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AUTOMATICALLY DOWNGRADED AT TWO YEAR
INTERVALS DECLASSIFIED ON DECEMBER

31. 1974

QUALITATIVE OPERATIONAL REQUIREMENT

FOR

RANGE EXTENSION OF THE HH-43B

PROJECT CORONA HARVEST

DO NOT DESTROY
CATALOGED CATALOGED

FEB 21 1967

No. 0005818

1. MISSION/FUNCTION. The Local Base Rescue (LBR) mission provides a twenty-four hour capability for expeditious recovery of personnel involved in aircraft/missile accidents, incidents, or similar occurrences on, or in the vicinity of, an air base. This mission is a function of the Air Rescue Service mission as defined in AFR 0-54.

2. MISSION CAPABILITY.

a. The HH-43B helicopter was designed and procured for the LBR function at air bases where the accident/incident potential is high by virtue of the type aircraft assigned and/or nature of air operations performed. The HH-43B is capable of providing a recovery capability, and is assigned an area of responsibility, within a 75 NM radius of its operating base. The LBR function is not limited to established operational bases. It is planned that the HH-43B helicopter be deployed to perform a like function in support of contingency operations at other than established LBR locations.

b. The 75 NM radius of action (area of responsibility) is adequate for most air bases requiring LBR support, however, it is not adequate at air bases such as Nellis AFB, Nevada; Suffolk County AFB, New York, or Wheelus AB, Libya, where high density air operations are conducted up to 150 NM from the base. At such locations, a high accident/incident potential exists beyond the present HH-43B operational range capability in areas of inaccessible terrain or over water.

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Additionally, northern bases such as Duluth, Minnesota, and Thule, Greenland, require a quick recovery capability during winter months to prevent loss of downed aircrews through exposure to extreme cold.

3. EQUIPMENT DEFICIENCY. The HH-43B operating range is deficient in respect to the LBR requirements at many established air bases around the world and in all probability will be deficient at bases planned for contingency operations.

a. Accidents/Incidents which occur more than 75 NM from a base cannot be resolved by the HH-43B without range extension and are necessarily resolved by time consuming surface means. In a few cases, when the HH-43B was the only means available, its range was extended by refueling enroute from fuel drums carried in the aircraft or from a source positioned for that specific mission. These makeshift range extension procedures, which are impossible over water and extremely hazardous over unknown snow/ice covered surfaces, are also time consuming and not in consonance with the inherent urgency of the rescue/recovery mission.

b. The need for extending the operational range of the HH-43B is immediate and will continue as long as the HH-43B is the primary LBR mission aircraft.

4. EMPLOYMENT.

a. Extended range HH-43B helicopters (or the provisions for extending the range) will be assigned initially to those bases that require LBR coverage beyond 75 NM.

b. HH-43B helicopters which are planned for use in support of contingency operations should possess or have available the extended

range capability. This concept should include all LBR HH-43B helicopters.

c. It is not envisioned for this requirement to alter the number of aircraft or personnel assigned to support the normal LBR program.

5. DESIRED PERFORMANCE CAPABILITIES. The HH-43B fuel capacity should be increased to meet the following performance requirements:

a. Range: 300 NM plus a ten minute hover capability in or out of ground effect and a thirty minute fuel reserve.

b. Speed: Minimum degradation consistent with gross weight increase.

6. SPECIAL INSTRUCTIONS.

a. The extended range mission will not be performed in conjunction with the fire suppression mission and fuel will be added as necessary for specific missions.

b. Fuel must be augmented by at least 100 gallons to meet the performance requirements.

c. Location of the augmented fuel in or on the aircraft should not interfere with normal hoist operation, fire suppression kit hook-up or delivery procedures, cabin configuration or cause an undesirable center of gravity position when empty or full.

d. Weight of additional fuel, tank(s), plumbing, and hardware should not exceed 1,750 pounds which is the difference between the recovery configured (without the fire suppression kit) takeoff weight of 6,500 pounds and the maximum allowable take-off gross weight of 8,250 pounds.

e. The augmented fuel should be fed directly into the main fuel tank to negate the requirement for duplicating major components of the fuel system.

f. The augmented fuel system should incorporate a dump or jettison capability, as appropriate, for rapid weight reduction in event of emergency.

g. If fuel augmentation utilizes more than one tank, single-point refueling should be considered to minimize the time required to fill the tanks when an extended range mission occurs.

h. The selected fuel augmentation system should be relatively easy to install and should not require a higher level of maintenance than that available at a field level maintenance facility. This would negate distant ferry or airlift of the aircraft and would not cause the LBR capability to be depleted over long periods of time.

i. Every possible method or configuration for fuel augmentation should be explored before considering use of the cabin (passenger) space.

7. POSSIBLE SOLUTIONS/RECOMMENDATIONS. Although the immediate requirement for extended range LBR HH-43B aircraft is limited to established operational air bases, it is recommended that all HH-43B aircraft be equipped for extended range in view of contingency LBR requirements and the fact that development and procurement costs should not vary appreciably. It is recommended that the following possible solutions be given primary consideration.

a. An internal installation consisting of fuel tanks beneath the flight deck in the area now occupied by the avionics equipment (stations 40 to 90) and in the step area aft of the present fuel tank (stations 156 to 175 approximately). This installation would add 126 pounds to the basic aircraft weight, would provide an additional 120 gallons/780 pounds of fuel, and would require the installation of a "chin pod" on the lower forward nose section in the vicinity of station

13.25 to accommodate the avionics equipment. The resultant weight increase is centered at station 147 when empty and at station 139.9 when full and would move the center of gravity forward from its present undesirable aft position. The tank in the step area should be constructed in a manner that would retain a step capability, that is, the tank could be indented or cutout to provide a step. The "chin pod" and tank arrangement described here is similar to the arrangement presently installed on Kaman Helicopter K1125.

b. An external installation consisting of two fuel tanks suspended from the lower section on each side of the fuselage between the fore and aft landing gear components. It is believed that the tanks could be positioned in a manner that would not interfere with fire suppression kit pick-up and delivery procedures, hoist recovery procedures, or aircraft entry through the side door. The tanks should be aerodynamically shaped and have a capacity of 50 to 75 gallons. For comparison, the tanks would be approximately one-fourth the size of a T-33 tip tank. Use of tanks similar to the U-3A wing tip tanks may provide a suitable solution. Such tanks can be installed with minimum modification and without interference to other operational capabilities.

8. Favorable consideration of this QOR is recommended. The need for range extension of the HH-43B is an urgent requirement for LBR support at many air bases and is further justified in view of contingency operations which will rely on the HH-43B for LBR support.

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PROJECT CORONA HARVEST

SECTION I

DO NOT DESTROY

INTRODUCTION

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Consideration for the value of human life is deeply imbedded in the traditions, ideals and ethics of the American peoples. The relatively short history of our country is rich with examples wherein public attitudes have been reflected by government directed military support of United States citizens engaged in hazardous activities. Flying over the globe in all environments, United States Air Force crew members engage in a range of hazardous activities unparalleled in the history of any nation yet feeling secure in the knowledge that an organization exists which is dedicated to assist them in the event of an incident which jeopardizes their safety.

Although vested in the humanitarian tradition, the Air Rescue Service offers the American public a calculable return for their investment not only in the savings of life but also in terms of costly hardware retrieved. Together with these visible evidences of the necessity for an aerial rescue/recovery system are the intangible benefits which accrue as a result of rescue and recovery. These include an increase in combat effectiveness due to preservation of combat resources; improved morale of aerospace crew members; the scientific value of technical data represented in recovered aerospace hardware; and regional, national, and international goodwill generated as a by-product of search, rescue and recovery operations.

The history of Air Rescue Service in terms of resources available, if plotted on a graph, would follow an erratic pattern of peaks and valleys. From a scattering of minimally trained personnel with a motley assortment of aircraft following WWII, Air Rescue Service was built up to a force of 50 squadrons during the Korean War. In 1957, this force was sharply reduced to a posture of 12 units located on the major aerial lines of communication, and oriented to the peacetime SAR mission. This was a result of a JCS policy decision that rescue forces would not be equipped or manned for combat rescue, which was in keeping with our national military policy of strategic deterrence. The situation today is essentially the same with 12 squadrons of fixed-wing aircraft, supplemented by local base rescue helicopter detachments of limited value for other than the short range missions for which designed. These forces are geared to the peacetime search and rescue function and not equipped for combat missions, although ARS is tasked in a myriad of war and contingency plans to provide combat aircrew recovery. ARS' ability to respond to these plans can best be exemplified by the fact that after two years of USAF operations in South Vietnam, only a token force of six short range helicopters with minimum combat equipment could be provided for combat rescue. The cost of this force, which was created with premium dollars on a crash basis, was exorbitant when related to the limited capability gained.

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d. (S) Recovery of Military Personnel from Hostile Areas:

(1) (S) ARS has become increasingly concerned with the historical deficiency in capability to perform the combat aircrew recovery mission. With one exception USAF policy has been that ARS be manned and equipped for this mission after initiation of hostile activity. This policy results in high cost crash programs to equip and man combat aircrew recovery units and in the use of inadequate resources with a high degree of risk in the interim period. The only exception to this policy was the creation of the 8th Air Rescue Group in 1954 to perform long range aircrew recovery in hostile areas. This unit was discontinued in 1958 during a directed reorganization of the Air Rescue Service. The necessity for in-being combat aircrew recovery forces, trained and equipped for immediate employment, is vividly illustrated by recent actions to meet SEA mission requirements. When USAF directed ARS to deploy HH-43B helicopters to SEA, the aircraft were not equipped, nor were aircrews trained, for combat aircrew recovery operations, thus the capability was minimal. USAF directed that 6 ConUS based HH-43Bs be modified for operation in combat environs and an extensive combat aircrew recovery program was provided for aircrew personnel. These actions, accomplished on a crash basis, took approximately one year during which USAF combat aircrews were denied the rescue/recovery capability that could have been provided had ARS forces been properly equipped and trained at the outset of hostilities. Adequate resources are not available at this time and non-combat configured helicopters continue to operate in hostile environments.

(2) (S) The European and Pacific area commanders, in cognizance of their SAR responsibilities, have been dependent on Air Rescue Service units to provide the necessary SAR forces for their limited and general war plans. For example, the Deputy Commander, Air Rescue Service, Atlantic, who is responsible for the operation of the USCINCEUR/USCINCPAC Joint Theater SAR Center, has been tasked for SAR coverage in approximately 50 Top Secret area war plans. In the Pacific, the Deputy Commander, Air Rescue Service, Pacific, has been tasked similarly in 25 area plans. It is recognized readily that SAR forces participating under any one of these plans would be operating in a hostile environment with essentially peacetime equipment.

(3) (U) In essence, the requirement for SAR originates at the JCS level and the responsibility is delegated down through area commanders to the Air Rescue Service, with the belief that these units have the capability to immediately accomplish the wartime SAR mission. As of this date the only resources for ARS to prosecute the wartime mission must come from those forces now provided to perform the route, area, and local base precautionary missions; the emergency SAR missions; and the ARS forces accomplishing the recovery requirements during space operations. It should be realized that ARS is standing on the threshold of becoming a global SAR force, both for peace and war, if the capabilities of the HC-130 and CH-3C are fully exploited and if the aircraft are supplied in the quantities specified later in this document. It is recognized that the

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Pacific Aerospace Rescue & Recovery Center (PAC ARRC) input to the PACAF
Battle Staff Book as of 31 December 1966.

31st ARRSq - 1/HU-16 gained from 37th ARRSq 9 Dec 66.

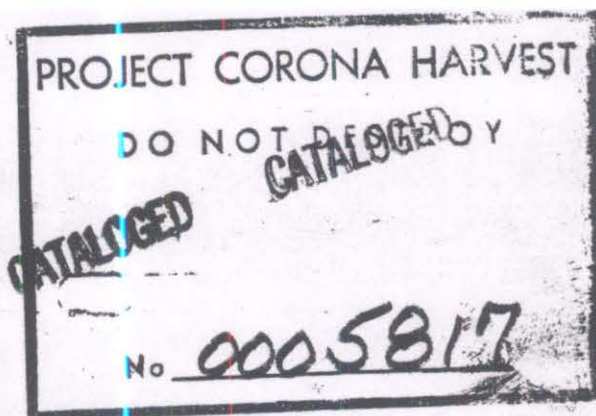
37th ARRSq - 1/HU-16 transferred to 31st ARRSq 9 Dec.

Det 1 - 1/HC-130P gained from CONUS 29 Dec.

38th ARRSq - 1/HH-43F gained from Det 4, APRF, Tan Son Nhut 13 Dec.

76th ARRSq - 1/HC-97 transferred to CONUS 23 Dec.

NOTE: No change to sheets 1, 2, 2a, 3, 3a, 6, and 6a.



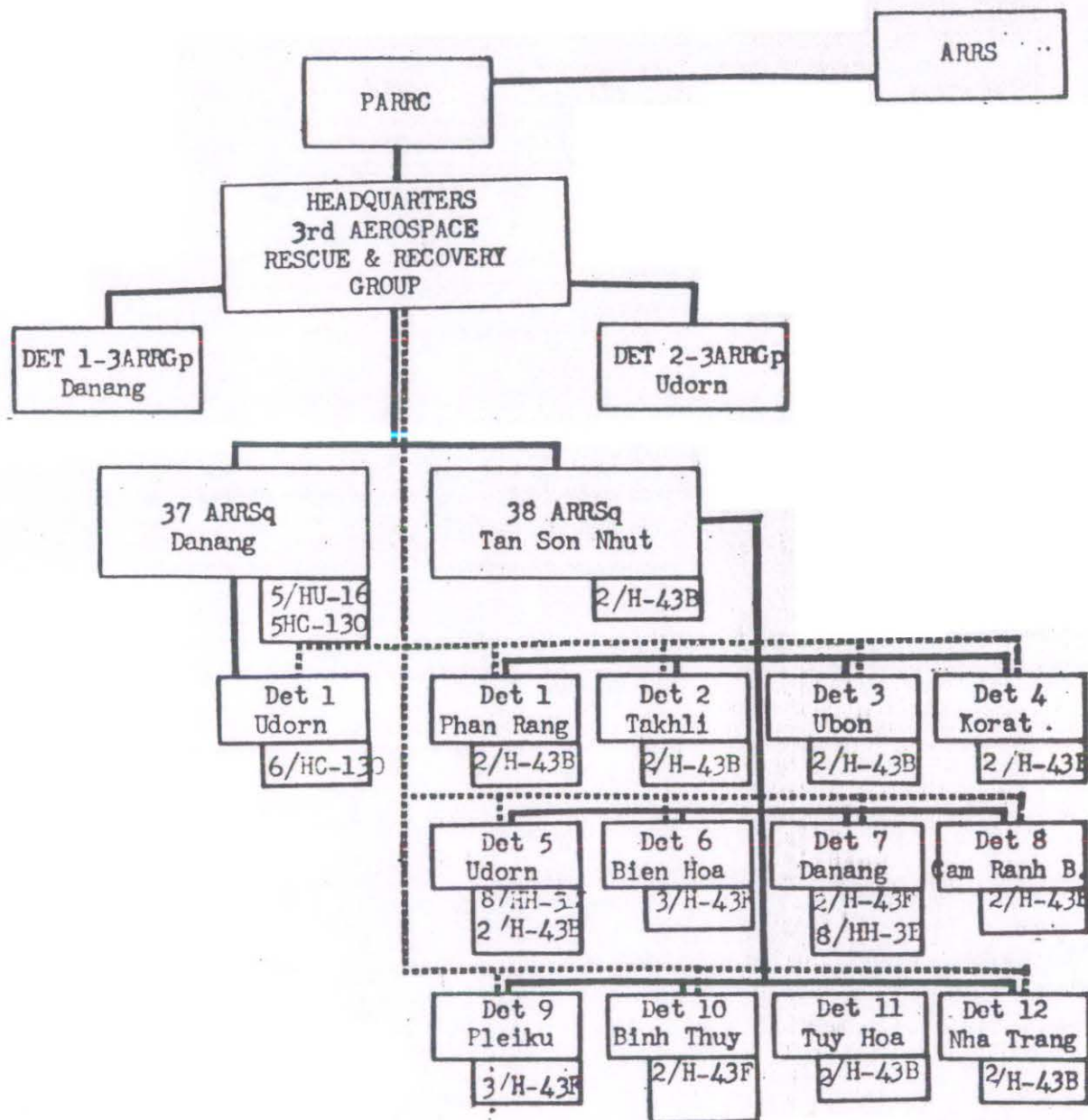
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13 March 1966

3a

UNIT	LOCATION	AIRCRAFT ASSIGNED		
		Number	Type	
3 AEROSPACE RESCUE AND RECOVERY GROUP (ARRGp)	Tan Son Nhut, RVN	None	None	SAR Advisor to 7thAF. Deputy Commander for PARRC in SEA.
1, 3 ARRGp	Danang, RVN	None	None	Rescue Coordination Center (RCC)
2, 3 ARRGp	Udorn, Thailand	None	None	RCC
37 ARRSq	Danang, RVN	5	HU-16B	
		0	HC-130H	
DET 1, 37 ARRSq	Udorn, Thailand	4	HC-130H	
		1	HC-130P	
38 AEROSPACE RESCUE AND RECOVERY SQUADRON (ARRSq)	Tan Son Nhut, RVN	3	HH-43B	
DET 1, 38 ARRSq	Phan Rang, RVN	2	HH-43B	
DET 2, 38 ARRSq	Takhli, Thailand	3	HH-43B	
DET 3, 38 ARRSq	Ubon, Thailand	3	HH-43B	
DET 4, 38 ARRSq	Korat, Thailand	2	HH-43B	
DET 5, 38 ARRSq	Udorn, Thailand	6	HH-3E	
		2	HH-43B	1/43B asgd to Det 7, APRFE
DET 6, 38 ARRSq	Bien Hoa, RVN	3	HH-43F	1/43B asgd to Det 4, APRFE
DET 7, 38 ARRSq	Danang, RVN	4	HH-3E	
		2	HH-43F	
DET 8, 38 ARRSq	Cam Ranh Bay, RVN	2	HH-43B	
DET 9, 38 ARRSq	Pleiku, RVN	1	HH-43F	
DET 10, 38 ARRSq	Binh Thuy, RVN	2	HH-43F	
DET 11, 38 ARRSq	Tuy Hoa, RVN	1	HH-43B	
DET 12, 38 ARRSq	Nha Trang, RVN	2	HH-43E	

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PARARESCUE

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PACIFIC AEROSPACE RESCUE AND RECOVERY CENTER

FIXED WING AIRCRAFT

CAPABILITIES

LIMITATIONS

HU-16B

Cruise: 140 Kts normal, 165 Kts high.
840 NM radius of action.
Water and snow landing ability.

Slow airspeed and limited range.
Limited weight and cube carrying ability
(Cannot carry own support personnel
and equipment on long deployments).

HC-130H

Cruise: 290 Kts normal, 330 Kts high.
2250 NM radius of action.
Ample rescue/recovery and survival
equipment carrying ability.
Fulton Recovery System (FRS) for
surface to air recovery of
personnel and hardware.
HC-130P will have air-to-air refueling
capability (primarily for HH-3).

No armor or self-sealing tanks.

HC-97G

Cruise: 220 Kts normal, 275 Kts high.
2000 NM radius of action.
Ample rescue/recovery and survival
equipment carrying ability.

Limited visual scanner windows.

HELICOPTERS

AIRCRAFT/CAPABILITIES

LIMITATIONS

HH-43B

85 Kts TAS. 75 NM radius of action
Hover out of ground effect. 100 ft 600 lb hoist.
Capacity two litter cases or six passengers.

HH-43F

85 Kts TAS. 130 NM radius of action.
Hover out of ground effect. 200 ft 600 lb hoist.
Armor plated and self-sealing fuel tanks.
Capacity one litter case or three passengers

HH-3E

120 Kts IAS. 400 NM radius of action.
250 ft 600 lb hoist. Twin turbine engine.
Capacity 15 litter & 2 attendants or 25 passengers.
Land and water landing capability.
Good search platform (7 windows, aft ramp & door).
Armor plated and self-sealing fuel tanks.
Will have air-to-air refueling capability from

HC-130

For both model HH-43s:

Slow airspeed.

Short range.

Small cabin.

Limited IFR and night flight capability.

Single engine.

Crucial rotor system, i.e., wooden blades
easily damaged by rain and vulnerable
servo flap control system.

Slow airspeed:

Hover out ground effect inadequate
due to additional weight.