APPENDIX A

UAV-ENDURANCE

The UAV-E is currently in the concept development stage with technological enhancement and maturity proceeding under sponsorship of DOD agencies. These efforts are expected to last from two to six years and lead to a variety of fielded systems. UAVs with long mission time and high operating altitudes are also supported by civilian and government research organizations principally for atmospheric and environmental monitoring.

MISSION

The UAV-E will be operated by multiple services, and due to their long time aloft, will primarily support the JTF commander and theater and higher commands.

ORGANIZATIONAL STRUCTURE

Operationally, the UAV-E is divided into two categories: medium altitude endurance (MAE), and high altitude endurance (HAE). The US Army will rely primarily on the MAE UAV for its mission requirements and will deploy the MAE UAV to theater MI brigades (see Appendix F for capabilities comparison). Figure A-1 lists the MAE UAV requirements, and Figure A-2 is an example of MAE UAV employment. The United States Air Force (USAF) and the United States Navy (USN) will also field the MAE UAV but will rely largely on the HAE UAV. Commonality of C^2 software and equipment between the various systems will provide maximum flexibility in their utilization.

EQUIPMENT

The MAE UAV will be deployed initially with an electro-optic and infrared sensor. Priorities for payload development include—

- Synthetic aperture radar and MTI.
- Communications data relay payloads.
- SIGINT sensors and payloads.

Experience with prototype MAE systems has shown a need for an all-weather sensor package and the synthetic aperture radar will provide this capability. The communications data relay payloads are required to fill the tremendous need for data transfer on the battlefield, and will serve as surrogate satellites. The operational profiles of the UAV-E are ideally suited to such a role and supports the stand distances and station time required for SIGINT collection missions. The size of the UAV-E allows for larger payloads and also opens the door to multiple sensors placed on a single UAV.

The long operational ranges at which the UAV-E will be employed require non-LOS control methods. Satellite communications (SATCOMs) are used to pass commands to the AVs and to receive sensor data. Limitations of bandwidth require that synthetic aperture radar data be pre-processed onboard the aircraft prior to transmission. Video data will require compression prior to transmission. Time delays associated with satellite control demand a higher level of autonomy for flight operations than is associated with other tactical UAVs. AVs must depend on onboard navigation systems to fly pre-programmed routes.

The UAV-E supports each of the five tenets of intelligence described in FM 34-1. These UAVs will be able to support the full spectrum of conflict and OOTW. Ideally, the systems will support the indications and warnings (I&W) effort of a theater prior to hostility and continue to provide real-time intelligence as a situation escalates. Use of communications assets such as TROJAN SPIRIT will provide dissemination of sensor data to virtually any location around the world.