

OPERATIONS MANUAL



July 2013

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SANTA BARBARA COUNTY AIR SUPPORT UNIT



OPERATIONS MANUAL

July 2013

Approving Authority

A handwritten signature in black ink, appearing to read "Bill Brown".

Bill Brown, Sheriff – Coroner
Santa Barbara County Sheriff's Office

7/10/13

Date

A handwritten signature in black ink, appearing to read "Michael W. Dyer".

Michael W. Dyer, Fire Chief
Santa Barbara County Fire Department

7/10/13

Date

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Section 1

Air Support Unit Operations Manual

MISSION:

The Santa Barbara County Air Support Unit (ASU) promotes public safety by providing aircraft to the Sheriff's Office and Fire Department, and other law enforcement and public safety agencies, local, state or federal, within or outside the boundaries of Santa Barbara County.

Air support may take any of the following forms: patrol, fire suppression, aerial observation, medical rescue and/or transports, surveillance, searches for persons, evidence or contraband, fire operations and tactical command and control, pursuit of criminal suspects, drug interdiction, personnel transport, prisoner transport, cargo transport, Search and Rescue (SAR) operations, emergency or disaster relief, special teams insertion and withdrawal, utilizing the aircraft assigned to the unit.

Personnel assigned to the ASU are Professional Aviation Field Experts, and will at all times carry out their assigned duties in a manner that will reflect positively on the Santa Barbara County Air Support Unit.

ORGANIZATION:

The Air Support Unit is a combined unit managed by the Santa Barbara County Sheriff's Office. The unit falls under the direction of the Criminal Investigation Division Commander.

For operational issues, the unit is supervised by a designated hangar supervisor, a Sheriff's Sergeant, who reports directly to a Sheriff's Lieutenant.

The overall management of the unit is the responsibility of a Sheriff's Lieutenant who answers to the designated chain of command.

The following positions are established within the Air Support Unit:

- Hangar Manager
- Hangar Supervisor
- Instructor Pilot
- Pilot
- Crew Chief/Tactical Flight Officer
- Aircraft Mechanic

Additional personnel may be assigned to the ASU as approved by the Sheriff's Office.

Section 2

Operational Goals and Objectives

The Santa Barbara County Air Support Unit will utilize the technical equipment, resources and assigned aircraft necessary to achieve our stated mission.

We will strive to provide the aerial support necessary to fulfill the desires of both the Sheriff's Office and Fire Department to assist other governmental agencies.

To fulfill the mission requirements, it will be necessary to utilize technical abilities and/or equipment. Those technical aspects could on any air support mission include one or more of the following nationally approved helicopter rescue techniques:

- Night Operations – flights during the hours of darkness
- Night Vision Goggle Flights – aid flights during darkness
- Utilizing water drop buckets and fixed tanks – for fire suppression
- Hoisting operations – lowering and raising personnel/victims/cargo while suspended
- Rope Insertion – utilizing technical rope systems to exit a hovering helicopter (Law Enforcement)
- Cargo let down – Lowering of equipment and/or cargo from a helicopter utilizing a specialized rope system
- Long Line/Sling load operations – transporting suspended loads from point to point
- Short Haul operations – a system utilized to transport one or more personnel or cargo suspended from a helicopter, a minimal distance (Law Enforcement)
- Helocasting – disembarking personnel from a helicopter into emergency water rescue operations
- Water rescue – assisting those emergencies involving victims in water
- Hover pick-up and drops – loading and disembarking personnel while a helicopter is not touching the ground
- One skid load and unload – a helicopter with only a portion of landing gear touching the ground

- Toe-in landings – Helicopter that is hovering with only a portion of the skid fronts contacting the ground
- Pinnacle landing/take off – pick-up and drop off personnel and/or cargo on a pinnacle
- STABO – a system utilized to insert and extract suspended personnel via helicopter, normally using a stabilizing body harness
- Confined Area Operations – Operating a helicopter in a tight, confined landing and take-off area
- Video Downlink for relaying real-time video feed to key stake-holders

Prior to utilizing any one or combination of these techniques the Pilots, Crew Chiefs and Rescue/Support will train to proficiency in each category. The hangar supervisor will confirm that the training disciplines have been met and will then approve their proficiency.

When utilizing one or more of these technical resources, all crews will adhere to those procedures and safety standards in this manual. If not specifically addressed in this manual, crews will adhere to those procedures and safety standards which are previously established and recognized nationally.

Section 3

Operations/Safety

PURPOSE:

Procedures and policies to be followed in conjunction with FAR Part 91 to ensure the safe operation of ASU aircraft. It is the Pilot in Command's (PIC) responsibility to ensure that safety remains the number one priority, and the PIC will be the final authority to abort operations when necessary to preclude unsafe conditions. In an emergency requiring immediate action, the PIC may deviate from the provisions of this Standard Operating Procedures (SOP), Federal Aviation Regulations (FAR) Part 91, or any other controlling authority. Any deviations will be reported to ASU supervision within 24 hours and/or the Federal Aviation Agency (FAA) in accordance with (IAW) FAR Part 91.3 (c).

PROCEDURES:

1. No person will operate ASU aircraft in a careless or reckless manner so as to endanger life or property.
2. No person will perform the duties of a crew-member or ride in ASU aircraft if his or her physical or psychological condition might be detrimental to safety.
3. No person who is under the influence of intoxicants or narcotics will travel in ASU aircraft except:
 - a. In an emergency or where ground transport is unavailable.
 - b. As a patient under proper care.
4. Smoking is prohibited in, and within 50 feet of, ASU aircraft.
5. The PIC must be seated at the controls, and secured with seat belt/shoulder harness whenever the aircraft engine/engines are operating and/or the blades are turning.
6. The PIC and Crew Chief will ensure that:
 - a. Each person can operate the seat belts.
 - b. Each person is in a seat, or is properly secured.
 - c. Crew Chief is wearing a harness when not in a seat.
7. The PIC will ensure that safety equipment is installed per the appropriate aircraft operators manual, and supplemental requirements of ASU.
8. The PIC will ensure that all rotors/props have stopped rotating and are secured

before leaving the aircraft unattended.

9. Operator and/or crew-member checklists will be used for all ground run ups, before take-off, before landing, and shutdown checks.
10. The PIC will complete performance planning to ensure adequate power for each flight as needed or required. The same performance planning will suffice for consecutive takeoffs and landings where load and/or environmental conditions have not increased significantly; that is $\pm 5^{\circ}$ C, and ± 1000 feet Pressure Altitude.

11. Acrobatic flight in ASU aircraft is prohibited.

12. Formation flights may be conducted during day light hours IAW the following:

- a. Selection of the most desirable formation
- b. Detailed briefing including, but not limited to:
 - i. Mission
 - ii. Route of flight
 - iii. Weather
 - iv. Interval
 - v. Airspeed
 - vi. Radio frequencies & call signs
 - vii. Emergency procedures
 - 1) (IFR break-up)
 - 2) Communication failure
 - 3) Aircraft
 - viii. Terrain
 - ix. Altitude

13. Fuel system servicing:

- a. Power-off
 - i. Battery-switch off and external power disconnected prior to fueling or de-fueling aircraft.
 - ii. Ground aircraft at receptacle adjacent to filler cap prior to removing same. The aircraft and fuel supply system shall be grounded before and during fueling operations.
 - iii. Open flame or any source of ignition shall not be permitted within 50 feet of fueling operations and fuel supply system area.
 - iv. There shall be two appropriately rated fire extinguishers at each fueling station.
 - v. After completion of fuel servicing, removal of nozzle and reinstallation of cap shall be done prior to disconnection of grounding devices.

14. Tactical Missions – During tactical missions, no person may be carried on ASU aircraft who does not meet one of the following criteria:

- a. Is a required crew-member
- b. Is a flight crew-member trainee
- c. Performs an essential function in connection with the operation
- d. Is necessary to accomplish the work activity directly associated with that operation.

15. External Load Operations:

- a. Each member of the ground crew will wear appropriate protective clothing/gear.
- b. Helicopter ground crews will ensure that in the event of an emergency during external load operations, procedures for clearing the aircraft have been discussed and understood.

16. Protective Clothing – The following clothing and equipment will be worn by all crew members who are performing crew duties (does not apply to fixed-wing A/C operations):

- a. Flight helmet.
- b. Nomex flight suit or nomex/aramid shirt & pants.
- c. Leather and/or nomex gloves.
- d. Leather boots.
- e. Headsets for rear seat passengers.

Section 4

Aircraft Activation

HELICOPTER OPERATION:

The helicopters shall be operated only by a licensed pilot authorized by the ASU supervisor who shall be responsible for aircraft and occupant safety. Consequently, the pilot shall exercise the final authority to commence a flight mission based on all factors which could affect the safe outcome of the flight.

ACTIVATION AND USE:

Use of the helicopters occurs within the categories of emergency and non-emergency services.

NON-EMERGENCY SERVICE:

Non-emergency service **does not** require an immediate response.

1. Non-emergency services should be handled during normal duty time only.
2. Flights may be conducted in any ASU aircraft that best fits the mission.

EMERGENCY SERVICE:

Emergency service requires an **immediate** response to a situation wherein a delay would endanger life or property.

1. Emergency Service: On-Duty Hours

Flight crews are normally on duty 7 days a week. Staffing plans vary and will be provided to Dispatch and appropriate allied agencies as necessary.

The on-duty flight crew can be dispatched/contacted directly and provided the required information. The pilot will evaluate the flight requirements and determine the appropriate aircraft for the missions. Flight crews are required to monitor radio traffic for fire and law enforcement frequencies.

Depending on the incident, the Air Support Unit supervisor can activate a crew, or the crew may begin a response, prior to being dispatched, should the incident warrant such action.

2. Emergency Service: After Hours

The Public Safety Dispatch Center shall contact the Air Support Unit supervisor. If unavailable, contact a Pilot or designated flight crew.

3. Direct Dispatch/Unit Initiated Dispatch

Often times, Air Support Unit requests are made directly through the hangar and/or the flight crews will self-initiate a response. In either case, the flight crew will notify Dispatch of the nature and the location of the mission as soon as practical or upon take-off.

4. Factors to Consider

Every effort will be made to provide the flight crew with as much information as possible about the mission (weather, mission type, any unusual conditions etc.).

Immediate response should be activated when the following exist:

- a. Remoteness of the incident, including those in USFS lands
- b. Terrain would inhibit or it is known ground units cannot access.
- c. Excessive response time by ground units (Rural land and off-road areas, Cuyama Valley etc.)
- d. River bottoms
- e. A victim's exact location is not known.
- f. Air Support is the closest or quickest air resource to the incident.
- g. Mission is in conjunction with a Search & Rescue mission.

Due to normal preflight and response times, the Air Support Unit should be notified without delay regarding any potential helicopter flight.

Every effort should be made to anticipate the need for helicopter services, in advance, to reduce response times.

Section 5

Crew Availabilities & Limitations

INTRODUCTION:

Aircrew flight, rest, flight operations and limitations are as follows:

FLIGHT:

1. Whenever possible, flight time should be reserved to 8 hours per duty day.
2. During any In-County or Out-of-County mission/incident, the ASU supervisor will be notified by the affected pilot or crew chief when the following occurs:
 - a. At the conclusion of the fourth continuous day on an incident/mission.
 - b. Or during the duty day prior to when anticipated flight time would reach 8 hours.
 - c. This is necessary to allow adequate time for scheduling a relief crew and travel time.
3. Maximum allowable duty day is 14 hours per day.

REST:

1. Crew members should have a minimum of ten (10) consecutive hours "off-duty" whenever possible.
2. Pilot fatigue is cause for grounding during any mission or incident, when it becomes a factor.
3. The ASU supervisor will be notified when a flight is cancelled or postponed due to fatigue.
4. Pilots will exercise reasonable caution to ensure fatigue does not become a factor during any duty day.

FLIGHT OPERATIONS/MINIMUM CREW:

1. During normal operations, (Day or Night) the minimum crew for Air Support Unit helicopters shall be a pilot and crew chief. The crew chief shall be a person who has been formally designated as a crew chief by the Air Support Unit Supervisor.
2. Each helicopter will have at least one sworn deputy on board to act as either a qualified pilot or as crew chief, cross trained in fire operations, unless prior approval has been authorized by SHERIFF, or his designee to waive this

requirement. A minimum of one FIRE crew chief shall be assigned to a Type 2 helicopter 7 days per week.

3. Maintenance test flights will be flown solo or with an Air Support Unit mechanic onboard unless another flight crew member is required for the flight.

Section 6 Resources

The PIC of any assigned mission shall make the determination as to what aircraft and equipment are available and can best be used to conduct the designated mission.

Section 7

Flight Uniforms

1. A military style, one piece flight suit manufactured of a "NOMEX" fabric will be worn by pilots and crew chiefs on Air Support Unit missions. Additionally a two piece uniform shirt/pants made of Nomex/Aramid fabric may be worn.
2. Flight crew uniform jacket will be an optional NOMEX flight jacket.
3. Under severe weather conditions, substitute jackets may be worn (i.e. extreme cold).
4. Black leather, high top, lace boots will be worn during flight duties. Rain boots or insulated boots may be worn during inclement weather.
5. An approved aviation helmet will be worn by flight crew, in and around ASU helicopters while the aircraft is in motion. Flight crews are authorized to wear regular headsets for fixed-wing aircraft operations.
6. Military style, NOMEX gloves will be worn by flight crews.
7. All safety equipment, i.e., flight suits, jackets, gloves, helmets, will be made available to, and worn by, Air Support Unit personnel.
8. The flight uniform will be worn by flight crews, except when those personnel are actively involved in maintenance of the facility, aircraft, or other equipment, or when operating Air Support Unit fixed-wing aircraft.
9. Air Support flight crews shall have the minimum required survival equipment readily available within the aircraft.

MECHANICS UNIFORM:

1. Uniforms will be supplied by Mission Linen or a similar vendor.
 - a. Blue/Brown Levi pant
 - b. Dark blue 3 button polo type shirt
 - c. Shirts may have "Santa Barbara County Air Support" patches or insignia on them.
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Section 8

Patrol Calls for Service

INTRODUCTION:

The Air Support Unit will provide airborne law enforcement support to the Sheriff's Office patrol units assigned to unincorporated areas and those cities which have contracted with the Sheriff's Office for law enforcement services. The Air Support Unit may also provide air support to any independent city in Santa Barbara County requesting assistance, or any other unit/department as directed by the ASU supervisor.

1. Any sworn Sheriff's/Fire Department employee may request aircraft assistance from the Air Support Unit when they believe an aircraft will assist them in the performance of their duties.
2. The employee requiring assistance may either contact the aircrew directly if the aircraft is airborne, or contact Dispatch with their request for aircraft assistance.
3. Dispatch will either contact the airborne helicopter or call the Air Support Unit directly.
4. During off-duty hours, personnel shall contact the dispatch center directly.

Section 9

Firefighting Operations

During operations in support of SBCFD/USFS/Cal Fire incidents, all participating crew members will have met the qualifications, training & currency requirements outlined in the Sheriff/Fire Operational Agreement and ASU Operations Manual. The pilots will also be carded by either CalFire or the USFS for the applicable missions.

Fire personnel assigned to the ASU will serve as Helicopter Managers during USFS/CalFire incidents. They will be responsible for completing all applicable forms and paperwork required by the State or Federal entity that is managing the incident. Appropriately certified Sheriff's crew chiefs can also serve as a Helicopter Manager.

In addition and whenever applicable, Air Support Unit personnel will review, be familiar with and adhere to the Firescope Night Flying Guidelines as described in the recommendations from the Governor's 2004 Blue Ribbon Commission, dated April 2013.

The following fire missions are approved:

1. Water deployment by either approved Bambi Bucket or a fixed tank.
2. Both day and night water deployments are approved. Night water drops shall be approved by the Fire Duty Chief or other appropriate fire authority. Night water drops shall be completed with a fixed tank and supplied by ground fill only.
3. Night water drops shall only be flown with night vision goggles.
4. Fire mapping and fire surveillance.
5. Evacuations.
6. Training flights.
7. Crew transport.
8. Assigned Rescue Ship to designated fires (aircraft availability depending).

NIGHT VISION GOGGLE (NVG) OPERATIONS

Night Vision Goggles (NVG) aid the pilot and crew members during the hours of darkness. NVG flight standards and NVG maintenance standards are as follows:

1. All crew members shall be NVG current at the time of a specific mission.

2. NVG currency for all pilots and crew members is one (1) hour of NVG flight (hobbs time) every 60 days. During this one (1) hour of flight, pilots shall complete the tasks identified under FAR Part 61.57 (f), including three take offs and landings at a non-airport location, i.e. unimproved site. Pilots that are out of currency shall notify the Unit Manager immediately and they shall schedule a check flight with a Unit Instructor as soon as possible.
3. All initial NVG flight instruction for pilots shall be conducted by an FAA Authorized Instructor Pilot with an NVG endorsement. Initial flight instruction should include the following as a minimum:
 - a. Pilot basic flight maneuvers.
 - b. Pilot emergency procedures.
 - c. Agency specific missions.
 - d. Pilot check flight.
4. All NVG instruction for crew members and crew chiefs should be conducted by an NVG experienced crew chief with assistance from an Authorized NVG Instructor Pilot.
5. NVG Recurrency Training shall be conducted to Federal Aviation Regulations with guidance from the FAA Commercial Pilot Practical Test Standards for Rotorcraft (FAA-S-8081-16).
 - a. Recurrency training can be performed by current NVG Commercial Pilots or an Authorized Instructor Pilot with an NVG endorsement.
 - b. Recurrency training can also be accomplished by an authorized NVG manufacturer or distributor, who specializes in initial or recurrent training.
6. All NVG operations shall be conducted utilizing inter-agency guidelines to improve safety and efficiency. Pilots shall be familiar with the terrain and hazards in the area of operation.
7. Initial Attack NVG operations shall not occur until at least one of the following is met:
 - a. Lives are or will be threatened.
 - b. Structures are or will be threatened.
 - c. Resources of significant value are or will be threatened.
 - d. Excessively high suppression cost will be prevented.
8. ~~Extended Attack NVG operations conducted in the second and subsequent operational periods shall meet the following criteria:~~
 - a. ~~Lives are or will be threatened.~~
 - b. ~~Structures are or will be threatened.~~

- c. Resources of significant value are, or will be threatened.
- d. Excessively high suppression cost will be prevented.

9. NVG flight hours alone shall not exceed six (6) flight hours per shift. NVG flight hours and duty limitations shall not be exceeded, except with approval by the Unit Manager.
10. All pilots shall complete a risk assessment prior to the launch of an NVG flight. Risk assessments that rate high (high risk) shall require the approval of the Unit Manager.
11. NVG maintenance shall be conducted on each set of flight certified goggles every 180 days by an FAA approved NVG maintenance facility or equivalent.
12. The Unit Manager shall designate one unit member to track and update all NVG maintenance. This person shall be responsible for all NVG records and the shipping and receiving of NVG's requiring inspection and/or maintenance.

Section 10

Out of County Agency Requests

1. One (1) Air Support Unit helicopter shall be available with flight crew on duty or standby "in county," before any Air Support Unit helicopters are dispatched to support an "out-of-county" agency. The Air Support Unit supervisor may modify this requirement, at his discretion, depending on the urgency of the request.
2. Out-of-county requests must be approved by the Air Support Unit Lieutenant, or if not available, the Unit Sergeant. If the request is not from a county contiguous to Santa Barbara County and if Fire personnel are to be deployed out of county, the Fire Duty Chief must be notified and approve of the deployment.
3. The following information must be obtained and properly recorded:
 - a. Name of agency requesting support
 - b. Name of person making the request and phone number
 - c. Details of incident requiring air support
 - d. Certification from the requesting agency that the flight was necessary due to imminent threat to life and property.
4. A jet fuel tender will be dispatched when authorized by the requesting agency. The jet fuel tender will be operated by approved personnel not assigned as part of the minimum flight crew, or other designated and properly trained person, as directed by the Air Support Unit supervisor.

OUT OF COUNTY ASSIGNMENT/INCIDENT:

1. Any assignment that requires an Air Support Unit aircraft and crew to perform their duties away from home base for more than one (1) calendar day (i.e., overnight) shall be classified as an out-of-county flight. A normal crew will consist of the following:
 - a. Pilot
 - b. Mission appropriate Law/Fire Crew Chief or Co-Pilot
 - c. Fuel tender driver: Air Support Unit Crew Chief not assigned flight duty or other qualified personnel. (When applicable)
 - d. Helicopter Mechanic – If helicopter is expected to be out of county for more than one (1) calendar day with support vehicle. (When applicable)
 - e. Fire ALS rescue personnel when required/requested for mission.
2. Method of crew change – Normal method should be with second Air Support Unit aircraft. At the Air Support Unit supervisor's discretion, crew change may be accomplished by surface transportation.

3. Aircraft replacement: If the aircraft assigned to the out-of-county incident is down for maintenance, when applicable, the original crew will stay on the out-of-county detail, flying the new aircraft assigned as a replacement.
 4. Aircraft replacement and crew exchange will be done at the discretion of the ASU supervisor.
 5. Flight crews and jet fuel tender drivers shall maintain all records and receipts for record keeping and billing purposes. The Helicopter Manager shall complete the necessary paperwork and submit it to the appropriate entity.
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Section 11

Conflicting Agency Requests

INTRODUCTION:

Conflicts involving simultaneous use of the helicopter(s) shall be resolved by discussion between the Air Support Unit supervisor and the requesting agency. In the event that the Air Support Unit supervisor is unavailable, the unit's Lieutenant shall resolve the situation.

1. The following priorities shall be applied in resolving the conflict:
 - a. Protection and/or saving a human life
 - b. Protection of property and/or valuable natural resources
 - c. Other missions
2. The agency which initiated the first dispatch of the helicopter(s) shall retain operational control of the aircraft until the conflict can be resolved; however, any emergency flight as determined by the PIC will supersede a non-emergency flight.

Section 12

Unit Supervisor

INTRODUCTION:

The Sheriff shall be the final authority in all matters which affect the operation of the Air Support Unit.

1. The Air Support Unit supervisor shall be assigned to ASU by executive discretion of the Sheriff and shall be responsible directly to the designated Lieutenant.
 2. The Supervisor shall direct all operational activities including, but not limited to, the following:
 - a. Direct and control the activities of assigned Air Support Unit personnel.
 - b. Aircraft and facility maintenance.
 - c. Coordination of scheduled flights.
 - d. Development and implementation of Unit training.
 - e. Preparation and administration of the Sheriff's program budget.
 - f. Compilation of statistical information.
 - g. Preparation of staff research projects necessary to the achievement of operation objectives.
-

Section 13

Pilot

INTRODUCTION:

The Pilot will operate ASU aircraft IAW FAR Part 91, ASU "standard operating procedures" (SOP), and perform duties as assigned by Unit Supervision. ASU Pilots will meet the requirements of FAR Part 61, IAW the Category and Class of aircraft to be flown. All pilots will possess a Commercial certificate or higher for Helicopter and Single Engine Land Airplane.

QUALIFICATIONS AND MINIMUM REQUIREMENTS: Law Enforcement and Fire

The qualifications for pilot are specifically designated within the Sheriff/Fire Operational Agreement for Air Support Unit. That Operational Agreement will be considered part of this Operations Manual and those guidelines will apply to this section.

RESPONSIBILITIES:

The responsibilities of the pilot(s) include the following:

1. Final authority and responsibility for the safety aspects of all flight operations which occur or are assigned under his direct control.
 2. Maintain up-to-date flight logs and aircraft use records to insure a current and comprehensive maintenance program.
 3. Assist management staff by providing input in the development of research projects.
 4. Perform pre-flight and post-flight inspections of the aircraft and complete other related minor maintenance as necessary and under the direction of maintenance personnel.
 5. Participate in and instruct training programs as required to maintain the safety and efficiency of flight operations.
 6. Inspect, supervise and assist in maintaining the cleanliness of the aircraft, facility and other support equipment.
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Section 14

Chief Pilot

INTRODUCTION:

The Chief Pilot will train and evaluate Instructor Pilots (IP). May train and evaluate all rated and non-rated crewmembers as well as other personnel in the designated aircraft. The Chief pilot has technical responsibility of the unit aviation program reference training/safety issues as specified by Unit management. He/She advises Department leadership at all levels regarding aviation standardization, training and safety.

QUALIFICATIONS AND MINIMUM REQUIREMENTS FOR HIRE:

1. Meet the requirements of Instructor Pilot
2. Possess the following flight instructor certificates/qualifications:
 - a. Airplane Single Engine Land (SEL)
 - b. Rotorcraft-helicopter
 - c. Instrument
 - d. NVG
3. Will be designated in writing as the Chief Pilot by the unit Lieutenant and may be authorized to instruct and evaluate the pilot, copilot, and/or non-flight crew stations.

Nothing in this section requires the appointment of a "Chief Pilot" within the Unit structure. The decision to make this appointment will be made as deemed appropriate by the ASU Chain of Command.

Section 15

Instructor Pilot

INTRODUCTION:

The Instructor Pilot (IP) will meet the Certified Flight Instructor (CFI) requirements of FAR Part 61 in the appropriate category and class of aircraft.

QUALIFICATIONS AND MINIMUM REQUIREMENTS FOR HIRE:

1. Meet the requirements of Pilot
2. 1500 hours Pilot in Command (PIC) time in aircraft category in which CFI duties will be performed.
3. Be recommended by the ASU Chain of Command.
4. Satisfactorily complete a CFI evaluation by an appropriate certifying agency.
5. Will be designated in writing as an Instructor Pilot by the unit Lieutenant and may be authorized to instruct and evaluate a pilot, copilot, and/or non-flight crew stations.

RESPONSIBILITIES:

The responsibilities of the Instructor pilot include the following:

1. Assume the responsibilities of Pilot.
2. Train and evaluate Pilots, non-rated crewmembers, and other personnel as directed by the ASU Supervisor.

Section 16

Crew Chief

INTRODUCTION:

Crew Chief(s) shall function under the direction of the Air Support Unit Supervisor. During actual flight operations, Crew Chiefs will function under the direction of the aircraft pilot.

QUALIFICATIONS AND MINIMUM REQUIREMENTS FOR SELECTION:

Crew Chief(s) shall have the following qualifications and meet the listed requirements:

1. Three (3) years experience as a law enforcement officer or a Firefighter holding the rank of Captain who is a full-time safety member of the Fire Department.
 2. Excellent physical condition and good health.
 3. Provide Air Support Unit Supervisor with performance evaluations for past two (2) years.
 4. Become proficient in the following skills during a six (6) month probation period:
 - a. Map reading
 - b. Flight adaptability – resistance to air sickness
 - c. All rescue equipment assigned to Air Support and aircraft
 - d. Moving Map operation
 - e. Hoist operation
 - f. External load operations
 - g. FLIR/Video/Search light operation
 - h. NVG procedures
 - i. Mechanical ability – minor maintenance of:
 - i. Jet fuel tender
 - ii. Fork lift
 - iii. Ground handling wheels
 - iv. Helicopter support equipment (tugs)
 5. Other skills as required by the ASU Supervisor.
 6. Effectively communicate with co-workers, supervisors and managers needs and requirements associated with Unit operation.
-

RESPONSIBILITIES:

The responsibilities of the crew chief(s) include the following:

1. Under the direction of the pilot and using the crew chief "Daily Preflight" checklist, performs pre-flight and post-flight safety inspections of the aircraft.
2. At all times maintains the safety and control of all occupants of the aircraft.
3. Using the crew chief "Daily Preflight" checklist, inspects, maintains and operates (when applicable) accessory aircraft equipment, e.g., flight maps, PA system, medivac equipment, video camera, FLIR, searchlight, hoist, etc.
4. Using the appropriate maintenance check lists, inspects and operates the fuel tenders, forklift and other minor shop equipment.
5. Completes all required reports after each flight operation.
6. Maintains individual responsibility for the cleanliness of the facility, aircraft and equipment.
7. Participates in and instructs training programs as required, to maintain the safety of flight operations.
8. Under pilot(s) supervision, directs and controls the safe operations of the landing zone area during emergency field situations.
9. Completes a fuel tender "Clear and Bright" test prior to dispensing fuel into an aircraft.
10. Dispenses fuel into the aircraft.

Section 17

Aircraft Mechanic

INTRODUCTION:

The Aircraft mechanic shall function under the direction of the Air Support Unit Supervisor.

DESIRED QUALIFICATIONS AND MINIMUM REQUIREMENTS FOR HIRE:

The Aircraft mechanic shall have three (3) years of experience in the maintenance of turbine powered aircraft and two (2) years of experience in an FAA-approved helicopter maintenance services program. Desired experience should be in Bell UH-1H, Bell UH-1N/HH-1N 204, 205, 212, OH-58 & Cessna 206 series aircraft.

LICENSES AND CERTIFICATES REQUIRED:

1. California Driver's License, current.
2. FAA Airframe/Powerplant certificate.
3. FAA Inspector Authorization (IA) certificate within (1) year of employment.

RESPONSIBILITIES:

The responsibilities of the aircraft mechanic include, but are not limited to, the following:

1. Maintains and repairs the aircraft and related accessories, which includes inspection and diagnosis of mechanical, electrical, hydraulic and structural integrity and malfunctions.
 2. Overhauls, rebuilds or replaces parts and components as applicable.
 3. Records all maintenance work performed on each aircraft to comply with the component mandates of the Federal Aviation Agency (FAA), the military, and/or the manufacturer.
 4. Operates specialized shop equipment such as lathes, welding apparatus and spray paint equipment.
 5. Performs specialized and general repairs as needed.
-
6. Diagnoses mechanical malfunctions and identifies maintenance and repair needs.

7. Orders supplies and parts as needed for the care and maintenance of all ASU aircraft.
8. Effectively communicate with co-workers, supervisors and managers the maintenance needs and requirements associated with Unit operation.

Section 18

Pilot Training

INTRODUCTION:

Training requirements are established in Federal Aviation Regulation (FAR Part 61). This manual does not waive nor make exception to any rules regarding training requirements as specified under FAR Part 61.

- The required certificates, flying experience, aeronautical knowledge, and training of each pilot/flight instructor will be documented and a record of same will be kept in a pilot's training folder retained by the ASU supervisor.

The following programs are training minimums for Air Support Unit pilots:

1. UH-1H, HH-1N, OH-58:
 - a. Annual recurrent training should be conducted by a Bell approved certified flight instructor.
 - b. A minimum of 1.5 hours of flight instruction on normal and emergency procedures, including touchdown auto-rotations.
2. New hire pilots who meet the minimum requirements for hire will be evaluated at the time of hire to determine the need for immediate recurrent training prior to assignment to Air Support Unit operations.
3. Pilots conducting NVG operations will be qualified IAW the standards of an FAA approved course, or will have previous military NVG qualification.
4. Pilots holding certified flight instructor ratings are authorized the necessary training to maintain that rating.
5. Seminars and conventions will be approved based on relationship to Air Support Unit/SAR operations, crew scheduling and cost.
6. Training activities/events will be logged in the pilot's flight training folder.

TRAINING:

1. Pilot Qualifications

-
- a. The academic and flight training required for the certification of pilots and instructor pilots as per FAR Part 61 will be considered as a minimum.
 - b. When practical, flight training should be completed without interruptions. Insofar as possible, academic training requirements, which complement

corresponding flight requirements, should be accomplished prior to flight training.

2. Refresher Training

- a. Refresher training is designed for pilots to regain proficiency when they have not met the currency requirements in the aircraft in which they have previously been qualified.
- b. Prior to beginning refresher training, the pilot's proficiency level must be determined. A proficiency flight evaluation will be conducted by an appropriately qualified CFI. The CFI will develop a training program that focuses on individual deficiencies noted during the evaluation flight.
- c. Pilots returning to operational flying positions that have been prohibited or excused from flying duties in excess of 60 days will receive refresher training IAW this chapter. Pilots with less than 60 days of non-flight duties may be required to receive refresher training, based on results of the proficiency flight evaluation conducted when the pilot enters the ASU. Refresher training should include academic and flight instruction that the evaluating CFI has determined to be deficient.

3. External Load Operations Training

- a. Ground Training – Four (4) hours developing the pilot's knowledge of the following:
 - i. Rotorcraft – load combinations
 - ii. Load categories
 - iii. Cargo nets and slings
 - iv. Pilot's Flight Manual
 - v. Coordination with ground personnel
 - vi. Load Pick-up Procedures
 - vii. Termination and load release procedures
 - viii. Ground-crew Procedures
 - ix. Short Haul operations
 - x. Rope Insertion operations – Law
 - xi. Stabo operations – Law
 - b. Flight Training – Five (5) hours developing proficiency and knowledge of the following:
 - i. Flight demonstration of hook-up, take-off, in-flight, and approach termination.
 - ii. Review and practice hook-up, take-off, in-flight, and approach termination.
-
- iii. Final pilot evaluation.

4. Mountainous Terrain Training

- a. Ground Training – Four (4) hours developing the pilot's knowledge of the following subjects as they relate to mountainous terrain:
 - i. Mountain Considerations
 - ii. Meteorology
 - iii. Mountain Operations (Enroute)
 - iv. Mountain Operations (LZ Sequence)
 - v. Performance Planning
 - vi. Hazards
- b. Flight Training – Five (5) hours developing the pilot's proficiency and knowledge of the following tasks as they relate to mountainous terrain operations:
 - i. Confined Area Operations
 - ii. Pinnacle/Ridge Line Operations
 - iii. Canyons & Draws
 - iv. Final Pilot Evaluation

5. Insertion/Extraction Training Procedures

- a. Tactical Personnel Safety Equipment
 - i. Gloves
 - ii. Goggles
 - iii. Utility Belt w/ D-Ring
 - iv. 4" Knife
 - v. (4) 18"x1" tubular nylon safety straps with quick release safety hooks.
- b. Aircraft Preparation
 - i. Rear doors will be removed or pinned open as applicable.
 - ii. Rear seats may be removed to allow additional space in rear.
 - iii. Harness attachment hardware installed.
- c. Training – Air Crew's and Tactical Personnel will receive initial training to include, but not limited to, the following areas;
 - i. Ground Instruction
 - 1) Safety in and around helicopters.
 - 2) Non-verbal communication techniques and procedures.
 - 3) Approaching/Departing aircraft.
 - 4) Personal equipment requirements.
 - 5) In-flight and ground aircraft emergency procedures.
 - ii. Flight Instruction – Tactical and flight crew personnel will train employing those techniques learned during the ground training phase. As a minimum, flight crews will fly one hour performing the procedures as indicated. Tactical personnel will make no less than four flights, each of which will include at least:
 - 1) Pre take-off phase
 - 2) Take-off/departure phase
 - 3) Enroute phase
 - 4) Approach/landing phase
 - 5) After landing phase

6. Water Rescue Training

- a. Helicopter Orientation
 - i. Characteristics
 - ii. Normal operations
 - iii. Special operations
 - iv. Loads/load combinations
 - v. Rescue operations
 - 1) Low risk
 - 2) High risk
 - vi. Special equipment
 - vii. Emergency procedures
 - viii. Aircrew coordination
- b. Human Factors
 - i. Physiological
 - ii. Psychological
- c. Water/Pool Site
 - i. Dunker training
 - ii. HABD/HEED orientation
 - iii. Simulated 10 X 10 Helo-casts
 - iv. Open water rescue equipment
 - v. Pyro-techniques & related devices
- d. A/C Ground Safety
 - i. LZ/PZ management
 - ii. A/C preparation
 - 1) Rear doors will be removed
 - 2) Rear seats removed
 - 3) Rope insertion bar installed
 - 4) Hook installed
 - 5) Rigging
 - 6) Knots
 - 7) Technical gear
- e. Pre-Flt Brief for Helo-casts
 - i. Helo-cast evolutions
- f. A/C Preparation for Short Haul
 - i. Rigging
 - ii. Short haul evolutions
- g. Helicopter Rappels/ Rope Insertion
 - i. Harness review
 - ii. Simulated Helo rappel from tower
 - iii. A/C rigging for rappel
 - iv. Helicopter rope insertion

7. NVG Qualification Training

- a. Ground-Training
 - i. Aero-medical Factors
 - 1) Vision
 - 2) Depth perception
 - 3) Night vision orientation
 - ii. Operations
 - 1) Introduction to NVG
 - 2) Night terrain interpretation
 - 3) NVG ground and air safety
 - 4) Night tactical operations, to include lighting
 - 5) NVG navigation, to include map preparation
 - 6) Aircraft modification requirements for NVG flight
- b. Flight Training
 - i. Stage Field
 - 1) Engine start through engine shutdown checks
 - 2) Hover power check
 - 3) Hovering flight
 - 4) VMC takeoff
 - 5) Traffic pattern flight
 - 6) Fuel management
 - 7) OGE check
 - ii. Confined area operations
 - 1) Slope operations
 - 2) Pinnacle/Ridgeline operations
 - 3) Terrain flight/navigation

8. Emergency Procedure Training

- a. E.P. training will be accomplished with a goal of developing good habits during critical flight profiles. A thorough review of the flight manual shall precede actual flight training in an aircraft.

9. Training in emergency procedures will be conducted IAW the applicable aircraft operator's manual, in an aircraft equipped with dual controls, and with a current appropriately qualified CFI at one set of controls. Touchdown emergency procedures will be done at an airport with crash rescue available.

a. Helicopters

- i. Touchdown auto-rotations will not be conducted in ASU line aircraft.
- ii. Unannounced touchdown auto-rotations will not be made except for CFI training and/or evaluation.
- iii. No more than eight (8) practice auto-rotations per pilot will be made during any instructional period (hovering auto-rotations not applicable). Consecutive periods involving autorotation maneuvers will not be scheduled. This restriction does not apply to CFI's conducting training.

- iv. Off-airport simulated engine failures with power recovery may be made if power recovery is initiated and descent terminated no lower than 200 feet AGL.

10. Evaluation Guidelines

This section is provided to prescribe the requirements for individual pilot evaluations appropriate to the pilot level and aircraft to be operated.

The extent to which these evaluations are of value depends upon strict adherence to rather fundamental principles.

The method in which the evaluation is conducted must be based on uniform objectives and standards. Most importantly, it must be consistent with the needs of the ASU and IAW appropriate regulations and manuals. The purpose of the evaluation must be completely understood by all concerned and conducted in a manner that is purpose and goal oriented.

The following evaluation sequence should be followed as closely as possible, because it is the accepted/time-proven method of evaluation:

- Comprehensive Briefing
- Oral Exam
- Flight Test
- De-briefing

Proficiency in the oral examination must be based upon the evaluator's assessment that the examinee possesses a working knowledge and understanding of the subject areas presented IAW the appropriate Practical Test Standards (PTS).

Each task contained in the appropriate PTS provides the grading considerations and standards of performance to be met as a minimum. These standards are for the ideal situation and under pre-requisites of the condition developed for each task. Deviations from the ideal during the evaluation must be considered by the evaluator and appropriate adjustments made to the standards.

- a. Pilot Flight Evaluation – This evaluation will be conducted to determine the examinee's ability to perform the duties of pilot. The recommended procedure for conducting the pilot flight evaluation is for the evaluator to assume the role of crew chief, while allowing the examinee to function as pilot. The evaluation should be administered for initial designation as pilot, and at periodic intervals IAW ASU requirements.

11. Instructor Pilot Evaluation – The purpose of this evaluation is to determine the examinee's ability to instruct, perform, and evaluate selected tasks. The

evaluation will be administered when the examinee is seeking initial designation as a CFI and at periodic intervals IAW ASU requirements. The recommended procedure for conducting this evaluation is for the evaluator to assume the role of pilot performing flight tasks, while the examinee functions as a CFI. The examinee will explain and demonstrate tasks selected by the evaluator. The evaluator may perform as though he/she were a pilot practicing the task and require the examinee to evaluate his performance and progress.

Proficiency Flight Evaluation – The purpose of this evaluation is to:

- a. Determine which level of training is appropriate for the qualified pilot upon initial assignment
- b. Determine if, and to what extent, refresher training is necessary for previously qualified pilots who have not met flight currency requirements
- c. Determine an individual pilot's ability whenever the ASU Supervisor questions his flying proficiency

The Proficiency Evaluation will be administered using the guidelines appropriate to the pilot position held.

12. Post Accident Flight Evaluation – This flight evaluation will determine a pilot's ability to perform his duties following an aircraft accident or incident. Pilots involved in an aircraft accident/incident will be suspended from flight duties until successful completion of a flight evaluation. The type and nature of the evaluation are dependent upon the pilot position held at the time of the mishap. Special emphasis should be placed upon evaluating the task which was being performed at the time of the mishap under similar conditions if possible. Safe operating practices will not be sacrificed in an attempt to re-create the conditions that existed at the time of the mishap.

13. Medical Flight Evaluation – This evaluation is required as a result of a physical disability. The CFI, in concert with an FAA Flight Surgeon, will require the pilot to perform a series of tasks most affected by the disability. The evaluation should measure the pilot's potential ability to perform IAW the pilot position.

Section 19

Crew Chief Training

INTRODUCTION:

Crew Chief(s) will be required to attend initial Crew Chief training and Flight Crew currency as described in section (12) training classes.

1. Crew Chief(s) are required to attend all scheduled training sessions at the Air Support Unit.
2. Crew Chief(s) will have all training activities logged in the individual crew chief personal training file, and will provide the ASU supervisor documentation describing the training.
3. Seminars and conventions will be approved based on relationship to Air Support Unit operations, crew scheduling and cost.
4. Failure to attend three (3) scheduled training periods in any 12 month period is grounds for termination or suspension from the crew chief program.
5. Relief crew chiefs are required to work a minimum of one (1) shift per quarter in addition to attending required initial & flight crew currency training sessions.
6. Relief/Collateral crew chiefs must have:
 - a. At least three (3) years experience as a law enforcement officer or,
 - b. Five years (5) experience as a full-time safety member of the Fire Department.

INITIAL TRAINING:

1. Helicopter operations
 - a. Ground handling/ pre and post flight duties
 - b. Routine flight operations
 - c. Rescue operations
2. Rescue apparatus

 - a. Vertical evacuation system
 - i. Billy Pugh
 - ii. Litter lift
 - iii. Hoist
 - iv. Rescue ring

- b. Ropes and knots
 - 3. Medical operations
 - a. Equipment condition and inventory checks
 - b. Use of medical equipment
 - 4. Sheriff/Fire Dispatch procedures
 - a. Response procedures
 - b. Flight following procedures
 - 5. Avionics checks, use and discrepancy reporting
 - 6. Jet tender, tug and dolly operations
 - 7. NVG, Moving Map, Searchlight, Sheriff/Fire radio's and F.L.I.R. operations
 - 8. Other subjects as directed by the Air Support Unit Supervisor.
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Section 20

Flight Crew Training & Currency

1. AIR SUPPORT FLIGHT CURRENCY

After initial training, personnel shall be required to complete the tasks listed in order to be considered current in each specific operation.

a. Night Operations (Hoist)	60 Days
b. NVG – one hour (Pilot)	60 Days
c. NVG – one hour (Crew Chief)	60 Days
d. Cliff Rescue	90 Days
e. Hover Pickups – one skid	90 Days
f. Water Rescue	90 Days
g. Hoist	6 Months
h. Rescue Equipment Procedures	6 Months
i. Sling load/Short Haul	6 Months
j. Bambi Bucket	12 Months
k. Bell Flight training (Pilot)	12 Months
l. Tank Operations Night	12 Months
m. Aerial Firefighting Operations	12 Months
n. Rope Insertion	12 Months
o. STABO	12 Months
p. HEEDS	24 Months

2. SCHEDULING TRAINING

Seminars, classes and conventions will be scheduled based on their relationship to Air Support Unit operations, scheduling and cost.

3. TRAINING RECORDS

A course description, which will include: course content, instructors' names, date of training, length of training, location of training and attendance list, will be kept in personal training files.

Section 21

Maintenance Training

1. After initial training, aircraft mechanics should attend the following courses every seven (7) years:
 - a. Allison C-20 Engine Familiarization Course
 - b. Lycoming T53 Engine Field Maintenance Course
 - c. Bell Helicopter Field Maintenance Course
 - d. Bell Helicopter Component Overhaul Course
 2. Aircraft mechanics should attend manufacturer's technical schools for each make and model of helicopters, airplanes and engines.
 3. All maintenance personnel shall be properly trained in the correct use, storage and disposal of all hazardous materials and shall obtain and keep current all applicable permits and licenses.
 4. All maintenance personnel shall keep a current training folder on file with the Air Support Unit supervisor. The training folder will contain certificates of all schools and seminars attended by maintenance personnel.
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Section 22

Medic and SAR Team Members Training

1. Medic and SAR team members must complete initial training on the following subjects prior to assignment on hoist operations:
 - a. Care and use of the following equipment:
 - i. Hoist harness
 - ii. Tag lines
 - iii. Stokes litter and bridle
 - b. Normal procedures
 - i. Patient packaging
 - ii. System set-up
 - iii. Grounding/Hook up
 - iv. Tag line
 - v. Hand signals
 - c. Emergency procedures
 - i. Cable hang up
 - ii. Medic and SAR team members will not be assigned hoist operator duties and are not required to train as hoist operators.
 - iii. Hoist training must be documented and a copy of trained and current team members must be on file at Air Support.

QUALIFICATIONS AND MINIMUM RECURENCE REQUIREMENTS:

1. All pilots, Crew chiefs, Medic personnel and SAR members must perform one (1) practice hoist operation every six (6) months to qualify for any hoist rescue operation.

LIMITATIONS:

1. Wilderness and remote area night hoist operations are authorized as required. Air Support NVG SOP's will be strictly followed.
 2. Hoist operations will not be conducted solely by helicopter landing light, night sun search light or hoist light, unless the existing ambient or artificial light conditions permit continued safe operations in the event of a light failure.
 3. Night short haul operations are permitted using night vision goggles (NVG) provided that all crew members meet the initial training and currency.
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Section 23

Maintenance

Airworthiness Certification

1. Maintenance will conform to FAA standards in accordance with FAR 43 and 91 as amended.
 2. Inspection intervals, overhauls and retirements will be determined by manufacturer's requirements, ICAP, military manuals and the FAA.
 3. All applicable FAA airworthiness directives, manufacturer notices, letters, military safety of flight notices and commercial engine bulletins will be complied with in accordance with the appropriate directive.
 4. The only parts to be used will be original manufacturer parts or parts manufactured under a parts manufacturing approval (PMA).
 5. Replacement parts must be certified "overhauled" or "function tested as serviceable" by the Air Support Unit or an approved FAA certified repair station.
 6. Permanent log records are maintained for each aircraft and engine. Inspections and maintenance performed will be recorded in the appropriate log in accordance with FAR 43.
 7. A copy of the completed inspection programs and maintenance discrepancy sheets will be retained for 24 months.
 8. The ASU will maintain a complete technical publications library for the manufacturer's make/model of helicopters owned by the County. These publications will be maintained in a current status by filing updated and revised publications.
 9. Certain items and parts may be installed without a "Standard type certificate" (STC) or FAA form 337, "Major Alterations and Repair" form. ASU personnel (Pilots, mechanics and Unit Supervisor) must approve all such items and parts.
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Section 24

Maintenance

No Airworthiness Certification

1. Aircraft will be maintained to civil standards in accordance with the airframe manufacturers recommended inspection program for comparable FAA certified models. In the absence of civil standards, pertinent military inspections and procedures will be followed.
 2. Inspection intervals, overhauls and replacements will be determined by the more restrictive civil or military standard or ICAP.
 3. All applicable FAA airworthiness directives for comparable FAA certified models, military safety of flight notices, manufacturer alert service bulletins and service letters will be complied with.
 4. Safety of flight, rotating controls, replacement parts – Only manufacturer parts or parts manufactured under a parts manufacturing approval (PMA) are authorized.
 5. Military parts – Only parts determined by appropriate methods to meet military airworthiness standards are authorized for installation.
 6. Replacement parts must be certified "Overhauled" or "Function tested as serviceable" by ASU or by an approved FAA certified repair station.
 7. Permanent log records are maintained for each aircraft and engine. Inspections and maintenance performed will be recorded in each appropriate log.
 8. A copy of the completed inspection programs and maintenance discrepancy sheets will be retained for 24 months.
 9. The Aviation Unit will maintain a complete technical publications library for the manufacturer's make/model of aircraft operated by the County. These publications will be maintained in a current status by filing updated and revised publications.
 10. All aircraft modifications and/or alterations will be approved by the mechanic and the ASU supervisor. All modifications and/or alterations will be documented in each appropriate log book.
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Section 25

Accidents/Mishaps/Incidents

OBJECTIVE:

Subsequent to an ASU aircraft involved accident/mishap/incident ASU personnel must accomplish the following as expeditiously as possible:

1. Rescue and care of the aircrew and other involved persons.
2. Protection of the scene and departmental equipment.
3. Acquisition and preservation of evidence needed for a comprehensive investigation.
4. Notification of ASU chain-of-command and assigned investigative personnel.

DEFINITIONS:

The following definitions are specific to the ASU operation regarding aircraft accidents/incidents as defined in 49 CFR Section 830.2.

1. Aircraft Accident – An occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage.
2. Aircraft Incident – An occurrence other than an accident associated with the operation of an aircraft, which affects or could affect the safety of operations.
3. Fatal Injury – An injury which results in death within 30 days of the accident.
4. Serious Injury – Any injury which:
 - a. Requires hospitalization for more than 48 hours, commencing within 7 days from the date of the injury was received.
 - b. Results in a fracture of any bone except simple fractures of fingers, toes, or nose.
 - c. Causes severe hemorrhages, nerve, muscle, or tendon damage.
 - d. Involves any internal organ.
 - e. Involves second or third degree burns or any burns affecting more than five percent of the body surface.
5. Minor Injury – Any injury not classified as fatal or serious.

6. Substantial Damage – Damage or failure which adversely affects the structural strength, performance, or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component.

NOTIFICATION:

1. A report shall be filed IAW FAR 830.20 with the NTSB office nearest the accident or incident.
2. Immediate notification by the pilot or crew chief, or appropriate personnel, shall be made to the ASU supervisor, and lieutenant whenever the following occurs:
 - a. An aircraft accident or incident occurs
 - b. A flight is over due and there is reason to believe that the aircraft has been involved in an accident or incident
 - c. A "mayday" or similar broadcast is initiated
3. The ASU supervisor shall be responsible for notifying the investigative team.
4. The lieutenant shall be responsible for notifying the chain-of-command.
5. The method of notification of the crew's family will be predicated by the extent of injuries sustained or the desires of the injured crew member.
6. Aircraft occurrences shall be reported to the ASU supervisor immediately.

NEWS MEDIA:

1. Under no circumstances shall any crew member be identified prior to family notification.
2. The Commander shall be responsible for coordinating the dissemination of information to the media regarding their respective personnel and equipment.

INVESTIGATION REQUIREMENTS:

1. An investigation shall be conducted whenever an ASU aircraft is involved in either an accident or an incident.
2. A detailed written memo shall be prepared by the pilot, crew chief and any other personnel who is a witness to the accident/incident, and forwarded to the ASU supervisor within 24 hours of an occurrence.
3. The above memo will be prepared in accordance with any existing policies pertaining to such accidents/incidents.

INVESTIGATION RESPONSIBILITIES:

1. Initial Response

- a. Appropriate law enforcement, SAR, fire, and paramedics
- b. Secure the scene, unauthorized personnel restricted
- c. Scene remains secure following rescue efforts
- d. Obtain identification and initial statements from all witnesses
- e. Photograph scene as soon as possible

2. Accident Investigation Team (AIT)

- a. The ASU supervisor has the responsibility for coordinating the investigation, provided the ASU Supervisor is not a witness. If the ASU Supervisor is a witness, the responsibility becomes the next person in the chain-of-command of the agency involved, above that of those directly involved.
- b. The Accident Investigation Team shall consist of at least one person who has been trained in aircraft accident investigation in the event of a fatality and at least one pilot in all other cases. Circumstances shall dictate the other members of the team, but shall be a minimum of two qualified personnel.
- c. All requests to the NTSB or FAA for investigative assistance shall be initiated by the ASU supervisor.
- d. The ASU supervisor shall be responsible for notifying the NTSB as required, and filing the necessary report.
- e. The lieutenant shall fulfill the requirements to the ASU supervisor in the event of his absence, or involvement in the incident.
- f. The Accident report shall be completed within 15 days of the incident.

TEMPORARY REMOVAL FROM FLIGHT DUTY:

- 1. After an accident or incident, pilots and/or crew chiefs may be temporarily removed from flight duty by the ASU supervisor or superior Department official.
- 2. Such removal will not affect pay status.
- 3. A post accident/incident flight evaluation and physical may be required prior to reinstatement to flight duty.

BOARD OF INQUIRY:

- 1. The Undersheriff shall convene a Board of Inquiry whenever a departmental aircraft accident occurs and results in a fatality, serious injury or major loss of property within fifteen days of the completion of the AIT report.

2. The purpose of the Board of Inquiry shall be:

- a. To determine if departmental policy was violated
- b. To determine a cause of the accident
- c. To review current operative policies and procedures
- d. To make recommendations as necessary

3. Board Members:

- a. With the exception of the Undersheriff, who shall sit as the non-voting chairman, the Board shall consist of any or all of the following personnel:
 - i. Not less than three and no more than five members from the Sheriff's Office.
 - ii. The ASU supervisor unless he/she is under review.
 - iii. One pilot from an outside agency who is familiar with the aircraft involved in the accident.
 - iv. A non-voting member selected by each personnel involved. This member will not be an advocate of the person who selected them, but may ask questions and participate in the discussion.
 - v. A secretary of Command Staff rank shall be appointed by the Board Chair. The secretary will be a non-voting member. The secretary will record the pertinent conclusions of the Board.
- b. The Board, when sitting, shall consist of officers of equal rank and higher to the person/s whose actions are under review.
- c. The person under review shall be notified in writing of the members of the Board. If the person under review believes that any Board member may be unable to view the information without prejudice, he/she may request that the Lieutenant appoint a replacement.
- d. In the event that a Board member disqualifies himself or is challenged, the Chairman will assess the need to appoint another member.
- e. The Departmental Review Board shall not have the authority or power to take action, but shall forward recommendations and findings to the Undersheriff.
- f. The person/s under review shall have the right to appear before the Board, and the Board shall have the authority to compel any crewmember or employee to appear before the Board, if the appearance is deemed necessary by the majority of the Board. An employee may bring with him a representative of his choice, as long as the representative is not a principle to the accident or incident under review.
- g. The Board meeting will not be recorded.
- h. The Undersheriff shall forward the recommendation of the Board to the respective department head within fifteen days of receiving the Board's recommendation. The final decision to act on the recommendation of the Board shall rest with the respective Department heads of involved personnel.

- i. Nothing in this section is intended to circumvent, nor shall it violate the Peace Officers Bill of Right or the Firefighters Bill of Rights.

Section 26

Flight Following Procedures

INTRODUCTION:

Flight following will be adhered to during all (Helicopter/Fixed wing) flights conducted by ASU, for aircraft and crew accountability. The following procedures will be followed:

1. Take-off/landing from/at any location, on a mission or an administrative flight, the County Public Safety Dispatch Center (Dispatch) will be notified. Proper notification method will be via radio or telephone.
2. The following information will be included but is not limited to what is provided to Dispatch:
 - a. Departure point
 - b. Destination
 - c. Flight route, when applicable
 - d. Estimated time of arrival, when applicable
 - e. Number of passengers
3. For in-County flights updated information (location and any change in destination) will be communicated to dispatch every 30 minutes or sooner as information changes. EXCEPTION: when dispatch is advised that the ASU aircraft has reached its destination and will be in communication with specific department/ground units. Dispatch will again be notified when aircraft departs the operational area and flight following will again apply.
4. Flight plans should be initiated for any Out-of-County Administrative Flights. With a flight plan, the 30 minute requirement will not be necessary. Without a flight plan 30 minute radio/telephone updates will be necessary. Should there be no radio or telephone service, an arrival time will be provided to dispatch and within 30 minutes of that time, dispatch will be notified. (Helicopter only)
5. The names of all personnel on an Administrative flight will be documented in the ASU office prior to take-off. Any change/addition in passengers from that point will be relayed to dispatch.
6. When necessary flight following can be accomplished utilizing another agency (USFS etc.) and that agency's established procedures will be followed. When this occurs, County dispatch will be notified by the flight crew or will request the other agency to advise them. A flight following with the FAA will suffice and no notification needs to be made to dispatch.

Section 27

Overdue Aircraft Procedures

INTRODUCTION:

If an Air Support Unit flight does not check in with dispatch within a 30-minute time frame, the following procedures must be initiated:

1. When Air Support Unit personnel are at the heliport, the duty pilot will determine if an immediate search is required or if additional time should be allowed for the overdue aircraft to re-establish radio contact.
2. If no Air Support Unit personnel are on duty, Sheriff's Dispatch will attempt to contact the missing aircraft.
3. A maximum of 30 minutes past the normal check-in time will be allowed for an overdue aircraft to re-establish contact.
4. Still no contact, ensure the following procedures have been initiated:
 - a. Immediately contact the ASU Supervisor, via cell phone and/or pager.
 - b. Page all members of the crew in the overdue aircraft and actually call their cell phones.
 - c. If the missing crew has a satellite phone with them, call that number.
 - d. Document the last known location provided by the missing crew, the exact time that location was communicated and any additional direction/information that had been provided.
 - e. Continue attempting contact on Sheriff, Fire, and USFS frequencies.

INITIAL SEARCH PROCEDURES:

1. Contact the department or agency the missing aircraft is supporting and ascertain if they have positive contact with the aircraft. Request that the aircraft contact County dispatch for flight update.
2. Contact department or agency facilities along the designated flight route to determine the overdue aircraft has been seen or has landed.
 - a. Suggested departments or agencies to contact depending on known flight route and destination:

 - i. U.S.F.S. L.P. Dispatch Center: (805) 961-5727.
 - ii. Sheriff's patrol or fire patrol units along designated flight route.
 - iii. Local police departments along designated flight route (including CHP).
 - iv. Santa Barbara Tower: (805) 681-0116.

- v. Santa Maria Tower: (805) 922-5018.
- b. If the overdue aircraft is known to be operating outside Santa Barbara County, contact:
 - i. Local fire departments
 - ii. Local police/sheriff departments
 - iii. Local airports
 - iv. U.S. Forest Service
 - v. Other agencies which could assist in locating the missing helicopter
- c. Contact F.A.A. only if aircraft is confirmed overdue and missing.

AIR SEARCH PROCEDURES:

1. If the missing aircraft is not located within the first one hour in which it is overdue, an air search will be initiated.
 2. The on-duty flight crew will arrange for appropriate SAR and/or medical/rescue personnel.
 3. The on-duty flight crew will respond to the last known position and commence an air search.
 4. If no on-duty crew is available, an attempt will be made to locate an off-duty pilot and crew chief.
 5. The ASU Supervisor will then assume responsibility for coordinating the search and rescue operation.
-

Section 28

Weather Restrictions

INTRODUCTION:

VFR limitations mean no less than those prescribed by the FAR. It is the responsibility of the pilot in command to be familiar with and comply with, the applicable provisions of the following FAR's:

1. FAR Part 91.155 - *Basic VFR Weather Minimums*
2. FAR Part 91.157 - *Special VFR Weather Minimums*

WEATHER MINIMUMS – GENERAL:

The following criteria are the minimum/maximum weather conditions established by this SOP in which ASU helicopter operations may be conducted. Limitations established by this SOP are minimums/maximums and are not intended to supersede or substitute for sound judgment and safe operating practices. When in doubt or when encountering situations not covered by ASU SOP, FAR 91.3(a) applies.

F.A.R. 91.3(a) - The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft.

1. Flight into the following known or forecast meteorological conditions is prohibited:
 - a. Severe icing conditions. If a flight is to be made into known or forecast light to moderate icing conditions, the aircraft must be equipped with adequate icing and/or anti-icing equipment.
 - b. Severe turbulence.
 - c. Thunderstorms.
 - d. Except as provided in paragraphs a. thru c., no pilot will operate an aircraft carrying passengers in IFR conditions unless there is a second pilot on-board (see h.).
 - e. Single pilot take-offs may be conducted under IFR conditions when weather reports or forecasts indicate VFR conditions will prevail within 15 minutes flying time along the planned route of flight to the destination airport.
 - f. Single pilot enroute IFR may be conducted if conditions below VFR are encountered on a flight that was planned to be conducted under VFR.
 - g. Single pilot approaches may be conducted under IFR conditions if weather conditions do not allow an approach to be completed under VFR.
 - h. Single pilot IFR may be conducted if the aircraft is equipped with an approved, operative three axis autopilot system.

WIND LIMITATIONS:

Effects of wind on flight operations vary considerably with terrain, altitude, visibility and mission requirements. It is the responsibility of the pilot in command not to exceed published flight manual limitations for the type aircraft flown.

In addition, the following ASU limitations apply:

Wind limitations are established by the aircraft manufacturer and ASU policy states they are not to be exceeded except in the most extreme, life threatening situations, and only when approved by the pilot in command and the Air Support Unit supervisor. Each aircraft has a different set of wind limitations and the PIC must be familiar with each set of limitations. The published limitations shall not be exceeded unless the PIC deems it necessary for the overall safety of the flight.

Section 29

Passenger Briefings

INTRODUCTION:

The Pilot in Command and/or Crew Chief shall ensure that all passengers have been orally briefed before every flight:

1. No smoking on Air Support Unit aircraft
 2. Use of seat belts
 3. Use of passenger door and emergency exits
 4. Survival equipment (medical gear)
 5. Over-water procedures, as required
 6. Location and operation of fire extinguishers
 7. Safe approaches and departures
 8. Location of E.L.T.
 9. Use of radios and headsets or helmets
 10. Emergency Procedures
 11. Restricted articles/items on board
-

Section 30 Patrol Altitudes

INTRODUCTION:

The Air Support Unit flight crews will follow the procedures listed below for maintaining operational altitudes:

1. With the exception of takeoffs and landings, normal patrol altitudes shall be 500/1000 feet AGL daytime operations and 700/1500 feet AGL during nighttime operations.
 2. Fixed-wing aircraft will comply with FAR 91.119
 3. Deviations from these altitudes may be made as operationally necessary.
-

Section 31

Airborne Surveillance

INTRODUCTION:

The Air Support Unit flight crews will follow the procedures listed below when conducting airborne surveillance missions:

1. All "out-of-county" surveillance missions must be approved by the Air Support Unit Lieutenant.
2. Surveillance requests will normally be handled with as much advance notice as possible to allow the Air Support Unit time to make appropriate arrangements for extended fuel, fresh flight crews, appropriate aeronautical charts, etc.
3. Requests should be submitted to the Air Support Unit supervisor or the on-duty flight crew.

Section 32

Hoist Operations

VERTICAL SURFACE (CLIFF OPERATIONS) RESCUE TECHNIQUES

DISCUSSION:

Vertical surface rescue operations can be the most demanding and dangerous land based rescue situations. Extreme caution and complete situational awareness must be maintained at all times. No other rescue scenario requires more crew coordination, briefing, and unanimous acceptance of the plan of attack. Consideration of rotor-wash, escape corridors, tail and main rotor clearances are primary concerns. An absolute 10 percent power margin must be available before any recovery is attempted. Further consideration of tail rotor authority, especially with the cliff on the right, should be examined and briefed. An avenue of approach for the rescuer should be determined, briefed, and agreed to by all crew. The preferred approach should normally be from below and downwind of the victim to minimize falling debris and rotor-wash. Positive contact with the rescuer and the cliff face allows surface maneuvering and prevents swinging/spinning of the rescuer. Once the ready for pickup signal is received, "taking the load" and "easy left" (away from the cliff) commands are given together to assure a vertical lift and clearance from the cliff. Cable management is critical to insure clearance from obstructions and overhangs. Any tensioned cable surface contact is grounds for an abort and will be immediately inspected prior to further rescue attempts.

All crews must accept that some missions pose unacceptable risk and must not be attempted. Reluctance or confusion by any member at any time is grounds to abort.

PROCEDURES:

1. Rescue Check Part 1
2. Rescue Check Part 2 (emphasis on risk analysis, rescuer route)
3. COMPLETE brief of plan, unanimous agreement.
4. Execute rescue with constant evaluation, risk analysis.
5. Rescue Check part 3.

CONCLUSION:

No aviation endeavor requires more of a choreographed integration of an aircrew than a confined cliff rescue. Humility, competence, and standardized procedures are the tools used to recognize and manage the extreme risks. Any deviation, hesitation, or confusion can and has resulted in the loss of airframes and crews.

TRAIL LINE (TAG LINE) USE AND PROCEDURES

DISCUSSION:

The use of trail lines during hoist operations is varied and not solely limited to the techniques listed in this document. Trail lines are used as tools to access hoist targets that are not accessible under normal hoisting procedures, to stabilize loads, and to protect the hoist cable from damage. All trail line deployments should be completely briefed with all crewmembers involved with its use including the reason and goal of its utilization. No two hoist evolutions are ever the same and any strict set of procedural rules for trail line deployments would inherently restrict crew's initiative and adaptability to the situation. However, absolute agreement as to the deployment technique and purpose must be acknowledged by the entire crew. Trail lines should be considered expendable and the consequences of retrieval, weighed against time in a hover, patient condition, snag potential, or need for reuse. The weak link end should always be attached towards the helicopter to insure recoil is away from the aircraft in case of parting.

USES:

Trail lines may be deployed;

1. Bundled
2. Via weight bag
3. Via Rescuer
4. Purposely swung
5. At the agreed discretion and method derived by the crew.

Traditional Uses of Trail Lines;

1. Non-plumb hoist deployment
 2. To prevent load swing
 3. To prevent load spin
 4. Radio/message delivery
-

CONCLUSION:

Trail lines are an important and often essential tool in helicopter rescue operations. Their utilization is as varied as the occasions of their need. Crew discussion and agreement on the need and deployment technique are the only limiting factors.

RESCUE SWIMMER DEPLOYMENT TECHNIQUES

DISCUSSION:

Rescue swimmers are essential assets in the recovery of incapacitated victims in a water environment. However, ambulatory victims, especially when trained (military aviators, etc.) may be capable of the proper use of slings/basket without swimmer assistance. Use of swimmers should be judicious and clearly appropriate. Safety of the swimmer and aircrew are paramount concerns. No rescue will be attempted without unanimous aircrew agreement in the rescue method and confidence of success. Standard procedures for deployment are designed to ensure constant visual contact with the victim and swimmer. Rescue swimmer qualifications and currency have been adopted from the USCG Rescue Swimmer Manual. Crew Chief procedures and phraseology in regards to swimmer ops are standard to other hoisting evolutions except for free fall deployments that are outlined below.

All crews must accept that some missions pose unacceptable risk and must not be attempted. Reluctance or confusion by any member at any time is grounds to abort.

PROCEDURES:

1. Rescue Check Part 1.
2. Rescue Check Part 2 (emphasis on risk analysis, rescuer method/device).
3. COMPLETE brief of plan, unanimous agreement.
4. For Free Fall deployment, Pilot must give "standby to deploy" until below 15 ft. then "clear to deploy swimmer." Then conning/deployment is controlled by the Crew Chief with Swimmer concurrence.
5. Execute rescue with constant evaluation, risk analysis.
6. Rescue Check Part 3.

CONCLUSIONS:

Rescue Swimmer operations are the pinnacle of helicopter rescue endeavors. The combination of sea state, lack of reference for the pilot, and a moving target for the crew chief, combine to make every evolution unique and challenging. Crew maturity and experience to recognize and avoid limits are crucial to success. No environment on

earth is more unforgiving of incompetence or even worse "overconfidence," than the open ocean. Serious thought and informed debate of the hazards and crews abilities must be vetted prior to any attempt.

SWIFT WATER RESCUE DEPLOYMENT TECHNIQUES

DISCUSSION:

Swift water rescue operations and techniques are utilized whenever currents are present in the rescue conditions. Rivers and surf are the primary occurrences encountered. Procedures for swimmer deployments are essentially the same except for allowances that must be made to adjust for the moving victim. Time of swimmer/victim contact is reduced to seconds versus minutes in a static rescue. Downstream obstacles (trees, wires, etc.) breaking waves (surf rescue) limit contact time and often only allow a single attempt. The key to river rescues is choosing the best stretch of water and utilizing landmarks as safety limits to know when to break off. Establishing pilot references tied to the victims' movement is critical. Position corrections (forward & right, etc.) must be made referencing debris drifting at the same rate of the victim. Time, wind, and obstacle permitting, turning the aircraft and positioning the swimmer/victim visible in the chin bubble allows for easier following and better cable management. Lack of crew coordination and competencies will be immediately obvious.

Swift water rescues with the helicopter are categorized as dynamic (victims adrift in current) or, static (victim is stationary on an island or on a strainer). Static rescues usually follow standard hoist procedures with one exception. If the victim is in a precarious situation and could fall into the current during the rescue, consideration should be given to deploying the swimmer via the back harness hook. This allows the swimmer and crew to immediately transition to the dynamic rescue technique for a moving pickup. Dynamic rescue techniques differ from static pickups dramatically. Swimmers are deployed downstream in the path of the victim and suspended with only their feet in the water. Rescue harnesses will be "hooked" from the back to allow free use of swimmers hands and correct positioning for the capture. Hover corrections are given to the pilot by the crew-chief to insure an intercept and the swimmer uses his dragging feet/fins to maintain an up-current heading. Normal hand signals should be given by swimmers for altitude and direction corrections. Distance callouts should be made by the crew-chief as the victim closes with the swimmer. When the intercept occurs the crew-chief calls "contact" and simultaneously pays out approximately 5 feet of cable to prevent cable tension during strop capture. Upon hearing "contact" the pilot will immediately match speed down-current and follow direction corrections given by the crew-chief. Short haul recovery to the closest safe offload is preferred to prevent injuries from the strop. Keeping the victim and swimmer as low as possible will minimize injuries from a strop-slippage. No rescue will be attempted without unanimous aircrew agreement in the rescue method and confidence of success. Standard procedures for deployment are designed to ensure constant visual contact with the victim and swimmer. Crew Chief procedures and phraseology in regards to swimmer

ops are standard to other hoisting evolutions except for swift water dynamic deployments that are outlined below.

All crews must accept that some missions pose unacceptable risk and must not be attempted. Reluctance or confusion by any member at any time is grounds to abort.

PROCEDURES:

1. Rescue Check Part 1.
2. Rescue Check Part 2 (emphasis on risk analysis, rescuer method/device).
3. COMPLETE brief of plan, unanimous agreement.
4. For dynamic deployment, swimmers harness "back hook" and double checked.
5. Establish safe hover downstream at capture point.
6. Execute rescue with constant evaluation, risk analysis.
7. Rescue Check Part 3.

CONCLUSION:

Swift water rescue attempts ALWAYS have the potential for disaster. Consideration should be given to shore based attempts first. Use of the helicopter indirectly for rope or personnel transports across the river is a viable option. Pilot reference to maintain position will always be a challenge and is usually the cause of unsuccessful attempts. Target fixation can allow crews to exceed limitations and drift past safety landmarks.

The odds of a dynamic river rescue in our area of responsibility are extremely remote. However the possibilities of a static rescue becoming dynamic are much greater. Crew discussion and input are the keys to recognizing when dynamic techniques should be used. Careful recon from altitude MUST be completed to identify hazards prior to an approach to the water. These scenarios are often emotional and dramatic. Crews will ensure all checklists are completed in a calm professional manner and the urge to rush the rescue will be quelled.

EMERGENCY PROCEDURES – HOIST OPERATIONS

DISCUSSION:

The following procedures are designed to facilitate a safe recovery of rescue personnel and victims in the event of malfunctions of the hoist or communication equipment during a rescue. Because of the dynamic, time critical environment of a rescue, all procedures must be performed from memory by Crew Chiefs and Pilots. Hoisting emergencies are

divided into two categories, committed and uncommitted. When a hoisting device is on a vessel's deck and is connected to the hoist hook, or is being delivered/retrieved through any obstacles that represent possible snag hazards, you are considered to be "committed" to the hoist. When using a trail/tag line, you are not committed until the device is in a situation as described above due to the weak link which is designed to part if an excessive force is applied. If you can immediately transition to level forward flight without snag or obstacle hazard, you are considered to be "uncommitted" to the hoist. If the hoist cable is damaged (i.e., kinked, bird-caged, strands broken or deformed), the cable must not be used for hoisting, nor shall the damaged portion be retrieved into the hoist assembly. Use of the quick-splice should be considered.

HOIST CABLE FOULED/DAMAGED

Symptoms:

- Hoist cable becomes fouled or snagged on deck or ground items.
- Hoist cable visibly damaged.

Corrective Action:

1. Payout slack in cable.
2. Advise Pilot.
3. If conditions permit, direct ground crew to free the cable.
4. If unable to free the cable or the cable is damaged, and the situation permits, wrap the area to be cut with tape (to prevent fraying). Use the cable cutters and sever the cable.
5. If mission urgency dictates a continued hoist, assemble the quick splice and continue the hoist with the remaining cable. **CAUTION:** Use of the quick splice will eliminate the automatic speed reduction and up limit switches.

HOIST FAILURE

Symptom:

- Hoist fails to respond to Crew Chief's inputs.

Corrective Action:

1. Advise the pilot.

If not committed:

1. Abort the hoist.

If committed:

1. Check the cable and drum for fouling.
2. Advise pilot to pull/reset hoist circuit breakers.
3. Check pendant/power cannon plugs on hoist.

If hoist power not restored:

1. Revert to "short haul" procedures.

HOIST ELECTRICAL RUNAWAY

Symptom:

- Hoist cable extends/retracts without crew input.

Corrective Action:

1. Advise Pilot/request hoist circuit breakers pulled.
2. Revert to "short haul" procedures.

ICS FAILURE DURING HOISTING OPERATIONS

Symptom:

- Pilot or Crew Chief unable to listen and/or talk during a hoist.

Corrective Action:

1. Crew Chief- blow whistle, (one blast for "uncommitted, Two blasts for "committed")
2. Pilot – Hold position/check ICS cord and comm. box settings.
3. Crew Chief – Check ICS cord and comm. box settings.

If ICS communication not restored:

1. Crew Chief – plug helmet cord into handheld radio and attempt communications on pre-briefed crew frequency established during Rescue Check Part One.

If radio communications not established:

1. Crew Chief – Communicate by voice commands and continue or abort hoist depending on committed status

LOST SWIMMER/CREWMAN

Corrective Action (DAY):

1. "Mark" GPS position, transmit location to dispatch.
2. Transition to forward flight and establish right hand orbit.
3. Look and listen for Swimmer Signal.
4. When visual—resume hover position.

If these procedures fail to relocate Swimmer:

1. Complete leaving Rescue Swimmer on scene procedure.

Corrective Action (NIGHT):

1. "Mark" GPS position, transmit location to dispatch.
2. Flash landing/hover light.
3. Look and listen for Swimmer signal.
4. When visual – cease flashing light.

If these procedures fail to relocate Swimmer:

1. Complete leaving Rescue Swimmer on scene Procedure.

LEAVING RESCUE SWIMMER/CREWMAN ON SCENE PROCEDURE

The abandoned rescue swimmer's, and survivor's, survivability is enhanced by providing any extra equipment possible, i.e., raft, hypothermia bags, EMT kit, etc. that can be left on scene as the aircraft departs.

In the event the aircraft must depart scene due to serious malfunction or other reason:

1. "Mark" and record position. Notify dispatch.
2. Deploy lighted raft.
3. Notify Swimmer of intentions and ETA of return.

HOIST OPERATOR PHRASEOLOGY

COMMANDS	PILOT ACTION
FORWARD	Move helicopter forward ____ feet.
BACK	Move helicopter back ____ feet.
LEFT	Move helicopter left ____ feet.
RIGHT	Move helicopter right ____ feet.
UP	Increase helicopter altitude.
DOWN	Decrease helicopter altitude.
HOLD	Hold the helicopter position relative to the target.
EASY	Move helicopter very slowly in direction indicated.
FORWARD AND RIGHT	Combination command ____ feet.
CEASE COMMANDS	Cease giving commands but continue advisory reports.
ABORT	Discontinue present evolution.
SHEAR! SHEAR! SHEAR!	Crew Chief shears cable with cable cutters.

HOIST RESCUE CHECKLIST

PREFLIGHT:

- ☐ SAFETY IS THE NUMBER ONE PRIORITY
- ☐ HAVE WE BEEN DISPATCHED OR REQUESTED?
- ☐ IS THIS FLIGHT NECESSARY?
- ☐ FIREWATCH, DOLLY SECURED, TIE DOWNS REMOVED
- ☐ FLIGHT CREW TRAINED AND QUALIFIED?
- ☐ FLIGHT CREW EQUIPED WITH PROPER PPE?
- ☐ ALL EQUIPMENT AND PASSENGERS SECURED
- ☐ RADIOS AND COMM'S SET
- ☐ DO YOU HAVE THE PERSONNEL NEEDED TO COMPLETE MISSION
- ☐ CONSIDER: WINDS, WEATHER, ELEVATION, FUEL, VISIBILITY
- ☐ COMPLETE LOAD CALCULATIONS
- ☐ AIRCRAFT CLEAR OF SURROUNDING HAZARDS

ENROUTE:

- ☐ PERFORM RESCUE CHECK PART (1)
- ☐ PLOT GPS TRACK
- ☐ SECURE RADIO FREQUENCIES FOR INCIDENT

ONSCENE:

- ☐ UPDATE DISPATCH WITH CURRENT GPS LAT/LONG
- ☐ HIGH AND LOW RECON, IDENTIFY ALL HAZARDS
- ☐ MAKE RADIO CONTACT WITH GROUND CREWS IF AVAILABLE
- ☐ PERFORM RESCUE CHECK PART (2)

RESCUERS:

- ☐ RESCUER 1: RADIO, BLUE MEDICAL BAG
- ☐ RESCUER 2: RADIO, BAUMAN BAG/TAG LINE, AND BACKBOARD
- ☐ CONSIDER: SCREAMER SUIT, RESCUE STROP, STOKES
- ☐ MAKE RADIO CONTACT WITH HELICOPTER AND GIVE UPDATES
- ☐ 600 LB MAX LOAD ON HOIST- PREFER SINGLE PATIENT LOADS
- ☐ WILL YOU MAKE A DIFFERENCE IN PATIENT CARE BY HOISTING PATIENT?
- ☐ RISK VS. BENEFIT OF HOISTING PATIENT
- ☐ HOIST RESCUER 1 BACK TO SHIP, THEN PATIENT, THEN RESCUER 2

POST RESCUE:

- ☐ PERFORM RESCUE CHECK PART (3)
- ☐ ADVISE DISPATCH OF TRANSPORT DESTINATION, ETA AND SUPPORT NEEDS

RESCUE CHECK PART 1 (En-route)

1. Safety harness on and double checked
2. Eye protection on
3. ICS cord attached
4. Turn on hoist cam recorder
5. Rescue device/swimmer readied in cabin
6. Cable cutters readied in cabin
7. Comm. check – Rescuers, Crew Chief and Pilot
8. Request hoist power, hoist function check
9. RESCUE CHECK PART 1 COMPLETE

RESCUE CHECK PART 2 (On Scene)

1. Door opened & pinned (Below 50 kts., Pilot approval)
2. Risk analysis (completed/concurred by crew)
3. Power check (Minimum 10% reserve available)
4. Pilot's radios are set
5. Rescue device/Crew Chief, rigged, ready at skid

RESCUE CHECK PART 3 (Departure)

1. Hoist secured
2. Door closed
3. Patient, personnel & equipment secured
4. Radios set
5. Cleared for forward flight

**Always complete a cable
Check immediately following a
hoist operation.**

Section 33

Over-Water Flights

1. ASU single engine helicopters will not be operated on extended over water flights, greater than surf zones or kelp beds, unless certain criteria (contained herein) are complied with.
2. Coast recons, beach or surf SAR is permitted at pilot discretion.
3. In response to critical life threatening emergencies, extended over water flights (day or night) may be conducted, as reasonable, at the discretion of the pilot.
4. On any over-water flights, personal flotation vests, and HEED breathing equipment are to be worn by all occupants.
5. The Bell HH-1N is equipped with two engines. This aircraft is approved for all day/night overwater flights.
6. Pilots, crew chiefs and medics will receive over water training every other year that will include, but not be limited to, emergency egress and survival equipment operations. Included with this training shall be a water dunker course.

Section 34

Water Rescue Operations

OFFSHORE RESCUE OPERATIONS

DISCUSSION:

The following procedures and crew requirements are designed to provide the maximum safety margins for open water operations. Proper planning, training, procedures, and uniform aircraft configuration will minimize the consequences of an aircraft ditching.

All aircrew members will be current on HEEDS training and be equipped with exposure suits, flotation vests, and serviceable HEEDS bottles. Aircrews will be current on emergency egress procedures including raft deployment. Standard Aircraft configuration will be, emergency raft mounted behind pilot seat via quick disconnect harness.

WEATHER MINIMUMS:

Day: (requires ASU Lt. notification)
3,000 Ft. ceiling 10 mi. visibility
Site visible using NVGs prior to
crossing shoreline.

Night: (requires ASU Lt. approval)
10,000 Ft. ceiling, incident

PROCEDURES:

1. Brief mission with all crew, receive unanimous consensus.
2. Obtain approval from ASU Lt./Sgt. and make notification to Fire Duty Chief.
3. Assign Automatic Flight Following responsibility.
4. Aircraft/Crew configuration, raft installed, exposure suits, vests, heeds.
5. After liftoff, establish positive radar contact with ATC and maintain throughout.
6. Prior to crossing shoreline, note/mark operating temperatures and pressures for frequent reference as to negative trends. If negative trend noted, abort mission to nearest safe landing.
7. When possible adjust route to overfly vessels and oil rigs. En-route altitude should allow for autorotation to shore or near closest vessel or oil rig.
8. Maintain 15 min flight guard with Control including heading, speed, and altitude.

9. Adhere to all standard Rescue Checks and procedures.

CONCLUSION:

Open water operations require constant vigilance as to aircraft condition. Early detection of impending mechanical failures can prevent the possibility of ditching. If controlled ditching is required, all aircrew and raft (except pilot) should be deployed from a low hover and then the pilot should reposition downwind at least 100 yards and execute a water landing with a left hand roll to ensure blade debris ejects away from the aircrew.

WATER RESCUE RESPONSE CHECKLIST

PREFLIGHT:

- ☐ DISPATCHED OR REQUESTED?
- ☐ IS THIS FLIGHT NECESSARY?
- ☐ FIREWATCH, TIE DOWNS REMOVED
- ☐ FLIGHT CREW TRAINED AND QUALIFIED
- ☐ OVER-WATER PPE FOR FLIGHT CREW
- ☐ CREW CHIEF CHECKS PPE PRIOR TO BOARDING
- ☐ ALL EQUIPMENT AND FLIGHT CREW SECURED
- ☐ ENOUGH TRAINED PERSONNEL TO COMPLETE MISSION
- ☐ CONSIDER: WINDS, WEATHER CONDITIONS, ELEVATION, FUEL, VISIBILITY
- ☐ AIRCRAFT CLEAR OF SURROUNDING HAZARDS
- ☐ HEEDS BOTTLES FOR FLIGHT CREW
- ☐ SWIMMER TRAINING COMPLETED
- ☐ OVER-WATER EMERGENCY PROCEDURES TRAINING COMPLETED

ADDITIONAL EQUIPMENT:

- ☐ LIFE RAFT: TO BE DEPLOYED WITH MULTIPLE SURVIVORS
- ☐ RESCUE BASKET
- ☐ RESCUE STROPS (2)
- ☐ WATERPROOF RADIOS
- ☐ LIFEVESTS FOR PATIENTS
- ☐ FULL WATER RESCUE PPE FOR SWIMMERS

ENROUTE:

- ☐ CONDUCT RESCUE CHECK PART (1)
- ☐ REQUEST AUTO FLIGHT FOLLOWING (AFF)
- ☐ ALL PERSONNEL & EQUIPMENT SECURE
- ☐ CONSIDER PACE OF OPERATIONS AND SLOW DOWN AS NEEDED
- ☐ CONFIGURE RADIOS (COAST GUARD CH 16 OR 22A)

ONSCENE:

- ☐ CONDUCT RESCUE CHECK PART (2)
- ☐ -----CRM-----
- ☐ UPDATE DISPATCH WITH CURRENT GPS LAT/LONG
- ☐ MAKE RADIO CONTACT WITH BOAT CREWS IF ON SCENE
- ☐ CONSIDER ALTERNATE OPTIONS: WATER RESCUE TEAM, COAST GUARD, LIFEGUARDS, HARBOR PATROL
- ☐ IS ENTIRE CREW COMFORTABLE AND CAPABLE WITH CURRENT OCEAN CONDITIONS
- ☐ IF SWIMMER DEPLOYED, ADVISE IC/DISPATCH

RESCUERS:

- ❑ RESCUE SWIMMER 1: RADIO, PRIMARY RESCUER
- ❑ RESCUE SWIMMER 2: RADIO – BACKUP
- ❑ CONSIDER: ALTERNATE OPTIONS
- ❑ MAKE RADIO CONTACT WITH HELICOPTER AND GIVE UPDATES
- ❑ 600 LB MAX LOAD ON HOIST, CONSIDER SINGLE PATIENT LOADS
- ❑ WILL YOU MAKE A DIFFERENCE IN PATIENT CARE BY HOISTING?
- ❑ RISK VS. BENEFIT OF HOISTING PATIENT

POST RESCUE:

- ❑ CONDUCT RESCUE CHECK PART (3)
- ❑ CONTINUE ADVISORIES TO IC/DISPATCH/COAST GUARD

RESCUE SWIMMER DEPLOYMENT TECHNIQUES

DISCUSSION:

Rescue swimmers are essential assets in the recovery of incapacitated victims in a water environment. However, ambulatory victims, especially when trained (military aviators etc.) may be capable of the proper use of slings/basket without swimmer assistance. Use of swimmers should be judicious and clearly appropriate. Safety of the swimmer and aircrew are paramount concerns. No rescue will be attempted without unanimous aircrew agreement in the rescue method and confidence of success. Standard procedures for deployment are designed to ensure constant visual contact with the victim and swimmer. Rescue swimmer qualifications and currency have been adopted from the USCG Rescue Swimmer Manual. Crew Chief procedures and phraseology in regards to swimmer ops are standard to other hoisting evolutions except for free fall deployments that are outlined below.

All crews must accept that some missions pose unacceptable risk and must not be attempted. Reluctance or confusion by any member at any time is grounds to abort.

PROCEDURES:

1. Rescue Check Part 1.
2. Rescue Check Part 2 (emphasis on risk analysis, rescuer method/device).
3. COMPLETE brief of plan, unanimous agreement.
4. For Free Fall deployment, Pilot must give "standby to deploy" until below 15 ft. then "clear to deploy swimmer." Then conning/deployment is controlled by the Crew Chief with Swimmer concurrence.
5. Execute rescue with constant evaluation, risk analysis.

6. Rescue Check Part 3.

CONCLUSION:

Rescue Swimmer operations are the pinnacle of helicopter rescue endeavors. The combination of sea state, lack of reference for the pilot, and a moving target for the crew chief, combine to make every evolution unique and challenging. Crew maturity and experience to recognize and avoid limits are crucial to success. No environment on earth is more unforgiving of incompetence or even worse "overconfidence," than the open ocean. Serious thought and informed debate of the hazards and crews abilities must be vetted prior to any attempt.

SWIFT WATER RESCUE DEPLOYMENT TECHNIQUES

DISCUSSION:

Swift water rescue operations and techniques are utilized whenever currents are present in the rescue conditions. Rivers and surf are the primary occurrences encountered. Procedures for swimmer deployments are essentially the same except for allowances that must be made to adjust for the moving victim. Time of swimmer/victim contact is reduced to seconds versus minutes in a static rescue. Downstream obstacles (trees, wires, etc.) breaking waves (surf rescue) limit contact time and often only allow a single attempt. The key to river rescues is choosing the best stretch of water and utilizing landmarks as safety limits to know when to break off. Establishing pilot references tied to the victims' movement is critical. Position corrections (forward & right, etc.) must be made referencing debris drifting at the same rate of the victim. Time, wind, and obstacle permitting, turning the aircraft and positioning the swimmer/victim visible in the chin bubble allows for easier following and better cable management. Lack of crew coordination and competencies will be immediately obvious.

Swift water rescues with the helicopter are categorized as dynamic (victims adrift in current) or, static (victim is stationary on an island or on a strainer). Static rescues usually follow standard hoist procedures with one exception. If the victim is in a precarious situation and could fall into the current during the rescue, consideration should be given to deploying the swimmer via the back harness hook. This allows the swimmer and crew to immediately transition to the dynamic rescue technique for a moving pickup. Dynamic rescue techniques differ from static pickups dramatically. Swimmers are deployed downstream in the path of the victim and suspended with only their feet in the water. Rescue harnesses will be "hooked" from the back to allow free use of swimmers hands and correct positioning for the capture. Hover corrections are given to the pilot by the crew-chief to insure an intercept and the swimmer uses his dragging feet/fins to maintain an up-current heading. Normal hand signals should be given by swimmers for altitude and direction corrections. Distance callouts should be made by the crew-chief as the victim closes with the swimmer. When the intercept occurs, the crew-chief calls "contact" and simultaneously pays out approximately 5 feet of cable to prevent cable tension during strop capture. Upon hearing "contact" the pilot

will immediately match speed down-current and follow direction corrections given by the crew-chief. Short haul recovery to the closest safe offload is preferred to prevent injuries from the stop. Keeping the victim and swimmer as low as possible will minimize injuries from a stop slippage. No rescue will be attempted without unanimous aircrew agreement in the rescue method and confidence of success. Standard procedures for deployment are designed to ensure constant visual contact with the victim and swimmer. Crew Chief procedures and phraseology in regards to swimmer ops are standard to other hoisting evolutions except for swift water dynamic deployments that are outlined below.

All crews must accept that some missions pose unacceptable risk and must not be attempted. Reluctance or confusion by any member at any time is grounds to abort.

PROCEDURES:

1. Rescue Check Part 1.
2. Rescue Check Part 2 (emphasis on risk analysis, rescuer method/device).
3. COMPLETE brief of plan, unanimous agreement.
4. For dynamic deployment, swimmers harness "back hook" and double checked.
5. Establish safe hover downstream at capture point.
6. Execute rescue with constant evaluation, risk analysis.
7. Rescue Check Part 3.

CONCLUSION:

Swift water rescue attempts ALWAYS have the potential for disaster. Consideration should be given to shore based attempts first. Use of the helicopter indirectly for rope or personnel transports across the river is a viable option. Pilot reference to maintain position will always be a challenge and is usually the cause of unsuccessful attempts. Target fixation can allow crews to exceed limitations and drift past safety landmarks.

The odds of a dynamic river rescue in our area of responsibility are extremely remote. However the possibilities of a static rescue becoming dynamic are much greater. Crew discussion and input are the keys to recognizing when dynamic techniques should be used. Careful recon from altitude MUST be completed to identify hazards prior to an approach to the water. These scenarios are often emotional and dramatic. Crews will ensure all checklists are completed in a calm professional manner and the urge to rush the rescue will be quelled.

Section 35

Over Water Emergency Procedures

EMERGENCY DITCHING PROCEDURES

Emergency Ditching procedures will be utilized in the unlikely event of the aircraft being unable to make shore due to an in-flight emergency requiring an immediate landing.

The following emergencies MAY meet the criterion for ditching but the final judgment must be made by the aircraft PIC with regards to severity of the failure and distance to land.

1. Aircraft fire.
2. Gearbox failure imminent.
3. Bird strike with known blade damage.
4. Fuel starvation.

PROCEDURES:

1. Tank doors (if installed) closed.
2. Radio: transmit position, intentions, number of crew onboard.
3. Sliding door: Open when below 50 kts.
4. Establish hover below 15ft (conditions permitting)
5. 1st Crewman and raft: freefall deploy.
6. 2nd Crewman: (if aboard) freefall deploy.
7. Crew chief: freefall deploy.
8. Pilot: Hover Taxi downwind 100 yards jettison door and perform "cut gun" water landing with maximum collective pull and rotor droop. If able, roll to the left to prevent rotor debris flying forward (towards crew).
9. Pilot: Perform Egress.
10. Crew: Inflate raft and proceed toward pilot for recovery.

Section 36

Transportation of Canines

All canines transported on Air Support Unit aircraft shall be accompanied by their handlers and under strict control at all times. Canines may be required to be muzzled under the direction of the flight crew.

Section 37

Carriage of Weapons

INTRODUCTION:

This section is not intended to address all provisions of section 14: Code of Federal Regulations (CFR) 175, but to provide guidelines on the transporting and packaging of weapons and hazardous materials commonly used by law enforcement and firefighting activities. Hazardous materials not specifically addressed in this section should be carried in accordance with those regulations defined in HMR 175.

1. The pilot in command must be advised if weapons, chemical agents or explosive breaching items are to be carried aboard the aircraft, either during exigent circumstances or placed in storage compartments during a routine flight.
2. The pilot in command may request disarming of passengers as necessary (Including TASERS).

3. HANDGUNS AND AMMUNITION:

- a. Handguns and ammunition may be carried in a readily accessible manner by law enforcement, military, or other personnel when the individual is on official business and is required to carry a firearm in performance of his duties and approved by the pilot in command.
- b. Handguns are required to be holstered and secured while aboard Unit aircraft.

4. RIFLES AND SHOTGUNS:

- a. Rifles and shotguns may be carried in a readily accessible manner by law enforcement, military or other personnel when the following conditions are complied with:
 - i. Magazines removed – magazines may be stored in an accessible manner
 - ii. No chambered rounds
 - iii. Weapon is open
 - iv. No mace or O.C. (pepper spray)
- b. Ammunition for rifles and shotguns not contained in magazines or approved ammo carriers must be transported in the original package or box.

5. TRANSPORTATION OF SPECIAL ENFORCEMENT TEAM:

- a. When SET members are being transported to a dispersal point, normal precautions shall be carried out with regards to the weapons and

equipment the team members carry. Long guns (bolt action rifles, shotguns, automatic rifles and submachine guns) shall be carried on board the aircraft unloaded with magazines removed. Bolts shall be closed and the weapon on "Safe." Handguns will be carried loaded, with a round in the chamber, secured in an approved holster. Tear gas agents such as Chemical mace, Oleoresin Capsicum spray ("O.C."), Pepper spray, or CN and CS tear gas are forbidden aboard Air Support unit aircraft. Pyrotechnic devices (such as "Flash bangs" and Smoke grenades) shall be carried in the aircraft's baggage compartment upon approval of the flight crew.

- b. In exigent circumstances, a component of SET may be transported directly to a scene, in which case it is necessary to make certain exceptions to standard policy. For purposes of tactical insertion **ONLY**, assault rifles, such as the Heckler and Koch 416, Colt AR-15, M-16, and submachine guns such as the Heckler & Koch MP5 may be carried with a round in the chamber and a loaded magazine attached, on "Safe." Bolt action rifles and shotguns shall be carried with the magazine loaded, no round in the chamber, on "Safe." 37mm grenades, explosive breaching items, smoke grenades, "Flash Bangs" and chemical agents may be carried by team members as a part of their personal load out.
- c. During Tactical Insertions, all team members shall have their weight inside the helicopter. They will be secured by seats belts, safety straps and carabineers, or other devices approved by the Air Support Unit after discussions with SET.

UNDER NO CIRCUMSTANCES
WILL ANY PERSONNEL STAND ON THE LANDING SKIDS
OF THE OH-58 HELICOPTERS WHILE AIRBORNE.

6. HAZARDOUS MATERIALS:

a. OXYGEN

- i. Cylinders must be securely labeled with DOT HazMat warning labels.
- ii. Each cylinder must be securely fastened in an upright position or lashed in a horizontal position if the container cannot be secured in an upright position.
- iii. Pilot shall assure no smoking, open flame or spark, while loading, unloading or transporting in flight.
- iv. Adequate ventilation must be provided to prevent accumulation of vapors.
- v. Oxygen used for medical emergencies may be dispensed inside the aircraft during flight.
- vi. Except for cylinders that must be available in flight, all cylinder valves must be protected from damage by a cap, collar or placing the cylinder inside a package.

b. FLARES – FUSES

- i. Flares/Fuses will be transported in the original shipping containers whenever practical.
 - ii. Small quantities may be transported when contained in a package, box or pack.
- c. LIQUID FUELS (except fuels under compression propane, butane, etc. less than 10 gallon quantity)
 - i. Liquid fuels must be transported in containers specifically designed to contain fuel.
 - ii. Containers must be inspected for leakage and be free of any damage that may allow leakage.
 - iii. Fuel containers must be secured in an upright position by tie down straps or must be stored inside a container that will prevent the container from overturning.
 - iv. Pilot shall assure no smoking, open flame or spark, while loading, unloading or transporting in flight.
 - v. Fuel containers will not be placed in compartments containing an exposed battery.
 - vi. Fuel containers will be labeled to indicate the descriptive name of the fuel.
 - vii. Containers must have at least one inch (1") of airspace below the container opening.
- d. FUEL IN POWERED EQUIPMENT TANKS
 - i. Fuel may be carried in powered equipment tanks when the following conditions are met:
 - 1) Each piece of equipment is stored in an upright position
 - 2) Each fuel tank must be filled in a manner that will preclude spillage of fuel during loading, unloading and transportation.
 - 3) The compartment in which the equipment is loaded will be suitably ventilated to prevent the accumulation of fuel vapors and the compartment must not contain an exposed battery.

Pilot shall enforce no smoking, open flame or spark, while loading, unloading or transporting in flight.

Section 38

Hot Fueling Operations

INTRODUCTION:

1. Hot fueling of Air Support Unit helicopters is permitted when the following policies and procedures are implemented.
2. Only helicopters equipped with closed circuit fueling systems are approved for hot fueling operations.
3. Hot fueling operations will be conducted using jet fuel tenders equipped with a closed circuit fuel nozzle.
4. Fuel tenders must be bonded to the helicopter to be fueled, prior to removal of the fuel tank filler cap.
5. A twenty-pound (20-lb.) dry powder fire extinguisher must be readily available to the jet fuel tender operator.
6. The helicopter pilot in command must remain at the controls whenever a unit helicopter is hot fueled.
7. All passengers must exit the helicopter and remain a minimum distance of fifty-feet (50') from the fueling operation.
8. Smoking is NOT permitted on any helispot or ramp where hot fueling operations are conducted.

REMOTELY LOCATED FUEL DISPENSERS

When fueling at Cuyama Valley or any remotely located fuel tank not equipped with a closed circuit fueling system, Air Support Unit helicopters will be shut down prior to refueling operations.

Section 39

Fuel Storage Quality Control

INTRODUCTION:

The following will be guidelines for quality control of fuel storage:

TENDERS AND FUEL DISPENSERS

1. Fuel samples will be taken from the fuel sump drains, filter & nozzle of any fuel tender prior to dispensing fuel into any aircraft.
2. Samples will be visually checked for water or other contaminants. **Note:** A small amount of water at the bottom of a fuel sample is normal. This is caused by condensation forming on the interior walls of the fuel tank and settling to the bottom of the tank.
 - a. If water is found at the bottom of a fuel sample, fuel should be drained from the tank sump until no water is present.
 - b. Fuel samples should never be poured back into a fuel tank. Fuel samples should be discarded or saved in approved fuel containers.
 - c. Any fuel samples that are cloudy or milky in appearance should be given to a pilot or a mechanic for evaluation. Cloudy or milky fuel should never be used in Air Support Unit helicopters.
3. A normal fuel sample will be clear with no suspended contaminants or water. The fuel should have a slight yellow color, close to the color of straw.
4. All fuel test results will be logged.

FUEL FILTER MAINTENANCE

1. In conjunction with annual U.S.F.S. and/or CalFire carding inspections of jet fuel tenders, the fuel filters in all Air Support Unit fuel tenders and dispensing units, will be removed and new filters installed annually.
2. Fuel filter canisters will be labeled with the date new filters were installed.
3. When fuel filters are changed, a notation is required in the Air Support Unit "Red Book."

FUEL DISPENSERS OTHER THAN FUEL TENDERS

1. Before dispensing fuel from the Cuyama Valley storage tank or any other remotely located storage tank, a fuel sample will be taken from the dispensing nozzle, sump and filter.
2. If tank design permits, a visual check of fuel for contaminants should be accomplished prior to dispensing of fuel.

Section 40

Fuel Tender Operations

INTRODUCTION:

The following guidelines will be followed as a minimum on all Air Support Unit fueling operations:

1. Air Support Unit jet fuel tenders will be attended and operated only by persons properly licensed and instructed in methods of proper use and operation.
2. Fuel shall not be dispensed into or removed from, an aircraft within the Air Support Unit hangar; unless circumstances warrant down loading of fuel and it is impractical to remove the aircraft from the hangar and is approved by the ASU supervisor.
3. During refueling operations, the aircraft will be pulled clear of hangar by a minimum of ten feet (10').
4. Fuel tender refueling units will be electrically bonded to the helicopter being fueled or de-fueled. All bonding connections will be made prior to any fuel transfer and will not be disconnected until fuel operations are completed.
5. Air Support Unit jet fuel tenders will be equipped with a minimum of **ONE** (1) twenty-pound (20 lb.) dry powder fire extinguisher.
6. No smoking within fifty feet (50') of any point where fuel is being transferred.
7. All fuel tender operators will become familiar with the following information:

SAFETY:

1. Do not allow any smoking within fifty feet (50') of the filling area.
2. Be certain suitable fire extinguishers are present (20-lb. dry powder type).
3. Check fuel for contamination prior to fueling any aircraft.
4. Have a static line attached to aircraft when refueling.
5. Drain water sumps on fuel tanks each day to prevent contaminated fuel from reaching aircraft fuel tanks.
6. Check hose and nozzle to insure both are free from foreign material.

7. Person fueling aircraft must wear non-static clothing.

DURING OPERATION:

1. Avoid spillage of fuel as much as possible. If spillage of fuel occurs, contact the Fire Department.
2. Avoid getting fuel on the body or clothing. If clothing becomes saturated with fuel, remove the clothing immediately and wash the body with hot soapy water.

GROUNDING PROCEDURES:

1. Connect the static wire from the jet fuel tender to the aircraft.
2. Remove filler cap and attach Wiggins nozzle.
3. When disconnecting, reverse the order 3, 2, 1. In general, the dispensing unit should be grounded first and should finally be bonded to the receiving unit. Tank covers should never be open during transfer of fuel unless all grounds are in place.

Section 41

Commonly Used Terms

DEFINITION OF TERMS:

Acrobatic flight

An intentional maneuver involving an abrupt change in an aircraft's attitude; an abnormal attitude; or abnormal acceleration not necessary for normal flight.

Aircraft

A device that is used or intended to be used for flight in the air.

Airplane

An engine-driven, fixed-wing aircraft, heavier-than-air, that is supported in flight by the dynamic reaction of the air against its wings.

Airport

An area of land or water that is used or intended to be used for the landing and takeoff of aircraft, and includes its buildings and facilities.

Autorotation

The action of turning a rotor system by airflow and not by engine power. The airflow is produced by the movement through the air.

Category

1. As used with respect to the certification, ratings, privileges, and limitations of airmen, means a broad classification of aircraft.

Examples:

- a. Airplane
- b. Rotorcraft
- c. Glider
- d. Lighter-than air

2. As used with respect to certification of aircraft, means a grouping of aircraft based upon intended use or operating limitations.

Examples:

- a. Transport
- b. Normal
- c. Utility
- d. Acrobatic
- e. Limited
- f. Restricted

g. Provisional

Class

1. As used with respect to certification, ratings, privileges, and limitations of airmen, means a classification of aircraft within a category having similar operating characteristics.

Examples:

- a. Single engine
- b. Multi-engine
- c. Land
- d. Water
- e. Helicopter
- f. Airship
- g. Free balloon

2. As used with respect to the certification of aircraft, means a broad grouping of aircraft having similar characteristics of propulsion, flight, or landing.

Examples:

- a. Airplane
- b. Rotorcraft
- c. Glider
- d. Balloon
- e. Seaplane

Confined area

Any area where flight of the helicopter is limited in some direction by terrain or the presence of obstructions, natural or manmade.

Congested area

The size of the area is not controlling, and violations of the rule have been sustained for operation of aircraft:

1. Over a small congested area consisting of approximately 10 houses and a school
2. Over the campus of a university
3. Over a beach area along a highway
4. Over a boys camp where there were numerous people on the docks and children at play ashore

The presence of people is important to the determination of whether a particular area is "congested."

External load

A load that is carried, or extends, outside of the aircraft fuselage.

Flight plan

Specified information relating to the intended flight of an aircraft that is filed orally or in writing with an FSS or an ATC facility.

Flight time

The time from the moment the aircraft first moves under its own power for the purpose of flight until the moment it comes to rest at the next point of landing.

Flight visibility

The average forward horizontal distance, from the cockpit of an aircraft in flight, at which prominent unlighted objects may be seen and identified by day and prominent. Lighted objects may be seen and identified by night.

Gross weight

The total weight of the aircraft and its contents.

Ground visibility

The prevailing horizontal visibility near the earth's surface as reported by the U.S. National Weather Service or an accredited observer.

Gust spread

Gust spreads are not normally reported. To obtain spread, compare minimum and maximum velocities.

Helipad

That part of the landing area designed for helicopters.

Heliport

An area of land, water, or structure used or intended to be used for the landing and takeoff of helicopters.

Hot Offload

Engine running, blades turning while personnel is embarking or disembarking from the aircraft.

Hot Refueling

Engine running, blades turning while refueling the aircraft.

Maneuver

Any planned motion of an aircraft in the air or on the ground.

Pinnacle

An area from which the ground drops away steeply on all sides.

Pilotage

Navigation by visual reference to landmarks.

Pilot in Command

The pilot responsible for the operation and safety of an aircraft.

Ridgeline

A long area from which the ground drops away steeply on one or two sides.

Rotorcraft-load combination

The combination of a rotorcraft and an external-load, including the external-load attaching means.

Rotorcraft-load combinations are designated as Class A, Class B, Class C, and Class D as follows:

1. Class A – One in which the external load cannot move freely, cannot be jettisoned, and does not extend below the landing gear.
2. Class B – One in which the external load is jettisonable and is lifted free of land or water during the rotorcraft operation.
3. Class C – One in which the external load is jettisonable and remains in contact with land or water during the rotorcraft operation.
4. Class D – One in which the external-load is other than a Class A, B, or C and has been specifically approved by the administrator for that operation.

Search and Rescue

A member of the Sheriff's Office Search and Rescue Team who has been trained in ASU aircraft and who has been approved as "Helicopter Qualified" by the SAR Incident Command Committee and the ASU Supervisor.

Survey

In reference to Helicopter operations; Examine as to condition and suitability for the safe approach, landing and departure.

Vertigo

A state of temporary spatial confusion resulting from misleading information sent to the brain by various sensory organs.

COMMONLY USED ACRONYMS

<u>AC</u>	Advisory circular
<u>ADF</u>	Automatic Direction Finder
<u>AIM</u>	Aeronautical Information Manual
<u>AIT</u>	Accident Investigation Team
<u>AGL</u>	Above Ground Level
<u>AHO</u>	Above Highest Obstacle
<u>ASR</u>	Airport Surveillance Radar
<u>ATC</u>	Air Traffic Control
<u>CalFire</u>	Cal. Dept. of Forestry (New designation)
<u>CDI</u>	Course Deviation Indicator
<u>CFI</u>	Certified Flight Instructor
<u>CG</u>	Center of Gravity
<u>CL</u>	Centerline
<u>DA</u>	Density Altitude
<u>DH</u>	Decision Height
<u>EGT</u>	Exhaust Gas Temperature
<u>ETA</u>	Estimated Time of Arrival
<u>ETE</u>	Estimated Time Enroute
<u>FAA</u>	Federal Aviation Administration
<u>FAR</u>	Federal Aviation Regulation
<u>FPM</u>	Feet Per Minute
<u>FSS</u>	Flight Service Station
<u>GPS</u>	Global Positioning System
<u>GCA</u>	Ground Controlled Approach
<u>HEED</u>	Helicopter Emergency Egress Device
<u>IAS</u>	Indicated Airspeed
<u>ICAP</u>	International Committee on Aviation Policy
<u>IAW</u>	In Accordance With
<u>IFH</u>	Instrument Flying Handbook
<u>IFR</u>	Instrument Flight Rules
<u>IGE</u>	In Ground Effect
<u>ILS</u>	Instrument Landing System
<u>IMC</u>	Instrument Meteorological conditions
<u>IP</u>	Instructor Pilot
<u>ITO</u>	Instrument Takeoff
<u>KIAS</u>	Knots Indicated Airspeed
<u>LOC</u>	Localizer
<u>MDA</u>	Minimum Descent Altitude
<u>MEL</u>	Multi-engine Land
<u>NDB</u>	Non-directional Beacon
<u>NM</u>	Nautical mile
<u>NOTAM</u>	Notice to Airmen
<u>N1.</u>	Percent of Gas Producer RPM
<u>N2.</u>	Percent of Power Turbine RPM

<u>NTSB</u>	National Transportation Safety Board
<u>NVG</u>	Night Vision Goggle
<u>OGE</u>	Out of Ground Effect
<u>PAR</u>	Precision Approach Radar
<u>PIC</u>	Pilot in Command
<u>PSI</u>	Pounds Per Square Inch
<u>RII</u>	Required inspection item
<u>RMI</u>	Radio Magnetic Indicator
<u>STABO</u>	Short Term Airborne Operations
<u>SEL</u>	Single Engine Land
<u>TGT</u>	Turbine Gas Temperature
<u>TOT</u>	Turbine Outlet Temperature
<u>VFR</u>	Visual Flight Rules
<u>VMC</u>	Visual Meteorological Conditions
<u>VOR</u>	VHF Omni-directional Range
<u>VNE</u>	Velocity Never-exceed
<u>USDI</u>	United States Department of Interior
<u>USCG</u>	United States Coast Guard
<u>USFS</u>	United States Forest Service