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USAF LOGISTIC PLANS AND POLICIES

IN SOUTHEAST ASIA

1966

by

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USAF Historical Division Liaison Office

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FOREWORD

This is the latest in a series of historical studies on the war in Southeast Asia prepared by the USAF Historical Division Liaison Office (AFCHO). The author has concentrated primarily on Headquarters USAF logistic plans and policies, as well as those of other top-level Pentagon agencies, aimed at resolving such problems as munition shortages and building an adequate theater base complex to support USAF combat units. Histories being prepared by the major air commands provide detailed coverage of logistical operations in Southeast Asia.

Previous studies in this series include: USAF Deployment Planning for Southeast Asia, 1966; USAF Logistic Plans and Policies in Southeast Asia 1965; USAF Plans and Operations in Southeast Asia, 1965; USAF Plans and Policies in South Vietnam and Laos, 1964; and USAF Plans and Policies in South Vietnam, 1961-1963.

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I. THE LOGISTICS OF ESCALATION

(U) On 30 March 1966 Secretary of the Air Force Harold Brown declared that "we are engaged in a major military action in Southeast Asia--one that has passed beyond the limits of a counterinsurgency operation." Secretary Brown added that the Air Force faced very difficult and complex problems primarily because the logistical pipeline reached almost halfway around the world.¹ In contrast, in early 1965 it had been difficult to predict the duration of the conflict in Vietnam--the United States was not fully committed militarily and there seemed a real chance that the Republic of Vietnam (RVN) would expire before crucial American military aid arrived to redress the balance. Once the decision was made to pour in major U.S. resources, there were those who felt that American power would prove decisive in a reasonably short period of time. This proved not to be the case although the U.S. commitment clearly saved the South Vietnamese from a total collapse.

~~(S)~~ Thus, by the beginning of 1966, it was obvious that a long term struggle was highly probable if not certain. That this recognition was crucial for United States Air Force planning was emphasized by Gen. John P. McConnell, USAF Chief of Staff, who foresaw a lengthy conflict which called for even greater mobilization since the "requirement to engage in a sustained conflict of moderate size imposes demands on the Air Force which tend to exceed our present and programmed capabilities."² In 1966, therefore, the USAF logistical system shifted from a philosophy attuned to support of interim deployments to the concept of backing a prolonged war. Thus, the Air Force undertook to establish new main operating bases on the Southeast Asia (SEA) mainland and production was accelerated and planned on a long term basis.

~~(S)~~ The munition shortage forced the Air Force to substitute certain ordnance for more desirable bombs which were in short supply. Much time and effort were consumed in planning and estimating sorties and tonnage expenditures in order

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to predict more accurately the specific munitions required by the escalating air campaign. Of great urgency was the need to accelerate munition production, especially of 750- and 500-pound general purpose bombs.

~~TOP SECRET~~ In order to support the increasing USAF buildup, the Air Force placed great emphasis on construction of a SEA air base network. But, as was the case in 1965, the Air Force found it necessary to prod constantly the Army and Navy construction agencies to meet completion deadlines that repeatedly slipped. As a consequence of this inadequate backing, the Air Force was authorized to initiate Project Turnkey to build a fourth new base at Tuy Hoa in South Vietnam. Although the project proved highly successful and Tuy Hoa became operational in November 1966, it appeared that no additional USAF bases would be built under this approach.

~~TOP SECRET~~ The need for great quantities of materiel in the theater necessitated expansion of USAF airlift. This requirement was partially met by the influx of C-141's which--with their great carrying capacity and speed--provided a major advance in airlift capability. Beginning in March 1966, these aircraft flew new channel routes direct from the U.S. east coast to Southeast Asia via Alaska and Japan. New cargo routes were also established for C-124's and C-130's. The number of troops flown to the theater rose dramatically and by January 1967 the Military Airlift Command (MAC)--with commercial augmentation--was flying approximately 35,000 passengers and 25,000 tons of cargo into Southeast Asia each month. In addition, the Air Force expanded its intra-theater airlift and continued moving Red Ball express cargo for the Army. * 3

(U) As USAF air operations in the theater increased during 1966, so did the need for more aircraft, equipment, and spares production, additional facilities of all kinds, and manpower. The increased tempo of a war 10,000 miles from the American

* The Air Force began moving critical parts for the Army with the Red Ball express on 8 December 1965 and during 1966 flew 695 Red Ball missions carrying 9,363 tons, an average of 25.7 tons per day.

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industrial base proved to be both persistent and complex and posed a major challenge to the USAF logistical system. Although the Air Force's logistic experience accumulated since the Korean war proved valuable, the character of the Vietnamese conflict demanded that it improvise an entire new range of responses.

The FOB/MOB Concept

████████ Theater facilities as well as distance from the American industrial base have always been a critical determinant in logistical planning. With South Vietnam terribly short of the most basic logistic facilities and USAF units at first being sent on temporary duty (TDY) to the theater, Headquarters USAF's initial response to the major force deployments of 1965 was to rely on a forward operating base (FOB) / main operating base (MOB) concept which made use of several large U. S. terminals in the Far East. The main bases--which were already stocked and operable and could support the deploying forces--included Clark AB, Philippines; Kadena and Naha, Okinawa; and Tachikawa, Yokota, and Misawa, Japan.⁴

(████████ As the Southeast Asian war escalated in late 1965 and the Air Force deployed more units and materiel, it became increasingly apparent to the Air Staff that it was impractical to rely on the six MOB's located off the SEA mainland a goodly distance from the forward operating bases in South Vietnam and Thailand. The limited supply and maintenance facilities of the forward bases kept the aircraft NORS rate (non-operationally ready, supply) inordinately high in some cases* as shuttling aircraft to the MOB's for repairs was wasteful in operational flying hours. Too, such a procedure was excessively time-consuming. In short, Headquarters USAF logistic planners concluded that weapon system support should be closer to the actual operational bases.⁵

* For example, the F-4C and the F-100. For a detailed consideration of NORS, non-operationally ready, maintenance (NORM), and operational readiness (OR) rates based on mathematical analysis see Joseph J. Varley, Irvin Kessler, and Maj Robert W. Bublitz, Logistics Support of Air Force Weapons Systems in Southeast Asia, (Hqs USAF Ops Analysis, June 1967).

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As a result, beginning in late 1965 and through the spring of 1966, the Air Force took steps to establish an MOB capability on the SEA mainland. The primary reason was to reduce flying time between the forward and main operating bases during a period in which the rapidly climbing sortie rate caused an escalating requirement for immediate aircraft maintenance. Thus, along with a change of its policy of TDY deployment to permanent change of station (PCS) for tactical units, the Air Force in late 1965 and during 1966 established mainland Southeast Asian MOB's at the following locations:⁶

<u>Vietnam</u>	<u>Thailand</u>
Bien Hoa (F-100, F-5)	Takhli (F-105, RB-66B/C)
Phan Rang (F-100)	Ubon (F-4)
Cam Ranh Bay (F/RF-4C)	Korat (F-105)
Tan Son Nhut (C-47, CH-3C, C-123)	Udorn (F/RF-4, RF-101)

In addition, C-130 main operating bases were established at Kung Kuan, Taiwan, and Clark, Philippines. In Okinawa, MOB capability was formed at Naha (F-102) and Kadena (KC-135). Also the Air Force designated U-Tapao (Sattahip), Thailand, as a future MOB for KC-135's (by February 1967) and for B-52's (by September 1967; it would initially become a B-52 FOB by May 1967). Phu Cat (Qui Nhon), Vietnam, was slated as a main base for F-100 aircraft in April 1967 while Nam Phong, Thailand, would eventually handle EC-121's. As part of the buildup, Headquarters USAF planned to deploy expanded support groups to Da Nang, Pleiku, Binh Thuy, and Can Tho in South Vietnam and Don Muang and Nakhon Phanom in Thailand.⁷

With the 1965-1966 buildup of mainland MOB's in South Vietnam and Thailand the Air Force gained heavy field maintenance resources in jet engine repair, communication-electronic maintenance, major AGE repair, and munition maintenance. This contrasted with what had essentially been only organizational level maintenance at the forward bases.^{* 8}

* Periodic maintenance could not be performed at the FOB's since they only possessed limited support resources. Major repairs or modifications could be done by MOB field teams, rapid area maintenance (RAM) teams, or by contract.

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(S) To aid in the transition to mainland MOB's, the Air Force initiated Project Bitter Wine in late 1965 to provide additional repair equipment (both common and field maintenance) to bases in Vietnam, Thailand, and Taiwan. Project Bitter Wine was one of the largest logistical efforts since the Korean War. It involved the movement in a single ship of a package with all related equipment and common items needed to establish and operate, for example, a complete machine shop or jet engine facility.

(S) Also, during 1966 the Air Force established 20 new base supply accounts in Southeast Asia to provide spares and associated components at operating locations. Cam Ranh Bay and Tan Son Nhut were given 65,000 and 50,000 line items respectively while other new accounts received 25,000 to 30,000 items.⁹

(S) Although the backlog of inspections and engine maintenance was reduced at the established main bases in the Philippines, Japan, and Okinawa, these rear bases continued to give support in battle damage repair and aircraft modifications. At the same time, Rapid Area Maintenance (RAM) teams from the continental United States (CONUS) continued their work at forward locations repairing damaged planes which could not be handled by tactical units. Between April 1965 and November 1966, RAM teams repaired 191 crash- and battle-damaged aircraft.¹⁰

Production and Attrition

(S) The sudden surge of war demands in 1965 and 1966 created many production difficulties at home. Perhaps most basic were those which resulted in a dangerous extension of lead time, i. e., the time between the decision to produce and the delivery of the equipment. Throughout 1966 Headquarters USAF became progressively more concerned about this problem. In the aircraft and electronic industries, shortages in materials, facilities, and skilled labor extended lead time for airframes, engines, and major components. Lead time for aircraft forgings, extrusions, copper wire, and electronic components doubled after mid-1965. For example, the lead time

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for steel forgings increased from 13.4 weeks in August 1965 to 25.9 weeks in October 1966, while it almost tripled for electrical cable--from 9.6 weeks to 27.1.¹¹

With industrial machine tool capacity severely taxed, it became more difficult for the Air Force to reduce NORS rates of several aircraft including the F-4C and the C-141.* In August the NORS rate for the F-4 was 13.4 and in November 13.6. The C-141 exhibited these rates: September, 19.8; October, 12.8; November, 11.7; and December, 11.3.⁺ In late 1966 two items in short supply were the F-4 altimeter and angle of attack transmitter, both affected by production postponements. At the end of the year, it was hoped that production would meet requirements by July 1967. The high utilization rate of the F/RF-4C also resulted in NORS demands for brakes, assorted flight instruments, and central air data computer system apparatus. The C-141 problems included modifications and long lead time for several parts.¹²

At year's end, there seemed little doubt that aircraft production and availability would remain critical, at least during the first half of 1967. Future USAF production deliveries were expected to take the following form (by quarters):¹³

	<u>FY 1967</u>				<u>FY 1968</u>				<u>FY 1969</u>			
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
F-4D	37	122	149	150	120	67	20	--	--	--	--	--
F-4E†	--	--	--	--	5	32	58	79	59	57	57	25
RF-4C	10	27	24	24	24	24	12	12	9	9	12	12
F-111A	--	2	6	12	11	19	29	33	28	27	42	42
A-7	--	--	--	--	--	--	--	3	3	14	22	41
	47	151	179	186	160	142	119	127	99	107	133	120

* The average NORS rate for all SEA aircraft was 6.9; for aircraft world-wide, 5.7. See Memo (C), SAF to Dep Asst SECDEF (Materiel Requirements), subj: Aircraft NORS Reporting for SEA, 26 Oct 66.

+ It should be remembered that the C-141 had entered the USAF operational inventory as recently as late 1965.

† The F-4E possessed an improved air-to-air fire control system with a greater capacity for detection of low-flying targets and carried an internal M-61 20mm gatling gun in its nose. Also, it had a new model engine with increased thrust.

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(S. G. 11) The question of aircraft production was, of course, closely tied to attrition which, as the tempo of the air war accelerated, increased commensurately. Although Department of Defense (DOD) policy called for replenishing USAF units from the force-in-being, including reserves, the mounting aircraft losses during 1966 called this procedure into question. On 1 August 1966, Secretary Brown broached the subject to Secretary of Defense Robert S. McNamara. He suggested that while the Air Force had never attempted to procure aircraft in advance as a reserve for combat attrition, this situation might now be re-examined. ¹⁴

(S. G. 11) A significant segment of the USAF reserve, Dr. Brown pointed out, had always been used for training and for maintenance supporting the repair of damaged aircraft. Thus, as far as replacing attrition was concerned, the overall reserve was somewhat illusory. This was particularly true as the pressure from rising attrition was felt in both production and the training base. Thus, according to Secretary Brown, "as the ratio of aircraft procurement cost to other force costs declines, the relative cost of advanced attrition procurement also declines and the option becomes more attractive." ¹⁵

(S. G. 11) Specifically, he noted that an attrition reserve could be provided by increasing the maintenance pool from 10 to 20 percent or by greater use of the reserve until new production made itself felt. Also, production would have to be accelerated and critical components, e. g., engines, stockpiled in order to pare the lead time. In any event, several concurrent measures would be necessary in order to counter rising attrition. In general, Dr. Brown was concerned about the so-called "D to P" interval* for aircraft and consumables. He felt it mandatory that the interval between the onset of hostilities and the time when production caught up with consumption be significantly reduced. The only alternative--and not an attractive one--was to maintain even larger stocks in the CONUS. ¹⁶

* The "D" denoted the beginning of conflict and the "P" the day when production matched consumption.

(S. C. 4) But despite this rationale, Deputy Secretary of Defense Cyrus Vance took the view that "normal peacetime" modernization of approved forces would give the Air Force "a considerable hedge against combat losses." Advising Dr. Brown that he was not persuaded of the efficacy of specific attrition replacement, he said: ¹⁷

It appears that for a given level of funding additional ready forces provide more combat capability than procurement of attrition replacement aircraft. While we should take every reasonable step to reduce production lead times, I am not convinced that we should procure aircraft in peacetime for the purpose of providing for anticipated combat losses.

(S. C. 4) Thus, in August and September, despite Headquarters USAF concern over the high loss rates, Mr. McNamara decided against procuring an attrition reserve. However, he suggested the Air Force study ways to maintain a warm production base that could respond rapidly to emergencies and reduce the D to P time of aircraft and other major components. ¹⁸

(S. C. 4) In the matter of logistical guidance for the future, early in 1966 Secretary McNamara proposed fiscal year 1968 procurement for 180 days of combat consumption for non-North Atlantic Treaty Organization (NATO) forces and 90 days for NATO. The Joint Chiefs of Staff (JCS) recommended 180 days for both NATO and non-NATO forces. Secretary Brown agreed with Mr. McNamara that 90 days for NATO was "realistic and practical" since it was not prepared to fight a long conventional ground war. ¹⁹ General McConnell, on the other hand, concerned over the state of USAF logistics, favored 180 days for Europe and the Pacific: ²⁰

I believe that the 90-day limitation for Europe. . . involves a higher degree of risk than we should take. I consider it important to have a logistic capability to support all our forces for at least 180 days, in simultaneous European-Pacific conflicts, if this should become necessary.

(S. C. 4) However, in September, Secretary McNamara reiterated the consumption goals of 90 days for NATO and 180 days for non-NATO forces. ²¹

Petroleum Supply

For petroleum, oil, and lubricants (POL), the Air Force relied heavily on commercial companies since there was a dearth of terminal and delivery facilities in Vietnam and Thailand. Acceleration of air operations strained the available POL distribution equipment. To ease the pressure, tactical airfield dispensing and refueling systems were used at new bases while semi-permanent facilities were being constructed. Bases not supplied commercially were serviced by pipelines from off-shore tankers which provided a five-day POL supply. ²²

The two primary commercial storage areas in Vietnam were the Nha Be terminal, near Saigon, and Lien Chieu in the vicinity of Da Nang. Also, fuel was received at Tan Son Nhut and Bien Hoa by truck and at Da Nang by rail and truck. Petroleum was barged to Nha Trang and hauled overland by truck if the roads were open. A special problem was that many roads were vulnerable to enemy interdiction. To get around this difficulty during emergencies, the Air Force used C-130 aircraft equipped with 6,000-gallon "bladder" systems to deliver fuel to isolated bases. ²³

In late 1966 USAF petroleum storage planning for South Vietnam called for these facilities (in terms of barrels): ²⁴

<u>Complex</u>	<u>30-day Consumption Requirement</u>	<u>Current Storage Assets *</u>	<u>30-day Storage Requirement</u>
Da Nang	562,000	722,000	868,000
Qui Nhon	423,000	500,900	650,000
Cam Ranh Bay	980,800	997,000	1,525,000
Saigon	<u>1,342,000</u>	<u>1,200,000</u>	<u>2,060,000</u>
	3,307,800	3,419,900	5,103,000

The major goal was to create a 30-day storage reserve. However, neither existing facilities nor approved construction would be adequate to provide 30-day storage capacity. On the other hand, floating storage--which had been utilized--was expensive and not always available.

* Including commercial.

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Next to Saigon, Cam Ranh Bay was the site of the largest POL facility in South Vietnam and was planned to serve as a major supplier for local needs including coastal enclaves. Cam Ranh could also be used as a replacement supply base should the primary commercial facility at Nha Be be destroyed or denied. The following comprised POL storage planning (again, in terms of barrels) for the entire Cam Ranh Bay complex including Nha Trang, Phan Rang, and Tuy Hoa: ²⁵

<u>Complex</u>	<u>Projected Consumption</u>	<u>Current Storage</u>	<u>MACV Storage Requirements</u>
Cam Ranh Bay	530,000	692,000	1,138,000
Nha Trang	97,800	99,000	107,000
Phan Rang	176,000	130,000	193,000
Tuy Hoa	177,000	76,000	199,800
	980,800	997,000	1,637,800

In Thailand bulk resupply was supported by commercial contract with the largest POL source located at the Chong Nonsri terminal near Bangkok. In-country delivery was by rail and truck to Ubon, Udorn, Korat, Takhli, and Don Muang. Special 20-car POL trains were used and supply was often critical because of railroad tank car shortages and poor highway conditions. ²⁶

In general, during the year the construction of POL facilities lagged badly behind schedule in Vietnam and Thailand. At the same time Headquarters USAF remained apprehensive that approved tank construction--based on DOD Program #3* -- would not be adequate to satisfy the 30-day supply level. In particular, it was concerned that facilities in Vietnam at Pleiku, Nha Trang, Bien Hoa, and Tan Son Nhut were insufficient to support future operations. ²⁷

In the Philippines POL requirements also had outstripped the Air Force's ability to resupply Clark AB by tank trucks, and a 43-mile pipeline to Subic Bay was

* Program #3, dated 1 July 1966, called for 431,000 U. S. military personnel in South Vietnam by June 1967. Secretary of Defense McNamara directed that Program #3 be used as a foundation for additional manpower and logistical planning as well as budgeting.

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included in the fiscal year 1966 supplemental construction program. However, this project was not immediately initiated because of funding and right-of-way difficulties. Finally in November 1966 construction began on the pipeline and the Air Force hoped that the entire project would be finished by June 1967. 28

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II. THE MUNITION SHORTAGE

~~(S)~~ The evolving USAF conventional munition shortage of 1966 was very much a legacy of 1965. During 1965 the expenditure of air ordnance in Southeast Asia increased tremendously over the previous year and the same was true in 1966.* Consequently, shortages that developed during 1965 intensified in 1966 and were not expected to ease until early 1967.

~~(S)~~ Headquarters USAF attempted to reduce the munition shortage in several ways, such as, increasing production of specific items and ordering the use of substitute munitions when feasible. During the year much time and effort also were devoted to analyzing sortie and munition requirements for 1966 and 1967. In order to arrive at stock and production needs, Adm. U.S. Grant Sharp, Commander-in-Chief, Pacific (CINCPAC) and the Joint Chiefs of Staff (with General McConnell playing an important role) had to consider SEA air strategy and then compute the number of combat sorties and the amount of air munitions to support it.

~~(S)~~ Their computations involved a complex interplay of missions, targets, aircraft, and available ordnance with unforeseen factors often militating against an optimum combination of weapons over the target. Not the least important of these were the constantly changing deployments and operations along with the late delivery of ordnance. Also, Presidential decisions sometimes modified the concept of operations. As a result, sharp rises in consumption could not always be predicted and production lead time lagged behind operational commitments.

* From 8,000 tons in 1964, munition consumption increased to 148,000 tons in 1965 and to 364,381 tons in 1966 including PACAF, SAC, and Military Assistance Program (MAP) expenditures.

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USAF AIR MUNITION EXPENDITURES (TONS) IN
SOUTHEAST ASIA, 1966

	<u>PACAF (SEA)</u>		Tns Per Sortie	<u>SAC</u>		Tns Per	<u>MAP</u>	<u>TOTAL</u>
	<u>Expended</u>	<u>Sorties</u>		<u>Expended</u>	<u>Sorties</u>		<u>Expended</u>	
Jan	16,483	8,552	1.93	6,080	350	17.37	3,439	26,002
Feb	16,659	9,422	1.77	5,803	334	17.37	3,461	25,923
Mar	20,273	11,991	1.69	6,991	403	17.34	5,781	33,045
Apr	17,671	9,605	1.84	9,799	429	22.84	3,122	30,592
May	10,255	8,658	1.18	8,963	411	21.80	2,577	21,795
Jun	14,352	12,068	1.19	9,417	383	24.58	2,406	26,175
Jul	18,461	14,248	1.30	8,773	426	20.59	3,452	30,686
Aug	19,199	14,274	1.34	8,395	452	18.57	4,030	31,624
Sep	19,545	14,402	1.36	8,072	448	18.01	3,054	30,671
Oct	18,985	13,594	1.40	8,532	408	20.91	3,406	30,923
Nov	20,819	13,562	1.53	10,638	531	20.03	4,081	35,538
Dec	<u>23,807</u>	<u>14,769</u>	<u>1.61</u>	<u>13,660</u>	<u>659</u>	<u>20.73</u>	<u>3,940</u>	<u>41,407</u>
	217,109	145,145	1.51	105,123	5234	20.01	42,749	364,381

* Source: Dir/Supply & Svces Chart, 31 May 67, subj: Airmunitions Expenditures/
Allocations.

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(S) On 8 April 1966 Gen. William C. Westmoreland, Commander, U. S. Military Assistance Command, Vietnam (COMUSMACV), worried that the munition shortage was affecting air operations, broached the subject to Secretary McNamara. He reported that 940 intra-theater airlift sorties had been flown during the first three months of the year in order to redistribute available munitions to meet sortie requirements. General Westmoreland attributed the shortage to lagging production, late arriving ships, delivery of incomplete rounds,* and civil disturbances in Vietnam. Alarmed by this report, Mr. McNamara on 11 April dispatched an investigating team headed by Paul R. Ignatius, Assistant Secretary of Defense (Installations and Logistics), to meet with Pacific Command (PACOM) officials.¹

(S) At an 11-12 April conference Admiral Sharp informed Mr. Ignatius that, due to the shortage, strike sorties had been cancelled or not scheduled during the first week of April and that future sorties would have to be controlled closely. Indeed, between 11-14 April, 515 additional USAF sorties were in fact cancelled.² Gen. Hunter Harris, Pacific Air Forces (PACAF) commander, felt that the dearth of conventional munitions was in large measure related to repeated shipping delays and port congestion. He predicted that the situation would probably deteriorate further in July and August.³

(S) The conferees, including Headquarters USAF representatives, thereupon agreed on the following sorties and tonnages for April-December 1966:⁴

	<u>Sorties</u>	<u>Ordnance (Tons)</u>
PACAF	141,966	251,015
B-52's	4,950	90,000
Navy	61,720	95,906
Marines	42,750	70,536
VNAF	31,780	41,632

* A shortage of fins, fuzes, and half-hard stainless steel arming wire existed. (PACAF Staff Study (S), 1 Mar 66, subj: SEA Supply Assistance).

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USAF allocations were based on a general loading factor of 2.4 tons per sortie for North Vietnam targets and 1.65 for South Vietnam.⁵ Previously MACV had limited B-52 sorties to 450 per month for May and June 1966 in order to extend the M-117 750-pound general purpose bomb inventory. The conferees noted that the problem was aggravated by the fact that additional munitions would not be forthcoming from the Navy which had heretofore supplied the Air Force with significant numbers of bombs.^{*6}

~~██████████~~ As a consequence, Secretary Ignatius recommended that a realistic plan be adopted for sortie and ammunition allocations and that an effective munition control system be established.⁺ Also, he proposed that base munition stock levels be held at a minimum of 15 days; additional stock should be taken from CONUS resources for use in Southeast Asia; the level of munitions in the pipeline should be raised from 60 to 90 days; and production should be accelerated where feasible.⁷

~~██████████~~ Commenting on the requirement for a 90-day level in the pipeline, Mr. Ignatius observed that the need for 50,000 tons of munitions per month was not being fulfilled. As of mid-April 1966, only 39,000 tons were enroute to Southeast Asia.⁺ A concerted drive would be made, he said, to accelerate production of the

* Prior to July 1965, the Navy had furnished the following munitions to the Air Force: 100-pound GP, 87,000; 250-pound GP, 44,000; 250-pound fragmentation, 88,750; 1000-pound GP, 18,000. Between July 1965 and April 1966, these had been supplied by the Navy: 100-pound GP, 38,000; 250-pound GP, 18,000; 250-pound fragmentation, 41,250; 500-pound GP, 4000; and 1000-pound GP, 7000. (Background Paper (TS) to Memo (TS), Col J.H. Germeraad, Dir/Plans to CSAF, subj: Ammunition Situation, SEA, 13 Apr 66).

+ Upon his return from Hawaii, Secretary Ignatius declared that he had been amazed to learn that "no one in authority" was aware of the munition shortages in Southeast Asia and, moreover, that he and Deputy Secretary of Defense Vance had recently visited a number of SEA bases without being informed of these shortages. (Memo for Record (S), by Dep Asst SAF Hugh E. Witt (Supply and Maintenance), 15 Apr 66, subj: Munitions for Southeast Asia).

+ In line with previous DOD policy European munition stocks were designated as inviolable unless CONUS resources were not adequate to meet SEA requirements.

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M-117 750-pound general purpose bomb. Although Lt. Gen. Thomas P. Gerrity, USAF Deputy Chief of Staff (Systems & Logistics) recommended production of 100,000 M-117 bombs per month, Secretary Ignatius stated that 75,000 per month would be adequate. The Assistant Secretary of Defense also observed with surprise that one of the major producers of fuzes was significantly behind schedule.⁸

~~██████████~~ On 26 April, with the top defense officials having confirmed the need, President Lyndon B. Johnson gave the highest national priority to production of the MK-82 250-pound bomb, the Mk-82 500-pound bomb, the M-117 750-pound bomb, the 2.75-inch rocket, and all types of 20-mm., 81-mm., and 105-mm. cartridges.⁹

~~(S. G. 4)~~ Too, on 19 April, the Air Staff established an improved system of munition control using the capabilities of the Logistics Readiness Center (LRC) at USAF Headquarters. The LRC was directed to monitor and control munitions for Southeast Asia and make its reports available to the JCS and the Office of the Secretary of Defense (OSD).¹⁰

~~██████████~~ On 24 April Admiral Sharp forwarded his analysis of the recently concluded Honolulu conference. The JCS then revised it into the following air sortie plan and sent it to Secretary McNamara on 8 May:¹¹

	<u>Sorties</u>				
	<u>Apr</u>	<u>Jun</u>	<u>Sep</u>	<u>Dec</u>	<u>Total (Apr-Dec 66)</u>
USAF	11,604	14,250	15,870	16,905	133,339
B-52	450	450	450	600	4,350
USN	6,580	6,180	6,180	6,500	57,220
USMC	4,125	4,125	4,620	5,500	42,255
VNAF	3,280	3,500	3,600	3,600	31,780
	<u>26,039</u>	<u>28,505</u>	<u>30,720</u>	<u>33,190</u>	<u>260,944</u>

In order to compute conventional air munition requirements for the remainder of 1966, CINCPAC had divided the total number of munition tons forecast to be available by the total number of required sorties. The result was a weighted average aircraft loading factor of 1.66 tons per sortie. Admiral Sharp then assigned each service

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specific loadings, either above or below this average factor, depending upon targets and aircraft characteristics: ¹²

<u>USAF</u> - North Vietnam, 2.40 tons per sortie			
SVN/Laos, 1.65	"	"	"
<u>USN</u> - NVN, 1.80	"	"	"
SVN/Laos, 1.30	"	"	"
<u>USMC</u> - SVN/Laos, 1.65	"	"	"
<u>VNAF</u> - SVN/Laos, 1.30	"	"	"

~~TOP SECRET~~ The JCS realized that the computations rested upon forecast production rates and deployments which in the past had proved difficult to predict with accuracy. It was clear to Headquarters USAF that during April-December 1966 the Air Force would be forced to use larger numbers of less preferred munitions. ¹³

~~TOP SECRET~~ The critical munition shortage as it evolved during April meant that Admiral Sharp was faced with the prospect of either reducing the sortie rate or the load per sortie. Since by early May CINCPAC had indicated that he planned no reduction in the sortie rate, General McConnell became concerned lest lighter loads be employed. Backed by the other members of the JCS, he argued that the policy of using the full capacity of aircraft should be upheld. This meant using complete loads in all cases where they would advance the mission. Although Mr. McNamara declared that larger expenditures could not be condoned just because aircraft were capable of carrying more and questioned whether more than 60,000 tons per month could be consumed, in late June he directed a reduction in the sortie rates rather than have aircraft carrying reduced loads. ¹⁴

June Consumption

~~TOP SECRET~~ On 8 July 1966 Secretary McNamara once again conferred with Admiral Sharp in Hawaii. Disturbed over a report that allocated munitions for June had not

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been expended, the Defense Secretary requested an explanation.* Although 33,547 tons were expended during June, 40,152 tons had been allocated based on planned assets.

(S-C-4) Admiral Sharp advised that the major reason for not using the allocated ordnance was the failure of munitions to arrive in the theater on time. He also predicted that planned sorties and expenditures would not be met for the next few months. After he remarked that he would establish a 45-day level of air munitions for the theater, Mr. McNamara told Admiral Sharp not to be concerned with production but rather to forecast his requirements and use what was needed to carry forward the planned air campaign. OSD, said Secretary McNamara, would manage munition production.

(S-C-4) On 8 August Admiral Sharp provided the Defense Secretary with munition statistics for June and a further explanation for under-expenditure. He stated that although it appeared that the gross tonnage on hand was sufficient, distribution difficulties, a significant proportion of less than optimum munitions, and a large number of rounds without all their components militated against meeting planned sorties. Also delayed deployment of four tactical fighter squadrons and marginal weather over targets contributed to a June reduction of 3,988 tactical and 39 B-52 sorties. Actual attack sorties flown in June were as follows:

	<u>NVN & Laos</u>	<u>SVN</u>	<u>Total</u>	<u>Short</u>
PACAF	7,208	5,201	12,409	1,841
VNAF	0	2,776	2,776	724
USN	3,180	2,606	5,786	394
USMC	911	2,185	3,096	1,029
	<u>11,299</u>	<u>12,768</u>	<u>24,067</u>	<u>3,988</u>

* Over twice the allocated tonnage was available in the theater as follows: Modern ordnance (complete rounds), 43,126.8 tons; modern ordnance (incomplete), 11,484.5 tons; substitute ordnance (complete), 33,561.9 tons; substitute ordnance (incomplete), 9,544.1. The total was 97,717.3 tons. (Ltr (S), Adm. U.S.G. Sharp, CINCPAC to SECDEF, subj: June 1966 Air-to-Ground Munitions Expenditures, 8 Aug 66).

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He also advised that the situation had since improved and that during July 42, 600 tons were consumed compared with 33, 547 tons in June.¹⁸

~~TOP SECRET~~ It should be noted that as of 30 June about 45 percent of PACOM munitions comprised older, less desirable ordnance.* Although much of these munitions were allocated for use, operational commanders often decided not to use substitute weapons for specific targets. Thus, according to Admiral Sharp, gross tonnage did not in fact comprise a valid criterion for availability.¹⁹

~~TOP SECRET~~ As for incomplete rounds, bombs assembled without all components continued to arrive in May and June. For example, 1, 030 of 3, 983 MK-83 1000-pound bombs delivered to Vietnam in June arrived without tail fins. On 1 May theater forces reported 182, 097 complete rounds and 70, 130 incomplete and on 1 June 224, 624 complete and 85, 737 incomplete. This situation improved significantly by November, with the number of incomplete rounds declining from 39 percent on 1 June to 5. 9 percent.²⁰

Production Planning

~~TOP SECRET~~ Production and consumption of conventional air ordnance in Southeast Asia continued under study throughout 1966. With the rising intensity of air operations and the continued shortage of certain categories of munitions, Headquarters USAF, PACOM, the JCS, and OSD attempted to compile specific production figures for 1966 and 1967. Although Secretary McNamara had questioned whether even 60, 000 tons per month could be expended, on 2 July the JCS observed that CINCPAC's 1966 assessment could not be considered a valid basis for 1967 production. It proposed that pending receipt of additional information, production should be established at about 100, 000

* Preferred modern ordnance included the MK-81, MK-82, M-117, MK-83, BLU-23/32, BLU-1/27, MK-77, CBU-2, CBU-12, CBU-14 and others. Less desirable substitutes included M-47, M-30, M1A2, M-57/81/88, M-64, M-65, MK-84, M-59, and BLU-10. (Ltr (S), Adm. U.S.G. Sharp, CINCPAC to SECDEF, subj: June 1966 Air-to-Ground Munitions Expenditures, 8 Aug 66).

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ORDNANCE BY TYPE SOUTHEAST ASIA

TOTAL USAF EXPENDITURES (PACAF & 3RD AIR DIV)

TYPE	ITEM	FY 63 - 64	FY 65	FY 66
Aircraft Gun Ammunition	20 mm HEI (M3 Gun)	32,000	2,971,801	3,940,927
	20 mm HEI & API (M39 Gun)	-	1,829,757	15,234,676
	20 mm HEI & API (M61 Gun)	-	373,808	9,630,621
	7.62 M/M (SUU-11 Mini-Gun)	-	-	8,287,805
Flares	MK 24	23,929	78,180	245,575
Bombs	<u>Fire</u>			
	250# BLU-10B	-	1,963	9,449
	500# BLU-11B/BLU-23/32	6,350	14,992	10,873
	750# M116/BLU-1B/27B	4,246	11,542	64,301
	<u>Smoke</u>			
	PWP #100/M47	5,577	13,979	17,200
	CBU-12	-	-	650
	<u>General Purpose</u>			
	100#/M30	-	12,763	20,396
	250#/M57	1,620	13,899	29,551
	250#/MK81	-	129	5,977
	500#/M64	3,064	25,591	95,036
	500#/MK82	-	-	45,928
	750#/M117	-	27,683	282,315
	1000#/M65	-	241	32,038
	1000#/MK83	-	-	5,304
	2000#/M66	-	-	42
	2000#/MK84	-	-	1,755
	3000#/M118	-	-	5,494
	<u>Fragmentation</u>			
	ADU-253/B Cannister W/BLU-3B	-	-	14,453
	M1A2	3,279	20,997	7,664
	M28A2	-	52	799
	CBU-2	-	393	10,055
	CBU-14	-	8?	10,015
	CBU-24B	-	-	118
	220/260# M88/M81	3,612	26,776	63,327
Rockets Heads	2.75"/3.5" Heads	38,410	88,316	540,406
Rocket Motors	2.75" Rocket Motor		79,294	551,753
Missiles	SPARROW, AIM-7D/E	-	10	90
	SIDEWINDER, AIM-9B	-	69	83
	BULLPUP, AGM-12B	-	196	95
	BULLPUP, AGM-12C	-	-	219
	SHRIKE, AGM-45A	-	-	76

Source: 15 Day PACOM Munition Status
Reports, 15 & 31 Dec 66

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tons per month with provision for emergency expansion if needed. However, based on a study by Assistant Secretary of Defense Ignatius, Mr. McNamara on 20 July approved a consumption rate of approximately 73, 700 tons per month (20 ordnance items). 21

() During the summer of 1966 it also became clear that an urgent requirement existed for production of specific critical categories of munitions including heavy bombs and CBU/ADU ordnance. Based on CINCPAC's analysis, the JCS therefore developed several "cases" for illustrating production of these critical munitions for 1967 along with substitute ordnance which would be used until production began. Case I represented the current JCS Southeast Asia air munition expenditure plan, based on the OSD-recommended production schedule; Case II modified the Case I requirements for various items and formulated a phased plan using substitutes until production could meet needs; Case III represented CINCPAC's 1967 modern air munition requirements and noted the production increases necessary to support them. 22

	<u>Case I</u> (OSD Prog #3)	<u>Case II</u> (JCS)	<u>Case III</u> (CINCPAC)
Expenditures (Tons)			
Monthly	78, 000	95, 000	98, 000
Annually	9 15, 000	1, 110, 000	1, 159, 000
45-Day Stock Level	108, 000	138, 000	140, 000
90-Day Pipeline	2 16, 000	275, 000	280, 000

(TS-Gp 4) Adding training allocations to its Case II, the JCS proposed an average monthly production for 1967 of 106, 000 tons for a total of 1, 272, 000 tons for the year. This recommended increase would cost an additional \$554 million and included the following munitions: M-117, MK-83, CBU-2, CBU-24, 2. 75 inch rocket motor, BLU-34, and the Shrike missile. 23

() The JCS argued that an entire range of munitions was needed for discrimination and flexibility. For example, the MK-82 500-pound and M-117 750-pound bombs were not really adequate substitutes for 2, 000- and 3, 000-pound weapons

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which were ideal for targets such as large bridges, underground storage, and other heavy structures. Also the CBU/ADU series was more effective against materiel and personnel targets (antiaircraft artillery, missiles, radar, truck parks, and POL) than the MK-82 and M-117. Thus, in August and September the JCS repeatedly made the point to Mr. McNamara that substitution of the 500- and 750-pound bombs for heavier ordnance could only be considered an interim measure until full production of the latter was reached. In support of increased production and its Case II proposals, the Joint Chiefs stated that: ²⁴

since the execution of recommended strategy and the concept of operations of the JCS has been limited by constraints, it is essential that efforts within these constraints be optimized through the use of modern munitions to minimize friendly casualties and reduce the effectiveness of the enemy.

While these discussions were going on, 250-, 500-, and 750-pound bombs remained in very short supply, and this, in turn, threatened a run on the limited stock of heavier bombs, causing Admiral Sharp on 7 August to impose restrictions on their use. By late August CINCPAC recommended to OSD that heavy ordnance production be resumed as soon as possible and in October he curtailed their use completely. He decided not to resume loading heavy munitions until mid-1967 pending receipt of later production and delivery data. ²⁵

Some improvement was observed at this time in the production-consumption ratio. For example, the 7th Air Force possessed 41,459 tons of air munitions on 1 August. During the same month 19,160 tons were used and 25,049 tons received, raising the overall balance to 47,348 tons on 1 September. These munitions were divided into four categories: Category I, optimum or preferred weapons; Category II, fire bombs; Category III, weapons compatible with only a few aircraft; Category IV, miscellaneous and small size older fragmentation and general purpose ordnance. The M-118 3000-pound bomb accounted for 30 percent of the

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Category I stock during August and September and would continue to represent a significant proportion of this category for some time. ²⁶

By September a 120-day supply of fire bombs existed, and it was clear that their production could be reduced. The 7th Air Force projected an inventory through January 1967 which depicted a steady rise in optimum munitions with an attendant decrease in substitute ordnance: ²⁷

	<u>October Inventory (Tons)</u>		<u>November Inventory (Tons)</u>	
Optimum Weapons	18, 587	(37. 7%)	24, 586	(40. 4%)
Fire Bombs	15, 178	(30. 8%)	21, 989	(36. 1%)
Weapons Compatible with Few Aircraft	12, 413	(25. 2%)	11, 229	(18. 5%)
Miscellaneous	3, 141	(6. 3%)	3, 055	(5. 0%)
	<u>December Inventory (Tons)</u>		<u>January Inventory (Tons)</u>	
Optimum Weapons	25, 650	(41. 2%)	34, 671	(46. 9%)
Fire Bombs	23, 681	(38. 0%)	26, 537	(35. 9%)
Weapons Compatible with Few Aircraft	10, 031	(16. 1%)	9, 758	(13. 2%)
Miscellaneous	2, 962	(4. 7%)	2, 868	(4. 0%)

Production and consumption planning factors were further reconsidered during the October Honolulu capabilities conference. Based on OSD approval in early November, a new CINCPAC munition requirements plan in early December clearly identified the most critical production deficiencies in 1967 would occur in the category of heavy bombs in the 1,000- and 3000-pound range. The CBU/ADU ordnance would also be in short supply. According to CINCPAC, the MK-84 2,000-pound general purpose bomb would be the only heavy bomb scheduled for production and even it would not be available until the final quarter of 1967. As a result both the MK-84 2,000-pound bomb and the M-118 3,000-pound demolition bomb would have to be rationed during 1967. The MK-82 500-pound and M-117 750-pound bombs were to be used as substitutes for these heavier munitions. ²⁸

Although use of the 500- and 750-pound bombs were not really a satisfactory solution to the dearth of heavier ordnance, CINCPAC--supported by the Joint

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Chiefs--recommended greater production of them during 1967 because of the anticipated greater expenditure of these weapons as substitutes for the 2,000- and 3,000-pound weapons. Admiral Sharp's munition projections were based on a rate of 33,800 attack sorties per month. Since Secretary McNamara's Southeast Asia Program #4 analysis--forwarded after the October meeting in Hawaii--approved only 28,000 sorties per month, adjustments to the following CINCPAC plan would be necessary early in 1967:

29

All MunitionsDec 66-May 67, Thousands of Tons

<u>Month</u>	<u>Available From Source</u>	<u>To SEA</u>	<u>To Other Than SEA</u>	<u>Programmed Drng Mnth</u>	<u>In stock End of Month</u>
Dec	88.9	88.9	0.0	66.1	194.7
Jan	46.6	46.6	0.0	75.6	165.7
Feb	80.4	71.1	9.3	82.8	154.0
Mar	88.7	74.1	14.6	84.5	143.6
Apr	93.2	74.1	19.1	82.6	135.1
May	98.5	77.7	20.8	82.6	130.2

End of Month Stock (In Days of Supply)Bombs (Modern)

	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>
M1A2 100# Frag	192	143	91	61	47	45
MK-81 250# GP	65	44	31	24	22	29
MK-82 500# GP	53	46	41	45	45	45
M-117 750# Demo	105	33	30	27	28	31
MK-83 1000# GP	87	164	313	No Expenditure		
MK-84 2000# GP	108	138	236	206	176	146
M-118 3000# Demo	351	401	378	474	444	414

Substitute

	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>
M-30 100# GP	264	333	203	173	143	113
M-57 250# GP	62	53	No Expenditure			
M-81/88 250# Frag	134	381	351	321	291	261
M-64 500# GP	94	63	135	137	107	77
MLU 10 Mine	489	459	429	399	369	339
M-65 1000# GP	40	47	33	21	101	71
			<u>Old</u>			
M-47 100# PWP	249	225	195	165	135	105
M-66 2000# GP	238	208	178	148	118	88

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Removal From Automatic Shipment

As production of optimum munitions increased, use of less desirable ordnance decreased. Concomitantly, as stocks of substitute munitions rose, Headquarters USAF decided to remove some of these weapons from automatic shipment to Southeast Asia. By July, in response to shortages, 45 items were under Admiral Sharp's control for automatic shipment direct from production or CONUS assets. During the last three months of the year, Secretary Brown--with CINCPAC and JCS support--requested that OSD remove selected munitions from the so-called automatic "push" system. By 31 December 13 of the 45 categories had been deleted from automatic shipment with 24 additional items recommended for removal. Items removed included the M-66 2,000-pound bomb, BLU-23/32 fire bomb, BLU-1/27 fire bomb, Bullpup-B, MK-77/79 fire bomb, M3 20-mm gun ammunition, MK-81 250-pound bomb, M61 20-mm gun ammunition, CBU-14, 7.62 20-mm ammunition, M1A2 100-pound fragmentation bomb, M47 100-pound bomb, and the MK-24 flare. ³⁰

Thus, as SEA stocks reached the 45-day objective, the pipeline filled, and production stabilized, CINCPAC could request shipment of specific munitions without having them sent automatically. Items in this category were diverted to war readiness materiel (WRM) or kept in depots. ³¹

As an additional rationale for removal of selected air munitions from automatic shipment, Secretary Brown had pointed out to the Defense Secretary that SEA storage handling facilities would be saturated at the current rate of production. In December, when Mr. McNamara expressed his concern and surprise, the Air Force Secretary advised that as of 1 October USAF storage capacity in Vietnam and Thailand was about 46,800 tons of which 23,050 were substandard. Approximately 56,000 tons was considered a 45-day stock. At the end of October 65,000 tons were possessed and PACAF storage requirements were predicated on 77,800 tons by 1 July 1967. ³²

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(S) Secretary Brown further reported that construction of storage facilities called for the following capacity: 1 January 1967, 64,707 tons of which 22,441 were substandard; 1 April 1967, 77,614 with 19,354 substandard; and 1 July 1967, 85,906 tons of which 10,500 would be below standard. Also Clark AB, Philippines had storage for 21,239 tons and Kadena, Okinawa 17,831 tons. Thus, said Secretary Brown, if certain munitions could be ordered selectively, strict stock levels could be maintained, less desirable ordnance gradually phased out, and stock could be handled more efficiently with fewer hazards.

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III. SOUTHEAST ASIA AIR BASE CONSTRUCTION

() Testifying before a joint session of the Senate Armed Services Committee and the Subcommittee on Defense Appropriations in March 1966, Secretary Brown stated that "the greatest single limitation on the scope of Air Force operations in Southeast Asia is not in the numbers of aircraft and aircrews available but rather in the adequacy of our base structure in the area."¹ Although progress was made in building the Southeast Asia air base complex^{*}, many difficulties afflicted the USAF program and consistently delayed deployment of tactical squadrons. Conflicting airfield, port, and distribution system construction priorities, a lack of military engineering and construction units, and diverse command and organization interests--all these factors adversely affected construction of the third and fourth USAF bases in South Vietnam and a second new base in Thailand.

() The Air Force--which dispatched Red Horse (civil engineering heavy repair) squadrons to the theater to erect some interim facilities and base engineering emergency force (Prime Beef) teams primarily to build revetments at existing congested bases--remained dependent on the Army and Navy for building its major airfields. The Navy's OICC (Officer-in-Charge of Construction) which had the predominant responsibility, relied in turn on the RMK-BRJ⁺ civilian combine for most of the construction in Southeast Asia. During 1966 RMK-BRJ increased its construction capability to \$40 million per month for all three services.^{† 2}

* This chapter is concerned with building new jet air bases in South Vietnam and Thailand, although it is recognized that Andersen (Guam), Kadena and Naha (Okinawa), and Clark and Mactan (Philippines) as well as other air bases played an important role as operating and support bases for the Southeast Asia theater.

+ Raymond International, New York; Morrison-Knudsen, Boise, Idaho; Brown and Root, Houston, Texas; and J. A. Jones, Charlotte, North Carolina.

† In contrast, service engineering construction forces accomplished the following (in millions per month): Army construction battalions, 1.30; Army combat battalions, 1.21; Navy construction battalions, 1.03; and USAF heavy repair squadrons, .63 (Ltr (S), CINCPAC to JCS, subject: 1967 Follow-on Military Construction Program, SVN, 31 Oct 66).

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~~(S)~~ Nevertheless, Secretary of the Navy Paul H. Nitze announced plans to reduce the RMK-BRJ work force from 51,000 personnel to about 43,000 by 1 January 1967 as part of a controlled reduction.* CINCPAC, meanwhile, forecasted that RMK-BRJ operations could be phased out by the end of 1968 provided adequate troop construction forces were available. During 1967 PACOM planned to use engineer troop units to the maximum while reducing military construction expenditures. Still, it expected that the contractor would account for approximately \$300 million of the \$586 million RVN construction. In early September McNamara approved the RMK-BRJ work force reduction and asked to be kept informed of Admiral Sharp's plans for a complete contractor phasedown contingent upon an increased troop construction capability.³

~~(S)~~ Aside from the shortage of military construction crews, gaining access to real estate in the area also was a problem since the governments of the Republic of Vietnam and Thailand were restricted by law in promulgating right-of-entry actions. In addition, frequent changes in the South Vietnamese high command resulted in fluctuating agreements.⁴

~~(S)~~ Deputy Secretary of Defense Vance, mindful of the need for additional airfields, on 14 January 1966 warned the JCS that CINCPAC's deployment schedules were in jeopardy. He reiterated that site selection should be "made promptly" and directed that the Thailand location be chosen by 31 January and the third field for Vietnam by 10 February.⁵

South Vietnam

~~(S)~~ In Vietnam approximately 850 non-jet and 570 USAF/VNAF jet aircraft were scheduled to use the seven jet-capable airfields which were built, under

* This combine also ran into serious management, supply, and cost problems which were criticized by the press during the year.

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construction or programmed to be built at Bien Hoa, Da Nang, Cam Ranh Bay, Phan Rang, Phu Cat, Tan Son Nhut, and Tuy Hoa as follows:⁶

<u>Base</u>	<u>USAF/VNAF Jet Acft</u>	<u>Other</u>	<u>Total</u>
Bien Hoa	90	209	299
Da Nang	85	195	280
Cam Ranh Bay	72	37	109
Phan Rang	99	27	126
Phu Cat	77	27	104
Tan Son Nhut	50	326	376
Tuy Hoa	97	27	124

(~~SECRET~~) In addition, allied aircraft were located at Binh Thuy, Nha Trang, Pleiku, and Vung Tau. For South Vietnam the OSD-approved program delineated 23 USAF jet squadrons augmented by 6 VNAF squadrons and 2 jet air defense detachments. This deployment was predicated upon construction of two new jet bases in addition to Cam Ranh Bay and Phan Rang.⁷

(~~SECRET~~) The expeditionary runway had been completed at Cam Ranh on 1 November 1965, but at Phan Rang heavy monsoon rains had saturated subgrade soils and brought earthwork to a halt in late 1965.* However, after the monsoon the Army's 62nd Engineer Construction Battalion accelerated its work and managed to complete the AM-2 aluminum mat runway, taxiway, and parking apron in time for the arrival of the 389th Tactical Fighter Squadron (TFS) on 14 March 1966. Unfortunately, after the field became operational, heavy unseasonable rains damaged the parking apron, runway, and taxiway. Because of this deterioration, PACAF recommended--and CINCPAC and JCS concurred--that additional tactical fighter squadron deployments be delayed until July, August, and September. The runways and taxiways were subsequently repaired by a USAF Red Horse squadron and by mid-September five squadrons were operating out of Phan Rang.⁸

Selection of Phu Cat

(~~SECRET~~) Indecisiveness marked selection of the third and fourth airfields in

* For details on the early development of Cam Ranh and Phan Rang see Herman S. Wolk, USAF Logistic Plans and Policies in Southeast Asia 1965, (AFCHO, June 1967), pp 31-35.

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South Vietnam. In late 1965 MACV chose Qui Nhon for the third field but later decided on Tuy Hoa, which CINCPAC also approved in December after completion of architect-engineer surveys*. However, during a PACOM logistics and capabilities conference 17-31 January 1966, CINCPAC declared that since port and depot development had not kept pace with airfield construction, the former would be given priority. He said that port handling and distribution facilities were already saturated, and introduction of more equipment and materials would only aggravate the situation. Subsequently, he endorsed the conference's recommendation that the third base be built at Phu Cat (Qui Nhon) rather than Tuy Hoa.⁺ MACV formally approved Phu Cat on 20 February. The primary reason for selection of Phu Cat over Tuy Hoa was ostensibly because both the airfield and port could be finished in November 1966.⁹

() After the belated selection of Phu Cat, General McConnell expressed concern to the Joint Chiefs that the choice of a fourth site might well encounter the same problems that led to postponement of a decision on the third airfield. He noted that Qui Nhon (Phu Cat) had been considered as early as July 1965 and not finally chosen until early 1966, and even after selection, the beneficial occupancy date (BOD) had slipped several times and had endangered operational developments. "These slippages and extended construction times," General McConnell said, "are a marked departure from the demonstrated capability to select and construct airfields at Cam Ranh Bay and Phan Rang." He reminded the JCS that the need for a fourth jet base in South Vietnam had been enunciated by Secretary McNamara in December 1965 and funding for its construction had been approved at that time. He

* See Wolk, (AFCHO, June 1967), pp 31-35.

+ Phu Cat was located inland from the port of Qui Nhon.

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PACAF AIRCRAFT DEPLOYMENT

		Ching													
Tainan		Chuan Kang		Naha		Kadena		Kunsan		Oson		Yokota		Misawa	
EC121	4	C130	49	C130	53	C130	1	F100	9	F105	15	EB57	4	F100	9
F100	4			F102	28	F105	47			HH43	2	F105	20	HH43	2
				HU16	4	HH43	3					HH43	2		
						KC135	24					RB47	1		
TOTAL	8	TOTAL	49	TOTAL	85	TOTAL	75	TOTAL	9	TOTAL	17	TOTAL	27	TOTAL	11

Ubon

F4	47
HH43	2
TOTAL	49

Korat

F105	77
HH43	2
TOTAL	79

Takhli

EB66	22
F105	60
HH43	3
KC135	8
TOTAL	93

Don Muang

F102	5
TOTAL	5

U-Tapao

KC135	22
TOTAL	22

Binh Thuy

AC47	6
HH43	1
O1	32
TOTAL	39

Vung Tau

C-7	27
TOTAL	27

Pleiku

A1	22
AC47	3
HH43	2
RC47	8
TOTAL	35

Phu Cat

C7	29
TOTAL	29

Tuy Hoa

F100	58
HH43	1
TOTAL	59

Guam

B52	56
HC130	4
KC135	5
TOTAL	65

Tachikawa

C124	16
C130	14
HC130	5
TOTAL	35

Hickam

EC135	5
HC97	5
HC130	4
KC135	1
TOTAL	15

Clark

AC47	7
B57	25
C130	26
F100	14
F102	27
HH43	2
HU16	5
RB47	1
KC135	18
TOTAL	125

Nakhon				Cam Ranh											
Udon	Phanom	Tan Son Nhut	Bien Hoa	Phan Rang	Bay	Nha Trang	Da Nang								
A1	13	A26	11	C47	1	AC47	5	B57	20	C7	27	AC47	1	AC47	4
CH3	8	HH3	3	C123	30	DC130	2	F100	74	F4	79	C47	2	C123	15
F102	6	O1	21	CH3	4	F5	17	HH43	2	HH43	2	C123	14	F4	57
F104	18	T28	11	EC121	4	F100	68					HC47	3	F102	6
HC130	4	U6	13	HH43	2	F102	6					HH43	2	HH43	2
HH3	4	UC123	6	RB57	3	HH43	3					O1	55	HU16	5
HH43	2	UH1	15	RC47	11	O1	67					RC47	9	HH3	3
RF4	21			RF4	40	U2	3					U10	14	O1	43
RF101	15			RF101	14	UC123	13							KC135	1
TOTAL	91	TOTAL	80	TOTAL	109	TOTAL	184	TOTAL	96	TOTAL	108	TOTAL	100	TOTAL	136

Source: PACAF Status of Forces Report, 17 Jan 67

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consequently recommended decisive action on the fourth base "as a matter of urgency" in order to meet Case I deployments.^{10 *}

() General McConnell's unease was not soon assuaged. Thus, in June, the OICC indicated that the BOD for Phu Cat would be further delayed from November 1966 to March 1967 because of a lack of construction forces coupled with existence of higher precedence projects. General McConnell, troubled by the new slip-page, on 17 June again reminded the JCS:¹¹

I have repeatedly expressed my concern over the lack of suitable airfields in Southeast Asia. Now indications are that the new jet field at Phu Cat will not become available in time to accept the planned deployments of tactical fighter squadrons in support of CINCPAC requirements. This base... is urgently required... Other bases could not accept additional deployments without intensifying vulnerability and saturation.

() Subsequently, on 8 July, during a conference with Admiral Sharp in Honolulu, the Secretary of Defense observed that construction in both Vietnam and Thailand was getting out of hand. According to Mr. McNamara, the program in the RVN had become too large and expensive and he directed CINCPAC to review critically all construction requirements in Vietnam. The resulting review, by both Admiral Sharp and the JCS, covered each of 29 subject/issue papers by so-called Functional Facility Category Groups (FFCG's).¹² Although OSD had hoped to determine cost variations by comparing facility category groups by individual complex, MACV, CINCPAC, and the Joint Chiefs agreed on the basis of their review that such comparisons were not valid. Differences in cost might be accounted for by geographical conditions, accessibility, or security requirements.¹³

() In August, after Secretary McNamara requested that the requirement for Phu Cat be re-examined, Headquarters USAF concluded that it was compatible with McNamara's 13 July deployment program. Secretary Brown advised OSD on

* See Chap. IV for a consideration of Tuy Hoa's selection as the fourth base under Project Turnkey.

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6 September that any reduction in the scope of Phu Cat's facilities would concomitantly affect operational capabilities, security, ground safety, and vulnerability. He recommended that they proceed with full development of Phu Cat.¹⁴

On 14 October the Defense Secretary finally agreed to go ahead with construction of Phu Cat as an operational base (single runway) supporting four tactical fighter/reconnaissance squadrons. However, he directed the Air Force to build the base "only to the minimum required to support proposed operations."¹⁵ Despite this approval, Mr. McNamara remained skeptical about the alleged consequences of not going ahead with Phu Cat. Also, he was worried about the possible vulnerability of the new bases. He directed the JCS to continue studying these difficulties and admonished that an "analysis of them should be part of any request for additional air bases."¹⁶

Thailand

During 1966 USAF tactical aircraft were located at the following Thai bases: Don Muang, Korat, Takhli, Ubon, Udorn, Nakhon Phanom, and U-Tapao.* In addition, Nam Phong was planned as a bare base.

Nam Phong (Khon Kaen)

While construction at U-Tapao progressed,⁺ in early January Deputy Secretary of Defense Vance approved a second new jet airfield in Thailand. CINCPAC subsequently chose Nam Phong (Khon Kaen)[‡] as the site but disagreement arose over whether it should be built as an expeditionary base with AM-2 or as a

* Situated adjacent to the port of Sattahip.

+ See Wolk, (AFCHO, June 1967), p 33 for the story of early construction at U-Tapao.

‡ Nam Phong was 26 kilometers from Khon Kaen.

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permanent field with concrete pavement. Headquarters USAF, worried over base saturation in Vietnam and Thailand, recommended to the JCS the use of AM-2 matting to produce an earlier BOD and help ameliorate crowding. Initially, on 5 February, Admiral Sharp agreed with this position and directed that Nam Phong be completed with AM-2 by November 1966. But in late March he issued new instructions that a permanent field be built--with a resulting slippage of three-to-five months--because the AM-2 matting was needed for higher priority commitments at Cam Ranh, Phan Rang, and Qui Nhon, South Vietnam.¹⁷

~~TOP SECRET~~ After analyzing AM-2 production and requirements, Secretary Brown declared that there would be sufficient matting to fulfill requirements at Nam Phong.¹⁸ On 7 April, in light of the Air Force Secretary's study, the Joint Chiefs forwarded specific matting figures to CINCPAC and asked him to reconsider his position.¹⁹

~~TOP SECRET~~ However, Admiral Sharp replied that base commitments in Vietnam remained overriding. He observed on 12 April that all AM-2 needs could not be met from production unless matting was taken from the Marines in order to satisfy RVN requirements. In any case, he felt Nam Phong would be delayed only a few months if built with concrete. The Joint Staff, concerned over the possible postponement in operational deployments, attempted to draft another message to the Admiral, but it was opposed by all services except the Air Force on the grounds that no significant new information had been introduced. In light of this opposition, the Air Force dropped its advocacy.²⁰

~~TOP SECRET~~ As far as deployment was concerned, on 26 March Secretary McNamara reduced from six to three the number of tactical fighter squadrons to be deployed to Thailand. His decision was based on sortie rates derived from studies developed at the Honolulu capabilities conference of late January and early February. However, when the JCS sent their 1966 deployment program to OSD in

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early April, they positioned three previously deferred squadrons at Nam Phong. On 24 May the Defense Secretary again refused to reinstate the squadrons. On 18 June Admiral Sharp reiterated the need for these units and in early August he was supported by the JCS.²¹

() Meanwhile, Mr. McNamara asked Secretary Brown to review USAF's Thailand construction, noting that Nam Phong ought either to be completed for some alternative purpose or terminated.²² In his response in mid-July, Secretary Brown recommended to Mr. McNamara that Nam Phong be built as a bare base to support dispersal or staging of theater forces. Secretary Brown's proposal was backed by CINCPAC and the Joint Chiefs, whereupon on 19 September the Defense Secretary gave final approval for Nam Phong construction as a bare base at a cost of \$14.8 million. "Construction beyond this scope," he declared, "will not be initiated without my prior written approval."²³ Nevertheless, in October Admiral Sharp and the Joint Chiefs indicated that they still believed that--in view of the saturated airfields in Thailand--Nam Phong should be built beyond the bare base level. In the meantime, work had begun and by year's end earthwork was completed.²⁴

U-Tapao (Sattahip)

() On 8 July, during his conference at Honolulu with CINCPAC, Secretary McNamara declared that both he and Secretary of State Dean Rusk had been surprised to learn of the "magnitude" of the American investment in Thailand.* Thus, the Defense Secretary stated that Thailand construction must be analyzed "most critically" by the Joint Chiefs and the services. When he remarked further that the United States had apparently "gone wild" on air base building in Thailand,

* Secretary McNamara also commented that only he could be criticized for letting the construction program get out of hand without his knowing about it. (Memo for Rcd (TS), by Maj Gen G.S. Brown, Spec Ass't to CJCS, subj: Highlights of SECDEF-CINCPAC Conference, 8 Jul, 9 Jul 66).

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Admiral Sharp interjected that Sattahip was a priority requirement and would save considerable expenditure and effort by cutting the waste in KC-135 tanker operations from non-mainland bases. In his response, the Secretary indicated that expanded operations at Sattahip would be approved.²⁵ Following the conference, the defense chief directed Admiral Sharp to examine the service reviews of Thailand construction and to forward his comments.²⁶

(S) On 20 September the PACOM commander sent his recommendations to the JCS and, in general, supported the services' needs. He specifically backed deployment of 35 KC-135's to U-Tapao rather than the originally planned deployment of 25 KC-135's and 32 C-130's. In summary Admiral Sharp observed that any diminution of Thailand construction would adversely affect operations although priorities of certain projects might be adjusted in the light of more recent funding information. The JCS supported his position.²⁷

(S) Meanwhile, on 15 August 1966 the U-Tapao runways and taxiways, which had been built with keels of strength sufficient to support B-52 bombers, were finished and on 28 November the base achieved a sustained operational capability.* Discussions as to the efficacy of basing the large SAC bombers at U-Tapao, which had been under way for some time, continued. On 17 December Secretary McNamara approved funding of \$19 million in the fiscal year 1967 supplemental military construction program for basing 15 B-52's in Thailand. Although a decision to deploy the B-52's to Thailand had not been made by the end of the period, it was obvious that eventual basing at U-Tapao would have many advantages.²⁸

Rising Costs

(S) Rapidly escalating costs plagued the construction program in Southeast Asia. The objective in 1965 and 1966 was to provide bases and facilities in the shortest time possible. However, by June 1966 cost overruns had assumed vastly

* No expeditionary facilities were built at U-Tapao.

greater proportions than was first thought possible. Secretary McNamara had previously gained congressional approval for a \$200 million contingency fund as part of the 1966 supplemental military construction program. Now, faced with the need for additional funding, he directed that \$60 million be provided to the OICC for construction in Vietnam during January-April 1967. He indicated that the additional money required after April 1967 would be considered as part of the fiscal year 1967 supplemental and 1968 military construction program budget. The following chart reflects the funding imbalance in Vietnam construction:²⁹

	<u>Military Construction-Vietnam</u>			
	<u>(Millions)</u>			
	<u>Milcon</u> <u>(Army, Navy, AF)</u>	<u>MAP</u>	<u>Other *</u>	<u>Total</u>
Total Authorization	821.3	109.0	104.9	1035.2
RMK Contract Authorization	613.5	109.0	17.5 ⁺	740.0
RMK Current Working Estimate	787.5	140.0	17.5	945.0

* Additional projects under RMK contract including the Agency for International Development, State Department, etc.

+ \$104.9 minus \$87.4 procurement for others or \$17.5.

() The difference between the total working estimate of \$945 million and the actual contract authorization of \$740 million represented a shortage of \$205 million.³⁰ It was attributed primarily to a significant rise in the cost of runway pavement and building materials. However, contributing factors were un-anticipated program changes, overpurchase of equipment and materials⁺, inflation, and a lack of cost data experience.

⁺ For example, in March 1966 the OICC was informed that two bases (including Tuy Hoa) would not be built by the OICC contractor. This meant a \$17 million equipment overbuy. (Report (U) by CINCPAC Study Group, subj: Construction Cost Overruns in South Vietnam, 20 Mar 67).

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~~SECRET~~ In early February the Defense Secretary approved a series of more flexible procedures to be implemented by Army Brig. Gen. Carroll Dunn, MACV Director of Construction.^{* 31} These were designed for more flexible and efficient funding, reprogramming, and management and allowed General Westmoreland to transfer program authorizations from one functional category to another without prior approval so long as any increased cost did not exceed 10 percent. Despite these measures, it was clear that additional budgetary steps would have to be taken in 1967.³²

* For details leading to the establishment of the office of the MACV Director of Construction see Wolk, (AFCHO, June 1967), pp 34-35. Brig. Gen. Dunn was replaced by Army Brig. Gen. Daniel A. Raymond on 7 July 1966.

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IV. PROJECT TURNKEY

~~SECRET~~ Following the siting and construction of airfields at Cam Ranh Bay and Phan Rang, Headquarters USAF pressed CINCPAC and MACV for timely decisions on locations for the third and fourth air bases in South Vietnam. Despite admonitions and frequent reminders that siting was lagging dangerously behind operational commitments, no decisions were forthcoming early in 1966. Thus, the Air Force found itself in the untenable position of being responsible for certain deployments and operations, yet having insufficient facilities to do so.

~~SECRET~~ To overcome this critical situation, in early February Secretary Brown submitted a proposal to Mr. McNamara that called for direct USAF contracting for the needed airfield construction. He envisioned awarding a USAF contract to an American firm that would be responsible for base construction, shipping, logistics, port facilities, and communications with real estate and security provided by the government. On the basis of Dr. Brown's proposal, Deputy Defense Secretary Vance approved exploratory USAF discussions with contractors.¹

~~SECRET~~ On 5 March Secretary Brown reported to OSD that preliminary talks indicated that the plan was "entirely feasible and would provide a significant increase in the magnitude and efficiency of the overall construction capability in Vietnam."² He said it was reasonable to assume that expeditionary fields could be finished in six months and permanent runways in 12 months. He advised that a USAF special project office would supervise this operation and be under the control of the MACV construction manager, General Dunn. Most importantly, the contractor would be supported by a separate logistical pipeline and not be dependent upon existing shipping or construction support.³

~~SECRET~~Resistance to Turnkey

~~██████████~~ The USAF plan was opposed by PACOM, MACV, and the Navy, which felt that the project would somehow remain distinct from the newly-established MACV construction management system. Admiral Sharp and General Westmoreland also were apprehensive that the new contractor would compete with RMK-BRJ for in-country materials already in short supply and for procurement from the United States. Both pointed to the probable adverse effects on the Vietnamese economy and on the severe port congestion which had continued since mid-1965.⁴

~~██████████~~ While admitting that "site selection... had been difficult and tryingly slow," Secretary of the Navy Nitze argued that the theater commander must continue to direct all construction and that the Air Force could not expect to maintain a separate construction operation in Vietnam. Secretary Nitze argued⁵

The theater commander is--and must be--responsible for all actions in his area. The Air Force proposal would negate the concept of a construction czar, responsible to COMUSMACV. It would remove the major portion of the Air Force program from General Westmoreland's control.

He recommended that the construction effort be intensified--but within the confines of the present organization. However, the Navy Secretary qualified his view by saying that if airfield building were of a higher priority than other projects and if the USAF contractor "were nearly entirely self-sufficient," he might change his position.⁶

~~██████████~~ The Air Force replied that it did not intend to circumvent MACV authority and that the USAF turnkey project would adhere to MACV's control over design, construction standards, and criteria. In a memorandum to Mr. Vance, Secretary Brown observed that the Air Force would not be in direct competition with other projects but would establish a direct channel with U.S. resources and materials. This approach would minimize the pressure on the Vietnamese economy.

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Pointing to support of the cost-plus-fixed-fee turnkey approach voiced by the U. S. Ambassador to South Vietnam, Henry Cabot Lodge, Dr. Brown argued that the major consideration was that, unless new resources were introduced, additional bases could not be built on schedule to support Case I deployments.⁷

~~██████████~~ He said further that, with the selection in early March of Qui Nhon (Phu Cat) as the third new Vietnam airfield, it was imperative that a site for the fourth base be chosen without delay. Whereupon, he recommended to OSD that the independent turnkey contract he approved for construction of the fourth new base. He proposed that CINCPAC and MACV be instructed to choose this site "without delay" while the Air Force went ahead with its discussions with potential contractors. He summarized the USAF case as follows:⁸

If the above proposals are approved, we are confident we can work out arrangements which will not upset existing policies on local or third national hire, shipping or any of the other problems foreseen by MACV & CINCPAC. Moreover, once the basic decision is made that the independent contractor's job is to build airfields and supporting facilities, this project will be subject to the same degree of supervision now exercised by MACV over the activities of the present contractor.

Political Considerations

~~██████████~~ During April and May the Air Staff continued to fret not only about the disagreement over the turnkey contract, with its organizational overtones, but over the fact that the exact location of the fourth base, or base "Z" as it was called, had not been decided on. After selection of Qui Nhon as the third airfield, attention focused on Tuy Hoa, situated between Nha Trang and Qui Nhon* in the II Corps zone, and on Hue Phu Bai in the northern I Corps area. The latter was favored by CINCPAC and the JCS.

~~██████████~~ Political considerations, however, intruded when severe instability developed in the I Corps zone during March and continued unabated into May.

* Tuy Hoa was 235 miles northeast of Saigon.

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Following the March 1966 ouster of the Vietnamese I Tactical Corps Zone Commander, Lt. Gen. Nyugen Chanh Thi, opposition to Premier Nguyen Cao Ky had grown more intense and soon spread from Hue and Da Nang in the north to Saigon in the south. This unrest--which bordered on insurrection--in the Hue area turned the planners' attention to Tuy Hoa in II Corps.⁹ The State Department in any event was strongly opposed to building a base in the Hue vicinity. The U. S. embassy in Saigon felt that the construction would trigger militant opposition which, in the final analysis, would have a detrimental effect upon U. S. -Vietnamese ties.¹⁰

~~TOP SECRET~~ The Joint Chiefs and CINCPAC, however, strongly backed selection of Hue Phu Bai on operational grounds, pointing out that the II and III Corps already possessed enough bases (Tan Son Nhut, Bien Hoa, Cam Ranh Bay, Phan Rang, and Qui Nhon) and that an urgent need existed for an airfield in the I Corps region. Gen. Earle G. Wheeler, Chairman, JCS, summarized the Chiefs' position in a memorandum to Secretary McNamara:¹¹

Dispersion of aircraft to Tuy Hoa would further concentrate additional air strength in the II and III Corps and would not relieve the greatest air base saturation which exists at Da Nang because of its proximity to heavy and essential air operating areas in Laos and North Vietnam.

General Wheeler observed that aircraft at Tuy Hoa would be about 140 miles from targets in Laos and approximately 275 miles from the North Vietnamese border. Comparable distances from Hue Phu Bai were 30 and 50 miles.¹²

~~TOP SECRET~~ However, General Wheeler admitted that serious political unrest in Hue and the I Corps area would probably remain an "overriding consideration." He proposed that the Defense Secretary attempt to gain the State Department's approval for Hue Phu Bai, and failing that, construction should begin immediately at Tuy Hoa.¹³ In the absence of a reply from State, the JCS then proposed preliminary development of both Hue Phu Bai and Tuy Hoa. A final decision, declared the JCS, could be made later.¹⁴

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Final Decisions

██████████ On 6 May however, General Westmoreland--under pressure from General McConnell to proceed with selection without further delay--deferred to the Saigon embassy's point of view and recommended that the fourth base be built at Tuy Hoa under the turnkey concept. At the same time--because of cancellation of Hue Phu Bai--he proposed building a parallel runway at Chu Lai in the north. He also recommended that an LST port be built at Hue as planned. Although Admiral Sharp reiterated the requirement for development at Hue Phu Bai, he acquiesced with the Westmoreland suggestion provided the turnkey contractor assumed responsibility for the entire Tuy Hoa development including the port, railroads, and roads. According to CINCPAC, it was most important that the turnkey contractor not divert any in-country resources.

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██████████ On 13 May the Joint Chiefs conferred with State Department representatives and agreed that it was not feasible to construct the fourth airfield at Hue. The JCS opted for immediate development of Tuy Hoa under the turnkey contract with concurrent expansion at Chu Lai. The turnkey contractor would be responsible for the entire Tuy Hoa complex. On 18 May JCS and service planners resolved minor differences, reaffirming that turnkey would come under MACV's jurisdiction and that any diversion of effort to other than Tuy Hoa would require JCS approval. Too, Hue Phu Bai would remain in consideration as a future location. Subsequently, Headquarters USAF negotiated an agreement with Walter Kidde Constructors, Inc. after the firm had advised that Tuy Hoa could be built according to the USAF schedule.

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██████████ In summarizing the project for OSD, Secretary Brown reiterated that a fourth new airfield was mandatory if the 31 tactical jet fighter squadrons that had already been approved by the Defense Secretary were to be supported.

* Walter Kidde Constructors, Inc. was one of four wholly-owned subsidiary industrial service companies of the Electric Bond and Share Co. (EBASCO).

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After three months of investigation, concluded Brown, "... we are convinced that by this method we can build the required fourth airfield... we believe it is the only way we can meet the need in South Vietnam." And finally, he added that the expeditionary field could be finished by December if the project could begin by the end of May; otherwise, "if we cannot proceed immediately, the proposal should be abandoned since every week's delay in June could cause a month's delay in completion because of the winter monsoon."¹⁷ On 27 May Deputy Secretary Vance approved the turnkey project at Tuy Hoa and on 31 May a formal letter contract was awarded to the construction firm.¹⁸

Construction

~~██████████~~ By the middle of July much construction equipment and materiel had already been shipped to Vietnam from Jacksonville, Fla., and large quantities of support materiel were being massed at Brookley AFB, Ala. for shipment. Also, 3,370,432 square feet of AM-2 aluminum matting was made available with CINCPAC's consent.¹⁹

~~██████████~~ As far as funding was concerned, Headquarters USAF originally estimated the cost of Tuy Hoa construction at \$52 million. Initially, \$25.3 million was made available from the fiscal year 1966 supplemental military construction program. On 8 August, at the Air Force's request, Secretary McNamara provided another \$15 million. By late October, when it was clear that the contractor was meeting his commitments--and even fulfilling them ahead of schedule--the Air Force asked for an additional \$11.7 million. OSD's approval brought the total to \$52 million.²⁰

~~██████████~~ Under the single contractor concept, the Air Force gave top priority to the unique Tuy Hoa project. The contractor, relying on both U.S. and native labor, used a self-contained beachhead with a dredged channel which permitted

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LST's to unload at the construction site. On 12 November 1966, five and a half months after the actual project began, the expeditionary 9000 foot AM-2 runway, cross taxiway, and apron were completed, 45 days ahead of schedule. * A 10,000 foot permanent concrete runway was scheduled for completion by 31 May 1967.²¹

(~~TOP SECRET~~) In mid-November this new expeditionary airfield was able to accommodate one squadron (308th TFS) of F-100 aircraft. One month later, on 16 December, the 308th was joined by two additional squadrons, the 306th and 309th tactical fighter squadrons.⁺ Tuy Hoa possessed a central coastal location between Nha Trang and Qui Nhon which permitted a more rapid response to requests for tactical air support than was possible from Da Nang or Bien Hoa. It had the best terrain and approach of any base in central South Vietnam and also served as an alternate recovery base for either Da Nang/Chu Lai or Bien Hoa/Tan Son Nhut. Further, its location was far enough north to be used for strike missions in Laos or North Vietnam.²²

* A C-130 aircraft carrying mobile communications equipment landed on the aluminum mat runway on 12 November and was followed three days later by F-100 fighters from Bien Hoa which landed after completing a combat mission.

+ Forming the 31st Tactical Fighter Wing.

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USAF AIRCRAFT PROCUREMENT IN SUPPORT OF SEA

AIRCRAFT	PROGRAMS						ACTUAL THRU 31 DEC
	FY 64	FY 65	FY 66	FY 67	FY 68	TOTAL	
F-4D	52	222	519	-	-	793	287
F-4E	-	-	99	89	245	433	0
F-5A/B	-	-	10	31	4	45	0
RF-4C	115	128	96	0	86	425	244
C-141	-	-	-	34	-	34	0
C-X2	-	-	-	4	4	8	0
HC-130H	15	33	15	0	-	63	60
UH-1D	-	-	-	9	12	21	0
UH-1F	51	55	40	-	-	146	110
CH-3C/E	39	35	13	6	-	93	72
HH-3E	-	-	6	18	-	24	0
U-10	52	-	44	-	-	96	52
U-17 A/B	-	-	6	6	7	19	6
T-37B	-	-	-	62	104	166	0
T-38A	-	-	-	78	123	201	0
T-41A	-	-	-	34	-	34	0
A-37B	-	-	-	57	120	177	0
O-2A/B	-	-	-	176	47	223	0
OV-10A	-	-	11	98	48	157	0
HH-53B	-	-	-	4	4	8	0
TOTALS	324	473	859	706	804	3,166	831

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SUMMARY OF SEA AIR MUNITIONS (STATUS IN TONS)

The Southeast Asia inventory increased 16,608 tons or 9.2 percent during the last reporting period. Overall consumption increased 1,370 tons or approximately 5 percent. December is the first month in which consumption has exceeded 50,000 tons and represents a 17 percent increase over the previous month. The number of incomplete rounds decreased 658 tons and reached a new low level. Incomplete rounds now constitute 3.4 percent of the total inventory.

Air Force assets increased 17,067 tons. Clark AB assets are included in the Southeast Asia inventory and account for part of the increase. Receipt of the following tonnage by 7th Air Force, in excess of expenditures, contributed to the increase.

MK-82/M117, 500/750 lb General Purpose Bombs	4,808
BLU-27, 750 lb Fire Bomb	4,150
M66, 2000 lb General Purpose Bomb	7,192

MAP assets continued to decrease for the fourth consecutive reporting period.

DOD (TONS)

	30 Sep	10 Oct	20 Oct	31 Oct	10 Nov	20 Nov	30 Nov	15 Dec	31 Dec
Opening Inventory	148,442	151,680	159,845	163,892	166,910	161,524	174,278	172,538	180,381
Receipts	20,608	22,632	18,203	17,165	11,037	27,393	14,964	35,090	45,225
Consumption	17,370	14,467	14,156	14,147	16,423	14,639	16,704	27,247	28,617
Closing Inventory	151,680	159,845	163,892	166,910	161,524	174,278	172,538	180,381	196,989
Complete Rounds	140,141	146,201	150,960	156,405	152,664	163,550	165,105	172,940	190,206
Incomplete Rounds	11,539	13,644	12,932	10,505	8,860	10,728	7,433	7,441	6,783
In Transit	125,673	121,330	139,829	126,885	144,917	139,707	141,082	147,861	132,558

CLOSING INVENTORY BY SERVICE (TONS)

	30 Sep	10 Oct	20 Oct	31 Oct	10 Nov	20 Nov	30 Nov	15 Dec	31 Dec
Air Force	83,974	95,975	97,243	91,620	87,899	96,014	97,789	97,809	114,876
Navy-Marine Corps	40,787	36,950	39,876	50,067	47,233	52,513	49,876	58,639	59,059
Army	2,678	2,508	2,310	2,964	2,861	3,445	4,210	3,797	3,960
MAP	24,242	24,412	24,463	22,259	23,531	22,306	20,663	20,136	19,094

Source: JCS SEA Air Munitions Ten Day Report
9 Jan 67

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AIRFIELD CHARACTERISTICS

Key to Abbreviations

TWR - Tower
 AG - Air to Ground Radio
 DF - Directional Finder
 GCA - Ground Control Approach

(A) - Asphalt
 (C) - Concrete
 RAPCON - Radar Approach Control

NDB - Non-Directional Beacon
 TACAN - Tactical Air Navigation
 VOR - Visual Omni-range

AIRFIELD	RUNWAYS LENGTH (FT)	NAVIGATION AIDS	FUEL	OK FOR ACFT OPERATIONS AS LISTED
<u>SOUTH VIETNAM</u>				
Da Nang	10,000 (A)	TWR/AF/DF/NDB/RBN/TACAN/RAPCON	AV/JP	All Incl F-100/F-105
Pleiku - Cu Hanh	6,000 (A)	TWR/NDB/GCA/TACAN/RAPCON	AV/JP	A-1E/T-28/RF-101
Pleiku - Old	5,400 (PSP)	TWR/RBN	AV	A-1E/T-28
Qui Nhon	4,950 (A)	TWR/RBN	AV	A-1E/T-28
Nha Trang	6,000 (A)	TWR/AG/DF/GCA/NDB/TACAN	AV/JP	A-1E/T-28/RF-101
Tan Son Nhut	10,000 (C)	TWR/AG/GCA/TACAN/RAPCON	AV/JP	All Incl B-57/F-105
Bien Hoa	10,000 (A)	TWR/AG/GCA/TACAN	AV/JP	All Incl B-57/F-105
Can Tho	4,600 (C)	TWR/RBN/TACAN	AV/JP	A-1E/T-28
Binh Thuy	6,000 (A)	TWR/GCA/TACAN/NDB	AV	C-123
Chu Lai (Marine)	8,000 (AM-2)	TAC Control Unit (TWR/GCA/TACAN)	AV/JP	F-4C
Cam Ranh Bay	10,000 (AM-2) 8,000 (C)	TWR/NDB/GCA/TACAN/RAPCON	AV/JP	All Incl F-4C
Phan Rang	10,000 (C)	TWR/GCA/TACAN/NDB	AV/JP	All Incl F-4C
<u>Airfields Under Construction</u>				
Tuy Hoa	9,000 (AM-2)	ALL Mobile - TWR/GCA/TACAN/NDB	AV/JP	
Phu Cat at Qui Nhon	10,000 (C)	BOD Apr 67		
<u>THAILAND</u>				
Udon	8,600 (C)	TWR/DF/AG/NDB/TACAN/RAPCON	AV/JP	B-57/F-105
Nakhon Phanom	6,000 (PSP)	Mobile TWR/NDB/TACAN/AG/GCA	AV	A-1E/T-28
Takhli	9,800 (C)	TWR/AG/NDB/VOR/DF/RAPCON	AV/JP	All Incl B-57/F-105
Korat	9,800 (C)	TWR/AG/TACAN/RAPCON/DF	AV/JP	All Incl B-57/F-105
Ubon	7,000 (C)	TWR/NDB/VOR/RAPCON/TACAN	AV/JP	B-57/F-105
Don Muang	9,800 (C)	TWR/GCA/AG/TACAN/VOR	AV/JP	All Incl B-57/F-105
U-Tapao	11,500 (C)	TWR/GCA/TACAN/VOR/DF/NDB	AV/JP	All Incl B-52

GLOSSARY

ADU	Aircraft Dispenser Unit
AFLC	Air Force Logistics Command
AFSC	Air Force Systems Command
AGE	Aerospace Ground Equipment
BLU	Bomb Live Unit
BOD	Beneficial Occupancy Date
CBU	Cluster Bomb Unit
CINCPAC	Commander-in-Chief, Pacific
CINCPACAF	Commander-in-Chief, Pacific Air Forces
COMUSMACV	Commander, U.S. Military Assistance Command, Vietnam
CONUS	Continental United States
CSAF	Chief of Staff, Air Force
DOD	Department of Defense
EBASCO	Electric Bond and Share Company
FFCG	Functional Facility Category Group
FOB	Forward Operating Base
GP	General Purpose
JCS	Joint Chiefs of Staff
LRC	Logistics Readiness Center
LST	Landing Ship Tank
MAC	Military Airlift Command
MACV	Military Assistance Command, Vietnam
MAP	Military Assistance Program
MLU	Mine Live Unit
MOB	Main Operating Base
NATO	North Atlantic Treaty Organization
NORM	Not Operationally Ready, Maintenance
NORS	Not Operationally Ready, Supply
NSC	National Security Council
NVN	North Vietnam
OICC	Officer-in-Charge of Construction
OSAF	Office of the Secretary of the Air Force
OSD	Office of the Secretary of Defense

UNCLASSIFIED

PACAF	Pacific Air Forces
PACOM	Pacific Command
PCS	Permanent Change of Station
POL	Petroleum, Oil, and Lubricants
RAM	Rapid Area Maintenance
RMK-BRJ	Raymond International, New York; Morrison-Knudsen, Boise, Idaho; Brown & Root, Houston, Texas; and J. A. Jones, Charlotte, N. C.
RVN	Republic of Vietnam
SAC	Strategic Air Command
SAF	Secretary of the Air Force
SEA	Southeast Asia
SEABU	Southeast Asia Buildup
SECDEF	Secretary of Defense
SECNAV	Secretary of the Navy
SVN	South Vietnam
TFS	Tactical Fighter Squadron
TDY	Temporary Duty
TPS	Tons Per Sortie
USAF	United States Air Force
USMC	United States Marine Corps
USN	United States Navy
VNAF	Vietnamese Air Force
WRM	War Readiness Materiel

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