5.1. RESPONSIBILITIES.

5.1.1. USARHAW, Installation Fire and Safety Office.

a. The Wildland Fire Program Manager is in the IFSO. The WFPM shall ensure that manpower, supplies, equipment, and other cooperative fire fighting resources are available to meet the required goals and objectives of the IWFMP. Each FMA shall be required to maintain the minimum level of fire fighting resources as identified in this section.

b. The Director of Installation Fire and Safety is the proponent for the Army's fire protection program. The Director acts as the Command Fire Marshal who sets policy and has safety oversight. The IFSO has authority over the PTA Fire Department, the IFSO Strike Team, and provides direct Army oversight over the FFD on Army installations in accordance with the interservice agreement.

5.1.2. USARHAW, G3/DPTM, Range Division Hawaii (Range Control). Certain Range Control personnel trained in wildland fire fighting shall be utilized for initial attack response to fires reported on PTA and Oahu training ranges until the IFSO Strike Team is operational. Upon arrival at the site, Range Control fire fighting personnel will assess the fire conditions and determine fire control equipment and personnel requirements necessary to execute initial attack operations. In the event fire escapes the initial attack, a contingency plan will be implemented in accordance with established procedures outlined in the wildfire SOP for each respective FMA.

5.1.3. PTA Fire Department. Under direction of the PTA Deputy Fire Chief, the fire department is responsible for providing wildfire protection services at PTA. The PTA Deputy Fire Chief shall be familiar with the provisions outlined in this plan and provide qualified personnel to support the wildland fire management program.

5.1.4. Federal Fire Department. Through an interservice agreement, fire protection/prevention, aircraft rescue fire fighting, and wildland fire suppression services are provided by the Federal Fire Department, Navy Region Hawaii, at all installations under the jurisdiction of the USARHAW.

5.2. FIRE SUPPRESSION ACTIONS.

5.2.1. Fire Suppression. The objective of fire suppression is to attack and suppress wildfires at minimum cost while protecting values at risk and minimizing the impacts from suppression activities. For purposes of this fire management plan, a wildfire is defined as a free burning and unwanted fire requiring suppression action. Wildfire suppression is an emergency operation and takes precedence over all other operations, including training, with the exception of safeguarding human life. In some cases, a wildfire on Army training lands can be controlled with a single attack response vehicle; in others, large numbers of firefighters, fire apparatus, and equipment may be required. Because of this range of resource needs, fire suppression can be relatively simple and straightforward or extremely complex.

5.2.2. Standing Operating Procedures. USARHAW has developed pre-incident wildland fire Standing Operating Procedures (SOP) that provide guidelines intended to assist firefighters and the Incident Commander (IC) in establishing priorities and making fire suppression decisions

(see Appendix 1). These plans describe the most likely organizational structures for controlling a range of possible fire scenarios at a given FMA. Each SOP is designed to identify needed resources, most likely access routes, as well as the location of plant communities, sensitive habitat areas, archeological sites, and available water resources. The SOP outlines the most likely deployment of personnel and equipment at each FMA. Each SOP identifies minimum staffing levels. For personnel safety, no action is to be taken on an incident if the staffing level available is below the identified minimum. All available resources assigned to the area will move to the reported incident and commence suppression action when doing so has been deemed safe. All wildfires will require immediate suppression response adopting a confine, contain, or control strategy using the Incident Command System (ICS). Every strategy chosen shall be documented and monitored by the IC. SOPs address initial attack, extended attack, and major fire attack and also include, but are not limited to the following:

a. Detection and reporting procedures.

b. Descriptions of organizational functions and delineation of responsibilities.

c. Type of equipment and number of personnel needed.

d. Description of support services needed.

e. Notification and operating procedures

f. Radio frequency assignment.

g. Maps showing topography, possible staging areas, target hazards, access routes.

h. Rosters of interagency resources and ordering procedures.

i. Special concerns/needs (i.e., biological sensitive areas, impact areas, UXO's).

5.2.3. Fire Management Strategies.

a. Fire management policy for all military training lands will be to implement a suppression strategy for all unplanned ignitions. The Army recognizes three levels of suppression response: confine, contain, and control. The difference among these strategies is subtle in many cases, but the consequences can be substantial. The definitions are as follows:

(1) **Confine**. Confine is to restrict the wildfire within boundaries established either prior to, or during the fire. These identified boundaries will confine the fire, with "no action being taken" (line construction, bucket drops, etc.) to suppress the fire.

(2) **Contain**. Contain is to restrict a wildfire to a defined area, using a combination of natural and constructed barriers that will stop the spread of the fire under the prevailing and forecasted weather conditions until out. This means, "some action has been taken" (line construction, bucket drops, etc.) to suppress the fire.

(3) **Control**. Control is to aggressively fight a wildfire through the skillful use of personnel, equipment, and aircraft to establish fire lines around a fire to halt the spread and to extinguish all hot spots, until out.

b. All three strategies require continuous observation of fire behavior. When possible, fires will be managed in a control mode to minimize fire size. Considerations of contain and confine strategies will be incorporated to provide for human safety and/or other aspects. Suppression strategy considerations:

(1) Always provide first for firefighter and public safety.

(2) Use natural and man-made barriers to help in the rapid control of incidents to reduce exposure of fire fighting personnel to hazard areas and Unexploded Ordnance (UXO).

(3) Base appropriate method of attack on fire behavior and available suppression resources.

(4) Assess environmental impacts resulting from suppression activities to be they are outweighed by the values at risk.

(5) Assign priority protection to all known threatened and endangered species and cultural sites.

(6) Provide for the protection of capital investments on and immediately surrounding the training area.

c. The SOP considers military training activities that are potential sources of unplanned ignitions, and the types of resources that need to be on site to take rapid action on ignitions.

5.2.4. Fire Management Option/Alternatives.

a. Fire suppression alternatives range from immediate and aggressive suppression to no attack. As presented, the alternatives set standards for selection of the appropriate option by the IC. Further, they provide basic guidance and parameters within which the IC makes initial strategies and tactical decisions.

b. In the event of potential fire escape from Army land, the IC must consult with the owner or manager of the adjacent lands to select a fire management option based on an evaluation of local conditions. The most appropriate level of suppression will be chosen by the IC depending upon the anticipated consequences and management objectives for the area likely to burn. This is also part of the Escaped Fire Situation Analysis.

c. Options are not “set in stone” when applied to specific areas. Rather, the application of the options must be flexible and subject to revision as conditions change, such as formulation of specific land use objectives, environmental considerations, and availability of new data.

d. During the critical portion of the fire season, most fires will receive an aggressive initial attack. If the fire escapes initial attack and requires more than a modest commitment to contain it, an extended attack and an escaped fire situation analysis will be conducted to determine the level of suppression justified by the values at risk. Minimizing acres burned must be balanced with suppression costs.

5.2.5. Description of Management Options.

a. Critical Suppression Management Option (Control): This option was specifically created to differentiate the protection of human life and inhabited property from natural resource protection. Unquestioned priority over all other fires is automatically given to sites (areas) identified in this option.

(1) Policy. This designation is for those areas where fire presents a real and immediate threat to human safety and designated physical urban developments. Fires burning in these areas will be immediately and aggressively suppressed.

(2) Objectives. Protect human life and inhabited property. Place highest priority on the allocation of suppression forces to sites (areas) that qualify for this option. Limit damage from fire to the minimum achievable.

(3) Operational Considerations. Areas designated by this option are restricted to sites and immediate surrounding areas. Managers are encouraged to exercise restraint in the designation of physical urban developments, limiting the application of this option to those sites which are currently or routinely occupied as a residence, or of such high economic or cultural value that fire could cause irretrievable loss. Coordinate immediate request for mutual aid assistance to augment fire suppression efforts as necessary.

b. Full Suppression Management Option (Control): Areas assigned this designation will receive the best fire protection available. That is, all fires in these areas will receive aggressive initial attack and aggressive suppression efforts until the fire is declared out. This option was designed for the protection of natural/cultural sites, high resource value areas, and resources that require wildland fire protection but do not involve the protection of human life and habitation.

(1) Policy. Fires burning under this designation will be controlled through immediate and aggressive action.

(2) Objectives. Regardless of fire weather or behavior, control all fires at the smallest acreage possible. Minimize disruption by fire of designated, planned, or ongoing human activities in the area. Environmental impacts resulting from suppression activities will be commensurate with the values at risk.

(3) Operational Considerations. Only fires in the critical protection area receive a higher priority for suppression resources. Incorporate priority protection to all known threatened and endangered species and cultural sites.

c. Limited Suppression Management Option (Confine): This category recognizes locations where a let it burn policy is desirable or the values at risk do not warrant the high expenditure of suppression funds. Suppression actions are outlined to the extent necessary to keep a fire within the designated area or to protect critical sites within the area. This policy will only apply to the SBMR impact area.

(1) Policy. Confine fires and prevent undesirable escape from this area.

(2) Objectives. Reduce overall fire suppression costs. Allow fire to burn unimpeded to the fullest extent possible. Prevent fire activity in this area from violating fire management policies and objectives in adjoining areas.

(3) Operational Considerations. Careful monitoring of fire behavior and fire weather conditions is essential within this area. When escape of a fire from this area appears imminent, the IC will implement a strategic control plan using natural and man-made barriers to control the fire.

d. Modified Suppression Management Option (Contain): This option provides for a level of protection between "Full" and "Limited". The intent is to provide the IC with an alternative for those areas that require a relatively high level of protection during critical burning periods, but a lower level of protection when the risks of large damaging fires is diminished. Its intent is to reduce suppression costs and increase resource benefits during the entire fire season through its two distinct operational responses to fire.

(1) Policy. Contain all fires using aggressive initial attack unless otherwise directed by the IC or adjacent landowner upon completion of a modified initial attack analysis. Manage fires to consider resource management objectives in a cost-effective manner.

(2) Objectives. Reduce suppression costs on escaped fires through minimum force commitments and indirect suppression tactics. Allow fire to help achieve land management objectives.

(3) Operational Considerations. When a fire escapes containment, the fire will be evaluated by the IC, using the escaped fire analysis format to determine further fire strategy. Coordinate immediate request for mutual aid assistance to augment fire suppression efforts as required.

5.3. SPECIAL CONSIDERATIONS FOR SUPPRESSION ON USARHAW LANDS.

5.3.1. Minimum Impact Suppression.

a. The Incident Commander (IC) needs to select suppression tactics commensurate with the fire's potential or existing behavior, yet leaving minimal environmental impact. This is referred to as Minimum Impact Suppression Tactics (MIST). Minimum impact suppression is an increased emphasis on suppressing a wildfire while minimizing the effects of suppression measures on the vegetation, soils, and watershed.

b. Minimum impact suppression tactics will not over-ride considerations for safety or containment or control of the wildfire. However, they will be used to the maximum extent possible within these constraints. On USARHAW lands, many fires are fought from pre-existing firelines, firebreaks, or from the air. MIST will not affect these suppression responses.

5.3.2. Methods to Reduce Impacts.

a. Protection of the local environment will be considered in fire management strategies, particularly in the location of fuelbreaks and control lines. Special biological resources will be

protected from fire and suppression activities. They are identified for each installation in Chapter 7 and the respective SOP's.

b. Bulldozers are a useful tool in fire suppression efforts but can have a severe impact on natural and cultural resources. The use of dozers to construct fire-lines within pre-established fuelbreaks provides for safe dozer operations, enhances ground firefighter safety, and causes the least environmental impact, as these areas are pre-approved for vegetation removal. Dozers are used as a means of last resort in fire suppression because of their potential impact on the environment. The use of dozers will be restricted in biologically sensitive areas. Dozer operators will be:

(1) Equipped and trained for wildland fire protection.

(2) Trained in environmental sensitive issues relating to the use of dozers (i.e., long term effects of physical disturbance, potential introduction of alien plants, erosion control, and location of endangered and threatened species populations).

(3) Given natural/cultural resource orientation prior to any work assignment to a FMA.

c. If dozer operators have not been trained on environmental issues, a swamper (escort) who has been trained, will accompany every dozer and mark a path that will have a minimum impact. When fire conditions and safety permits, DPW Environmental personnel trained in basic wildland fire behavior, may be utilized as swampers.

d. Fire managers must be familiar with:

(1) Long term effects of physical ground/vegetation disturbance.

(2) Potential of alien vegetation introduction, through the use of dirty equipment or the creation of invasion routes.

(3) Creation of erosion problems.

(4) Protection of cultural sites.

(5) Limitations on use of fire suppression chemicals (foam and retardant).

e. The aerial use of chemical retardant, fire foam and saltwater will be weighed against the potential for fire damage to sensitive plants.

f. During fire suppression the IC will:

(1) Evaluate each and every suppression activity during planning and strategy sessions to see that they meet minimum impact suppression objectives.

(2) Discuss minimum impact suppression tactics with overhead team during overhead briefings.

(3) Ensure minimum impact suppression tactics are implemented during line construction as well as other environmentally destructive activities.

(4) Consult with environmental staff prior to implementing line construction in sensitive areas, providing time permits and proper personnel are available.

5.3.3. Protection of Natural and Cultural Resources.

a. Aside from human safety and structure protection, natural and cultural resources take highest protection priority. Each FMA SOP includes information about specific natural and cultural resources found there, locations of rare plants, and any special instructions regarding their protection. Specific actions and/or information can be found there.

b. Whenever possible, a red card certified member of the environmental and/or cultural staff shall accompany bulldozers or hand crews constructing fireline in previously undisturbed locations. Minimum impact suppression tactics shall be applied to ensure protection of high valued resources.

5.4. FIRE DETECTION AND REPORTING.

a. Early fire detection is critical to an effective initial attack of wildfires on Army training lands. Any agency, unit leader, or individual noticing a fire is responsible for reporting it as soon as it is detected.

b. Any person witnessing a fire or detecting smoke must report it to the Range Control, the FFD, or PTA Fire Department. Notification of fire managers and responders will be initiated by the first alerted agency.

c. Using military units must report all fires, regardless of size, immediately to Range Control, and in turn, to the appropriate fire department. Upon detection of a fire, unit range Officers in Charge (OIC) will immediately initiate a “cease fire” order and notify Range Control, giving the location and size of the fire. Units will not be allowed to resume training until the fire is extinguished or upon approval by a Range Officer and Senior Fire Officer. Units shall follow the fire reporting and notification procedures that are outlined in the SOP for each respective FMA.

5.5. INITIAL AND EXTENDED ATTACK.

5.5.1. Initial Attack.

a. Every wildfire must receive appropriate initial attack action as defined in the SOP for each FMA (see Appendix 1). The goal of the initial attack actions is to limit damage to values at risk while minimizing burned area and preventing escape of the fire. If any wildfire suppression strategy other than full control is to be utilized in initial attack, the rationale must be documented as part of the Army’s Wildland Fire Incident Report (WFIR).

b. Upon notification that a fire has been detected, Range Control and/or the FFD will dispatch appropriate fire fighting resources to respond to the location of the fire. Upon arrival at the site, fire fighting personnel will assess the fire conditions and determine fire control

strategies, including the equipment and personnel requirements necessary to execute initial attack operations.

c. Once on the fire scene, the initial attack responder or the IC may decide that additional personnel are required to fight the wildfire. Military personnel may assist in initial attack efforts provided they are directly supervised by qualified firefighters and proper personal protective equipment (PPE) has been issued. Once notified, the primary mission of the unit OICs will shift from training to assisting with fire fighting. Once military resources have been committed to fire fighting, they are under the operational control of the IC. This does not preclude unit commanders from rotating personnel and equipment as needed. The IC directs the overall employment of fire fighting resources to control and extinguish the fire.

d. The initial attack individual with the highest level of wildfire qualification/training will act as the initial attack IC until relieved by a higher qualified individual of the fire department. Under normal situations, Range Control personnel will be the first responders until the FFD or PTA Fire Department arrives.

e. The closest forces, (i.e., the nearest available appropriate fire resource) will be used to respond to an incident within a specific FMA. At DMR and KTA, the first responders on scene will often be Honolulu County firefighters. The use of closest resources must be covered by cooperative agreements or memoranda of understanding with adjacent agencies or fire protection organizations.

REFERENCE 5.5.1
COOPERATIVE WILDLAND FIRE FIGHTING RESOURCES

1. Dillingham Military Reservation:

Base Location	Distance	Response Time	Agency
Waialua	7 Miles	15 Minutes	Honolulu City/County
Wahiawa	13 Miles	20 Minutes	Honolulu City/County
Schofield/Wheeler	15 Miles	25 Minutes	FFD

2. Kawailoa Training Area:

Wahiawa	12 Miles	20 Minutes	Honolulu City/County
Schofield/Wheeler	15 Miles	25 Minutes	FFD

3. Kahuku Training Area:

Kahuku	5 Miles	15 Minutes	Honolulu City/County
Wahiawa	25 Miles	35 Minutes	Honolulu City/County
Schofield/Wheeler	30 Miles	40 Minutes	FFD

4. Makua Military Reservation:

Waianae	7 Miles	15 Minutes	Honolulu City/County
Lualualei	15 Miles	25 Minutes	FFD
Kapolei	21 Miles	35 Minutes	Honolulu City/County
Manana	28 Miles	45 Minutes	FFD
Hickam AFB	36 Miles	55 Minutes	Hickam Air Force Base

5. Pohakuloa Training Area:

Waimea	22 Miles	25 Minutes	Hawaii County
Waikaloa	28 Miles	40 Minutes	Hawaii County/DOFAW
Kaumana	34 Miles	60 Minutes	Hawaii County
Hilo	36 Miles	60 Minutes	Hawaii County/DOFAW

6. Schofield Barracks Military Reservation:

Wahiawa	3 Miles	5 Minutes	Honolulu City/County
Mililani	4 Miles	7 Minutes	Honolulu City/County

7. Schofield Barracks East Range

Wahiawa	2 Miles	5 Minutes	Honolulu City/County
Mililani	4 Miles	7 Minutes	Honolulu City/County

5.5.2. Extended Attack.

a. Extended attack occurs when a fire has not been contained or controlled by the initial attack forces and continues until transition to a higher level fire that requires an incident management team, or until the fire has been contained or controlled.

b. Once a fire has expanded beyond the capabilities of the on site resources, or it is apparent that it will exceed these capabilities, the initial attack IC must request assistance. Fire managers must be activated and additional resources must be deployed to expand the suppression assets and fire organization under the Incident Command System (ICS). Extended attack operations require an ICS to be established and can be tailored to the incident. Extended attack action requires an Escaped Fire Situation Analysis to guide the re-evaluation of suppression strategies.

c. Operational decision charts have been developed to assist the initial attack IC in the decision making process upon the onset of a fire being first reported (see References 5.4.2-5.4.5).

5.5.3. Fire Suppression Strategy.

The flow charts on the next several pages illustrate the appropriate actions to be taken given differing fire situations. They are intended to aid the Incident Commander during a wildfire response. The possible wildfire situations are:

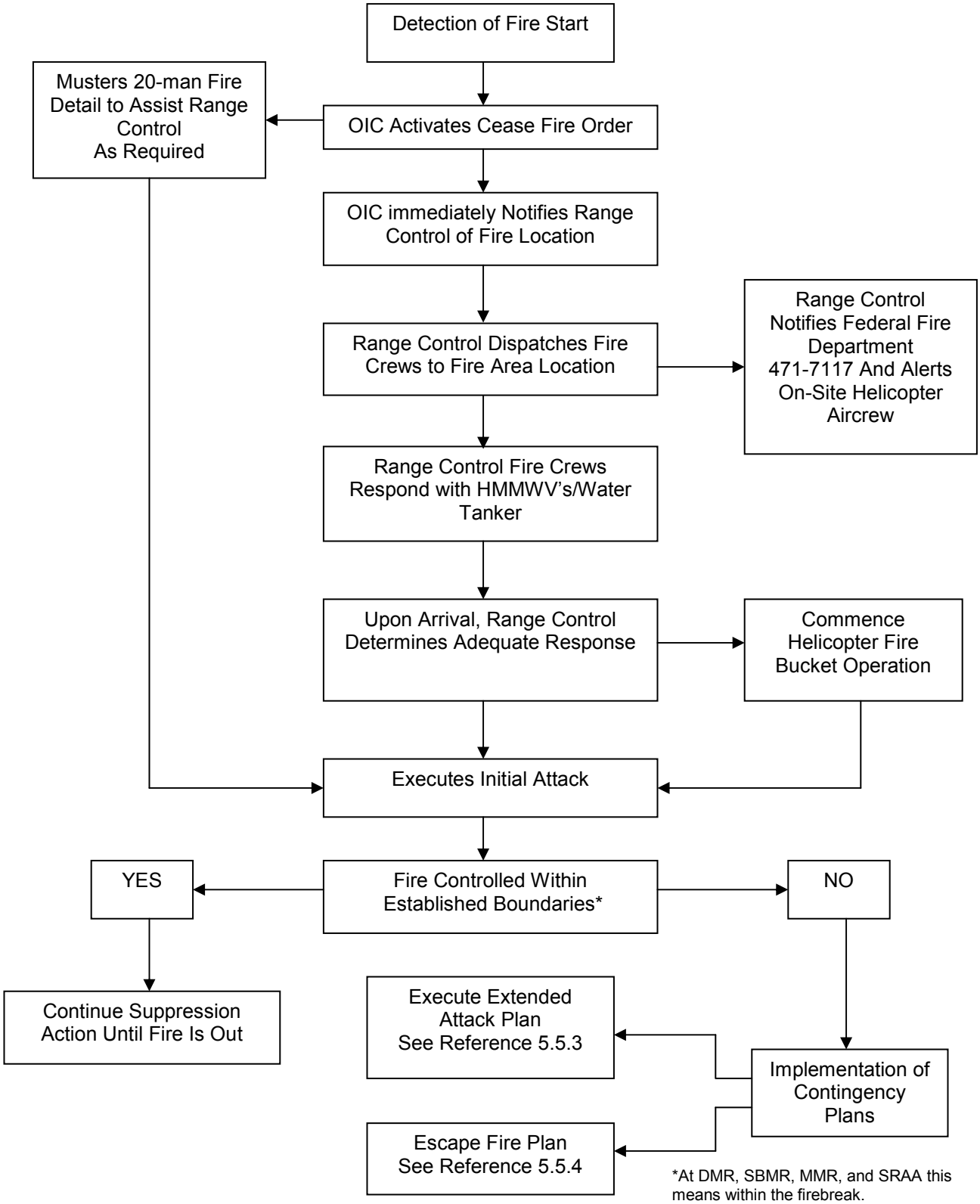
a. **Initial Attack**. This flow chart depicts the decision process designed for resources responding to an initial attack of a wildfire. This chart will aid the Initial Attack IC in responding to a wildfire. See Reference 5.4.2.

b. **Extended Attack**. This flow chart depicts the decision process designed for resources responding to an extended attack of a wildfire. This chart will aid the Extended Attack IC in responding to a wildfire. See Reference 5.4.3.

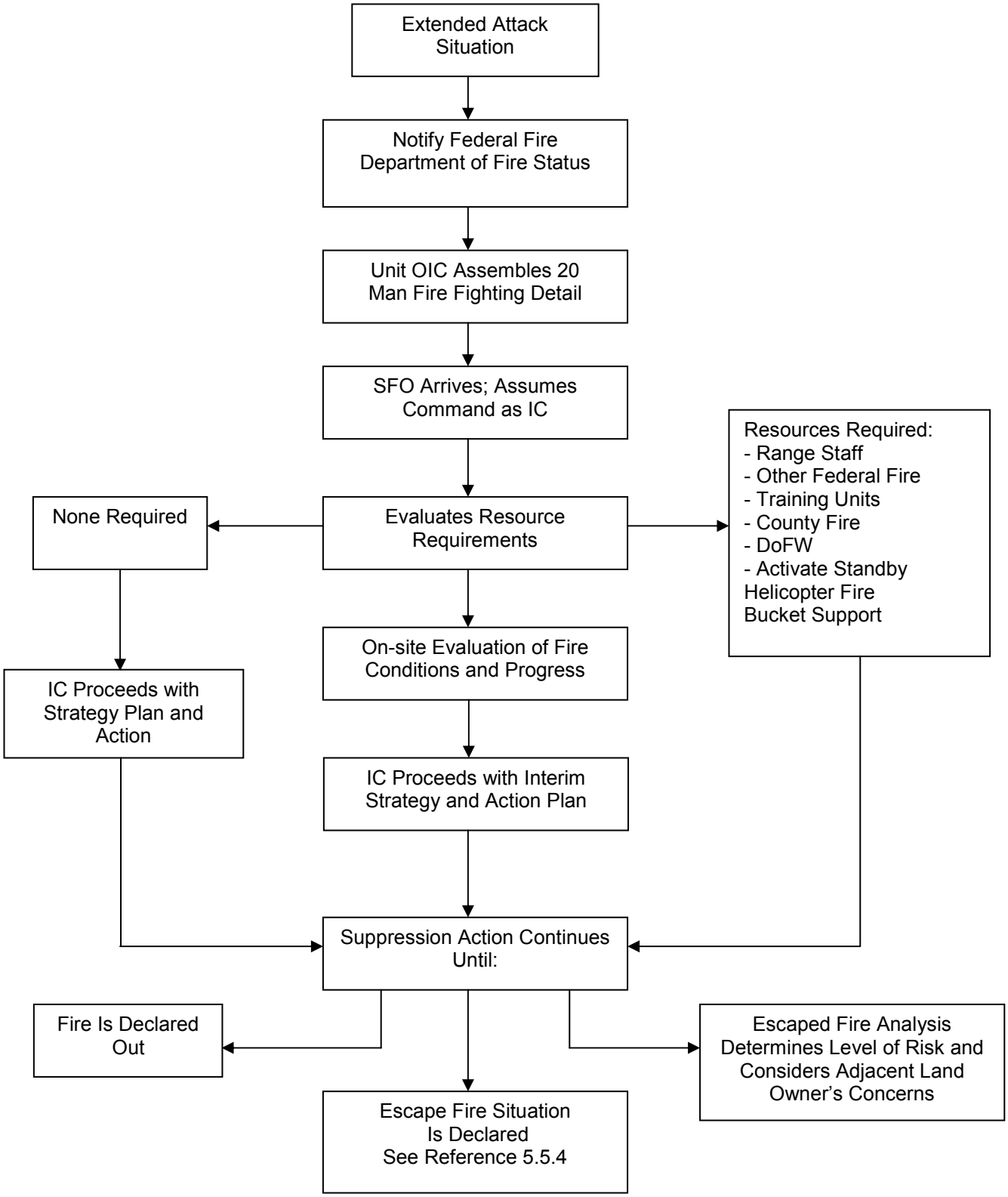
c. **Escaped Fire Situation**. This flow chart depicts the decision process designed for resources responding to an attack of an escaped wildfire. This chart can be used when a fire escapes any control measure. At MMR, SBMR, or DMR an escaped fire is any fire outside of the firebreak. See Reference 5.4.4.

d. **Monitoring Procedures** (Non-Army Fires Outside Of Installation Boundary) This flow chart depicts the decision process designed for resources responding to an initial or extended attack of a wildfire that has started off USARHAW land. See Reference 5.4.5.

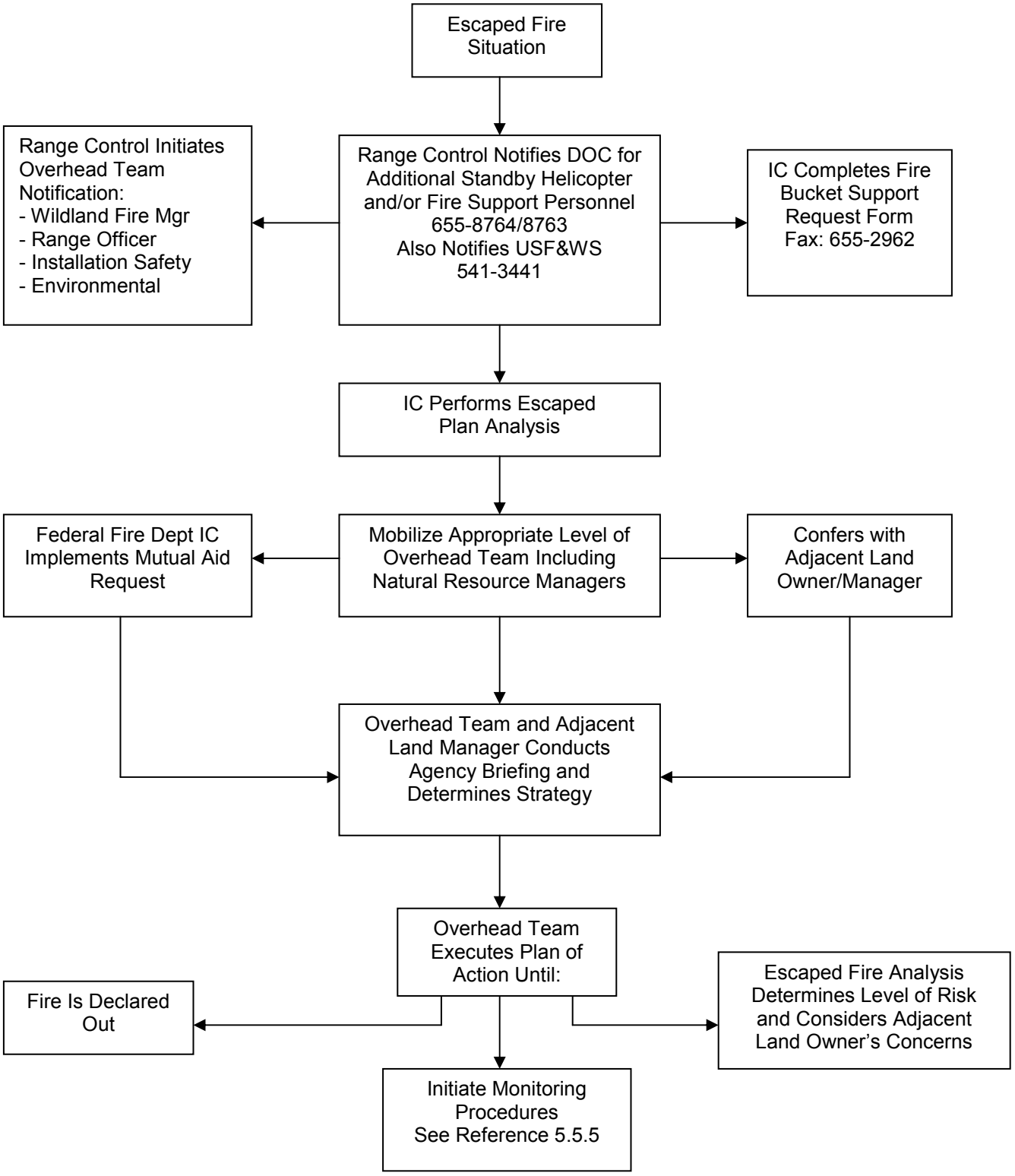
REFERENCE 5.5.2
OPERATIONAL DECISION CHART (INITIAL ATTACK PLAN)



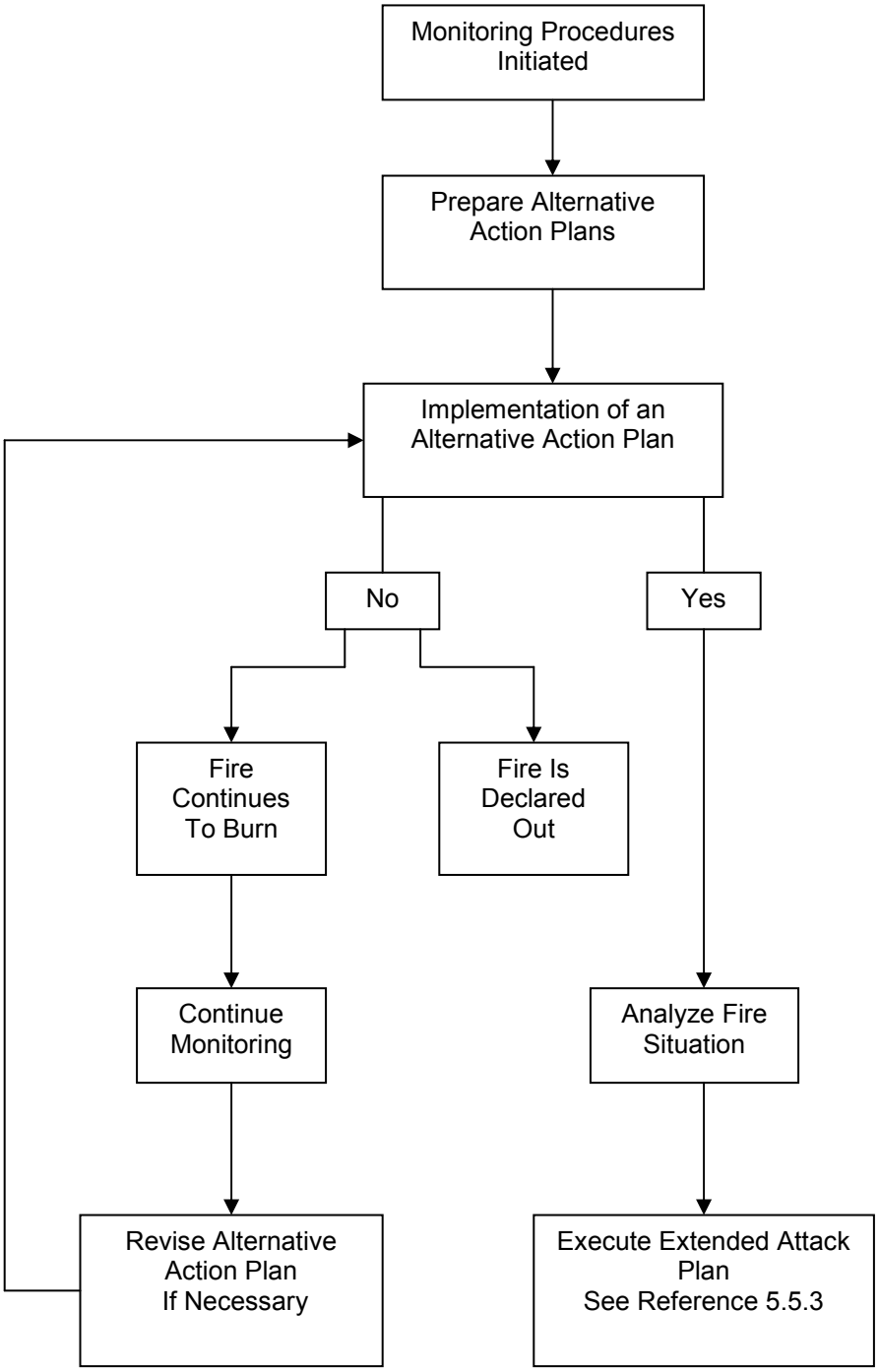
REFERENCE 5.5.3
OPERATIONAL DECISION CHART (EXTENDED ATTACK PLAN)



REFERENCE 5.5.4
OPERATIONAL DECISION CHART (ESCAPE FIRE SITUATION PLAN)



REFERENCE 5.5.5
OPERATIONAL DECISION CHART (MONITORING PROCEDURES)
(FIRES OUTSIDE OF INSTALLATION BOUNDARY)



5.6. COMMUNICATION.

5.6.1. General.

a. Effective fire fighting communications support is based on providing the Incident Commander (IC), with the communications means and procedures that will ensure ability to fulfill the specified fire mission requirements. These requirements must be fulfilled under a variety of conditions. The scope of these conditions involves the following:

1. Ability to conduct routine operations required for normal fire management.

2. Ability to employ and control a wide variety of fire fighting personnel and material resources in the fire suppression effort.

3. Ability to perform (1) and (2) simultaneously within resource limits and degree of fire severity.

4. Ability to coordinate laterally with other Army, government and civilian emergency and fire support agencies in consideration of contingencies which may require mutual effort.

5.6.2. Types of Communications.

a. Telephone is the primary means of communications between fixed agency facilities. Telephone communications are used between the Federal Fire Department (FFD) and other non-mobile units (Range Control, IOC/EOC facilities, etc.) and the FFD Communications Center commonly referred to as “Central”.

b. Radio is the primary means of communications between the fixed base facilities and mobile fire response vehicles, helicopters, or ground forces. Fixed locations possessing radio equipment may use such means (provided if they know the proper radio frequency assignments) as an alternate to telephone, should it fail.

5.6.3. Agencies.

a. USARHAW.

1. The IC may employ a significant amount of multi-agency resources for major fires. Telephone and radio will be the primary means of communication for the ICS. During initial attack, Range Control will establish an internal radio network as the primary means for control and coordination of Range Control or military forces once deployed. Radio will become the primary means of communication should telephone facilities serving these links fail or become inadequate. The USARHAW/USAG-HI Command Network is designed for this purpose and the Area District Fire Chief or IC will request its activation during emergency or natural disasters, if required.

2. Range Control with internal radio equipment assets (portable, air-to-ground) will support the ICS or FFD with radios, if required. Range Control shall maintain continuous operation of the radio network and monitor all radio transmissions during normal duty hours and

any periods of live firing. Range Control must be prepared to transmit information relating to geographical location of fires or other information useful to the IC and fire fighting forces.

b. OTHER AGENCIES. The IC may significantly increase the use of external communications when on base or major off base fires threaten to cross Army installation boundaries. The FFD has radio facilities for external communications on mutual aid radio networks with local, state, and federal agencies.

5.6.4. Radio Networks

a. FEDERAL FIRE DEPARTMENT PRIMARY NETWORK. This provides the means for the Fire Chief and/or Area District Fire Chief to exercise command, control, and administration over all subordinate components of the FFD and agencies/organizations in direct support. It provides the primary means for assignment and dispatch of selected fire fighting support vehicles, forces, and resources. The radio network may function as an alternate to one of the Range Control networks when radio facilities assigned to those networks fail or do not provide adequate radio coverage.

b. RANGE CONTROL PRIMARY RADIO NETWORK. Provides the means for the Range Control Officer to exercise technical control and direction over subordinate components of the Range Control and military training units assigned in direct support. This network may be reassigned to the Area District Fire Chief for his use to function as the Incident Commander. The radio network may function as an alternate to the FFD radio network when radio facilities assigned to that network fail. Range Control Dispatchers will:

(1) Be familiar with the IWFMP and wildfire SOPs.

(2) Know how and who to notify in the event of wildfire.

(3) Know whom to call if additional resources are required.

(4) Ensure emergency radio traffic is kept to a minimum.

(5) Be familiar with documentation and proper entries on the WFIR.

(6) Access weather data.

(7) Dispatch initial attack response crews and activates helicopter support as required.

c. USARHAW/USAG-HI COMMAND RADIO NETWORK. Allows the Installation Commander to exercise command and control over subordinate units, directorates, sub-installations, Disaster Commanders and in the case of a wildfire, the Incident Commander (IC). This network is activated as required for destructive weather, fire, and disaster or emergency conditions. Commanders may be directed to enter this network if such action is required due to circumstances of the emergency. The network control station will be at the Installation Operations Center (IOC)/Emergency Operations Center (EOC) at Schofield Barracks (Oahu) or the Emergency Operations Center (EOC) located at Pohakuloa Training Area (PTA), on the Island of Hawaii. The USARHAW/USAG-HI Command Radio Network is operated over a radio repeater that ensures complete radio coverage of Army installations and most surrounding communities.

5.6.5. Radio Frequencies.

a. INTERAGENCY RADIO FREQUENCY LIST (Oahu). Radio frequency assignment lists on Oahu for Army, Federal Fire Department, Hickam Fire Department, Division of Forestry & Wildlife, City & County of Honolulu Fire Department are listed in Reference 5.6.1.

b. INTERAGENCY RADIO FREQUENCY LIST (Hawaii). Radio frequency assignment lists on the Island of Hawaii for Army, Federal Fire Department, Division of Forestry & Wildlife, National Park Service, Hawaii Volcanoes National Park; and Hawaii County Fire Department are listed in Reference 5.6.3.

REFERENCE 5.6.1
INTERAGENCY RADIO FREQUENCY LIST (OAHU ONLY)

CHNL	TX	RX	AGENCY
CH 1	143.1750	143.1750	Schofield Range Control
CH 1	143.1750	143.1750	Makua Range Control
F1	138.000	138.000	Federal Fire Dept (Removal)
F2	141.000	141.000	Federal Fire Dept
F1	173.260	173.260	Hickam Fire Dept
F2	175.5625	175.5625	Hickam Fire Dept
F1	154.220	154.220	Honolulu Fire Dept
F2	154.340	154.340	Honolulu Fire Dept
F3	154.145	154.145	Honolulu Fire Dept
F4	154.400	154.400	Honolulu Fire Dept
F5	154.280	154.280	Honolulu Fire Dept
SPX	154.995	154.995	State DLNR (DOFAW)
RPT	154.085	154.995	State DLNR (DOFAW)
TAC 1	155.895	154.895	State DLNR (DOFAW)
TAC 2	155.985	155.985	State DLNR (DOFAW)
TAC 3	155.980	155.980	State DLNR (DOFAW)

FM	38.30	Schofield/Makua Range Control (SINGARS) Primary
FM	49.70	Schofield/Makua Range Control (SINGARS) Alternate

REFERENCE 5.6.2
PTA RADIO FREQUENCY LIST (PTA & KMC ONLY)

Army Radio Frequencies or frequencies programmed to Army radios, Hawaii (PTA & KMC). Radio channels/frequencies and owning agencies for USARHAW on Island of Hawaii.

CHNL	TX		RX	PL	Remarks
1	173.5125		173.5125	CSQ	PTA & KMC Admin/DOD Police
2	173.4125		173.4125	CSQ	PTA Range Control
3	173.4625		173.4625	CSQ	PTA & KMC Fire/Ambulance
4	172.500		73.5125	CSQ	Mauna Loa Repeater (Priority 1)
5	172.300		173.4125	CSQ	Mauna Loa Repeater (Priority 2)
6	172.5000	PL3A	173.5125	PL3A	Future Mauna Loa Repeater
7	172.300	PL4A	173.4125	PL4A	Future Mauna Loa Repeater
8	171.3875	PL4A	173.4375	CSQ	Kulani Cone Repeater
9	168.550		168.550	CSQ	National Park Service
10	169.400		168.550	CSQ	National Park Service Repeater
11	156.210		155.310	CSQ	Hawaii County Civil Defense
12	153.950	PL3A	154.385	PL7Z	Kulani Cone (Chan 1) Fire
13	153.890	PL4B	154.310	PL7Z	Sheep Station (Chan 2) Fire
14	153.890	PL1A	154.310	PL7Z	Iolehaehae, Ohia Mill (Chan 2) Fire
15	153.890	PL4Z	153.310	PL7Z	Base Yard, South Point (Chan 2) Fire
16	154.010	PL2Z	154.445	PL7Z	Kapoho, Kahua Ranch (Chan 3) Fire
17	154.010	PL5Z	154.445	PL7Z	Naalehu (Chan 3) Fire
18	153.890	PL3A	154.310	PL7Z	Huehue (Chan 2) Fire
19	153.950	PL7Z	154.385	PL7Z	All Points (Chan 1) Fire
20	153.950	PL6Z	154.385	PL7Z	Haleakala (Chan 1) Fire

VHF	126.300	Bradshaw Tower to Aircraft
FM	41.50	Bradshaw Tower to Aircraft
VHF	121.700	Bradshaw Tower Ground Control
UHF	237.500	Bradshaw Tower Ground Control
FM	38.30	Range Control (SINGARS) Primary
FM	49.70	Range Control (SINGARS) Alternate
VHF	121.650	Bradshaw Airfield Weather (ATIS)

REFERENCE 5.6.3
INTERAGENCY RADIO FREQUENCY LIST (ISLAND OF HAWAII ONLY)

Radio Codes in use on the Big Island (Alphabetical Order)

TX	RX	AGENCY
154.085	154.995	GRN RPT
154.995	154.995	GRN SPX
153.950	154.385	HFD F1
155.950	154.396	HFD F1
153.890	154.310	HFD F2
154.010	154.445	HFD F3
154.130	154.130	HFD T1
154.205	154.205	HFD T2
154.385	154.385	HFD T3
154.310	154.310	HFD T4
154.445	154.445	HFD T5
155.115	155.115	HAWAII LG SPX
169.400	168.550	MAUNA LOA
155.820	155.820	MAUI LG SPX
155.865	155.115	HAWAII LG RPT
154.965	155.820	MLG RPT
169.400	168.550	NAALEHU
168.550	168.550	NPS HVNP
168.350	168.350	NPS KONA
169.400	168.550	PALI
155.895	159.360	TAC 1 RPT
155.895	155.895	TAC 1 SPX
155.985	159.360	TAC 2 RPT
155.985	155.985	TAC 2 SPX
154.980	159.360	TAC 3 RPT
154.980	154.980	TAC 3 SPX
162.400		WEATHER
162.550		WEATHER
155.025	155.715	YEL RPT
155.715	155.715	YEL SPX

REFERENCE 5.6.3 (Cont.)
INTERAGENCY RADIO FREQUENCY LIST (ISLAND OF HAWAII ONLY)

Radio Codes in use on the Big Island (Ascending Order)

TX	RX	AGENCY
153.890	154.310	HFD F2
153.950	154.385	HFD F1
154.010	154.445	HFD F3
154.085	154.995	GRN RPT
154.085	159.360	GRN TRPT
154.130	154.130	HFD T1
154.205	154.205	HFD T2
154.310	154.310	HFD T4
154.385	154.385	HFD T3
154.445	154.445	HFD T5
154.965	155.820	MLG RPT
154.980	159.360	TAC 3 RPT
154.980	154.980	TAC 3 SPX
154.995	154.995	GRN SPX
155.025	155.715	YEL RPT
155.115	155.115	HAWAII LG SPX
155.715	155.715	YEL SPX
155.820	155.820	MAUI LG SPX
155.865	155.115	HAWAII LG RPT
155.895	159.360	TAC 1 RPT
155.895	155.895	TAC 1 SPX
155.950	154.396	HFD F1
155.985	159.360	TAC 2 RPT
155.985	155.985	TAC 2 SPX
162.400		WEATHER
162.550		WEATHER
168.350	168.350	NPS KONA
168.550	168.550	NPS HVNP
169.400	168.550	MAUNA LOA
169.400	168.550	NAALEHU
169.400	168.550	PALI

a. Communication between fire fighting resources on a fire incident is critical to the safe and effective suppression of wildfires. All ground military and civilian resources must be able to communicate with each other, and military and civilian aircraft must have communication with each other and ground resources.

b. The Federal Fire Department maintains a central dispatcher for normal fire protection. Range control maintains a dispatcher (firing desk) whenever there are military training exercises and live-fire activity on the range.

c. During extended attack, an IC will be required to develop a Communication Plan that outlines radio communication requirements for ground and air operations. Radio frequencies of other cooperative agencies shall be made available to the Army for use during mutual aid response. See Section 5.6, Communication Plan.

5.7. AIR OPERATIONS.

5.7.1 Objective.

a. This Aviation Plan establishes policy and procedures for requesting the use of Army military helicopters and Army contracted helicopters capable of providing aerial support during wildland fires on military installations and within the state of Hawaii. The Aviation Plan further outlines the responsibilities required to providing essential logistical support to military helicopters operating fire support missions.

b. Because fire fighting is a secondary duty for all Army aviation assets, response times for aerial assets, though acceptable, are often not ideal. Additionally, Army pilots are often only stationed in Hawaii for 2 to 3 years meaning they have little opportunity to become proficient at aerial fire bucket operations.

(1) The IFSO will explore the possibility of a lease to purchase option of a civilian helicopter for fire fighting duties. This aircraft will have medium lift capabilities in support of aerial fire fighting and search and rescue efforts, and a proven record as a reliable fire fighting aircraft. It will preferably have a water carrying capacity of no less than 1000 gallons (US). This aircraft will not be assigned to duty as the on site aircraft for Makua as its purpose is to provide rapid aerial response to fires anywhere on Oahu.

(2) A pilot(s) will be hired, as an Department of the Army civilian employee of the IFSO, to fly this helicopter on initial attack and extended attack missions throughout USARHAW installations on Oahu and, if necessary, at PTA.

(3) Depending on operating costs, the maintenance package will come from an existing Army contractor already on site or a maintenance package included with the aircraft manufacturer's lease agreement. In addition to the annual lease cost, maintenance package, and manning costs, the IFSO will develop an operating budget that includes class IV (POL). Space for short term aircraft parking, hangar/maintenance, and pilot office facilities will be coordinated until a permanent facility can be established. The pilots and aircrew will be stationed at the proposed new WAAF Fire Station programmed for FY06/7.

5.7.2. REFERENCES.

a. AR 95-1/2/3

b. AR 420-90, Fire Protection, Facilities Engineering.

c. Mutual Aid Fire fighting Agreement (FB5260-93354-903), Dec 93

d. Interservice Support Agreement (N62813-89230-109), Aug 90

e. Joint Services Operations Plan (JSOP), Aug 98

f. PTA External SOP, Aug 96

g. Aviation Brigade GSOP, Appendix 17 (Fire Bucket Operations) to Annex I (Flight Standardization and Training), 1 Mar 98

5.7.3. Aircraft Use.

a. Helicopters are a proven, powerful, multi-mission weapon in the fight against unplanned wildfire(s). Helicopters provide close-in aerial delivery, with rapid refill and return time, to provide essential support to contain a fire and prevent the loss of life, property, and natural/cultural resources from wildfires.

b. Fire Managers use a variety of helicopters to augment ground operations. Fire managers use helicopters in a wide variety of ways:

(1) To suppress fires using aerial fire buckets that deliver water directly on a fire. Water buckets can also be used with Class A fire foam to enhance the suppression properties of the water. Helicopters using aerial buckets augment initial attack ground fire fighting crews where they can most likely be effective and can be applied safely.

(2) To add or strengthen fuel breaks by using aerial fire buckets to deliver water in the path of a fire. Water buckets can be used with fire retardant to enhance the holding properties of the water.

(3) Transport equipment, supplies and hand crews.

(4) Command and control and aerial observations.

c. In some areas, helicopters are required to be on standby to decrease response time while military operations are under way as a risk management/mitigation tool.

d. Aerial operations can utilize Army helicopters, other military services helicopters, other fire agency helicopters, or helicopters under contract to the Army. The pilots of civil contract aircraft must be Office of Aircraft Services (OAS), Department of Interior qualified; Military Airlift Command (MAC) certified. Military aircrews conducting aerial bucket operations must be certified and current in Aviation Task, Perform Fire Bucket Operations, Task 3016 (see Reference 5.7.11).

e. The Army utilizes military helicopters capable of fire bucket operations to combat wildland fires on Army training lands. The military in Hawaii (USARHAW, USMC and HIARNG) has also incorporated a mutual aid agreement to assist other state and local agencies in the combat of wildfires off military installations.

5.7.4. Proponency.

a. The G3, Air is the proponent of this Aviation Plan.

b. Helicopter aviation support units will provide the Range Division Hawaii (RDH) with a list of all pilots and aircrew members that are certified and trained in fire bucket operations and fire suppression application techniques for wildland fires. The list will be submitted to the Army's wildland fire program manager and will be updated quarterly or as required.

5.7.5 Notification.

a. The decision as to which military service should be called (USA, USMC or HIARNG) is the responsibility of the 25th ID(L) & USARHAW Installation Operations Center (IOC).

b. On Oahu military helicopters assigned to conduct fire missions on federal military installations are normally activated by request through the Army's IOC. In turn, the IOC will activate the aviation unit assigned to respond to the fire incident. Military helicopters on training deployments to PTA may be utilized only if the pilots and aircrews are equipped and trained to conduct the specific operations at the higher altitudes found there. Also at PTA, a private helicopter module (helicopter, pilot, and service support) contracted by the Army, is the preferred approach since there are no permanently assigned aircraft there.

c. Authorization. Notification for support from military helicopters will be coordinated through the Chain of Command. Guidelines as to when military helicopters will be used are as follows:

(1) Fire threatens loss of life, property, and natural/cultural resources on military land.

(2) Fire started as a result of military training activity.

(3) Fire started on military property and threatens civilian property or off post resources.

(4) Fire started on civilian property and threatens military property.

(5) Fire has grown in size and requires large lift capacity.

(6) Fire not accessible by ground fire units.

(7) All other fire suppression assets are committed.

(8) Support is provided to another governmental agency (Federal State or County) per a agreement.

(9) Declared Federal or State disaster support.

d. The decision as to which military service or unit will respond is the responsibility of the IOC. Factors to guide the decision include:

(1) Location of the fire.

(2) Helicopter assets available from each service component.

(3) Type aircraft requested.

(4) Fire bucket capacity requirements (gals).

e. Requesting DoD Assets. Military assistance to civil authorities in support of fire fighting operations during emergency disasters may be provided through the established mechanisms identified below:

(1) Mutual Aid Agreement

(2) Commander's Decision

(3) Joint Services Operating Procedures (JSOP)

(4) Federal Response Plan

f. It is important to remember that the lowest level of government shall respond first prior to implementation or plan execution. Mutual aid agreements provide for immediate and limited resources while the JSOP provides for more DoD resources without Presidential Disaster Declaration. See Reference 5.7.6.

g. Once a Presidential Disaster is declared the JSOP and/or mutual aid agreement is negated under the Federal Response Plan (FRP). Federal assistance under FEMA is provided in accordance with a FEMA-State Agreement for Fire Suppression Assistance signed by the Governor and the Regional Director. Costs associated with fire suppression activities may be eligible for reimbursement to the command pursuant to allowable costs approved by the Regional Director to the State. See Reference 5.7.7.

5.7.6. Aircraft Alert Response Schedule.

a. Military aircraft are limited to daylight fire bucket operation missions only[1].

b. Daily unit schedules and alert response times are as follows:

(1)	USA[2]	Weekdays	0700-1730	90 minute alert
		Weekends/Holidays	0700-1730	3 hour alert
(2)	USMC	Weekdays	0700-1730	90 minute alert
		Weekends/Holidays	0700-1730	3 hour alert
(3)	HIARNG	Weekdays	0700-1730	90 minute alert
		Weekends/Holidays	0700-1730	3 hour alert

5.7.7. Command and Control.

a. Command and control of a fire scene will be organized under the Incident Command System (ICS) and as follows:

(1) Fire fighting operations on military property will be coordinated by the Federal Fire Department (FFD).

(2) Fire fighting operations on state, county or city property will be coordinated by the responsible controlling agency of that land; i.e., State Forestry, State Civil Defense, National Park Service, or Civilian Fire Department.

(3) Aircraft in formation, or from the same unit may coordinate internally.

(4) An “Air Attack Boss”, either on the ground or in the air, may be designated to control aircraft for the IC and acts similarly to an air traffic controller to coordinate large numbers of aircraft.

b. Radio Frequencies. A common interagency working radio frequency for “checking in” during a fire will be developed. However, unless otherwise directed, the frequencies listed in Section 5.6, Communication Plan, and the following radio frequencies are to be used by helicopters at the fire scene:

(1)	UHF	250.10	Military Aircraft (Internal)
(2)	VHF	138.00 Primary	Federal Fire Department 141.00 Alternate
		123.100 TAC Net	Federal Fire Department (Air-to-Ground)
(3)	FM	38.30 Primary 40.70 Alternate	Range Control (SB, Makua, PTA)

[1] The CG or Bn Cdr of 2-25 Avn Regt has sole authority for NVG use required during night fire bucket missions.
[2] Exception to helicopter use at MMR. See Appendix 1 to Annex A for required response time at MMR.

c. For reasons of both safety and effectiveness, close coordination between air and ground operations is critical. The use of air-to-ground communication is essential. The IC must configure communications so that air to ground and air to air communications can be established. This may require using parties with multiple means of communications to act as relays with aircraft. The IC must prioritize when and where to use air resources to maximize their effectiveness and their value to the ground operations. Aerial operations are most effective in rough terrain areas that are inaccessible by ground fire fighting crews and in areas potentially contaminated by unexploded ordnance.

5.7.8. Aerial Fire Bucket Operations.

a. Military and civilian contracted aircrews can be assigned to conduct fire bucket missions provided that:

(1) The crew is qualified and briefed to conduct the operations.

(2) The aircraft is equipped to carry and operate the aerial fire bucket

(3) The weather meets the requirements for Visual Flight rules (VFR) at he operational area.

b. Currently, the Army maintains the following fire bucket types in its fire cache inventory:

REFERENCE 5.7.1

Fire Bucket "BAMBI™" Model, Capacity, and Weight Specifications

Model No.	Capacity			Gross Weight		Empty Weight	
	US Gal	Imp Gal	Liters	Pounds	Kg	Pounds	Kg
5566	660	550	2498	5725	2602	225	102
HL7600	1998	1665	7562	17115	7780	465	211
3542 (U.S. Marines)	420	350	1590	3667	1667	167	76

c. Normally the owning unit/operation of fire bucket is responsible for recurring maintenance. However, during aerial attack operations, on site Range Control Maintenance personnel shall be responsible for repairs.

REFERENCE 5.7.2

Helicopter Fire Bucket Lift Capacities.

Agency	Aircraft Type	Lift Capacity (Gals)	Bucket Type
US Army	CH-47D "Chinook"	2000	Bambi
	UH-60A "Blackhawk"	660	Bambi
USMC	CH-46E "Sea Knight"	400	Bambi
	CH-53D "Sea Stallion"	400	Bambi
HIARNG	CH-47D "Chinook"	2000	Bambi
	UH-60A "Blackhawk"	660	Bambi
County Fire	Hughes 500/Bell 206	75/110	Bambi
Civilian Contract	Hughes 500	110	Bambi

5.7.9. Execution.

a. All pilots and aircrew members will be certified and trained in fire bucket operations and fire suppression tactics for wildland fires in order to conduct bucket operations to effectively suppress a fire. (See reference 5.7.11).

b. The assigned aircraft will ensure mission briefings, aircrew safety briefs and aircraft preflight are completed in order to meet the assigned mission requirements.

c. Before beginning the mission the information regarding the fire incident will be provided via agency chain of command, in accordance with the Fire Bucket Request Form (5.7.8).

d. Upon arrival at the fire scene, aircraft will attempt airborne and/or ground communication with the command and control agency for an operational briefing. If civilian helicopters are not present or positive radio contact cannot be established, military helicopters will attempt to land in close proximity to the ground Command Post (CP) for a face-to-face brief. The following information should be passed during the operational brief:

(1) Update of fire scene: hazards, fire movement, location of critical sensitive areas, populous and/or structures being threatened by wildfires.

(2) Tactics, strategy and areas of responsibility.

(3) Water resource locations.

(4) Additional helicopters working in the area and location.

(5) Call signs and radio frequencies of airborne and ground fire suppression units.

(6) Other special requirements.

e. In the absence of air to ground radio communication or a safe landing zone for a face to face briefing, military helicopters should adhere to the following:

(1) Work the flanks of the fire from the heel toward the head fire(s).

(2) When combating wildfires off military installations, civilian fire department or contract helicopters have primary responsibility for fire fighting; therefore, military helicopters should stay clear of their operating area.

(3) Avoid approaches that produce downwash in the vicinity of other fire fighting aircraft, vehicles, and personnel.

(4) If the fire presents danger to structures or residential area and additional support appears necessary, establish separation to integrate with other helicopters working the area.

(5) Always remain predictable for enroute, drop, and egress routes.

f. For extended attack or prolonged fire suppression operations, or as directed by the appropriate chain of command, a ground-to-air radio support component may be required for insert to the Command and Control Center or at the fire scene Command Post, to further enhance radio communication.

5.7.10. Unit Responsibilities:

a. Operations Officer: Maintain a current hazards map of all Army training areas. Currency of hazards posted will be confirmed by pilot report on mission debriefings. If more than 30 days have elapsed since the last hazard confirmation, a day recon is required prior to execution of fire bucket operations.

b. Unit Commanders: Ensure that specific crew experience/mix is considered in selecting flight crews for fire bucket operations.

c. Pilot in Command: Overall responsibility for pre-mission planning, water weight/gallons lift capabilities, crew briefings, mission execution and mission abort/safety criteria.

d. Crew Chief: Ensure that cargo hook and fire bucket mechanisms are properly rigged and in functional working order prior to and during fire bucket operations; ensure that aircraft electrical receptacles are inspected. Perform duties for lift/drop coordination and safety as directed by the Pilot in Command.

5.7.11. Qualification/Currency. See Reference 5.7.11.

5.7.12. Aviation Procedures:

a. Pre-mission Planning: Will include specific attention to flight crew qualifications, compliance with the crew endurance program, determination of maximum gallons of water that can be lifted and maximum flight hours on-station.

b. Passengers: Are not permitted on board during fire bucket operations. The Bn Cdr is the sole waiver authority to this restriction.

c. Night vision goggles (NVG) Fire bucket Operations will comply with the following:

(1) NVG fire bucket will be classified as a minimum of "Medium Risk" for operational missions even if mission risk analysis indicates “Low Risk”. For training missions, the actual risk analysis will be used.

(2) AN/AVS-6 NVDs are required for all crew members.

(3) Crew chiefs will be used for all fire bucket operations.

(4) Both landing and searchlight, one with IR Bandpass Filter, will be operational prior to and throughout the mission.

(5) NVG fire bucket missions outside of the Makua Military Range require a day recon and hazards map of fire area and dip sites.

(6) Night unaided fire bucket operations are prohibited

5.7.13. Bucket Specifications:

a. BAMBI BUCKET:

(1) Model #2024: Overall Length with Standard Rigging: 10.5 ft.
Model #8095: Overall Length with Standard Rigging: 14.5 ft.

(2) Standing Height of Bucket: 38"

(3) Recommended maximum water-dumping airspeed: 50 KIAS

(4) Control Head height: 24". CAUTION: To avoid damage to the helicopter, never land vertically on the control head. Allow the bucket to touch down along side of the helicopter and then maintain tension on the suspension lines by moving laterally slightly, thereby keeping the control head at an angle while landing.

(5) Capacity and Weight: (The BAMBI Bucket water capacity is adjustable by setting the FCAS belt to the desired percentage of bucket fill).

REFERENCE 5.7.3

BAMBI Bucket: (Model 2024) Fill Capacities and Gross Weight

Empty Weight	% Fill in U.S. Gallons (8.33 lbs/gal)	Total Gross Weight**
115 lbs	100% / 240 gal	2115 lbs
115 lbs	90% / 216 gal	1915 lbs
115 lbs	80% / 192 gal	1715 lbs
115 lbs	70% / 168 gal	1515 lbs
115 lbs	60% / 144 gal	1315 lbs

** Total Gross Weight includes Bucket Empty Weight

b. GRIFFIN BIG DIPPER BUCKET:

(1) Overall Length with Standard Rigging: 21' 8"

(2) Standing Height of Bucket: 44"

(3) Recommended maximum water-dumping airspeed: 50 KIAS.

(4) Capacity and Weight:

REFERENCE 5.7.4

GRIFFIN Big Dipper Bucket (Model 1250) Fill Capacities and Gross Weight

Empty Weight 198 lbs	Water Fill (8.33 lbs/U.S. gal)	Total Gross Weight**
Limiter Plugs Installed	250 gal	2281 lbs
Limiter Plugs Removed	200 gal	1865 lbs

**Total Gross Weight includes Bucket Empty Weight
Note: 50-lbs must be added to Total Gross Weight if the system's battery is installed (optional).

5.7.14. Special Requirements.

a. On-site Standby Helicopter During Live-fire Training at MMR and Battalion sized training at PTA.

(1) Training units without aviation assets will coordinate tasking through appropriate channels for a standby helicopter to remain on-site during live-fire training at MMR in accordance with range training SOPs.

(2) Standby helicopters will augment ground fire fighting resources during initial attack on wildfires caused by live-fire activities on training ranges. The ability to control the spread of wildfires from the onset and extinguishing wildfires at its earliest will further enhance training opportunities.

b. Water Resource Locations. Water resource locations that are approved and available for training and/or use during emergency fire bucket missions will normally be one or more of the locations identified in this plan (See Reference 5.7.9).

c. Aircraft Call Signs. Unless otherwise designated at the fire scene, aircraft call signs will be as follows:

(1) US Army:

45th Support Group		
B Company, 214th Aviation Regiment	CH-47	"Hillclimber".
C Company, 2-25 Aviation Brigade	UH-60	"Wolfpack"

(2) US Marine Corps:

Aviation Support Element (ASE)	CH-53	"Pegasus"

(3) HI Army National Guard:

Army Aviation Support Facility (Oahu)	CH-47	"Imua"
Army Aviation Support Facility (Hilo)	UH-60	"Imua"

d. Transportation of DOD personnel and equipment. This Aviation Plan authorizes in cases where an emergency exists, the requirement to transport DOD fire fighting personnel or required fire equipment to a fire scene by military aircraft IAW AR 420-90, Fire Protection, Facilities Engineering.

e. Fire Bucket After-Action Reports (AAR). Units supporting fire bucket operations will ensure a fire bucket After Action Report form (See Reference 5.7.10) is completed following every mission and routed through appropriate chain of command for correction of any operational discrepancies. All AARs will be forwarded to the IFSO Wildland Fire Manager for final review and evaluation.

5.7.15. Air Operations Safety. All fire bucket missions, training or actual, will adhere to established Naval Aviation Training Operations Standard (NATOPS) restrictions and be supported by sound judgment and common sense. Safety is paramount.

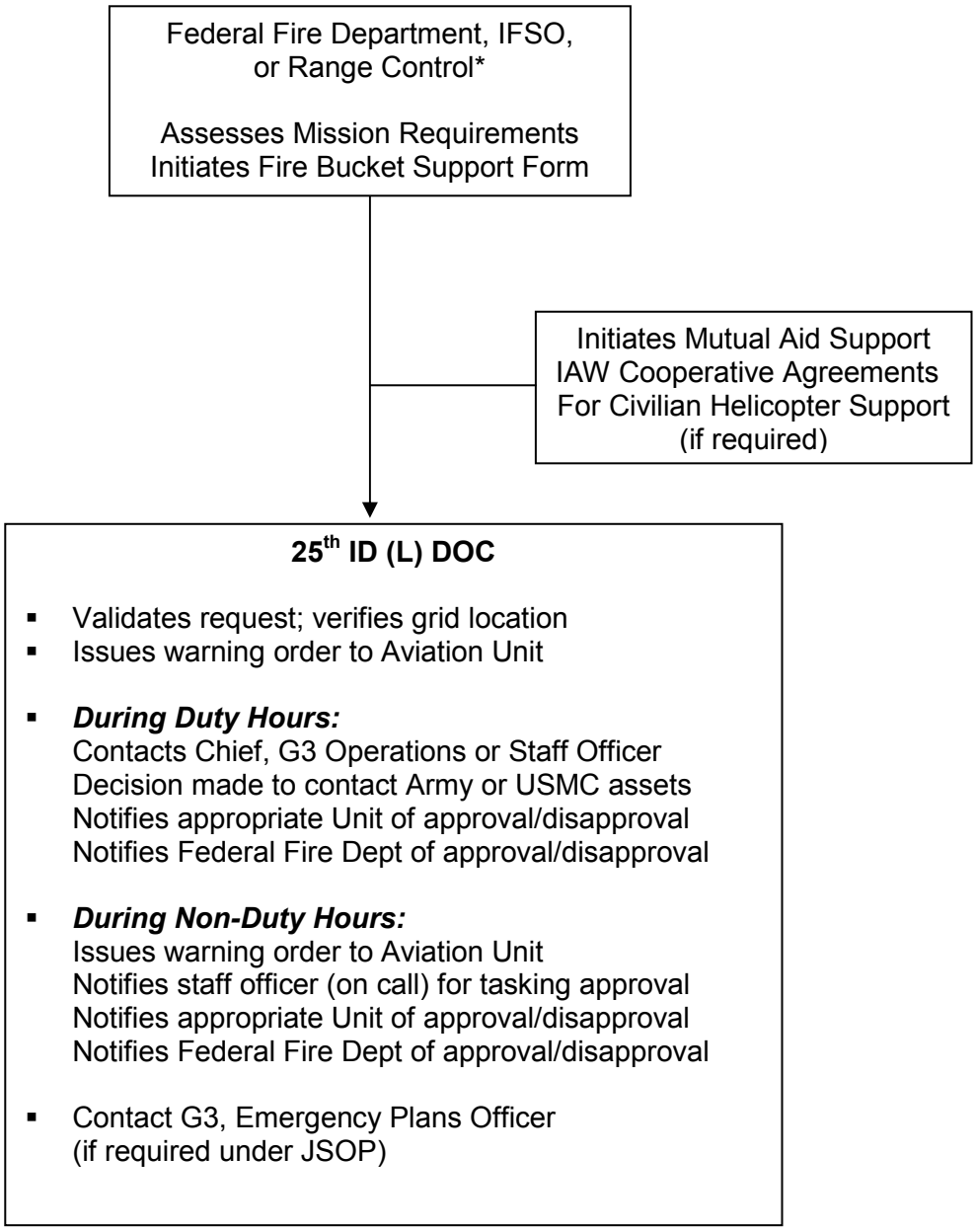
5.7.16. Airspace.

a. All applicable Federal Aviation Administration (FAA) airspace control measures, local air traffic control rules and Army regulations must be followed during aerial fire fighting operations. Federal Air Regulations (FARs) and Army Regulations will be adhered to unless specific coordination has been accomplished by the aircraft commander/pilot in command, mission commander or IC with the local FAA or airspace-controlling agency.

b. Restricted Airspace. Due to the especially high hazards and tight controls associated with military restricted airspace, all aircraft entering restricted airspace must coordinate with the respective controlling agency. Aircraft must contact the controlling FAA or military air traffic control tower, or Range Control, to enter or exit airspace and to obtain specific routes or flights. Operations within USARHAW R-3109 (SBMR), R-3110 (MMR), and R-3103 (PTA) can be coordinated with Range Control.

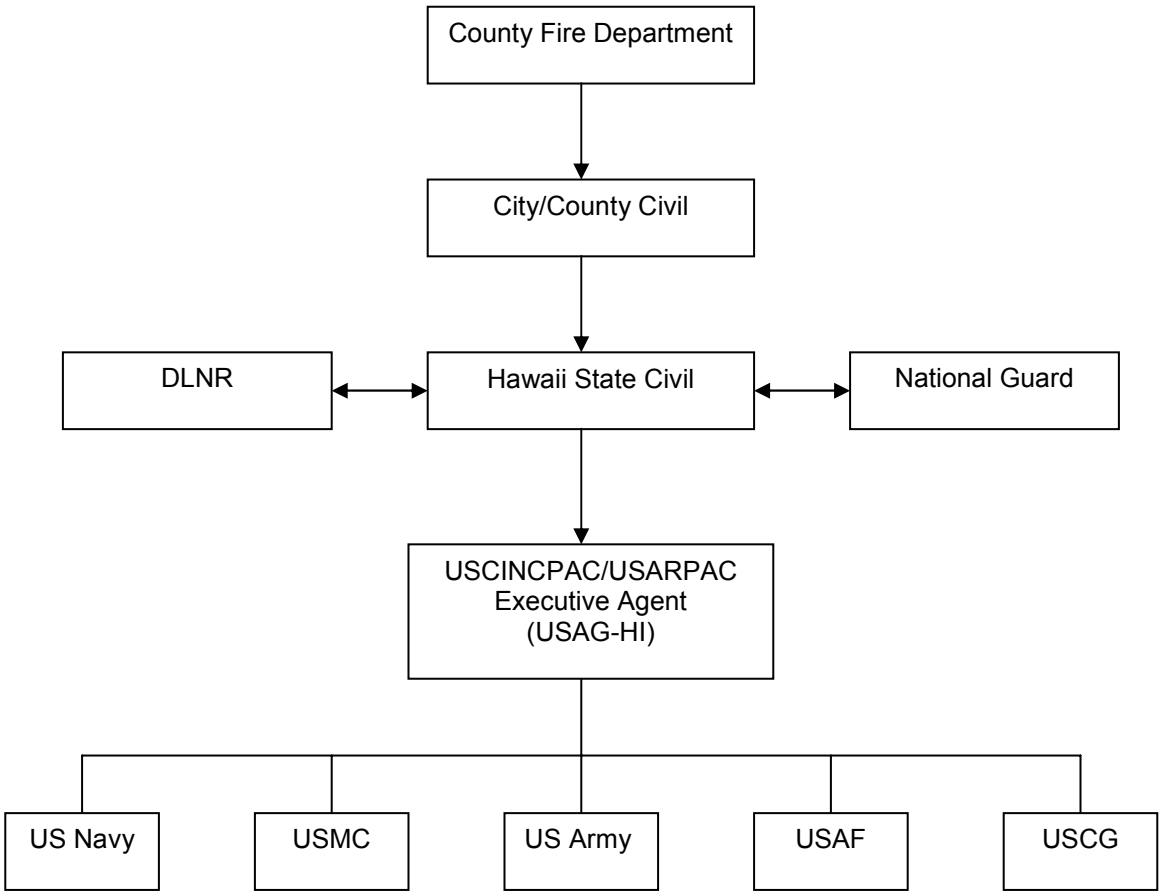
c. During large scale extended attack the IC may establish a special use airspace for aerial fire fighting operations within the restricted military airspace. This must be done in coordination with the controlling agency.

REFERENCE 5.7.5
25th ID(L) & USARHAW FIRE BUCKET SUPPORT COMMUNICATION PLAN
(Fires Started on Military Installations Only)



*Range Control shall have the authority to initiate requests for fire bucket support in the event of imminent threat of fire escape from the military installation boundary.

REFERENCE 5.7.6
REQUESTING DoD ASSETS UNDER JOINT SERVICES OPERATING PROCEDURES (JSOPS) (Pre-Presidential Declaration, Fires Started off Military Installations)



FOR MUTUAL CIVIL EMERGENCY SUPPORT IN THE STATE OF HAWAII

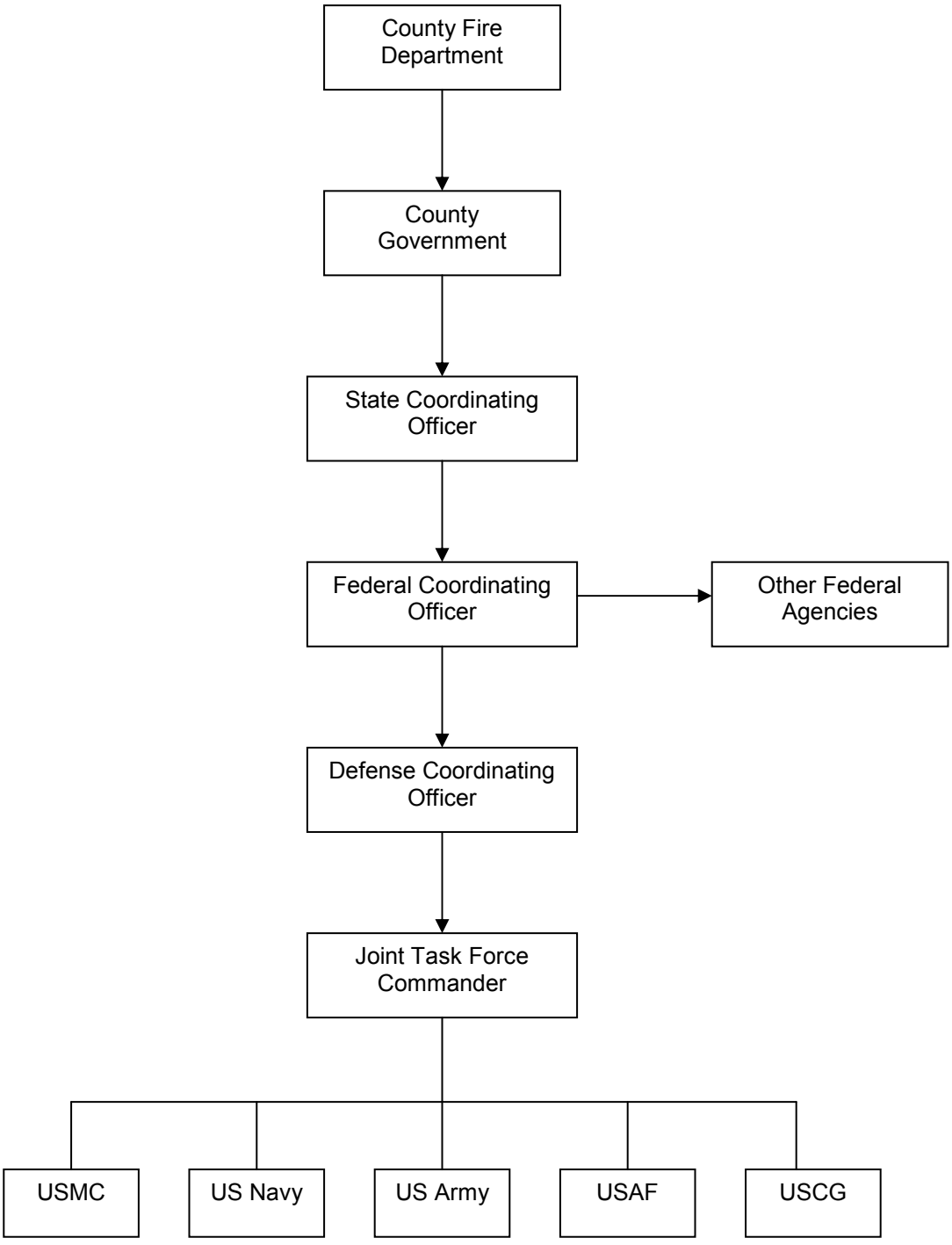
Establishes procedures for responding to requests for Military Support to Civil Authorities (MSCA) without a Presidential Disaster Declaration.

Establishes command relationships.

Provides reimbursement for eligible costs.

Provides hold harmless for claims in providing requested assistance.

REFERENCE 5.7.7
REQUESTING DoD ASSETS UNDER JOINT SERVICES OPERATING PROCEDURES (JSOPS) UNDER FEDERAL RESPONSE PLAN (FRP)
(Presidential Disaster Declaration)



REFERENCE 5.7.8

25th ID(L) & USARHAW Reg 350-1

Request for Rotary Wing Aircraft Support

Date of Request:

REQUEST FOR ROTARY-WINGED AVIATION SUPPORT Proponent of this Form is G3, 25 ID(L) May 97		1. Late Request? Yes / No If Yes, Letter Incl? Yes / No
2. Requesting Unit:	3. POC and Ph# or Freq and Call Sign:	4. Submitted or Coord at AMAC/G3 Conf ? If Yes, Date:
5. Date(s) Required: 5a. Unit's Cycle:	6. Number and Type of Aircraft Requested: 1x UH 60	7. MSC or SEP BN S3 AIR:
8. Pick-Up Point(s)/PZ(s):	9. Destination(s)/LZ(s):	
10. Contact at PZ:	11. Contact at LZ:	
12. Pick-Up Time:	13. Release Time:	
14. Passengers:		
15. Cargo: (type, number, weight)		
16. Special Instructions or Mission Equipment: (e.g. Headphones, Cargo Hook, C2 A/C etc.)		
17. Mission Description: (who, what, when, where, why)		
18. Initial Planning Coordination: (when and where)		
AVIATION USE ONLY		
19. Mission Received From: (name, unit, date, time)		20. Mission Number
21. Mission Passed To: (name, unit, date, time)		
22. Mission Passed To: (name, unit, date, time)		
23. Mission Passed To: (name, unit, date, time)		
24. Number of Aircraft Assigned to Mission: AH-1 _____ CH-47 _____ EH-60 _____ OH-58 _____ UH-1 _____ UH-60 _____ OTHER _____		
25. Estimated Number of Hours for Mission: AH-1 _____ CH-47 _____ EH-60 _____ OH-58 _____ UH-1 _____ UH-60 _____ OTHER _____		
26. Remarks:		

REFERENCE 5.7.9
AERIAL FIRE BUCKET WATER SOURCE LOCATIONS

OAHU TRAINING AREAS:

RESERVOIR	GRID COORDINATES
Ranch 10-B	EJ 895837
Kawailoa 18	FJ 473844
Opaeula 16	FJ 005859
Opaeula 2	FJ 993864
Opaeula 15	FJ 977864
Upper Helemano	EJ 005812
Helemano 11	EJ 971857
Makua Dip Pond 1	EJ 801810
Makua Dip Pond 2	EJ 818809
SBMR Dip Pond (Proposed)	EJ 957783
Kahuku Dip Pond (Proposed)	FJ 985056 (approximate)

POHAKULOA TRAINING AREA:

DIP TANK LOCATION	CAPACITY	GRID COORDINATES
LZ BRAD	80,000 gals	KB 353831
Redleg Trail, Range 9	80,000 gals	KB 333804
Bradshaw AAF	80,000 gals	KB 305872
Puu Maile	80,000 gals	KB 269883
FAARP, Range 17	80,000 gals	KB 249858
Puu Keekee Road	80,000 gals	KB 202866
Keamuku Flow (proposed)	80,000 gals	KB 169918
Old Kona Hwy (proposed)	80,000 gals	KB 172883
MPRC Quarry (proposed)	80,000 gals	KB 142777

REFERENCE 5.7.10
AERIAL FIRE BUCKET AFTER ACTION REPORT FORMAT

XXXX-XX

MEMORANDUM THRU

FOR

SUBJECT: Fire Bucket After Action Report

1. Reference Aviation Plan for Army Helicopter Fire fighting Support

2. The following information is submitted:

   a. Brief description of the incident (include location).

   b. Type/number aircraft involved.

   c. Notification/Launch DTG (Date/Time/Group).

   d. Fire scene arrival/departure DTG.

   e. Total support hours.

   f. Total number of water drops.

   g. Controlling agency on scene.

   h. Remarks (Highlight strengths/weaknesses of event activities and provide recommendations for changes to operating methodology when appropriate.

   i. Estimated Area burnt (acres).

3. The POC is , phone number.

Authenticating Authority

REFERENCE 5.7.11
AVIATION TASK: PERFORM FIRE BUCKET OPERATIONS (TASK 3016)

1. Task: Perform Fire Bucket Operations (TASK 3016)

2. Condition: In a utility helicopter with an operational cargo hook and fire bucket; required briefings and checks completed; and aircraft cleared.

3. Standards:

a. Preflight: the cargo hook IAW the operator's manual and the fire bucket IAW this task's description; brief the crew IAW unit SOP.1

b. Fire bucket Attachment/Hookup: ensure proper rigging and attachment to the aircraft IAW this task's description.

c. Hover:

(1) Maintain ascent heading +/-10 degrees.

(2) Maintain altitude of load 5/10feet AGL, +/-1 foot.

(3) Do not allow drift to exceed 5 ft.

d. Takeoff (below 100 ft AGL):

(1) Maintain takeoff +/-10 degrees.

(2) Maintain ground track alignment with takeoff direction.

(3) Maintain power as required to clear obstacles safely.

e. Takeoff (above 100 ft AGL):

(1) Maintain aircraft in trim.

(2) Maintain airspeed +/-10 KIAS.

(3) Maintain rate of climb +/-100 ft.

f. Enroute:

(1) Maintain aircraft in trim.

(2) Maintain airspeed +/-10 KIAS. (70 KIAS is recommended maximum airspeed).

(3) Maintain safe load obstacle clearance (minimum 50 ft AHO).

(4) Maintain continuous crew coordination to ensure load stability and obstacle clearance.

REFERENCE 5.7.11 (CONT.)
AVIATION TASK: PERFORM FIRE BUCKET OPERATIONS (TASK 3016)

g. In-flight Water Retrieval (Bucket Dipping):

(1) Perform a continuous reconnaissance.

(2) Maintain a constant approach angle to the water reservoir to ensure the load safely clears obstacles.

(3) Maintain ground track alignment with the selected approach path.

(4) Execute a smooth and controlled termination over the water reservoir with load altitude of 5/10 ft AGL, +/-1 foot.

(5) Maintain a vertical descent heading +/-10 degrees and allow the bucket to tip, submerge and fill with water.

(6) Maintain a smooth and controlled vertical ascent; heading +/-10 degrees.

(7) Conduct a hover power check at load altitude of 5/10 ft AGL, +/-1 foot.

(8) Comply with standards for Hover, Takeoff and Enroute Operations as described above.

h. Water Dump/Release:

(1) Maintain continuous crew coordination to ensure load stability and obstacle clearance.

(2) Maintain aircraft in trim.

(3) Maintain airspeed +/-10 KIAS (maximum 50 KIAS for water release).

(4) Maintain safe load obstacle clearance (minimum 50 ft AHO).

i. Landing (for ground refill or bucket derigging):

(1). Execute a smooth and controlled termination over the selected landing site with load altitude 5/10 ft +/-1 foot.

(2) Maintain a vertical descent heading +/-10 degrees and allow bucket to touch down.

(3) Execute a rearward (UH-1) or sideward (UH-60) hover to apply tension to the suspension cables without upsetting bucket stability.

(4) Ensure aircraft clearance.

(5) Execute a smooth and controlled touchdown.

(6) Confirm safe bucket manual refill or derigging

REFERENCE 5.7.11 (CONT.)
AVIATION TASK: PERFORM FIRE BUCKET OPERATIONS (TASK 3016)

j. Perform Correct Crew Coordination Procedures.

k. Preflight:

(1) BAMBI Bucket (fabric construction):

*Check all fabric straps for tears.
*Check side wall battens for loose stitching or bolts.
*Check purse lines on the fabric dump valve for frays.
*Check the FCAS belt for security and condition.
*Check the suspension lines for frays, kinks or twists.
*Check ballast pouch (inside wall), for installation and condition.
*Check control head for secure fittings, cover installed.
*Check electrical cables and connectors for condition.

(2) Griffin Big Dipper (orange urethane construction):

*Check suspension line attachments for condition and security.
*Check urethane bucket for general condition.
*Check suspension lines for frays, kinks or twists.
*Check electrical cables and connectors for condition.

l. Hookup/Attachment: the fire bucket will be rigged for attachment to the helicopter only by certified Range Control personnel and will be supervised for safety by the aircrew.

CAUTION

Ensure the ballast pouch on the "BAMBI" bucket will face forward in flight. This will avoid twisting of the suspension lines and possible jamming of the trip line.

m. In-flight Water Retrieval (Bucket Dipping): Once the bucket touches the water surface it should tip and sink.

WARNING

When filling, do not make abrupt heading or attitude changes. There is a danger that the bucket suspension lines could get tangled or caught on the aircraft and cause dynamic rollover on lift out. The crew chief shall check the load for clearance and safety prior to lift out.

NOTE

The aviator can vary the "BAMBI" bucket's capacity by controlling rate of lift out. As a fully submerged bucket is lifted, water pressure expands the fabric bucket shell, increasing volume. Therefore, a slow lift out gives minimum fill; a fast lift out gives maximum fill. Varying the lift out speed is often the best way to adjust volume, allowing the aviator to vary the load at each fill to best suit the fuel load and prevailing lift conditions. Several fill attempts will be required to gain proficiency. Ensure that aircraft power limitations are not exceeded.

REFERENCE 5.7.11 (CONT.)
AVIATION TASK: PERFORM FIRE BUCKET OPERATIONS (TASK 3016)

n. Water Dump/Release: When over the dump site, press the release mechanism. The dump pattern is most concentrated at lower airspeeds and altitudes and will spread with increased height and speed. Ensure that dumping speed does not exceed 50 KIAS. Press the release mechanism a second time prior to lift out to ensure the release mechanism is in a "locked" position. Consider the effects of wind, airspeed and altitude to make subsequent adjustments for effective dump patterns. Continuous crew coordination is necessary to ensure safe and effective operations.

o. Landing: Proceed as established in the task standard. This procedure is set to clear the bucket and avoid landing on the "BAMBI" bucket's 24" control head.

NOTE
Hover OGE power is required for fire bucket operations

NOTE
The CARGO RELEASE SWITCH will be in the ARMED position for all operations below 300 ft AGL.

NOTE
Before the mission the PC will ensure that all crew members are familiar with hand and arm signals in TC 1-201 and forced landing procedures. In case of a forced landing enroute, the load will be jettisoned. At a hover the aviator will jettison the load if possible and land left of the load. Ground personnel will move right of the aircraft and lie face down. The signal man will lie face down in place.

p. NVG Considerations:

(1) All operations will be conducted IAW unit SOP.

(2) Hovering with minimum drift is difficult and requires proper scanning techniques and crew member coordination. Areas with adequate ground contrast and reference points should be used.

CAUTION
Excessive drift may position the load so it cannot be jettisoned if required.

(3) Treat visual obstacles the same as physical obstacles.

(4) Rates of descent and closure should be slightly slower to avoid abrupt attitude changes at low altitudes.

(5). When flying above terrain flight altitudes, keep in mind the inherent limitations of the NVG; ensure adequate obstacle clearance enroute.

(6) Prior to water dump, avoid target fixation on the fire site by ensuring proper scanning techniques. Avoid restrictions to visibility such as heavy smoke.

REFERENCE 5.7.11 (CONT.)
AVIATION TASK: PERFORM FIRE BUCKET OPERATIONS (TASK 3016)

NOTE

Reference to 5/10 ft hover altitude applies to UH-1/UH-60, respectively.

4. Aviation References:

a. AR 95-1
b. FM 1-203
c. FM 1-204
d. FM 55-450-3
e. TC 1-201
f. Aircraft Operator's Manual

5.8. UNEXPLODED ORDNANCE (UXO).

a. USARHAW uses the range facilities for various forms of live-fire training. Some of the live-fire range facilities are hazardous only during use due to ballistics dangers. These ranges are considered hazardous past the normal use area, (i.e., from the firing line forward to the down range portion, or toward the impact area) during live-fire operations. Access to this down range portion of the live-fire ranges to conduct fire fighting operations is prohibited to all personnel while live firing is taking place. A responding IC must ensure that these ranges are in a "check or cease fire" condition before sending fire suppression forces down range.

b. The explosive hazards inherent with military training on the ranges are multiplied when UXO's are exposed to wildfires. Duds on the ranges and in the training areas and live ammunition or explosives in the possession of military training units on the ranges create extremely hazardous conditions.

c. Due to various types of military ammunition, some range areas are hazardous even after the range has closed for normal live-fire operations due to the probable presence of UXO. These hazardous areas are divided into two categories, those presenting a low hazard to trained, authorized personnel and those containing a high hazard to all personnel.

(1) A low hazard rating means that the government has taken reasonable and prudent measures to reduce the hazard to an acceptable level, consistent with generally accepted standards. This low rating applies only to personnel trained in UXO identification and having appropriate safety courses while they are performing authorized duties, under the direction of their supervisor. The area is considered hazardous to any other person. Authorization to enter low hazardous areas is subject to approval by the range officer, Range Control Safety Technicians, or Explosive Ordnance Disposal (EOD) personnel knowledgeable of hazardous areas. Fire suppression forces will not enter low hazard areas to conduct fire suppression operations down range unless authorized and properly escorted. If proper safety precautions are taken, fire fighting in these areas is approved per Army Reg. DA PAM 386-63.

(2) A high hazard rating means that the government has been unable or it is not feasible to reduce the UXO hazards. The area contains hazards that cannot be mitigated by training or safety measures. All personnel are prohibited from entering hazardous areas without proper authorization. Under no circumstances will firefighters or soldiers enter designated hazard areas to fight fires.

5.9. MUTUAL AID SUPPORT AGREEMENTS.

a. Mutual Aid Support Agreements have been established to provide for multiple agency response and cooperative assistance between fire agencies. Mutual Aid Support Agreements shall be updated and reviewed annually or as required.

b. These agreements provide the instruments to implement cooperative wildland and structural fire fighting response assistance among all of the cooperative departments within the State of Hawaii. Cooperative ground resources normally have well-established procedures and written instructions necessary for quick and effective mutual assistance.

c. Copies of the existing cooperative agreements are provided for review in Appendix 2 of this IWFMP.

d. Cooperating Agencies are:

1. City and County of Honolulu Fire Department (Island of Oahu) is a structural fire department with some wildland fire assets.

2. Hawaii County Fire Department (Island of Hawaii) is a structural fire department with some wildland fire assets.

3. State of Hawaii, Division of Forestry and Wildlife (DOFAW) is a natural resources/forestry management organization with wildland fire assets.

4. National Park Service (Hawaii Volcanoes National Park) is a natural resources management organization with wildland fire assets.

5. U.S. Air Force at Hickam Air Force Base is a structural and crash rescue fire department.

STANDARD FIRE ORDERS AND WATCHOUT SITUATIONS

The 10 Standard Fire Orders were developed in 1957 by a task force studying ways to prevent firefighter injuries and fatalities. Shortly after the Standard Fire Orders were incorporated into firefighter training, the 18 Situations That Shout Watch Out were developed. These 18 situations are more specific and cautionary than the Standard Fire Orders and described situations that expand the 10 points of the Fire Orders. If firefighters follow the 10 Standard Fire Orders and are alerted to the 18 Watch Out Situations, much of the risk of fire fighting can be reduced.

10 STANDARD FIRE ORDERS

Fight fire aggressively but provide for **safety first**.

Initiate all action based on current and expected **fire behavior**.

Recognize current **weather conditions** and obtain forecasts.

Ensure that **instructions** are given and understood.

Obtain current information on **fire status**.

Remain in **communication** with crew members, your supervisor, and adjoining forces.

Determine **safety zones** and **escape routes**.

Establish **lookouts** in potentially hazardous situations.

Retain **control** at all times.

Stay **alert**, keep **calm, think** clearly, and **act** decisively.

18 WATCH OUT SITUATIONS

1. Fire not scouted and sized up.
2. In country not seen in daylight.
3. Safety zones and escape routes not identified.
4. Unfamiliar with weather and local factors influencing fire behavior.
5. Uninformed on strategy, tactics, and hazards.
6. Instructions and assignments not clear.
7. No communication link between crew members and supervisors.
8. Constructing line without safe anchor point.
9. Building line downhill with fire below.
10. Attempting frontal assault on fire.
11. Unburned fuel between you and the fire.
12. Cannot see main fire, not in contact with anyone who can.
13. On a hillside where rolling material can ignite fuel below.
14. Weather gets hotter and drier.
15. Wind increases and/or changes direction.
16. Getting frequent spot fires across the line.
17. Terrain or fuels make escape to safety zones difficult.
18. Feel like taking a nap near fireline