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USA INSCOM Reg 105-12

DEPARTMENT OF THE ARMY  
UNITED STATES ARMY INTELLIGENCE AND SECURITY COMMAND  
Arlington Hall Station  
Arlington, Virginia 22212

Regulation  
No. 105-12

2 November 1978

Communications-Electronics  
ADVANCED IDENTIFICATION TECHNIQUES (AIT) (U)

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\*This regulation supersedes USA INSCOM Regulation 105-12, 26 February 1976.

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## Section I

### GENERAL

1. (U) PURPOSE. This regulation provides standard criteria for local in-station management, control, and tasking of USA INSCOM Advanced Identification Techniques (AIT) [REDACTED]

2. (U) SCOPE. This regulation applies to all INSCOM organizations and units engaged in or responsible for AIT management, control and tasking. This basic document is augmented by additional regulations pertaining to the specific areas of operation addressed within this document.

3. (U) EFFECTIVE DATE. This regulation and changes thereto will be placed in effect upon receipt.

4. (C) DEFINITIONS. In order to standardize the terminology associated with the AIT Field, the following terms are defined below:

a. (C) Advanced Identification Techniques (AIT). [REDACTED]

b. (U) AIT Library. A collection of AIT recordings mounted on sheets, either matched or unmatched, catalogued and filed by representative characteristic classification.

c. (U) AIT Recording. A filmed record of one transmitter's characteristics taken at a specific point in time.

d. (U) AM Trace. The AM Trace is a visual display on the AIT film record of the signal voltage and includes both the zero trace lines (non-keyed display between elements/bauds) and the keyed transmitter signal envelopes.

e. (U) Buildup time. The number of milliseconds it takes the AM envelope to reach its initial maximum amplitude after key on.

f. (U) Characteristics. The specific FM and AM variations of a transmitted signal.

g. (U) Continuity. A progressive accumulation of AIT recordings depicting major characteristics of a single transmitter, which shows changes or lack of changes in that transmitter over a progressive length of time.

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h. (U) Element. That envelope/ baud portion of an oscillogram which represents both frequency and amplitude of the keyed transmitted signal. It is inclusive of the key-on, main-body, and key-off portions of the emission.

i. (U) Envelope. That portion of an AIT representation showing the amplitude (AM) display of the transmitted signal between key-on and key-off. Also referred to as baud.

j. (U) FM Trace. The FM Trace is a visual display on the AIT recording of the signal frequency which includes both the free swinging (between elements/bauds) and the carrier or keyed frequency of the transmitted signal.

k. (U) Key-off. The terminal portion of the element/baud which occurs when the transmitter key is released.

l. (U) Key-on. The initial portion of an element/baud which occurs when the transmitter is keyed.

m. (U) Match. Two AIT recordings obtained at different times, which are matched due to similarity of characteristics; thus, indicating they are representative of the same transmitter.

n. (U) Matched Group. A group of three or more AIT recordings obtained at different times which match.

o. (U) Millisecond. A unit of time utilized in AIT measurement which indicates one-thousandth of a second.

p. (U) Mounting sheet. An 8 x 13 inch sheet of paper (preprinted and usually of card stock) for mounting representative elements/bauds of an AIT recording for labeling, classification, analysis, filing and future matching purposes.

q. (U) Oscillogram. A representation of an oscilloscopic display which depicts the AM and FM traces (keyed or not keyed).

r. (U) Shot number. A one-up serialized number placed automatically on the AIT recording by the oscillograph unit each time the record button is depressed.

s. (U) Shot-to-Shot Matches. Matches comprised of two AIT records which display the same or similar characteristics but which do not have sufficient continuity in depth (three or more recordings) to establish a matched group.

t. (U) Singleton. An AIT recording which displays unique characteristics for which no match exists within the AIT library.

u. (U) Timing marks. Pulses produced at the AIT equipment which are synchronized at a rate of 1000 and 100 Hz. Pulses are printed as timing marks at a time interval of one each millisecond, with every tenth millisecond producing a line across the AIT recording perpendicular to the timing mark line.

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## Section II

### OBJECTIVES

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## Section III

### RESPONSIBILITIES

7. (U) HEADQUARTERS, USA INSCOM. Heads of staff elements concerned will maintain staff supervision and guidance over the INSCOM AIT

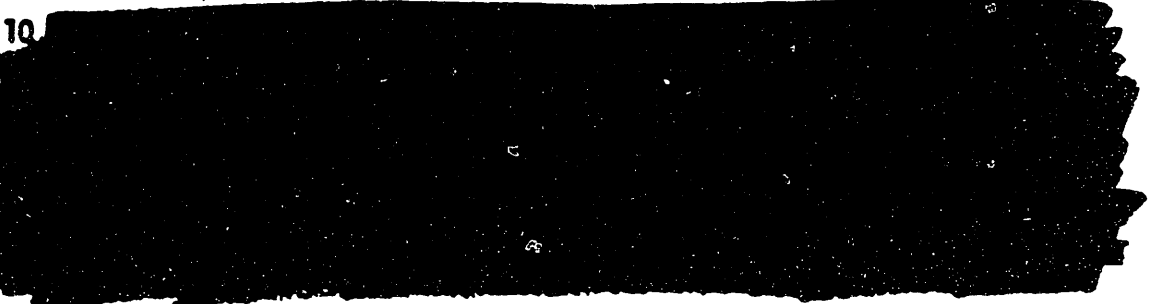
programs through review of selected technical and operational information provided on a continuing basis by field activities. In addition, necessary liaison and continuing studies will be conducted to insure that the programs remain abreast of the advancing technical sciences.

8. (U) SUBORDINATE ELEMENTS. Each INSCOM field element having AIT will be responsible for the control, processing, evaluation, and reporting of the efforts employed. The day-to-day operation and evaluation, timely recognition, and correction to problem areas is the responsibility of the field elements. When problems identified are beyond the capabilities of field elements to correct, assistance is to be requested from this Headquarters. Likewise, this Headquarters should be kept abreast of all significant AIT occurrences. Subordinate field elements engaged in AIT operations will prepare local in-station Standard Operating Procedures to include management, tasking, and control of AIT. As a minimum, in-station procedures will include instructions outlined in this regulation and technical guidance prepared and issued by NSA/CSS. Productivity reports will be prepared and generated in accordance with pertinent instructions contained in this regulation and NSA/CSS directives.

Section IV

STANDARD PROCEDURES FOR MANAGEMENT, CONTROL, AND TASKING OF AIT

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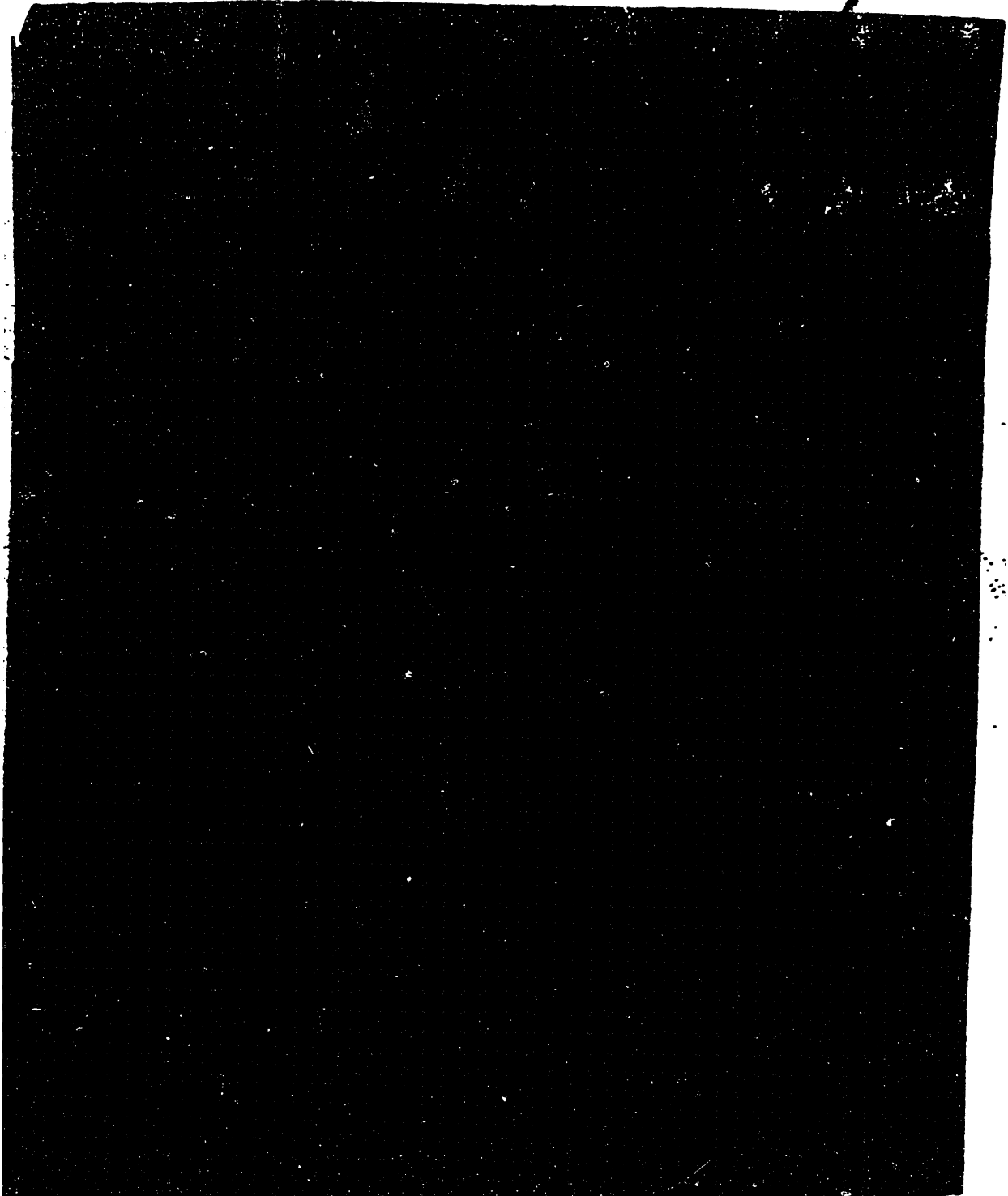
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f. (U) Major characteristics which are considered during record analysis are as follows:

(1) (U) Initial and Terminal Frequency Shifts. These shifts are positive, negative, steady, and variable. The initial frequency shifts may be further segregated by the degree of recovery exhibited after the initial up or down shifting following key-on. Terminal frequency variations are determined as having occurred only in the final 20 milliseconds of the element/ baud recording.

(2) (U) Initial and Terminal Relay Breaks. Extreme caution should be exercised when cataloging by initial or terminal relay breaks; transmitter relay repair will correct this deficiency in most transmitters.

(3) (U) Ripple Harmonics. Are generally utilized when they are considered a major transmitter characteristic. Ripple harmonics are highly susceptible to masking by man-made interference (QRN).

(4) (U) Irregular Transmitter Effects. Unusual or unique types of characteristics which are not normally found on a signal recording. Such as: saw toothed ripples, breaks in transmission (within the body of the envelope), stepped frequency shifts.

(5) (U) Overload Effects. Shifts in amplitude which should only be used for classification purposes in the absence of outstanding Frequency Modulation characteristics.

g. (U) AIT recordings should be effectively deleted or weeded out from file folders periodically. A minimum review of folders for deletions would be once each quarter, or when no longer needed for continuity purposes. Disposition of all weeded recordings will be entered on AIT logs.

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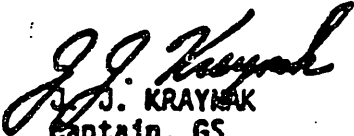
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The proponent of this regulation is the Deputy Chief of Staff, Operations. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) to this Headquarters, ATTN: IAQPS-0-S.

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