

## APPENDIX K

**AERIAL FIRE SUPPORT OBSERVER AND OH-58D  
EMPLOYMENT****Description of the OH-58D  
Helicopter**

The OH-58D is a division or corps aerial platform capable of conducting multiple tactical missions in a relatively short time. Because of its mobility and on-board systems, this helicopter gives the commander the ability to seize the initiative and remain extremely flexible in a tactical environment.

The OH-58D helicopter consists of a modified OH-58 airframe, a mast-mounted sight, an airborne target hand-over system (ATHS), an attitude and heading reference system (AHRS), and an advanced avionics cockpit. The crew consists of one pilot and one aerial fire support observer.

**Modified Airframe**

Improvements to the airframe include the following:

- A 650 shaft horsepower (SHP) turbine engine with flight endurance of 2.5 hours.
- Hover out-of-ground effect (OGE) at 4,000 feet at 95°F.
- Vertical climb of 500 feet per minute.
- Forward airspeed of 119 knots.
- Rearward and sideward airspeeds of 35 knots.

**Advanced Avionics Cockpit**

This cockpit contains a complete digital programmable system readout with aircraft statistics, frequencies, location, and TACFIRE messages; one VHF radio, one UHF radio, and two FM radios; and the capability for adding an HF radio.

**Airborne Target Hand-Over System**

The ATHS gives the operator the capability to interface with Army aviation aircraft (UH-60, AH-64) and Air Force aircraft (F-16, A-10, and A-7). It also gives the unit an automated communications link with artillery systems through TACFIRE.

**Mast-Mounted Sight System**

The MMS is above the rotor system and houses the optics for the AFSSO and pilot. Contained in the sight system are the laser range finder and/or designator, the optic telescope, the thermal imaging sight, and the boresighting system. With these systems, the AFSSO has the capability for day or night target acquisition and recognition and the ability to laser range and designate targets well beyond 5 kilometers.

**Attitude and Heading Reference System**

This system is similar to the conventional PADS. It is capable of giving the pilot an eight-digit grid location of the aircraft during flight. The system must be updated with survey points throughout the routes of the aircraft.

**Crew**

The pilot and the aerial fire support observer are the flight crew of the OH-58D. The pilot is the primary operator of the aircraft. The AFSSO performs navigation assistance, tactical coordination with the supported element, and digital communication with the artillery units. He performs lasing, designation and hasty fire planning; reports to higher headquarters; and is the secondary operator of the aircraft in an emergency.

## Capabilities of the OH-58D

The OH-58D helicopter has the following capabilities:

- Ž Target acquisition capability in day or night visibility and in limited visibility through the use of a thermal image system (TIS).
- Eight-digit target location capability based on the accuracy of position location equipment,
- Ability to supplement and use Army aviation, Air Force, and other ground target acquisition assets.
- Ž Laser target designation and range-finding capability. The OH-58D is compatible with munitions such as the Pave Penny, Copperhead, and other *smart* munitions of all services.
- Provides a digital link to any TACFIRE artillery unit and its relay systems.
- Can deploy, detect, recognize, and guide munitions to a target and send target intelligence reports without exposing more than the MMS to the enemy threat.
- Provides rapid mobility throughout the battlefield.
- Capable of communications with all Air Force aircraft and Army assets.
- Ž Can fully support a combat aviation unit with aerial fire support coordination during tactical operations.
- In the future, aircraft will be mounted with Stinger and antiaircraft missile pods for use as a self-defense weapon system.

## Limitations

The OH-58D is a line-of-sight system. It cannot see over the horizon or through foliage.

If the weather or environment defeats the laser, it may defeat the system. Defeating

conditions could include conditions such as smoke, dust clouds, fog, and ice. Because of safety restrictions, the system cannot be flown in icing weather conditions.

The aircraft is not certified for instrument flight rules (IFR). That means the aircraft can be flown by instruments in bad weather, but only in emergency situations.

Preflight operations require 35 to 50 minutes to program systems for a mission. Navigation information, communications, and ATHS data must be entered before executing a mission.

Crew endurance is limited. The division has only six of these aircraft; approximately four are available at any one time because of downtime for maintenance. For this reason, missions for these systems must be well-planned and briefed.

Fire support coordination is possible but difficult to perform while target acquisition and/or attack is being conducted simultaneously. Limited space and no hard-copy capability in the aircraft make scheduling and planning difficult. The AFSO can digitally transmit only limited fire support planning information. Transmission of fire plans will be limited to the capabilities equivalent to those of a company FSCOORD.

## Missions

The OH-58D is designed to perform a variety of missions as described below.

### Target Acquisition

Target acquisition capabilities of the OH-58D include —

- Ž Acquiring deep targets for supported units and counterfire assets.
- Ž Collecting and reporting battlefield information.
- Ž Early warning surveillance.

### Target Engagement

The OH-58D is capable of firing targets with all fire support assets, including smart munitions.

### Fire Support Planning and Coordination

When no other capability is available, the OH-58D can—

• Perform rear area fire support

- Augment combat aviation brigade fire support operations with the AFSO.

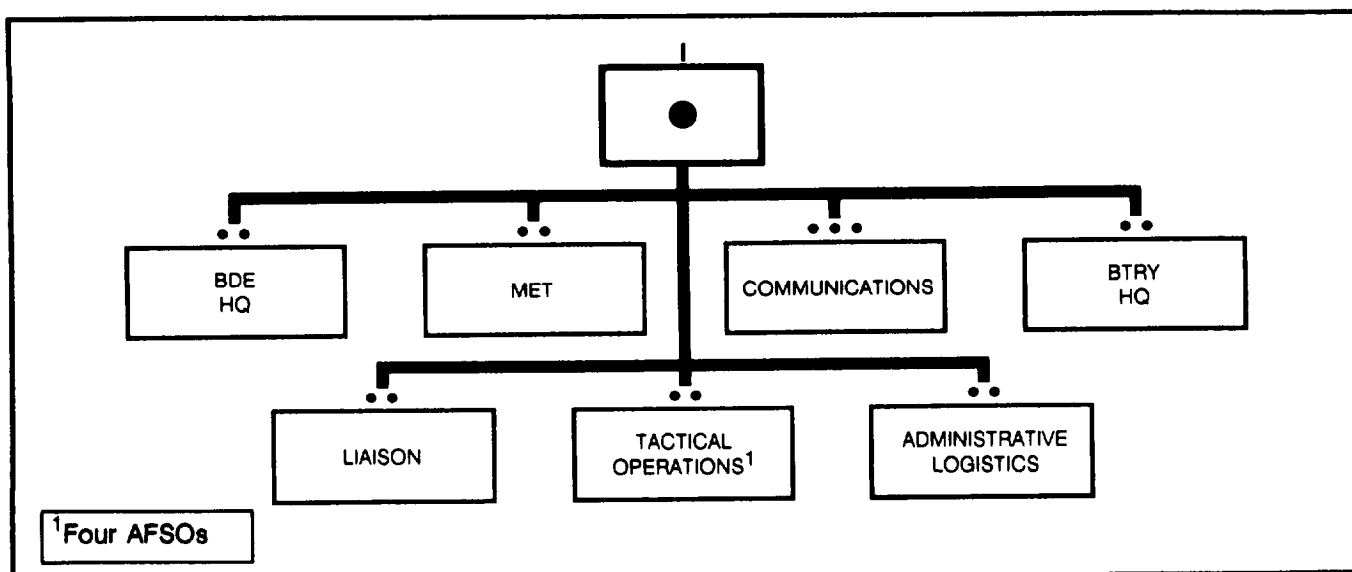
### Organization

At each level of command, assets from the field artillery and the aviation brigade combine to form the OH-58D system.

#### Corps

Four AFSOs are assigned to the headquarters and headquarters battery (HHB) of each field artillery brigade.

#### HEADQUARTERS AND HEADQUARTERS BATTERY, FA BRIGADE

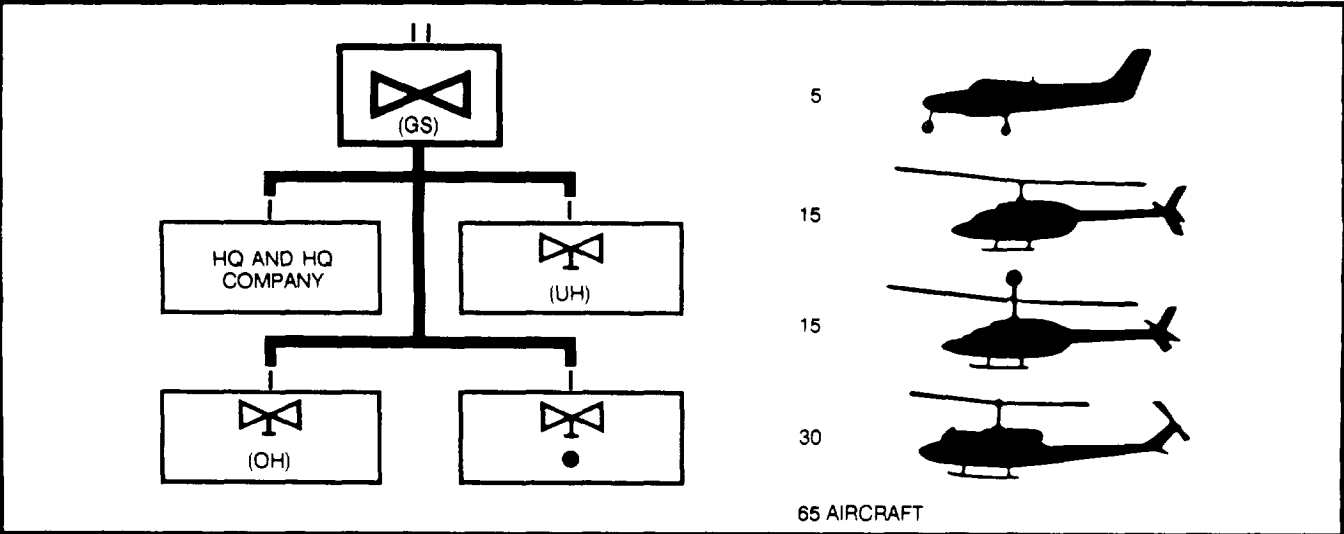


Fifteen aircraft and pilots are assigned to the target acquisition and reconnaissance company, command aviation battalion, corps aviation brigade.

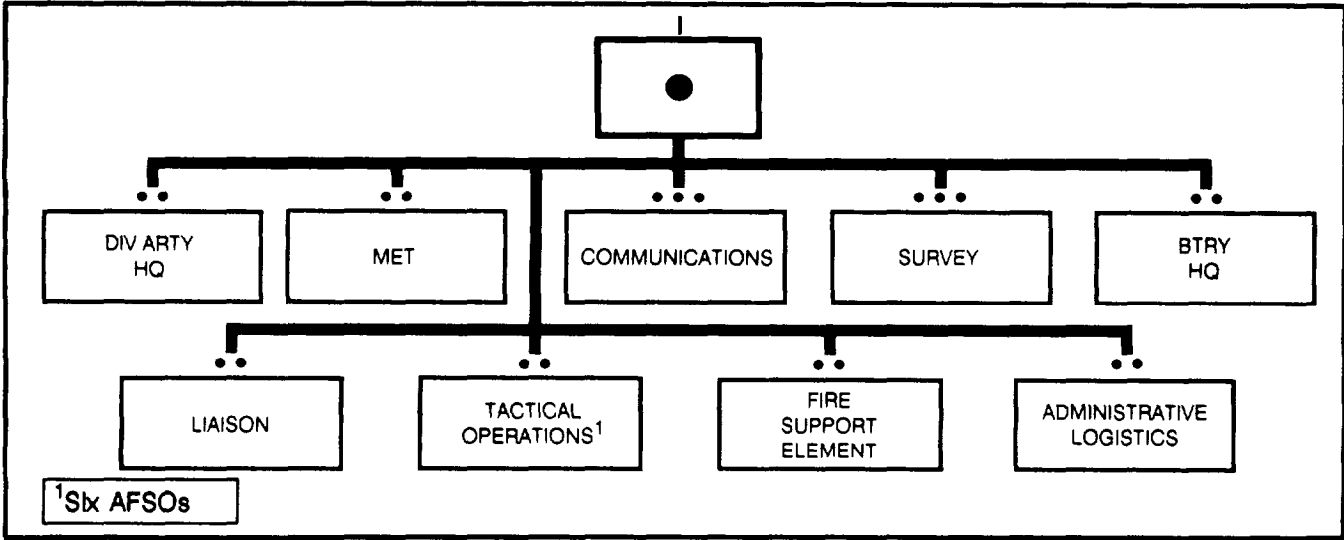
Division

Six AFSOs are assigned to the HHB, division artillery.

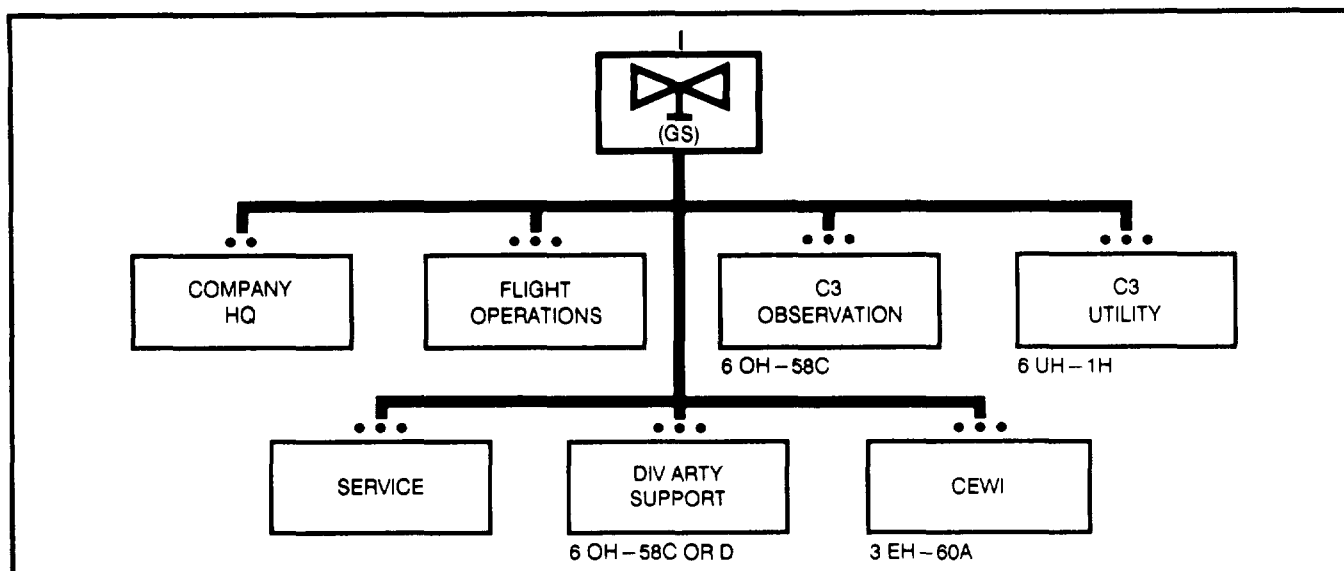
COMMAND AVIATION BATTALION, AVIATION GROUP,  
AVIATION BRIGADE, HEAVY CORPS



HEADQUARTERS AND HEADQUARTERS BATTERY, HEAVY DIVISION ARTILLERY



## COMMAND AVIATION COMPANY, AVIATION BRIGADE



Six aircraft and pilots are assigned to the div arty support platoon of the command aviation company of the aviation brigade.

### Employment Considerations

Because of its limited numbers, multipurpose utility, and requirement for target attack and TA systems support, the OH-58D system requires detailed planning and execution at all echelons within the fire support structure. Use of the OH-58D should be based on the factors of METT-T and the commander's intent.

On the basis of the mission, IPB, resources, TVA, and the commander's concept and intent, the FSCOORD at each echelon of command recommends to the supported commander the priority of employment, appropriate munitions mix, supporting and supported units, and selection and disposition of appropriate sensors. Determinations made on OH-58D employment are reflected in the task organization and fire support paragraph or annex of the appropriate operation order.

To provide the accuracy and responsiveness required by the OH-58D system, target acquisition and designation systems provide immediate target location capability and the ability to interface with the fire support C3 system. Targets are initially located by acquisition systems that can see deep. They are then refined by other systems as the targets move closer. When contact is established, the target is identified by the maneuver company FIST, the COLT, or the OH-58D. The link between these other acquisition systems and the OH-58D will be the TACFIRE, or when fielded, the advanced field artillery tactical data system (AFATDS).

OH-58D missions require prior planning and coordination between the AFSO of the OH-58D system, the unit to be supported, and the units supporting the system. Special requirements include maintenance, fuel, TACFIRE subscriber codes, TACFIRE device designation (such as observer with laser), survey locations, and so forth. Although digitally interfaced with the fire support C3

system, the AFSSO cannot effectively transmit a fire support plan digitally. Therefore, transmission of the fire support plan is, for the most part, manual. When placed under the operational control of an FA unit, the OH-58D moves to the designated rendezvous point and contacts the FS cell of the supported unit. The FS cell is responsible for coordinating the requisite C3 for employment. The OH-58D is integrated into the unit fire support plan and positioned accordingly. Normally a direct link is established between the OH-58D and the fire unit supporting it. When a target is detected, the system moves to a vantage point, coordinates the delivery of fires on the target, provides target attack assessment, and reengages the target if necessary.

The aircraft requires significant survey support in order to maintain the accuracy of its target-locating system. The system must be initialized every 15 nautical miles or 15 minutes. Less than adequate survey degrades first-round fire-for-effect capability. Div arty is responsible to provide survey control reference points.

Operationally, the system can be employed by itself when it is performing target acquisition and targeting. The ideal situation, however, would be to employ another aircraft, such as another OH-58D or an OH-58C, to enhance survivability and mission performance. Two aircraft will facilitate continuous coverage when one goes to refuel.

### **Division Control**

OH-58D assets available to the division can be employed in support of the division as a whole or can be further allocated to subordinate units. The division FS cell normally controls employment of OH-58D systems retained under divisional control. These systems are directed toward areas of particular interest to meet the commander's intent. Missions include augmenting target designation and target

acquisition assets for surge requirements in close, rear, and limited deep operations. Under division control, the AFSSO is assigned missions by the division FS cell and provides an acquisition capability and the ability to call for and adjust indirect fire support. The AFSSO receives initial artillery support through the div arty. A quick fire channel can be established to a GS artillery unit, such as the MLRS battery. The AFSSO talks to div arty or the division FSE on the div arty command net (voice) or operations/fire direction net 1, 2, or 3 (digital). For artillery support, the AFSSO contacts a designated artillery unit on its operations/fire direction net (digital). The OH-58D may be OPCON to a rear area operations center (RAOC) or a tactical combat force to support rear operations. In this contingency, the OH-58D will be assigned missions by the RAOC fire support officer. The AFSSO receives artillery support through the artillery unit assigned the mission to support rear operations. The AFSSO talks to the FSE on the FSE net or on the supporting artillery unit command net (voice). The AFSSO calls for artillery support on the supporting unit FD net (digital).

### **Maneuver Brigade Control**

The OH-58D system should be used primarily for augmenting the brigade organic target designation and target acquisition assets rather than for fire support coordination. The OH-58D system normally is used to augment the brigade FISTs and COLTs. Because it can see deeper than most other target acquisition systems in support of the brigade, the OH-58D also augments target acquisition assets supporting the brigade and provides timely and accurate battlefield information. In any case, the OH-58D is under the direction of the brigade FS cell.

### **Aviation Brigade Control**

When the aviation brigade exercises direction of the OH-58D systems, it normally places the

systems under the operational control of either the divisional cavalry squadron or an attack helicopter battalion (AHB).

In support of the cavalry squadron, the OH-58D system is employed in much the same manner as in support of maneuver units. It can also be used to support the cavalry squadron air cavalry troops individually as an aerial FIST. The OH-58D function in such a role is to provide fire support planning and coordination, to implement the air commander's concept and intent, to provide

target acquisition, and to designate targets for attack helicopters.

When the OH-58D is OPCON to an attack helicopter battalion, the AHB commander may choose to retain control of the OH-58D rather than further allocate the system to subordinate units. This is particularly true when the battalion is given a mission requiring the employment of the battalion as a whole. The OH-58D system is one of the few elements under the commander's control that is capable of providing effective fire support planning and coordination.

### EXAMPLES OF EMPLOYMENT OPTIONS

EMPLOYMENT OPTION	MISSION	TASKS	CONTROLLED BY	FIRE SUPPORT FROM
Division control: GS	Observer	Target acquisition and engagement	Division through FS cell	Div arty or quick fire channel to GS unit
Division Control: GS	Observer	Target acquisition and engagement	RAOC through its FSE (nonstandard mission)	Unit providing support to RAOC
Maneuver brigade or battalion control: OPCON to or R the DS FA battalion	Observer	Target acquisition and engagement	Maneuver brigade or battalion through brigade or battalion FSE	DS battalion
Covering force HQ Control: OPCON to or R the covering force artillery HQ	Observer	Target acquisition and engagement	Covering force HQ through its FSE	DS battalion
Attack helicopter battalion control: OPCON to or R the AHB	Observer and/or fire support coordination	Target acquisition and engagement and/or fire support planning	AHB through AHB FSO	AHB Initially; GS artillery secondarily
Cavalry squadron control: OPCON to or R the cav squadron	Observer and/or fire support coordination	Target acquisition and engagement and/or fire support planning	Cavalry squadron through squadron FSO	Air cavalry troop Initially; GS artillery secondarily