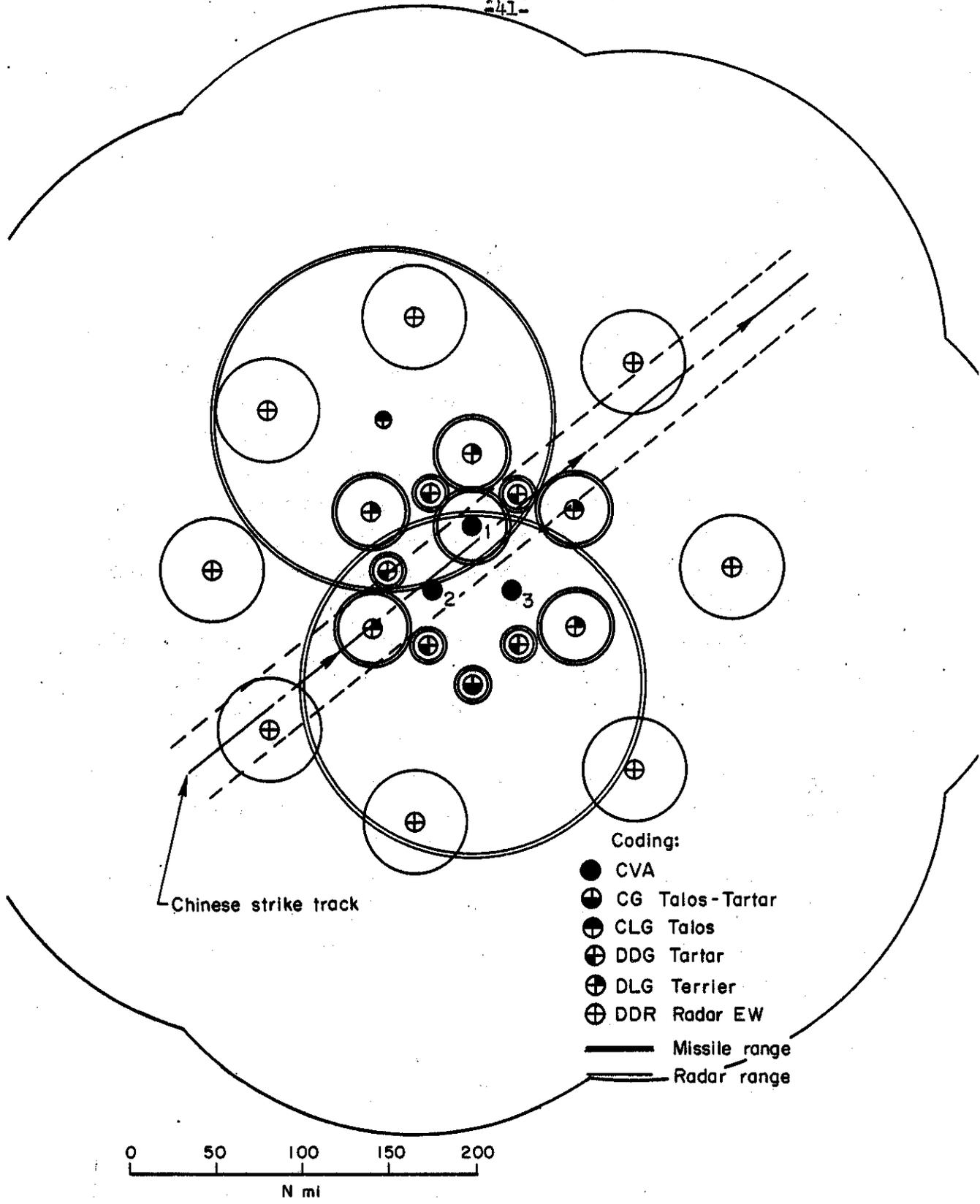


Fig. II — Deployment of Task Force 1

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spread of the aircraft provides the needed search width for detecting the prime targets, the carriers.

The probability of detecting the low-flying aircraft increases to better than 80 per cent as they approach the line of deployment of the DDR's (destroyer picket ships). Assuming detection at the DDR deployment line (by either E-2A or DDR), Badger speed of 480 kn, and negligible communication delay to the carriers, the carriers could have a warning time of approximately 20 min. Assuming Carrier 1 to have four catapults and 36 aircraft ready for action (50 per cent of available combat aircraft), the minimum launch time would be about 5 min. Carrier 3 has three catapults and 41 aircraft on alert status. These planes could be launched in a minimum time of 7 min. Carrier 2, the defense carrier, has two catapults and 32 ready aircraft. Minimum launch time is 8 min. On the basis of the above figures, it is very likely that a very high percentage of ready aircraft would be launched in such a Chinese attack situation.

The Chinese Badger force loses 14 aircraft to the guided missile ships and fighters during the penetration phase of the attack.* They also lose seven nuclear weapons, which are fuzed for high-order detonation in case of disaster. The proximity of Carrier 2 to the penetrating bombers insures its demise. Whether or not Carrier 1 will be sunk depends on the protection provided by the defense fighters, and its own rather lethal defense provided by two twin Terrier batteries. Although there is doubt as to whether Carrier 1 was sunk, to be conservative it is assumed that its facilities and remaining carrier-borne aircraft are not available for a strike against the Chinese mainland.

After the Chinese strike, the U.S. fighters continue to attack the remaining bomber force. With the assistance of the E-2A aircraft for detection and air vectoring control, the Chinese Badger force is decimated.

Summary of Results. Only two targeted U.S. land bases survived the Chinese nuclear strike: Naha on Okinawa, and Misawa in Japan.

*Mortality figures are obtained from data in Ref. 20.

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Tachikawa Air Force Base was not attacked. The transport and fighter aircraft on these bases do not constitute a threat to the Chinese.

The available and surviving U.S. offensive forces include

103
120
131

- 12 B-52's (Guam)
- 10 F-100's (Philippines)
- 8 Mace-B's (Okinawa--100 psi hard)
- 103 A-4C's and A-4E's (Seventh Fleet)
- 16 A-3B's (Seventh Fleet)
- 12 A-6A's (Seventh Fleet)
- 1 Polaris Submarine

The Chinese are estimated to have lost 44 Badgers, 2 Beagles, and 1 fighter in this campaign.

Observations. Some observations drawn from this Case II-A campaign and force postures follow:

1. A modest nuclear capability could be used by the Chinese to heavily damage the augmented U.S. theater forces. However, some portions of the force would survive and be available for a retaliatory strike against China.
2. The success of the Chinese attack depends critically on a number of factors:
 - o The timing of the various phases of the operation is of major importance. All events must take place on a precise schedule to prevent the premature disclosure of the strike and thus allow the United States to get a larger percentage of its offensive and defensive aircraft airborne before being hit.
 - o The effectiveness of the attack on Guam depends on (1) the ability of the Chinese bombers to pass between Taiwan and Luzon without being detected by Task Force 2 and other detection media, (2) the ability of the bombers to escape detection by the EC-121K aircraft on patrol from Guam, and (3) the number of B-52's on air alert at the time of the attack.
3. The remaining Chinese offensive forces represent a second-strike threat which can be used either directly, if needed, or as a deterrence to possible responses to their attack.
4. The U.S. land bases have limited early-warning capability against low-flying aircraft. Since many of these bases are surrounded by water, or must be approached over water, the use of existing over-water detection techniques would further limit the effectiveness of the Chinese airborne attack.
5. There is little likelihood that the Chinese could mount any form of attack on the Seventh Fleet that would prevent the launching of nearly all ready aircraft. The possession of

an ASM with a 150-n mi range would be of help, presuming the location of the carriers could be determined at that range.

- 6. Forty-eight ships of the Seventh Fleet are relatively ineffective in an air-defense role. The addition of Mauler-type SAM systems to these ships would more than double the air-defense fire power of the Seventh Fleet against low-flying aircraft.

B--Retaliation Against Chinese Offensive Air and Missile Capability by Surviving U.S. Forces

The next phase examines an attack on the Chinese mainland by the U.S. forces that survive the attack described in Case II-A. Such an attack would be carried out in a period of confusion, without coordination, and with some duplication. For purposes of this study, it is assumed that there is preplanning to the extent that each aircraft would attack targets assigned through existing emergency plans.

Concept of Operation. The target structure is the same as that of Case I. The B-52's attack the MREB sites and the Badger bases with Hound Dogs and laydown weapons and penetrate from the southwest over Burma for deep targets. The Polaris missiles are fired against the MREB sites. The surviving Maces are fired against coastal airfields. All aircraft missions over the Chinese mainland are carried out at low altitude to maximize the detection problem for the defenders, to take advantage of known deficiencies in the Chinese air defense, and to minimize losses to the U.S. striking force.

Summary of Attack by USAF Units. It is assumed that the 12 surviving units of the B-52 force arrange target assignments while they approach the Chinese mainland. Priority is attached to the destruction of the MREB sites and the Badger bases. Two aircraft are assigned to each important target, and each aircraft is assigned up to four targets. The B-52's strike 18 airfields and the 12 missile sites.

The eight surviving Maces are targeted against eight airfields in the general vicinity of Shanghai.

The ten F-100's from the Philippines attack ten airfields in the southern part of China.

no mention of Misawa.

have 33 F100s at Wash with Cdt mission.
→ 33 Naha
10 PH
48 available

10 short
Survive Cdt hits on PH, see Table
13 p. 76.

10 F100s

Summary of Attack by Units of the Seventh Fleet. The assumed Seventh Fleet emergency plan calls for two aircraft against each target, and each A-3B and A-6A is assigned two targets. The reasoning behind this plan is that under emergency conditions the number of aircraft available is not known, and thus redundancy is desirable. Since the enemy is expecting the strike, losses to the alert air defense may be high, and thus duplication of assignments is again a desirable feature.

The Navy aircraft attack 72 targets comprising eight airfields and four radar picket ships. Several of these airfields are also struck by the Maces and F-100's.

Summary of Results. A total of 104 targets was hit by the U.S. retaliatory strike. Seventeen targets survived. These consisted of one missile site, one Badger base, nine fighter bases, and six unoccupied airfields. The combat losses of the U.S. force were 30 fighter and attack aircraft and three B-52's.* Three Polaris missiles aborted in flight, as did two Maces. A third Mace was destroyed by Chinese air defenses.

The surviving Chinese force consisted of 16 Badgers and several regiments of air-defense fighters which were airborne during the U.S. attack.

Observations. Some observations drawn from this Case II-B campaign and its force postures follow:

1. The augmented U.S. theater forces surviving the nuclear strike could destroy a major portion of the remaining Chinese offensive capability. The success of such a U.S. attack would depend on a number of factors:
 - o The U.S. retaliatory strike is carried out in a pre-planned and relatively orderly fashion. Such an assumption is probably optimistic, and therefore the results should be downgraded to some degree.
 - o Alternate targets were not assigned for the aircraft in the dual coverage role. In the strike, many weapons were not dropped because the target had been destroyed by the first aircraft assigned to the target.

includes
Miyawa?
Must as
Naha has only
SR F105
unclear for
the strike.
Only planes
are PH's
10 x F100's
& MiG's
F105s x 75
RF-4C x 18.

*The attrition was developed from data given in Ref. 19.

- o Authorization to attack is necessary within one hour after the Seventh Fleet aircraft take off from the carriers that are destroyed by the Chinese strike. Otherwise, these aircraft would not have sufficient fuel to complete their missions.
- 2. The U.S. losses could be high because the U.S. attack is expected, and all elements of the Chinese air-defense system are at a high state of alert.
- 3. The Chinese offensive capability surviving the attack by the augmented U.S. forces would not represent a serious threat to the U.S. military posture in the Pacific.
- 4. The U.S. theater forces surviving the attack on the Chinese mainland do not provide the United States with the capability for a major second strike.
- 5. Range limitations will not permit the naval aircraft to return directly to their task forces, and they must recover over friendly territory such as Taiwan, South Korea, and South Vietnam. In the event that adequate landing facilities are not available, the pilots parachute to safety.

OBSERVATIONS CONCERNING THE NUCLEAR CAMPAIGNS

The nuclear campaigns were studied to obtain a general estimate of the effectiveness of programmed theater forces against a China with a modest nuclear capability as they might affect Chinese calculations of the risks involved in a major military confrontation with the United States. On the basis of the postulated conditions, the following general conclusions are drawn:

- 1. United States programmed theater forces, augmented by one wing of B-52's and utilizing one SSB(N), could destroy a substantial portion of the Chinese offensive capability when operating from an undamaged posture. Augmentation was found necessary in order to strike targets deep in China, and to minimize warning time to the fast-reacting Chinese MRBM system. In a strike from an undamaged posture, augmented U.S. theater forces would be capable of a major second strike.
- 2. If the Chinese choose to strike first, they can severely damage the programmed U.S. military posture in the Far East. Further augmentation of air and naval forces would be required to provide a satisfactory retaliatory strike capability in this case.
- 3. Both U.S. and Chinese effectiveness would depend critically on adequate intelligence of the size, disposition, and location of opposing forces. For the Chinese this is

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particularly true for an attack on the Seventh Fleet; for the United States, in target assignment of occupied airfields.

4. For both sides there are deficiencies in early warning of low-altitude attacks, and air defense against such attacks. The vulnerability of U.S. forces could be reduced by appropriate improvements in equipment.
5. After a U.S. strike from a damaged posture, only a minimal theater force would be available for a second strike against surviving Chinese military, industrial, or political targets. If such a strike were required, additional forces would be necessary.

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IV. NONNUCLEAR CAMPAIGNS IN THE TAIWAN STRAIT AREA

Provided the United States continues to maintain a nuclear posture commensurate with growing Chinese nuclear weapon developments, the previous section suggests that Chinese attempts to use their nuclear capability in direct nuclear aggression would entail high risk for them.

The Chinese would still have the military option of using their nuclear capability as an umbrella for overt nonnuclear military operations, i.e., as a threat to enhance the possibilities of achieving limited objectives by nonnuclear operations. Some of the implications of such a strategy for the United States will be appraised in this section.

The locale for this case study is the Taiwan Strait, particularly Quemoy. This area was selected for several reasons. The 1958 crisis provides both a precedent and historical data that permit comparisons with objectives attributed to the Chinese.⁽¹⁾ The Communist Chinese have often voiced their intent to reincorporate Taiwan and the Offshore Islands with the Chinese Mainland. For defense of the Offshore Islands, U.S. intentions may be regarded as ambiguous, and allied support may be questionable; whereas for the defense of Taiwan, a firm U.S. commitment and a greater probability of allied support are assumed.

This case is not intended to represent a detailed analysis of the variety of possible situations and events that might develop in the Taiwan Strait area. It is intended to illustrate some of the military situations that might develop in a time when the Chinese might attempt a nonnuclear operation with the capability of resorting to nuclear weapons. It also provides some indications of the possible significance of nuclear weapons to the Chinese for this type of operation, and of some of the consequences for U.S. responses.

Two situations are examined: The major one is an attack on Big Quemoy.* The second is a limited examination of a Chinese assault on Taiwan. Political aspects of these situations are discussed in Ref. 1.

*A brief analysis of possible Chinese actions against some of the smaller Offshore Islands (Pai-Ch'uan group, Tung-Yin Shan, Wu-Ch'iu Hsu,

OPERATIONS AGAINST BIG QUEMOY

Two operations are examined involving Quemoy: a "direct assault" campaign and an "interdiction" campaign. It is assumed that the Quemoy defense capabilities have been modified since 1958. The changes include a decrease in the number of troops on the island to approximately 60,000, an increase in the number (and quality) of guns to 350, and widespread use of mines, barbed wire, and defensive fortifications.

Direct Assault on Quemoy

Any invasion attempt against either Quemoy or Taiwan involves rather extensive preparations which would be impossible to disguise or hide. The discovery of these preparations was assumed to result in the U.S. force redeployment shown in Table 17. The large shift of aircraft from Japan to Taiwan is the result of uncertainty as to the Japanese reaction to another Offshore Island crisis in the face of the Chinese nuclear strength. The augmentation of the Seventh Fleet is generally similar to that which occurred in 1958. An augmentation force of one B-52 wing based on Guam and the use of one SSB(N) submarine is assumed, as in Cases I and II.] x x x

Approximately one-fourth of the total Communist Chinese air and naval capability and less than one-fourth of the ground forces are considered available for the Quemoy assault. The major part of the

etc.) was also undertaken. In general, it is indicated that the Communist Chinese could successfully assault one or more of these smaller islands without extensive military preparations that might produce warning of the assault. Using standard military planning factors, an estimated force of from one to five divisions, approximately 200 combat aircraft, and an appropriate number of landing craft and junks would appear adequate to carry out the attack, depending on the particular island or islands chosen. Such an assault could raise problems concerning possible military responses for the Chinese Nationalists and have political implications in the Far East, particularly for U.S.-Chinese Nationalist relations. The military capability to undertake such action exists today and does not depend upon Chinese possession of nuclear weapons, nor are there indications that nuclear weapons would play a dominant role in the local military situation; hence further examination was not undertaken.

Table 17

FORCE REDEPLOYMENT FOR TAIWAN STRAIT CRISIS

Type	Number	From	To
PACOM Forces			
USAF F-4B	36	Japan	Taiwan
ASAF RF-4B	6	Japan	Taiwan
MAG A-4E	18	Japan	Taiwan
MAG F-4B	18	Japan	Taiwan
Seventh Fleet	-	Japan area	Taiwan area
CASAF			
F-105	32	U.S.	Philippines
F-4B	32	U.S.	Japan
RF-4B	6	U.S.	Japan
KC-135	8	U.S.	CASAF deployment & Okinawa
C-130	32	U.S.	Theater reserve & deployment
CINCPAC Fleet			
CVA Carrier	2		Seventh Fleet
CVS Carrier	1		Seventh Fleet
Army STRAF			
Hawk	1 Bn	U.S.	Taiwan (airfield defense)

force is considered to be held in place by other commitments. Direct Soviet military support is not considered likely in line with political assessments made in Ref. 1.

The amphibious assault follows a period of heavy shelling and numerous air attacks to reduce the defenses. The force requirement for the assault is estimated as

1. 15 to 20 Communist Chinese divisions
2. 2000 to 4000 air sorties
3. 3000 to 4000 landing vessels and junks

In order to estimate the results of such an attack, no opposition by Nationalist Chinese or U.S. air units is assumed. Even without Nationalist Chinese air opposition (a highly unlikely condition) Communist Chinese casualties from the Quemoy defenses alone are estimated to be in excess of 40,000 men, with heavy materiel losses. If Nationalist Chinese and/or U.S. air forces vigorously oppose the assault through attacks on staging and transit operations, the cost in both men and materiel will be greatly increased. This factor plus the problems the Communist Chinese face in coordinating and executing an operation of this magnitude would provide them with only a marginal chance of success.*

In view of the marginal chance of success, the substantial losses, the limited value of the objective, the many uncertainties in preparation and execution of the operation, and the variety of possible U.S. and Nationalist Chinese responses, an assault on Quemoy under the conditions postulated appears to involve high risks for the Communist Chinese. The value of a nuclear capability as an "umbrella" for such operations is highly questionable.** Moreover, the use of nuclear

* Factors that could be strongly adverse to the Communist Chinese operations include the preparation, assembly, and loading of the invasion forces, which could provide hours to weeks of warning; the loading, moving, and landing of the 3000-plus junks; the logistic support required for initial attacks; replacement of losses; etc. Because of these major problems, the estimate of force requirements and losses is conservative.

** The value of a Communist Chinese nuclear umbrella is likely to be less in deterring U.S. military actions, especially deployments or redeployments in the area, than in creating special problems in such

weapons against Quemoy would increase the risk of expansion of the conflict out of all proportion to the value of the operation.

Interdiction of Quemoy

The interdiction campaign was not fully developed because of the variety of possible actions and counteractions available to both sides. In general terms the Communist Chinese might consider interdiction of the supplies to Quemoy for a number of reasons: as a softening-up action prior to a direct assault, as the first step in a major action against Taiwan, or as a probe of U.S. responses to increased military action in the area. In all of these actions there are major political considerations. The discussion of these is outside the scope of this Memorandum, but some of them are considered in Ref. 1.

It is assumed that any attempt at interdiction as a prelude to military action would require an effort that would severely curtail the resupply of Quemoy for a period of two to three months. The length of the action could provide both sides with a number of opportunities to modify their objectives and operations. A brief analysis considered three such alternatives:

1. Under the threat of extended interdiction and with the possible expansion of the conflict, a review of the tactical and strategic value of the island might favor the withdrawal of the Nationalist Chinese forces. This was considered an unlikely alternative and one in which major political considerations overshadow the military aspects of the situation.
2. Both sides, the Communist Chinese and the Nationalist Chinese--with or without U.S. support--engage in major but local efforts. Since neither side appears to have a significant military advantage in the initial stages, such a campaign could prove very costly to both. As the Communist Chinese interdiction effort continued over an extended period of weeks or months, both sides would have opportunities to

actions as, for example, the anticipatory move of aircraft out of Japan. The value of the umbrella in increasing the dangers of escalation of the conflict and in creating pressures on the United States to restrict or limit its responses to Chinese actions against Quemoy involves political considerations outside the scope of this Memorandum. Many of these are discussed in Ref. 1.

change the manner and scope of their operations. Generally it appeared that adequate resupply of the islands could be maintained by various measures, including poor-weather operations, night operations, and protected resupply. Air actions by both sides in the immediate area might occur, and U.S. support in the resupply operations and the air actions could have an important influence on the effectiveness of the Communist Chinese efforts.

3. With each side having the capability and the opportunity to change the nature and locus of the conflict, the interdiction situation is an unstable one and might not stay confined to a limited operation. Depending on a variety of factors, primarily determined by the situation prevailing at the time, the conflict could expand significantly in area and magnitude.

Based on the estimate that the Communist Chinese could not undertake a localized interdiction effort that would be effective, and that an interdiction operation could be highly unstable, the risks involved to them in such a campaign would be considerable.

ASSAULT ON TAIWAN

The next phase involves a limited examination of Communist China's capabilities for a nonnuclear campaign against Taiwan. The U.S. force deployments are the same as those assumed for the assault on Quemoy. The Communist Chinese force requirements are estimated using the same planning factors as were used for the attack on Quemoy.

On this basis, an assault on Taiwan would tax the total Communist Chinese military capability. Naval and air requirements are particularly demanding. Assuming Communist Chinese air power is used in an attempt to markedly reduce or eliminate the Nationalist Chinese Air Force, the requirements approach the limits of their (estimated) total operational and logistic capability. Commitment of U.S. air and naval units would make the costs of such an operation almost prohibitive, with only the remotest chance of success.

Such a campaign is not in line with estimates of Communist Chinese willingness to accept such high risks.⁽¹⁾ If the Communist Chinese were willing to risk a campaign involving the commitment of the major portion of the total military capability of Communist China, the United States might well consider a nuclear response, such as

nuclear attacks on staging bases and the invasion fleet. Appropriate timing and targeting (including the timing of the authorization to use nuclear weapons) could be militarily effective in stopping the invasion. (21)

The use of nuclear weapons by the Communist Chinese prior to, or as part of, such an invasion is considered unlikely in view of the variety of responses available to the United States. The possibility of a U.S. response such as the one examined in Case I, i.e., U.S. retaliation from an undamaged posture following a Communist Chinese nuclear attack on Taiwan, would be a dominating factor in Communist Chinese risk calculations.

OBSERVATIONS CONCERNING THE NONNUCLEAR CAMPAIGNS

1. A Communist Chinese overt nonnuclear campaign against Quemoy or Taiwan would represent clearly identifiable aggression. Against Quemoy it could be carried out only at considerable cost and with a marginal chance of success. Against Taiwan the costs would be almost prohibitive and the chances of success remote. Both campaigns could bring the Communist Chinese into direct military confrontation with the United States and involve high risks for them.

2. Any major invasion attempt on the part of the Communist Chinese would be accompanied by preliminary preparations which would be extremely difficult to disguise or hide and could provide the United States with time to take diplomatic or military action to meet such a threat.

3. A Communist Chinese nuclear capability as an umbrella would be of limited military value against Quemoy, although the possession of such a capability would probably create political pressures on the United States to limit its response and might necessitate operational and logistic adjustments.

4. In an assault on Taiwan, the use of nuclear weapons by the Communist Chinese could have local military value but would involve extremely high risks for them in view of U.S. commitments and response capabilities.

V. TARGET STUDY AND WEAPON APPLICATIONS*

In the nonnuclear campaigns described in the previous section, U.S. and/or Nationalist Chinese operations would be against the following types of Communist Chinese targets:

- o Troop concentrations
- o Concentrations of junks and small boats
- o Isolated junks, small boats, and ships
- o Gun emplacements
- o Airfields
- o Aircraft (on the ground and airborne)
- o Supply dumps
- o Transportation facilities
- o AAA installations
- o SA-2 missile sites
- o Early-warning and GCI radar

All of these targets are vulnerable to air attacks, and in the 1967 time period there will be many advances in nonnuclear weapons and delivery capabilities for airborne attack. Table 18 presents a listing of airborne weapons which should be available and various targets against which these weapons are effective. In this time period, the F-100, F-105, and F-4C will be equipped for multiple-weapon carriage. For example, the F-105 will be able to carry sixteen 750-lb bombs on short-range missions, and eight 750-lb bombs plus two 450-gal external fuel tanks on missions of 550-n mi radius, using a hi-lo-hi mission profile.

Two short studies were made of air operations against airfields and shipping to evaluate the effectiveness of these advanced nonnuclear capabilities.

AIRFIELD INTERDICTION

There are six Chinese Communist airfields within 150 n mi of Quemoy. Aircraft from these airfields could be used in an attempt to

* This section presents several points that developed in the course of the analysis of Case III and which have not been covered elsewhere in reports of the China study.

Table 18
RECOMMENDED WEAPONS FOR AIR OPERATIONS (1967)

Target	Weapons
Close-Support Mission	
Troops in the open	CBU-1A, Microjet, Lazy-Dog, 20-mm guns, napalm
Troops in foxholes	CBU-1A, Microjet, napalm
Troops in bunkers	Bullpup (GAM-83A), Bullpup "B", napalm, 500- to 2000-lb bombs
Gun emplacements	Bullpup "B", Bullpup (GAM-83A), 500- to 2000-lb bombs, ZUNI
Light-armored vehicles	CBU-3A, Rockeye II, 2.75-in. FFAR, Bullpup (S.P.), ^a 20-mm guns
Observation posts and pillboxes	Bullpup "B", 500- to 2000-lb GP bombs, napalm
Supplies	Napalm
Buildings	500-, 750-, and 1000-lb GP bombs, Bullpup (GAM-83A), Bullpup "B"
Interdiction Mission	
Bridges	Bullpup "B", 500- to 1000-lb bombs
Railroads	Doanbrook mine, 500- to 2000-lb GP bombs
Locomotives	Bullpup (GAM-83A), 20-mm guns, 2.75-in. FFAR
R.R. cars	Bullpup (GAM-83A), ZUNI, 2.75-in. FFAR, 20-mm guns
Roads	Doanbrook mine, 500-, 750-, and 1000-lb GP bombs
Trucks	CBU-2A, 20-mm guns, 2.75-in. FFAR, Bullpup (S.P.)
River & coastal shipping	Bullpup (GAM-83A), ZUNI, 2.75-in. FFAR, 20-mm guns
Sea-going junks, destroyers, etc.	Bullpup "B", Bullpup (GAM-83A), ZUNI, Walleye, 500-, 750-, and 1000-lb GP bombs, mines
Counterair Mission	
Fire control and EW radar	Shrike, Bullpup (ARM)
SA-2 and AAA sites	Bullpup "B", Bullpup (GAM-83A), 500- to 2000-lb GP bombs
Runways	500- to 2000-lb GP bombs, Doanbrook-type mines, earth-penetration bombs (new dev.)
Parked aircraft	CBU-2A, CBU-3A, Bullpup (S.P.), 2.75-in. FFAR, 20-mm guns
Air-to-air combat	Sidewinder (IRAH & SARAH), Sparrow III, Falcon, Eagle (?), GAR-9(?)

^aBullpup with a subprojectile (multiple) warhead.

achieve temporary air superiority over Quemoy and to intercept air operations initiated from Taiwan. Thus there are circumstances where it would be desirable to neutralize these airfields for limited periods of time.

In the past, runway interdiction with airborne conventional weapons has been a low-effectiveness operation. This picture should change for the better during the 1965-1970 time period. Multiple racks on the F-100, F-105, and F-4C should provide the capability for multiple target hits with a single pass over a linear target such as a runway. The following factors are used to establish a typical runway interdiction mission:

Runway length, ft	7000
Runway width, ft	200
Runway thickness (concrete), in.	8
Runway length required, ft	3500
Runway width required, ft	50
Attack speed, ft/sec	800
Attack altitude, ft	500
Range-error probability (REP), ft	300
Deflection-error probability (DEP), ft ..	120

A coarse evaluation, using these factors, indicates that three F-105 aircraft carrying eight 750-lb bombs each have better than a 0.84 probability of taking this runway out of operation in one pass. Two aircraft have a probability of greater than 0.74, but three sorties are advisable in order to provide redundancy in case one aircraft aborts or is shot down.

The time of runway deactivation is a function of the aircraft complement involved. If the aircraft must have concrete runways, the runway will be out of action for over 24 hours. If they can operate from compacted earth, the runway will be out of action for only a matter of hours depending on the labor and equipment supply available. In order to keep an airfield out of operation, the sortie timing rate will be a direct function of the runway repair schedule.

The destruction or disablement of aircraft parked on the airfields requires more sorties than runway interdiction, but repeat sorties need not be as frequent, since the damaged aircraft are out of action for at least a matter of days, and some are completely destroyed. At the cost of decreasing their strength in other locales, the Chinese

have the option of flying in replacement aircraft. A survey of the Chinese airfield posture shows that they generally park their aircraft in revetments without cover. An effective weapon for use against such a deployment is the CBU-2A, which will dispense 63 bomblets in a pattern 1200 ft long by 80 ft wide.⁽²²⁾ If two units were used per attacking aircraft, the mean bomblet density at impact would be one per 800 sq ft. The CBU-2A bomblets are small fragmentation bombs which are effective over a 40-ft (or more) radius, or an area greater than 5000 sq ft. With the long pattern length, it is possible to cover two revetments in a single pass. Analysis of photographs of the airfields near Quemoy indicates that from 18 to 24 successful bombing passes are needed to cover all revetments, assuming two revetments per pass. The CBU-2A carries 360 bomblets, thus each attacking aircraft is capable of making 5 (or more) bombing runs. Future modifications of this weapon may make it possible to eject all 360 bomblets in a single pass if desired.

An effective countermeasure to the CBU-2A is heavy wire mesh on top of the revetments. In the likely event that this material is used, the attacking aircraft may use 20-mm guns, 2.75-in. FFAR rockets, or Bullpup (S.P.) missiles against reveted aircraft targets.

ANTISHIPPING OPERATIONS

The primary antishipping emphasis for U.S. and Nationalist Chinese forces should be against torpedo boats and junks. In any invasion attempt on the part of the Communist Chinese, junks would be the main troop and materiel transport media. In an invasion attempt against Taiwan the torpedo boats could be used to harass the U.S. and Nationalist Chinese naval defense forces and to defend their own invasion fleet.

Although there have been no weapons especially developed for offensive action against small ships such as torpedo boats, the use of 20-mm cannon, Bullpup (S.P.), and the CBU-3A and/or Rockeye II seems to be logical. Torpedo boats are small, fast, and maneuverable, and they rely on these characteristics for both offensive and defensive action. They are normally lightly armored, if at all, and thus are

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fairly vulnerable when hit. Defensive armament might consist of 20- or 40-mm guns. The CBU-3A and the Rockeye II are currently R&D items for the Air Force and the Navy, respectively. Each unit will pattern on the order of 350 bomblets over an area 300 ft long by 80 ft wide, or 24,000 sq ft. Assuming a target area of 300 sq ft, such a system is capable of placing as many as four or five bomblets on any target in the impact area. These weapons are intended for use against armored land vehicles, but their shaped-charge effect would serve to penetrate the deck and possibly the hull, and the blast and fragmentation effects would act against any personnel or armament on the deck.

The destruction of junks turns out to be a very difficult problem, as they are capable of absorbing a large amount of damage without sinking or being out of action. This is a result of the unique construction features of such ships. During 1952 and 1953 the U.S. Navy conducted an extensive study on how to destroy junks. The following description of a typical junk is quoted from the final report of that study. (23)

- Over-all Length - About 65 feet.
- Beam - About 20 feet.
- Loaded Draft - About 4 feet (not including rudder).
- Propulsion - 90% sail, remainder having an auxiliary gasoline engine, usually a converted truck type.
- Masts - Two-masted (varying with origin and function).
- Sails - Heavy canvas with multiple full-length battens.
- Rudder - Usually extends below the keel and is retractable to facilitate beaching and navigating in shoal waters.
- Hull Construction - Multiple compartmentation is achieved by heavy transverse bulkheads. The bottoms are fairly flat and the hull is heavily built with rough-hewn strakes outboard. Bows and stern are blunt, the stern generally higher than the bow. Hull and bottom planking can be expected to be of coniferous wood about 2 to 5 inches thick and fastened together with a large number of heavy, soft, wrought-iron spikes and

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nails. Most joints are of the "butt" variety. Extensive caulking is employed throughout the hull and deck.

Operational
Characteristics

- The speed under sail varies from about 1 knot to as high as 7 knots; two knots is considered a normal sailing speed. The speed attained under power may be as high as 10 to 12 knots; 5 knots is considered an average. Turning circles average 75 to 100 yards.

The referenced Navy study recommends only two ways to immobilize junks. The first of these is to use depth charges or mines having explosive power greater than 50 lb of HBX-1. These charges should explode away from the hull at depths no greater than 45 ft and no further than 10 ft from the side of the hull. The action of such a charge will destroy a junk to the extent that it cannot be repaired. Secondly, the study recommends explosive charges of from 50 to 200 lb of HBX-1 in contact with the hull under water. The lighter charge will destroy about 9 ft of the hull, but the remainder of the junk will remain intact. A 200-lb charge is estimated to be capable of destroying a medium-size junk of strong construction.

At this time there are no air-delivered munitions capable of combating junks in the recommended manner. The closest things available are antisubmarine depth bombs, which would be very difficult to drop with the necessary accuracy. In the likely event that satisfactory air-delivered junk munitions are not available in the 1967 time period, preferred weapons will be the Bullpup (GAM-83A) and ZUNI rockets with short-time-delay fuzes to permit underwater bursts. Other less satisfactory weapons would be depth bombs and GP bombs.

VI. CONCLUSIONS AND IMPLICATIONS

THE THREAT

China's initial detonation of a nuclear device will be used by the Chinese to create the impression that China possesses a military capability and is a significant nuclear power. From that time on, and increasingly as China develops a nuclear capability, the United States will be confronted with a wider range of possible Chinese threats and actions than hitherto. By the time China possesses a modest nuclear capability, she will have the following options:

- o The direct use of nuclear weapons on U.S. Far East bases, or on Asian nations
- o The use of nuclear weapons as an umbrella for overt, nonnuclear military operations and support of insurgency
- o The political and propaganda exploitation of her nuclear capability to capitalize on and to create opportunities for achieving Chinese objectives

CAPABILITIES OF PROGRAMMED U.S. THEATER FORCES

Based on the campaign analyses and force postures described herein, the U.S. programmed theater forces for the 1966-1967 time period can inflict severe damage on Chinese military targets when operating from an undamaged posture. However, they are unable to attack targets that are deep within China because of inadequate range capabilities. Programmed forces also do not have the capability to attack inland targets with little or no warning, a unique characteristic of ballistic missiles. These deficiencies could be exploited by the Chinese in their base planning and could permit the launching of MRBM's and the survival of strategic bomber systems in time of attack.

CAPABILITIES OF AUGMENTED U.S. THEATER FORCES

In light of the deficiencies mentioned above, U.S. programmed forces were augmented to provide both minimum-warning and deep-strike capabilities. This was done by stationing one wing of B-52's on Guam and utilizing one of the Pacific Fleet SSB(N) submarines equipped with

*it was done in 1964
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at the Board.*

16 A-3 Polaris missiles. The results of Case I indicate that the augmented U.S. forces, when operating from an undamaged posture, can inflict enough damage on the Chinese offensive air and missile capability to essentially eliminate them as a military threat against U.S. bases in the Pacific. Such an operation could be carried out with very low losses to the U.S. striking force. The surviving U.S. forces would be capable of launching a second strike in the area should the need arise.

A pre-emptive strike by the Chinese, assuming the force posture in Section II, against the programmed but not augmented U.S. theater forces would considerably reduce U.S. effectiveness in mounting a counterstrike. To provide a counterstrike capability, the programmed theater forces were augmented by one wing of B-52's on Guam, plus the addition of two aircraft carriers and several support vessels to the Seventh Fleet, and the use of one SSB(N). Even for operations from a damaged posture such an augmented theater force could be capable of destroying enough of the Chinese offensive air and missile capability to virtually eliminate them as a further threat to the United States. An important aspect of this counterstrike capability was the airborne alert status of the B-52's. Another important aspect was the early-warning capability of the Seventh Fleet task forces, which permitted the launching of all of the ready aircraft before the carriers came under attack.

The U.S. augmented theater forces surviving their first counterstrike against the Chinese mainland would be unable to carry out an effective second strike if the need arose. This conclusion is not based on high losses to the Chinese defenses, but on such factors as

- o Aircraft losses resulting from inadequate landing facilities at most of the recovery areas
- o Nuclear weapons not being available at the surviving U.S. bases or recovery areas
- o Confusion resulting from the effects of the Chinese pre-emptive strike

In the event that a second strike was required, additional forces would be necessary.

AIR-DEFENSE PROBLEMS

The assumed Chinese air-defense posture is designed primarily to counter the threat of high-altitude attack. However, as the case studies herein show, China is highly vulnerable to low-altitude air attacks. Inadequate early warning, GCI, and airborne radar capabilities against low-altitude penetrators greatly limit air-to-air operations. China's ground defenses against this threat are limited to AAA. The possession of an extensive SA-3 missile system could have severely hampered the U.S. air operations over China.

The U.S. land bases in the Far East are vulnerable to a Chinese MRBM attack because of the limited number of targets presented, their proximity to China, and their limited defense capabilities.

As was the problem with Communist China, the U.S. land bases suffer from limited air-defense capability against low-altitude attack. The primary problem is early warning. Island-based radars cannot provide extended low-altitude coverage, and the United States does not possess a long-range airborne radar capable of detecting incoming aircraft against a land background. The United States does possess an airborne long-range radar (APS-96) capable of detecting incoming aircraft against a water background. Since most of the U.S. land bases in the Pacific must be approached over water, the use of this airborne radar might have permitted more USAF aircraft to become airborne safely.

NONNUCLEAR CHINESE AGGRESSION IN THE TAIWAN STRAIT AREA

Any invasion attempt against the major Offshore Islands or Taiwan by the Chinese is estimated to involve high risks on their part. If the United States chose to intervene militarily in either campaign, the costs to the Chinese would be extremely high. The chances of a successful invasion of Quemoy are only marginal, and the chances of a successful invasion of Taiwan very remote. Either campaign would involve high manpower and materiel losses for the Communist Chinese invaders.

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The possession of a nuclear capability by the Communist Chinese could create political pressures on the United States to limit its response and might necessitate operational and logistic readjustments. The use of nuclear weapons by the Communist Chinese in such campaigns would provide the United States with a variety of options for military response including nuclear attacks on Communist China.

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