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ADVANCED RESEARCH PROJECTS AGENCY
WASHINGTON, D. C. 20301

TRIP REPORT: Rescue Operations in Hostile Areas/Lieutenant Peter
E. Carpenter, ARPA

Organizations Visited: Hq. Aerospace Rescue & Recovery Service.

Orlando AFB, Florida.

CINCPAC

PACAF.

7th Air Force

Carrier Task Force 77 -

USS Constitution (CVA) - Yankee Station

USS Kersarge (CVS) - Yankee Station

USS Coral Sea (CVA) - Yankee Station

USS F. D. R. (CVA) - Yankee Station

USS Hoel (DDG) - North SAR

USS Chicago (CG) - PIRAZ

USS Reeves (DLG) - South SAR

3rd Aerospace Rescue & Recovery Group

Tar. Sản Nhut

Da Nang

Udör ..

MACV - MAC SOG V

Joint Personnel Recovery Center (JPRC)

PROJECT CORONA: HARVEST

DO NOT DESTROY

SMG

No. 0003789

K3/8.203-41
30 Nov 1966

RETURN TO:

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(CG) - PIRAZ
SUBJECT TO GSA
DLG) - South SAR - DECLASSIFICATION
SCHEDULE 25 EXECUTIVE ORDER 11652
Rescue & Recovery Group
AUTOMATICALLY DOWNGRADED AT TWO
INTERVALS. DECLASSIFIED ON DECEMBER
31, 1974

At the request of DDR&D (SEA), the problem of personnel recovery from hostile areas was examined and this trip report is submitted as a partial report on the current status of recovery operations in SEA.

The problem of recovering personnel, primarily downed aviators, from hostile areas remains critical. Although recovery "rates" for the present operation in SEA are better than for either the Korean Conflict or World War II, these recovery rates could be noticeably enhanced by the application of improved technology. (Methods of recovery rate determination vary so widely that any figures given by anybody should be seriously questioned as to assumptions, data base, and unfortunately, accuracy.) If the defensive environment continues its development, entirely new tactics and systems will be required within the next 6-12 months if we are to maintain even our present recovery rate. Certain logistical, supply and command problems exist in SEA which also severely limit our capability to recover people from hostile areas.

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Each of these areas is discussed briefly below and the suggested action items are summarized at the end of this report.

Inaccessible Areas: This is by far the most serious long-range technical and operational problem in search and rescue operations in SEA. Discussion of inaccessible areas is divided below into two areas (which are not mutually exclusive).

1.) Range limitations: At present there are areas which are unreachable by present helicopters due to fuel and density altitude limitations. It is not simply a question of straight line range but rather of the defense avoidance routes required as well as the mid-point hover requirement. The upcoming USAF HC-130H/HH-3/HH-53 system will do a lot to alleviate this problem and is vitally important to an improved SAR capability. It appears to me, however, that the use of presently available USAF and Navy helicopters refueling from surface vessels could give total coverage in all areas presently considered out of range. This presumes, however, that the defensive environment in the pick-up area is not too hostile for helicopter survivability and that penetration routes are available. To a degree it seems to be a matter of opinion whether any helicopter should be sent into Route Package VIb. The Air Force doesn't think the Navy would send its helicopters into VIb or VIa. Yet the Navy (CTF 77) hasn't ever been asked to relocate a destroyer and airborne helicopter (SH-3), to a more northern position. The UH-2 could never do this - as a matter of fact all agree that the UH-2 is a marginal tool for the SAR mission overland in any case. The Air Force can only cover a small part of VIa when it comes in from Thailand - has to cross Red River almost at the China border - and can only come down about 50 miles on the other side of the river. From a refueling standpoint there is little that a destroyer cannot do in the Gulf of Tonkin that a HC-130H/HH-3/HH-53 combination can do except rapidly relocate (an important exception particularly if something unforeseen happens). To my knowledge the Air Force has never even tried to see if it would be feasible to marry their helicopters to the Navy's destroyers for refueling. If the HC-130 buy keeps getting put back the AF may have to do this. Why they haven't even tried it out before is a real mystery. An SH-3 can top off to 4 hours 30 minutes flying time from a destroyer and the Navy currently keeps 56,000 gallons of JP-5 on station at North SAR, South SAR and PIRAZ combined. On the other side of NVN the HC-130H/HH-53 combination is the only apparent answer to the refueling problem, but in the Gulf there appear to

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be some untried combinations that could materially improve everyone's capability. The HH-3's will be severely limited in their ability to air refuel west of NVN due to altitude-speed problems. No decision has been made by Air Force to use HH-53's on the west side exclusively but it may be necessary. I am aware of the fact that the Air Force helicopters presently in use are not single point refuelable and also normally use JP-4 however, these helicopters are going to be modified (at considerable expense) for air-to-air refueling. Hopefully they will also be modified at the same time for ship-to-air refueling. It wouldn't be too humorous if one of them had to ditch next to a destroyer full of JP-5 because something happened to its air-to-air system and it didn't know how or wasn't configured to get fuel from the destroyer. For rapid redeployment of rescue forces the air-to-air system has undeniable advantages and should be retained without question; where the system duplicates what could have been a current capability the AF and Navy should get together and see if a more optimum procedure using present systems could be worked out. Navy has had their operation of ship-to-air refueling going on for a year.

2.) Defensive limitations: Here is the real crucial question and the one to which the R&D community should address itself. There are already areas in SEA which are closed to helicopter rescue operations as well as A-1 search operation due to the enemy's defenses. Six months ago the closed areas were confined to parts of IVa and IVb; today parts of every route package are so heavily defended that no rescue operations can be undertaken in or through these areas. All of the intelligence people I talked with felt that the enemy could effectively bar helicopters, using present tactics for penetration and pickups, from all of NVN within the next year. An admittedly cursory examination of the trend (i. e. number of rescues not attempted, or broken off due to hostile action, as a function of time) shows that the present limitations are becoming quite serious and one can expect our recovery "rate" to begin falling off. It has been improving up until the last quarter as a result of more and better rescue helicopters. There is considerable confusion as to the nature and degree of the SAM threat to Al's and helicopters - some people feel that neither the Al's nor the helicopters can survive at all in a SAM envelope. It is important that accurate information be obtained on this and provided to the users. There is no doubt as to the vulnerability of the Al's and helicopters to ground fire. It is important that systems be developed which permit pickup in areas already defensively closed to helicopters as well as in areas which may become closed to helicopter operations. Two approaches which I have attempted to evaluate in terms of technological feasibility and operational suitability may provide a solution to the problem. The first is an add-on pod for the F4/F105 type aircraft and emergency parachute modification which would permit the air-snatch of a descending parachutist by

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his wing-man, (technologically feasible, operationally feasible if it can be done at a high enough speed to preclude the pickup plane from getting shot down - question as to how fast man can be towed safely -), following the air-snatch the man would be taken in trail to a safe pickup area and then redeployed for normal descent. I have developed this concept in considerable detail and have in hand a proposal from a contractor which would produce a fully operational prototype within 5-1/2 months. Concurrently, man towing test should be undertaken to determine physiological parameters. The second approach is for the use of drone vehicles such as the G-D ring shroud device or a modification of the Navy's DASH (although DASH is basically just a helicopter and hence still vulnerable, however, it does have a small profile and can be well armored.) I understand that the Navy is deploying a DASH to Yankee Station for some operational tests as a rescue vehicle - much more needs to be done on this. Both of these approaches need to be examined in detail by all concerned; hopefully, a joint group can be set up to determine which if either or both should be developed - lead time on both systems for deployment to SEA could be less than 12 months if everyone would agree on an approach and the priorities involved. I have collected a great deal more information on the operational parameters felt to be applicable to these systems and would be glad to discuss this with anyone, anywhere, anytime. I have already made arrangements to brief a group from HQ ARRS and AFSC (ASD) at Orlando AFB, Florida, on 1 December concerning the defensive limitation problem. I cannot emphasize how important I think it is for this problem to be addressed on a priority basis - things are bound to get worse and it is not at all inconceivable that our present capability in NVN might be reduced to nothing in the next 6-12 months.

Lack of data: Navy has ONI 53-1 which summarizes OP REPS on each loss by the Carrier Task Force in SEA, however, amount of detailed information is limited. USAF and USMC have no such compilation. ARRS keeps records only on successful recovery operations. All concerned with recovery problem are limited by the lack of a data bank. JPRC spending a lot of its time on data accumulation that somebody else should already have accomplished. The older this data becomes the harder it is to produce complete information on each incident. Lack of data prevents any good operations analysis. In addition to ONI 53-1, PACAF (DOPE) has a single, handwritten compilation of limited data on USAF losses and JPRC has scattered information on unrecovered losses. One of the most complete USAF records in the Missing Persons Supplementary Report which is strictly a personnel document. The 7th Air Force Weekly Air

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Intelligence Summary also has some limited data as does the PACAF Summary of Air Operations - SEA. No one group or agency has the responsibility for compiling this data.

No Night Rescue Operations: With the exception of certain over-water pickups by helicopter there are no night rescue operations in SEA due to equipment and crew training limitations. A lot of current and planned work in night vision could be applied to this particular problem in the near future. Even a limited capability would expand the current operation. Night helicopter operations are inherently less vulnerable to defensive fire (non-radar controlled) and would appreciably improve our recovery rate. Flares and strobes make night location problem relatively easy once general area is established, also permit search planes to discriminate colored strobe from ground fire. The best strobes are the ones with blue shields; these have a directional capability.

Poorly Coordinated USAF/USN SAR Operations: CINCPAC has directed the formation of a SEA Search and Rescue Center (SEA SARC) in lieu of the present so-called "joint" SARC (JSARC) operated solely by the Air Force - this, if ever implemented, will do a lot to improve the recovery capability. At present the Air Force and Navy run almost duplicate and independent operations without having established direct lines of communications to tie the two together. There is little, if any, exchange of ideas, information, procedures between the USAF and Navy SAR forces. For example, there has been no in-theater coordination between USAF and Navy on the operational concept of the new air-refuelable HH-3 and HH-53 helicopters; presently most helicopter support in Gulf of Tonkin is provided by Navy - CTF77 hadn't even heard of the Air Force's plan to use the air-refuelable choppers. There is tremendous duplication and lack of coordination except during the actual conduct of a SAR effort - and then it is unfortunately too late to work out procedures, plans and command and control responsibilities. More specifics available on request - suffice it to say that I am personally convinced that more than one pilot has been lost due to this problem. Roles and missions are sticky problems but they don't seem to be worth losing people over.

White Parachutes: All Navy emergency chutes as well as most USAF chutes used with F-4 aircraft are all-white. Since large numbers (hundreds of thousands) of white flare chutes have been dropped in strike areas it is impossible to discriminate the white emergency chutes. There is no excuse for not immediately dyeing all white personnel chutes some bright color both to assist in discrimination and to enhance their observability. Problem was briefed to CINCPAC - they may try to take action on

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this. Important that future buys of emergency chutes avoid more all white canopies - the multi-color canopy which combines selective visibility with a camouflage capability (when rolled up) appears to be the best long range solution; in all USAF aircraft other than the F-4 the multi-color type canopy is standard equipment.

Pilot Location Marker - Visual Ground Enplaced: Requirement identified for a device which will enable pilot to mark his position beneath heavy canopy - something small, lightweight, simple, which will put a relatively long lasting marker on the top of the canopy. No stated requirement presently in service channels on this. There are three primary considerations for survival equipment - small and lightweight for ease of carrying; simple because many of the pilots using them are highly excited or in state of shock.

Pilot Location Marker (Visual) (Air Enplaced): Collateral requirement identified for a device which will permit RESCAP aircraft to mark location of downed airman once it has been determined. Such marking would permit better fire suppression, quicker pickup by helicopter and also enable planes to return to same location at later time (at least one loss occurred due to inability to relocate precise pilot location). This requirement should be easily solvable - no requirement is presently in service channels for this particular use and type of marker.

Communication: The single most serious technical problem in current search and rescue operations. Present equipment (AF-RT-10/RT-10A, NAVY-PRC-49, URC-10, RT-10) may well be adequate, however, lack of spare batteries (none in theater for AF RT-10's or Navy URC-10's or RT-10's - CINCPAC briefed and taking action on this) proper test equipment (AF has some which work poorly and only on certain radios, function of manufacturer of radio as well as of type of radio; Navy has no test equipment for the radios) and proper maintenance equipment. Talked to pilots who hadn't turned their radios on for months. Didn't want to run down the only battery they had. Pilots' pool radios and carry 2-5 each on missions. One pilot went down with 5 and only one worked. Of ten pulled out of personal equipment section for a special rescue operation only three worked and only two lasted for the duration of the operation - which was two days! Radios have no volume control on speaker and hence tend to compromise user's location. ARPA RDFU-V made field modification of URC-10 within three hours after problem presented - 120 additional radios will be modified in theater. These 120 will also be switched to assorted frequencies for special rescue operation - again field mod being done by ARPA Field Unit.

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New Radios Presently in Production - PRC-63 (NAVY-SINGLE CHANNEL) and PRC-64 (USAF-FOUR CHANNEL). Important that immediate steps be taken to: 1) determine whether one or both of these radios should be produced in quantity, 2) insure that spares, tech orders and test equipment are available in-theater at the same time that radios are made available, 3) to insure that there is some standardization as to type(s) of survival radios carried by all personnel in SEA to simplify supply and maintenance problems - as well as operational problems if some are going to be multi-channel and some not. Note that present design of PRC-63 does not include earplug option or volume control - important to establish the need for these features before quantity production is undertaken - may be too late already. PRC-64 includes only the volume control feature. To my knowledge the batteries are not interchangeable (see below).

Case in Point - Non-interchangeable Batteries and Non Use of Auto-Beeper: pilot on ground in North Vietnam was observed to be experiencing battery failures - elaborate arrangements were made to drop spare batteries in his generally known area - turns out later that he had the URC-10 radio and they had dropped batteries for the PRC-49 - pilot was never recovered - one wonders what his reaction was to finding the wrong batteries - probably wondered whose side the SAR forces were on. In this case the pilot was known to be alive and his general location had been established yet he was lost, presumed captured, after two days of intermittent radio contact. Another interesting fact was the wingmen stated emphatically at time of loss that "he never got out ... saw him go right in with aircraft" - yet he came up on his radio a few hours later and was positively authenticated - automatic beepers anybody?

Use of Automatic Beepers: There is no theater policy on the use of automatic beepers (which actuate upon ejection) in fact 7th AF for a short time prohibited their use. They didn't want to compromise location and to reduce false alarm rate (rather shallow arguments in my opinion). Fortunately, policy was rescinded - however, among AF pilots there is still not a standard practice regardless of what 7th AF might say to the contrary. Navy leaves this up to individual squadrons. In fact the Air Force (BIG EYE) and Navy (North & South SAR and PIRAZ) operate almost a continuous DF watch for automatic beepers and can: 1) determine if an incident has taken place - something that is extremely important. At present a large percentage (20-30%) of the losses go unobserved until some time after the loss occurs (10 minutes to 2 hours). This is particularly critical for unaccompanied flights such as certain RECCE operations; 2) can establish the general location of incident (range of beeper as low as

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13. [REDACTED] of strobe lights issued in SEA; the shielded blue strobe or better item.

14. Development of improved ground-air signalling devices which will operate from beneath dense canopies. Priority production and shipment to SEA of optimum devices.

15. A program to standardize the entire survival "package" carried by aircrews in SEA to an optimum configurations. All essential items must be carried on the individual; supplementary items only should be considered for inclusion in the seat pack.

16. Decision regarding "over-manning" of aircraft.

17. Decision regarding the reduction of unnecessary sorties generated by less than optimum bomb loads.

I have available additional information on many of the items covered in this report and would be glad to participate in any future activities or discussions regarding this problem. Subsequent reports will be prepared as significant events come to my attention (i. e. a trip report will be prepared on my 1 Dec meeting with USAF's AFSC(ASD) and HQ ARRS personnel at Orlando, and on the status of SAR in SEA as observed during my next SEA trip in January-Feb 1967.) I would appreciate each recipient of this report bringing to my attention demonstrable errors as well as any additional information which they have relating to any of the points covered. It is my desire neither to perpetuate errors or misinformation nor to stimulate unnecessary controversy but rather to do all that I can to identify and solve these problems. Each day that these problems, and others like them, continue to exist more people, who we have the potential capability of recovering, will be irretrievably lost.

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