

a. A/P 28/S-17/18 Troop Parachute. The S-17/18 parachute is a troop-type, static-line operated, bag-deployed pack assembly. It is designed for use for parachuting into isolated land or water areas with or without tree jump or scuba equipment. The difference between the S-17 and S-18 is canopy color. The main canopy is constructed of high tensile strength ripstop nylon. The canopy is 35 feet in diameter. This parachute can be deployed as low as 800 feet AGL and as high as 14,000 feet MSL. Generally, the movement of the canopy is controlled by the action of the wind, the position of the canopy modification, and the way in which the canopy is manipulated by the parachutist using the control lines. Rate of descent for a 250-pound canopy load ranges from 18 feet per second at zero feet MSL to 22 feet per second at 10,000 feet MSL, and is affected by temperature and humidity. The reserve parachute assembly consists of a 24-foot diameter canopy, a pilot chute, a rip cord assembly for manual operation, and a pack. The small diameter of the reserve canopy allows a rapid rate of descent. The reserve is intended to prevent death but not necessarily injury. The S-17/18 parachute assembly has been assigned National Stock Number (NSN) 1670-00-246-0509, cost \$758.82, and is depot funded. This assembly is maintained in accordance with (IAW) TO 14D1-2-396.

b. MC1-1B Low Porosity Troop Parachute. The MC1-1B parachute is a troop-type, static-line operated, bag-deployed pack assembly. It is designed for use for parachuting into isolated areas. It provides the capability to safely deliver an airborne soldier and individual equipment from an aircraft in flight for a vertical infiltration. The main canopy is constructed of a high tensile strength, low-porosity nylon. The parachute can be deployed as low as 800 feet AGL and as high as 14,000 feet MSL. Generally, the movement of the canopy is controlled by the action of the wind, the position of the canopy modification, and the way in which the canopy is manipulated by the parachutist using the control lines. The low porosity main canopy material reduces the rate of descent at zero feet MSL to approximately 12 feet per second for a 250-pound canopy load. The MC1-1B assembly uses the same reserve as the A/P 28/S-17/18 assembly. The MC1-1B parachute assembly has been assigned NSN 1670-00-598-0751, cost \$903, and is depot funded. This assembly is maintained IAW TO 14D1-2-463-2.

c. MT-1X High Glide Ratio Parachute. The MT-1X is a military, tactical, ram-air parachute assembly used for HALO and HAHO insertion. The main is a 375 square foot, slider-deployed, seven-cell, ram-air canopy. The main has a spring-loaded pilot chute and a retained deployment bag. Maximum suspended weight is 400 pounds and the maximum opening altitude of 25,000 feet MSL. This highly maneuverable system is capable of flared landings with a descent rate of zero feet per second and zero forward speed. The reserve is a 270 square foot, five-cell, slider-deployed, ram-air canopy. The reserve has a spring-loaded pilot chute and a free-bag deployment system. Maximum suspended weight is 350 pounds. The next generation assembly, the MC-4 (MT-1XX), uses a 375 square foot built-in main canopy for the reserve, increasing the safety margin in the event of a malfunction. The MT-1X has been assigned NSN 1670-01-094-0769LS, and cost \$4,147.54. The MC-4 has been assigned NSN 1670-01-306-2100, and cost \$5,700. The MT-1X and the MC-4 are maintained IAW TO 14D1-2-465-2.

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26 August 1994

Pararescue Parachuting

ACC/DO

The purpose of airborne training is to qualify service personnel in the use of the parachute as a means of combat deployment. It also develops leadership, self-confidence, and aggressive spirit through tough mental and physical conditioning.

1. **Introduction and Purpose.** Since 1947, pararescue forces have used parachuting tactics and equipment to execute Air Force rescue missions. The missions have driven the selection of parachuting tactics, and the tactics have driven the selection of the parachuting equipment necessary to execute the missions. Military parachutes have one purpose: they act as a deceleration device to safely deliver personnel and equipment from an aircraft to the surface of the Earth. The basic concept of executing missions by delivering personnel by parachute has not changed. However, parachuting tactics and equipment have changed through leaps in parachuting technology. The purpose of this paper is to describe the application of current parachuting tactics and equipment to the combat rescue mission, and to validate the requirement for all US Air Force pararescuemen to maintain qualification and proficiency in the full spectrum of military parachuting.

2. **Scope.** The tasker that generated this paper, ACC/DO Message 241258Z May 94, Pararescue (PJ) High Altitude Low Opening (HALO) Parachuting, addressed every aspect of pararescue military parachuting. Therefore, this paper will cover the parachuting tactics and equipment used by pararescuemen; the initial parachuting qualification and proficiency training programs; and the application of parachuting tactics and equipment to the pararescue mission.

3. **Parachuting Tactics.** The US Army is the office of primary responsibility (OPR) for developing, testing, and certifying parachuting tactics. The Air Force does not develop or validate parachuting tactics. The Air Force selects and applies the US Army certified and validated parachuting tactics that meet Air Force needs. Pararescuemen employ using three US Army tactics: static-line, high altitude low opening (HALO), and high altitude high opening (HAHO) parachute infiltration.

a. **Static-Line Parachute Infiltration.** Static-line parachuting allows commanders to safely infiltrate personnel and equipment. Pararescuemen use static-line parachutes for low-level computed air release point (CARP) infiltration into combat, jumpmaster directed infiltration, and Rigging, Alternate Method Zodiac (RAMZ) open-sea deployments when HALO operations are impractical (for example, low cloud cover).

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The maximum deployment altitude is 14,000 feet mean sea level (MSL), and the minimum deployment altitude is 800 feet above ground level (AGL).

b. HALO Parachute Infiltration. HALO, or military free-fall parachuting, allows commanders to infiltrate personnel into areas under conditions that restrict static-line parachute operations. The minimum exit altitude is 5,000 feet AGL, with the maximum exit altitude of 43,000 feet MSL. The minimum opening altitude is 3,500 feet AGL. The maximum opening altitude is 25,000 feet MSL, and permits HALO insertions to drop zones at altitudes up to 20,000 feet AGL. The advantages of HALO parachuting are:

- (1) As a means to infiltrate hostile areas when low-altitude penetration is not practical because of enemy ground fire (for example; small arms, anti-aircraft, and hand-held missiles).
- (2) When there is a need or desire for precision landings on small drop zones.
- (3) When immediate assembly of personnel on the drop zone is necessary.
- (4) When the desired or available aircraft cannot be used for static-line parachuting.
- (5) Where parachute operations using aircraft at low altitude are prohibited, unsafe, or otherwise impractical, such as mountainous terrain.
- (6) When infiltration is to occur with other operations involving aircraft flying at high altitude.
- (7) When navigation aids are not available to ensure required accuracy of drops at low altitude (for example, desert, jungle).
- (8) When standoff operations increase supporting aircraft survivability.
- (9) When low-signature infiltrations are necessary to mission success.

c. HAHO Parachuting. High altitude high opening offset delivery techniques offer the commander a unique method for infiltrating personnel. Personnel can infiltrate without requiring the aircraft to overfly the intended drop zone. Personnel can be deployed at an offset release point and cover long distances under canopy. Maximum deployment altitude is 43,000 feet MSL, with maximum opening altitude of 25,000 feet MSL. Although HAHO trained, conventional pararescue rescue forces do not currently maintain proficiency in HAHO skills.

4. **Parachuting Equipment.** The US Army is the OPR for developing, testing, procuring, and supporting personnel parachutes (troop chutes) and related equipment for the Department of Defense (DOD). The Air Force selects for its use parachutes from those approved and stock listed by the Army. Air Force pararescuemen currently use the AP-28/S-17/18 Troop Parachute; the MC1-1B Low Porosity Troop Parachute; and the MT-1X (MC-4) High Glide Ratio Parachute. The MC-5 Military Convertible Static Line/Freefall System has been approved by the US Navy and should be considered for pararescue use. A brief description of each system and their characteristics follows.

d. MC-5 Military Convertible Static-Line/Freefall System. The MC-5 is a military, tactical, ram-air parachute assembly with the capability of static-line or freefall activation. It is cleared for use at a maximum suspended weight of 360 pounds and an opening altitude of 25,000 feet MSL. The system can be static-line deployed as low as 1,800 feet AGL. This system is capable of flared landings with a descent rate of zero feet per second and zero forward speed. In the free-fall configuration, the MC-5 is applicable to HALO and HAHO insertions. In the static-line configuration, the MC-5 is applicable to over-the-ramp RAMZ deployments, no-threat infiltrations, and operations in extreme cold weather. A HC-130 static-line retrieval system should be tested and approved to support over-the ramp deployments. The MC-5 is the US Navy/Marine Corps designation for the type classified commercially as the MT-1XX SL/FF convertible parachute manufactured by Para-Flite Inc. The MC-5 was assigned NSN 1670-01-367-0304 in November 1992. Use and maintenance of the MC-5 parachute assembly is covered by the US Marine Corps Technical Manual TM09770A-12&P-1, and the qualification tests for service use conducted prior to type classification are outlined in US Navy Technical Memorandum NAWCWPNS TM 7330 issued by Naval Warfare Center Weapons Division, China Lake CA. The cost of the MC-5 is \$4,600 per assembly.

5. **Parachute Training.** Military static-line and free-fall parachuting are mandatory core skills for the award and retention of the 1T2X1 AFSC, Pararescue (Reference: AFI 36-2108 [formerly AFR 39-1]). Parachute training is accomplished through formal schools with a follow-on, in-unit currency and proficiency training program.

a. Formal Schools. Pararescuemen complete two US Army courses to achieve certification as a military parachutist: Course J5AZA11000-000, US Army Parachutist, Ft Benning GA, 3 weeks, \$3,509; and Course J5AZA11000-003, US Army Military Freefall Course, Ft Bragg NC, 6 weeks, \$6,318.

b. Currency and Proficiency. Parachuting currency and proficiency training is accomplished in unit. The annual cost of currency and proficiency training is equal to the cost of training equipment divided by the projected service life of the equipment, plus the man-day cost required to complete the training. Equipment costs per unit vary based on the amount and type of equipment purchased (see paragraph 4, parachuting equipment). Cost in man days is fairly constant within respective commands, based on each command's published minimum parachuting training requirements. For instance, ACCR 51-111, Pararescue Aircrew Training, Attachment 4, shows 18 days (or 8% of available duty time) are required to maintain annual parachuting currency. The Pacific Air Forces (PACAF) and the Air Reserve Component (ARC) use comparable currency tables. The Air Force Special Operations Command (AFSOC) has a more extensive parachuting proficiency program. The goals of the proficiency programs are to maintain pararescue core skills, ensure a safe and effective parachuting capability, and meet DOD mission requirements.

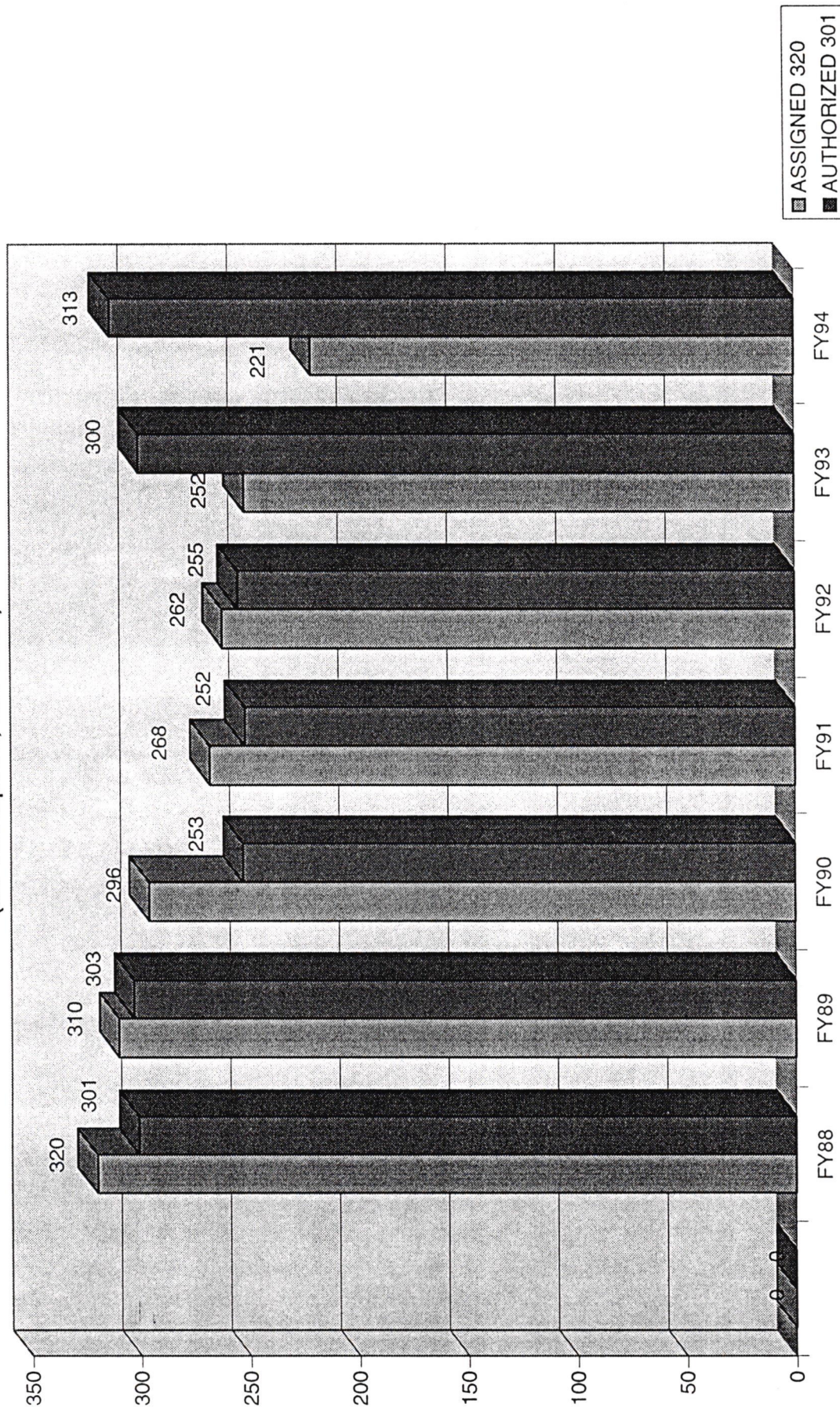
6. **Applying Parachuting Capability.** Pararescuemen are spread throughout the Air Force among six commands. Each command has requirements for pararescuemen to

conduct parachute operations in support of their mission. The combined total of pararescue positions within the six commands is 482. Of the 482 pararescue positions, 445 (92.3 percent of the total) are required to maintain proficiency to deploy by static-line and freefall parachute from fixed-wing aircraft as a primary duty. The remaining 37 pararescue positions (7.7 percent of the total) are assigned to helicopter-only squadrons, but are occasionally tasked for fixed-wing NASA support missions. The following is a listing of the number of pararescue positions by command and how parachute capability is used to support each command's mission.

a. Air Combat Command (ACC). ACC has 56 pararescue positions earned against the HC-130 aircraft, 53 positions earned against the HH-60 aircraft, and 6 staff positions. Pararescuemen assigned to the 71st Rescue Squadron (71 RQS) against the HC-130 aircraft maintain parachuting skills as the primary method of employment. These pararescuemen support fixed-wing operations that include SOUTHERN WATCH in Saudi Arabia, search and rescue (SAR) operations in Iceland, and transatlantic abort landing site (TALS) operations in Africa and Europe for the National Aeronautics and Space Administration (NASA) space flight program. For SOUTHERN WATCH, static-line parachutes are used to deploy during low-level computed air release point (CARP) insertions. HALO capability is used to insert pararescue teams from an altitude up to 25,000 feet MSL and above small arms, anti-aircraft, hand-held missile ground-fire threat. Pararescue HALO employment from altitudes up to 25,000 feet MSL was identified as a necessary capability by the 4404 CW (P) June 94 Tactics Review Board. Because ram air canopies are safer, more maneuverable, and can carry more weight than round canopies, HALO is the preferred employment tactic for Rigging, Alternate Method Zodiac (RAMZ) operations. RAMZ is used for open-sea rescue missions and NASA TALS support. The 41st RQS helicopter-assigned pararescuemen also maintain static-line and HALO fixed-wing employment proficiency at the direction of the 1st Fighter Wing Commander (1 FW/CC), who also maintains proficiency in HALO skills with the 71 RQS. The remaining 37 positions earned against the HH-60 aircraft are divided among the 48th RQS at Holloman AFB NM, the 56th RQS at Keflavik IC, and the 66th RQS at Nellis AFB NV. These 37 pararescuemen maintain static-line and HALO proficiency as a core skill, and are frequently asked to support TALS missions. Denying these 37 personnel (7.7 percent of the total pararescue force) the opportunity to maintain proficiency in the full spectrum of pararescue core skill parachuting would negatively impact command operational flexibility, create an unwarranted training burden on their next unit, reduce proficiency in perishable skills, affect morale, and exacerbate a growing retention problem (see Attachment 1, 1T2X1 Historical Data).

b. Air Force Special Operations Command (AFSOC). AFSOC has 110 pararescue positions earned against missions. AFSOC pararescuemen deploy from a variety of rotary-wing and fixed-wing aircraft. They employ using alternate insertion/extraction methods and static-line, HALO, and HAHO parachute tactics. All AFSOC pararescuemen maintain a high degree of proficiency in the full spectrum of military parachuting.

1T2X1 HISTORICAL DATA
 SOURCE: HQ USAF/DPPP
 (Mr Thompson, 225-3434)



Attachment 1. 1T2X1 Historical Data.

c. Pacific Air Forces (PACAF). PACAF has 25 pararescue positions at Kadena AB JA, earned against HH-60 aircraft, and one staff position at Hickam AFB HI. The pararescuemen's primary mission is to support the squadron's mobility and combat rescue mission. However, because of the vast overwater environment between Hawaii and Southeast Asia, Kadena-based pararescuemen are tasked to support fixed-wing precautionary orbits for DOD assets transiting the western Pacific. This mission requires proficiency in static-line, HALO, and RAMZ operations. In addition, these pararescuemen are frequently tasked to support TALS operations that also require proficiency in static-line, HALO, and RAMS.

d. Air Education and Training Command (AETC). AETC has 46 pararescue positions earned against formal school instructor requirements. Pararescue instructors are responsible for providing pararescue students training leading to the award of AFSC 1T231, Pararescue Apprentice. Upon graduation, these students fill vacant pararescue positions within the commands. The instructors must be highly proficient in all phases of pararescue training curriculum, including static-line and HALO parachuting.

e. Air Force Reserve (AFRES). AFRES has 95 pararescue positions earned against HC-130 and HH-60 aircraft, and one staff position. All AFRES pararescuemen maintain qualification and proficiency to employ from both rotary-wing and fixed-wing aircraft. Since AFRES pararescuemen routinely support the fixed-wing SOUTHERN WATCH, Iceland, and TALS missions, in addition to wartime mobility requirements, they must remain proficient in static-line and HALO parachuting, and RAMZ operations.

f. Air National Guard (ANG). ANG has 90 pararescue positions earned against HC-130 and HH-60 aircraft. All ANG pararescuemen maintain qualification and proficiency to employ from both rotary-wing and fixed-wing aircraft. Since ANG pararescuemen routinely support the fixed-wing SOUTHERN WATCH, Iceland, and TALS missions, in addition to wartime mobility requirements, they must remain proficient in static-line and HALO parachuting, and RAMZ operations.

7. Conclusions.

a. The US Air Force uses US Army-developed, tested, and validated tactics and equipment for pararescue parachute infiltration operations. (para 3 and 4)

b. HALO parachute infiltration from altitudes up to 25,000 feet MSL is a valid tactic to infiltrate hostile areas when low-altitude penetration is not practical because of enemy ground fire such as small arms, anti-aircraft, and hand-held missiles. (para 3b(1) and 6a)

c. HAHO is a validated tactic that is not currently used by conventional rescue forces. (para 6c)

d. The MC-5 military convertible static-line/freefall system may be applicable to conventional rescue operations. (para 4d)

e. The HC-130 does not currently have an approved over-the-ramp static-line retrieval system. (para 4d)

f. Military static-line and freefall parachuting are mandatory core skills for award and retention of the 1T2X1 AFSC, Pararescue. (para 5)

g. Ninety-two percent (445 of 482) of the pararescue force is required to maintain proficiency to deploy by static-line and HALO from fixed-wing aircraft as a primary duty. (para 6)

h. Helicopter-assigned pararescuemen currently maintain proficiency in static-line and HALO parachuting. (para 6a)

8. Recommendations.

a. Air Force conventional pararescue forces should continue to use US Army-validated parachuting tactics and equipment for combat rescue and other DOD missions. (OPR: ACC/DOH)

b. Conventional rescue forces should support HC-130 medium altitude ingress, (20,000 to 25,000 feet MSL), and associated pararescue HALO operations as a necessary capability. (OPR: ACC/DOH)

c. HAHO parachute infiltration capability should be evaluated for tactical application to conventional rescue operations. (OPR: CRQS/RQE/RQT)

d. The MC-5 military convertible static-line/freefall system should be evaluated for application to conventional rescue operations. (OPR: CRQS/RQE)

e. A static-line retrieval system should be identified and tested for HC-130 over-the-ramp static-line deployments. (OPR: CRQS/RQE)

f. All Air Force pararescuemen should maintain proficiency in static-line and HALO parachuting core skills IAW AFI 36-2108 (formerly AFR 39-1). (OPR: ACC/DOH)