

## ELECTROMAGNETIC ENVIRONMENTAL EFFECTS (E3) CHECKLIST

INTRODUCTION: E3, formally known as electromagnetic interference (EMI), is a recognized potential cause factor and should be thoroughly evaluated during all accident investigations, to determine if E3 could or could not have influenced the operation of the equipment involved. If E3 could have been a factor, then it must be rigorously evaluated. E3 should be considered a potential cause factor for any air or ground system with electronic components, especially modern, complex systems.

The following E3 checklist is recommended for use whenever E3 is suspected as a cause factor. Use of a checklist will ensure a thorough evaluation of E3.

### E3 CHECKLIST

1. During the initial stages of the investigation, attempt to determine if there is any evidence of an external influence on the aircraft/vehicle/weapon system or its subsystems. Consider cockpit/instrument indications reported by surviving crewmembers, eyewitness reports, and other physical evidence. This is especially important where the physical evidence indicates that the aircraft/vehicle/weapon system was out of control prior to accident sequence termination.

2. If E3 can be ruled out as a causal factor during this stage, then document the actions taken to eliminate E3 (i.e., "E3 was considered but ruled out for the following reasons :...").

- Aviation accidents: Document this in paragraph 2j (Special Investigation) of the DA Form 2397-3 narrative.
- Ground accidents: Document this in the Narrative of DA Form 285, paragraph 2I, Special Investigation.

3. If E3 cannot be eliminated early on or there are positive indications of an external influence, advise USACRC Operations immediately at DSN 558-3410/2660, and request technical assistance. In addition, perform the following:

a. Check for High Intensity Radio Transmission Areas (HIRTAs) in the area of the accident. Note VFR sectional or tactical map for large towers (transmitters) within 5 miles of the accident site.

b. While taking aerial photographs of the accident site, recon the area surrounding the accident (5 miles) for large towers (transmitters) such as radio/television, telephone microwave, radar, etc.

(1) All towers (transmitters) are considered a potential source and should be plotted on a diagram in relation to the accident site.

(2) Contact owners of the towers (transmitters) to determine:

(a) Hours of operation.

(b) Nature of transmission (signal power level and frequency).

(c) Signal beam width.

(d) Azimuth(s) of transmitter signal(s).

c. For aviation accidents, gather any and all available ATC tapes, to include radar and voice, for later review.

d. If there are surviving crewmembers, record all cockpit/ instrument indications experienced during the accident (caution/warning/advisory light illumination, audio warning tones, and degradation/loss of flight controls, stiffness of pedals, etc.). Compare cockpit/instrument indications against the database of known type aircraft responses to E3.

e. If there are no surviving crewmembers, analysis of the above data plus any additional information gained from flight data recorders (if so equipped) will indicate possible contribution to E3.

f. Close coordination with USACRC Operations will be maintained throughout the E3 investigation. Aviation and/or Ground Systems and Accident Investigations will conduct detailed analysis of the above data at the USACRC.

g. E3 can be eliminated as a causal factor only if accident circumstances (physical evidence, aircraft/vehicle maintenance history, witness statements, etc.) indicate a failed part or human error was the primary cause.