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REPORT
of

THE ARMY AIR FORCES BOARD

MASTER FILE

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SUBJECT

HANDBOOK OF SIGNS AND SYMBOLS USED IN INTERPRETATION AND
ANNOTATION OF AERIAL PHOTOGRAPHS

PROJECT No 3719A461

DATE

COPY No. 65

28 September 1944

94-27331



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THE ARMY AIR FORCES BOARD
Orlando, Florida

28 September 1944

ARMY AIR FORCES BOARD PROJECT NO. 3719AA61

HANDBOOK OF SIGNS AND SYMBOLS USED IN INTERPRETATION AND
ANNOTATION OF AERIAL PHOTOGRAPHS

1. OBJECT.

The object of this study is to prepare, for purposes of standardization, a list of signs and symbols used in the interpretation of aerial photographs, and to consider the use of annotation symbols printed on gummed acetate in photographic interpretation.

2. FACTUAL ELEMENTS.

a. The project was initiated by letter to the President, Army Air Forces Board, from Headquarters, Army Air Forces, subject "Initiation of project for standardization of signs and symbols used in interpretation and annotation of aerial photographs", dated 30 June 1944.

b. A wide variety of signs and symbols are in use in the theaters of war among units of the United States Forces, and a definite need exists for one standard list to be adopted for use by all United States Forces throughout the world.

c. A seven (7) day conference was called by the Army Air Forces Board on 11 September 1944 for the purpose of compiling a single list of symbols which would fulfill requirements for United States forces and provide standardization. The following officers were in attendance:

Major Audobon Tyler, Reconnaissance Branch, Requirements Division, AC/AS, OC&R, Headquarters, Army Air Forces, Washington, D. C.

Major E. L. King, Photographic Division, AC/AS, Intelligence, Headquarters, Army Air Forces, Washington, D. C.

Major Frank S. Savage, Tactics Division, Army Air Forces Board, Orlando, Florida.

Captain F. W. Galbraith, Intelligence School, AAFSAT, AAFTAC, Orlando, Florida.

Lt. A. G. Hutchins, Military Intelligence Training Center, Camp Ritchie, Maryland.

Ensign J. T. Bill, Photographic Interpretation Center, Division of Naval Intelligence, Chief of Naval Operations, Anacostia, D. C.

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As a result of this conference a list of symbols and certain recommendations were determined.

3. CONCLUSIONS.- It is concluded that:--

a. The set of symbols presented as Inclosure 2 is the most desirable for use in photographic interpretation by United States Forces.

b. These symbols should not be distributed in a separate handbook, but should be included in publications as mentioned under recommendations.

c. The use of annotation symbols printed on gummed acetate is not desirable.

4. RECOMMENDATIONS.- It is recommended that:--

a. The set of symbols presented as Inclosure 2 be submitted for approval to the Joint Chiefs of Staff, and if approved, be issued for use by all United States Forces whenever symbols are used in the annotation of aerial photographs or the preparation of overlays, terrain models, or map substitutes from photographic interpretation information.

b. This set of symbols be distributed to the using agencies in the following manner:

(1) As an annex to FM 21-30, "Conventional Signs, Military Symbols, and Abbreviations".

(2) As a part of the "Photographic Interpretation Handbook-- United States Forces", a joint Army-Navy publication.

c. These symbols, if approved for use by the Joint Chiefs of Staff, immediately be adopted for the training of photographic interpreters for the Army Air Forces, Army Ground Forces and United States Navy.

d. Before future additions or changes to these symbols are adopted for general use, they be submitted for approval to the Joint Intelligence Committee, Joint Chiefs of Staff, to insure standardization at all times throughout the United States armed services.

e. Investigation be made of the provision of an acetate templet such as suggested in Inclosure 3, containing the principal geometric forms presented in the attached list of symbols in the several sizes needed, for use as a drafting aid to photographic interpreters.

5. DISCUSSION:

a. The presence of different sets of symbols for use in photographic interpretation in adjacent or cooperating theaters has created an unnecessary confusion in the registration of photographic information for distribution. In addition it has created difficulty in the forming of joint services interpretation teams because of the variety of symbols which the several services

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have had in use. The Intelligence Schools, because of the existence of these unrelated lists of symbols in the theaters, have been forced to instruct their students in the use of all lists, with subsequent confusion arising in the training given to photographic interpretation students.

b. In the compiling of the list of symbols presented in this report, requirements of the Army Air Forces, Army Ground Forces, United States Navy, and Marine Corps were considered. Symbols from twelve (12) agencies among these services were brought under consideration to provide a thorough cross section of the numerous series of symbols which have developed in the conduct of operations in this war.

c. The preparation of annotation symbols on gummed acetate for the use of interpreters in the field is not favorably considered by the Army Air Forces Board. The use of symbols prepared in this manner for photographic interpretation would entail an unnecessary amount of added materiel in the interpreter's equipment, if symbols were to be provided in the several scales necessary to agree with the scale of photographs being interpreted. The use of these gummed acetate symbols would provide no substantial time-saving element in interpretation work. The adoption and distribution of symbols on gummed acetate to the various theaters would, in addition, entail procurement and final distribution difficulties which are not commensurate with the benefits which might be gained. Of the interpreters questioned on the relative values of this method of annotating photographic information, only a small minority regarded the system as of possible value.

d. The use of symbols prepared in rubber stamp form is not recommended by the Army Air Forces Board for the same reasons; however, the provision of clear acetate templet sets, containing the principal geometric forms presented in the attached list of symbols and furnished in the several sizes needed, would provide a material drafting aid and insure uniformity and clarity of symbol annotation. It is not believed necessary to provide these basic forms in more than three (3) progressive sizes. The templet can be used to advantage for annotating photographs in conjunction with a Leroy lettering pen.

6. INCLOSURES:

1. Copy of directive from Hq, AAF, Washington, D. C., dated 30 June 1944.
2. Signs and symbols for use in photographic interpretation.
3. Symbol templet.

PREPARED BY:

FRANK S. SAVAGE, Major, AC, Tactics Division, AAF Board.

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FILE

12

R E S T R I C T E D

CONCURRED IN BY:

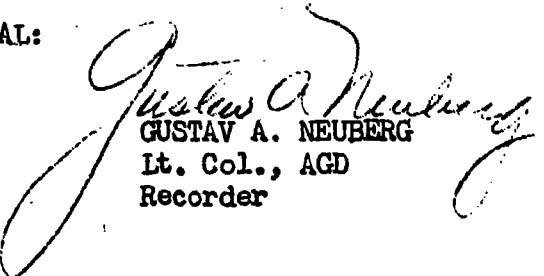
H. G. MONTGOMERY, Colonel, AC, Chief, Tactics Division, AAF Board.
M. J. COFFIELD, Colonel, AC, Chief, Policy Division, AAF Board.
E. H. RICE, Colonel, AC, Chief, Equipment Division, AAF Board.
A. F. SHEA, Colonel, AC, Executive, AAF Board.

APPROVED:

For the Army Air Forces Board:

E. L. EUBANK
Brigadier General, U.S. Army
President

OFFICIAL:


GUSTAV A. NEUBERG
Lt. Col., AGD
Recorder

DISTRIBUTION "B"

AAFEd Project No. 3719A461

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S#5561-4

R E S T R I C T E D

HEADQUARTERS, ARMY AIR FORCES
Washington

30 June 1944

SUBJECT: Initiation of Project for Standardization of Signs and Symbols
Used in the Interpretation and Annotation of Aerial Photographs.

TO: The President
Army Air Forces Board
Orlando, Florida

1. It is requested that a project be initiated by the Army Air Forces Board to standardize and publish in handbook form the accepted signs and symbols currently used by the American armed forces in the interpretation and annotation of aerial photographs.

2. There exists at present a wide variety of such signs and symbols which differ in the various theaters.

3. It is requested that in connection with this project, investigations be made regarding the feasibility of printing these standardized signs and symbols on some type of gummed acetate to facilitate their use in the field of operations.

4. It is also requested that this project be given a No. 2 priority and that prior to publication, proper coordination be made with this office.

5. It is believed that qualified personnel in the Research and Analysis Division, Intelligence Department, Army Air Forces School of Applied Tactics, are capable of assisting in the preparation of this project.























By command of General ARNOLD:
























/s/ R. H. Macklin
For H. A. CRAIG
Major General, U. S. Army
Asst. Chief of Air Staff
Operations, Commitments &
Requirements.

Inclosure #1.

S#5561-5

SIGNS AND SYMBOLS FOR USE IN PHOTOGRAPHIC INTERPRETATION

UNIDENTIFIED	(?)	LIGHT	
WEAPONS		SELF PROPELLED	
ANTI AIRCRAFT		COAST DEFENSE	
HEAVY		SUPER HEAVY	
AUTOMATIC		HEAVY	
LIGHT		MEDIUM	
MACHINE GUN		LIGHT	
DUAL PURPOSE		HOWITZER	
SELF PROPELLED		SUPER HEAVY	
RAILWAY		HEAVY	
SHIP		MEDIUM	
TOWER		LIGHT	
ANTI TANK		FIELD ARTILLERY	
HEAVY		HEAVY	
MEDIUM		MEDIUM	

SIGNS AND SYMBOLS		(Cont'd)
LIGHT		VEHICLE, ARMORED 
SELF PROPELLED		VEHICLE, MOTOR 
HOWITZER		BATTERY, NO. OF GUNS 
HEAVY		(Numeral on right side of appropriate gun symbol indicates number of pieces in battery)
MEDIUM		CALIBER 
LIGHT		(Numeral on left side of appropriate gun symbol indicates caliber of piece in millimeters)
MACHINE GUN		WEAPON OR EMPLACEMENT DESTROYED 
HEAVY		WEAPON, DUMMY 
LIGHT		WEAPON, DOUBTFUL 
FIELD OF FIRE		EMPLACEMENTS
MORTAR		(If the type of material utilized in the construction of the emplacement can be determined, the appropriate "MATERIAL INDEX" will be added beneath the symbol.)
MORTAR, BARRAGE		
RAILWAY GUN		MATERIAL INDEX
RAILWAY GUN ON TURN-TABLE		C - concrete L - log M - masonry W - wood S - steel E - earth
ROCKET PROJECTOR, SINGLE		BUNKER 
ROCKET PROJECTOR, MULTIPLE		CASEMATE OR BLOCKHOUSE 

SIGNS AND SYMBOLS

(Cont'd)

EMPLACEMENT, EMPTY		TRENCH, w/firing bays	
EMPLACEMENT, COVERED		TRENCH, FIRE	
(Example - 4 Gun, 240mm heavy coast defense Battery in covered con- crete emplace- ments)		WEAPONS PIT (INFANTRY)	
FIRE CONTROL CENTER		OBSTACLES (If the type of material utilized in the construct- ion of the obstacle can be determined, the ap- propriate "MATERIAL INDEX" will be added beneath the symbol.)	
FIRE CONTROL RADAR			
FIRE CONTROL VISUAL			
FOXHOLE			
(If in quantity, outline area and annotate FOXHOLES)		ANTI-TANK BARRIER	
OBSERVATION POST		ANTI-TANK DITCH	
OBSERVATION POST, ARTILLERY		ANTI-TANK DITCH, COVERED	
OBSERVATION TOWER		BARRAGE BALLON	
PILLBOX (Axis of Gun indicates direction of fire)		DEMOLITION CHARGE	
SHELTER		OBSTACLES, FIXED	
STRONG POINT		OBSTACLES, FIXED IN WATER	
TRENCH, COMMUNICATION		OBSTACLES, MOVABLE	
		OBSTACLES, MOVABLE IN WATER	

SIGNS AND SYMBOLS		(Cont'd)
ROAD BLOCK, DEMOLITION		COMMAND POST
ROAD BLOCK, PARTIAL		COMMAND POST AREA
ROAD BLOCK, TOTAL		MILITARY OCCUPATION
MINES		NEW CONSTRUCTION
MINED AREA, LAND		PARK, ARMORED (Outline area, indicate type, where possible, and show numerically the number of vehicles.)
MINED AREA, WATER		
MINEFIELD GAP		PARK, ENGINEER EQUIPMENT (Outline area and indicate type where possible.)
WIRE, BROAD AREA (Base of symbol indicates location of first strand. Depth of zone, in feet, is indicated by numerals.)		PARK, MOTOR (Outline area, indicate type where possible, and show numerically the number of vehicles.)
WIRE, CONCERTINA - SINGLE		
WIRE, CONCERTINA - DOUBLE		PARK, ORDNANCE (Outline area, indicate type where possible, and show numerically the number of pieces.)
WIRE, SINGLE FENCE		
WIRE, DOUBLE FENCE		STORES, AREA (Area of stores to be inclosed in a solid ring.)
MILITARY AREAS		AMMUNITION
BARRACKS AREA		BURIED
BIVOUAC AREA		COAL

SIGNS AND SYMBOLS

(Cont'd.)

ENGINEER		BUILDING, REVETTED	
LOOSE		* CABLE	
LUMBER		CABLE, BURIED	
OIL OR GAS		CANAL	
WATER		CEMETERY	
TENT, AREA		CLIFF	
TENT		CLIFF, ROCKY	
TERRAIN FEATURES		CHURCH	
BLAST WALL (Line conforms to shape of installation protected.)		CULVERT	
RETAINING WALL		CUT	
BRIDGE (Indicate width in feet and construction material by MATERIAL INDEX.)		DAM	
BRIDGE, OUT		DIRECTION OF FLOW	
BRIDGE, PONTOON		DRAINAGE DITCH	
BUILDING, BURIED		EXCAVATION	
BUILDING, DUG-IN		FILL	
		FLOOD GATE	

* - BUILDING UNDER CONSTRUCTION (SEE PAGE 7)

SIGNS AND SYMBOLS		(Cont'd.)
FORD		ROAD, PRIMARY [Show number of lanes in figures. (Minimum width of 1 lane is 8')]
HOSPITAL		
LAKE		ROAD, SECONDARY [Show number of lanes in figures. (Minimum width of 1 lane is 8')]
LAKE, DRY		
LOCK		SAND DUNES
LOCK, DOUBLE		SCHOOL
PATH OR TRAIL		SPRING
PIPELINE, BURIED		STONE FENCE
PIPELINE, OVERHEAD		
PIPELINE, SURFACE		STREAM, BED
RAILROAD DOUBLE TRACK		STREAM, INTERMITTENT
RAILROAD ELECTIFIED		TANK, BURIED
RAILROAD, NARROW GAUGE		TANK, FARM
RAILROAD, SINGLE TRACK		TANK, FUEL
RIDGE LINE		TANK, GASOMETER
RIVER OR STREAM		TANK, WATER

SIGNS AND SYMBOLS

(Cont'd.)

BUILDING, UNDER CONSTRUCTION		SWAMP OR MARSH	
TOWER, UNSPECIFIED OR OBSTRUCTION		TREE	
TOWER, WATER		(Areas containing the above, or other, types of vegetation should be outlined and annotated with the type indicated.)	
UNDERGROUND ENTRANCE		SLOPE	
VEGETATION		FALLS OR RAPIDS	
BRUSH		WELL	
CONIFEROUS FOREST		WELL DERRICK	
DECIDUOUS FOREST		WINDMILL	
GRASSLAND		<i>ELECTRONICS</i>	
MANGROVE		DIRECTION FINDER	
ORCHARD OR PLANTATION		POWER STATION	
PALMS		POWER TRANSMISSION LINE	
RAIN FOREST OR JUNGLE		RADAR	
RICE FIELD		RADIO NAVIGATIONAL AID	
STUMP LAND		RADIO STATION	
SWAMP FOREST			

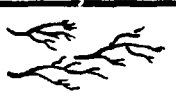












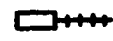









SIGNS AND SYMBOLS

(Cont'd.)

RADIO TRANSMITTER		BEACHES	
SEARCHLIGHT		LOCATION & EXTENT	
SEARCHLIGHT, RADAR CONTROLLED		CENTER	
SOUND LOCATOR		GRADIENT	% OR RF
TOWER, CONTROL		LEFT FLANK (FROM SEA)	
TOWER, LIGHT		RIGHT FLANK (FROM SEA)	
TOWER, RADIO		BEACH MATERIAL	
TOWER, SIGNAL		BLOCK OR BOULDER	
TELEPHONE OR TELEGRAPH LINE		CORAL HEAD, AREA	
TRANSFORMER STATION		CORAL HEAD ISOLATED	
WEATHER STATION			
NAVAL AND HYDROGRAPHY			
ANCHORAGES			
SHIP		GRAVEL	
SHIP, EMERGENCY			
SHIP, W/COMPLETE FACILITIES			


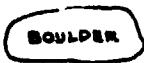

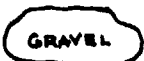






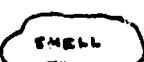



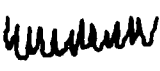


SIGNS AND SYMBOLS






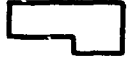













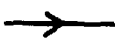


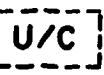


(Cont'd)

KELP OR SEAWEED		LIGHTSHIP	
		LIGHT, UNSPECIFIED	
MUD		CRANE	
		DANGERS	
ROCK		DANGER, AREA	
		ROCK, AWASH	
SAND		ROCK, SUNK	
		WRECK, AWASH	
SHELL		WRECK, SUNK	
		DREDGE	
SHINGLE		DRY-DOCK	
		DRY-DOCK, FLOATING	
BOUYS AND LIGHTS		MARINE, RAILWAY	
BOUY, BELL. (Etc.)		NET, SUBMARINE	
BOUY, LIGHTED		NET, TORPEDO	
BOUY, UNSPECIFIED			

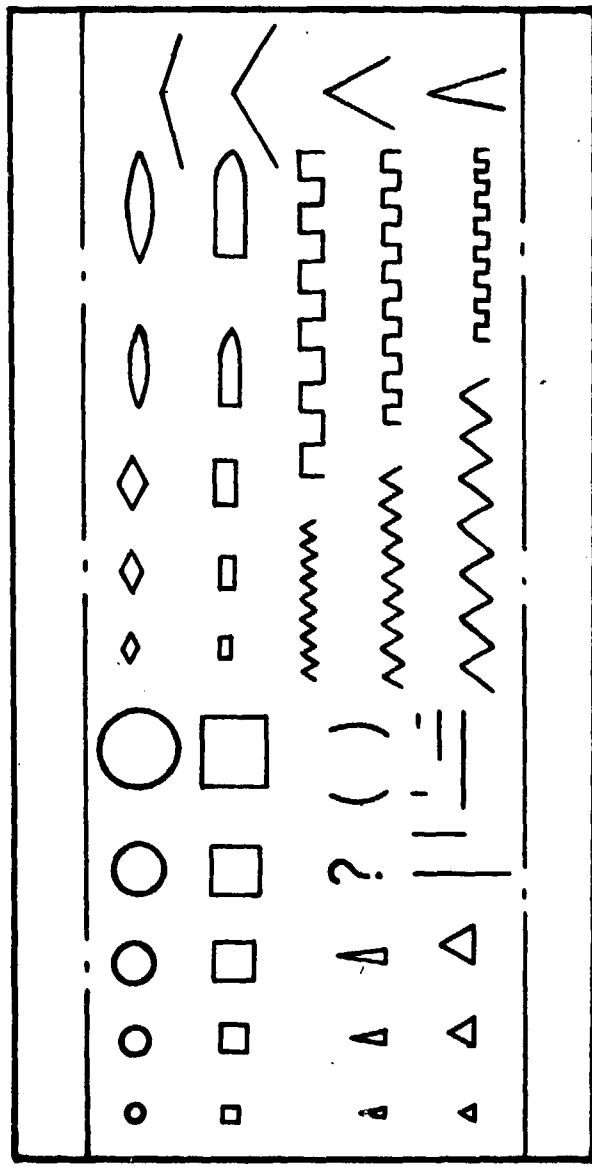
SIGNS AND SYMBOLS

(Cont'd.)

OFFSHORE		TIDES AND CURRENTS	
BOTTOM MATERIAL		EBB	
BLOCK OR BOULDER		FLOOD	
GRAVEL		GENERAL	
MUD		VESSELS	
ROCK		MERCHANT [Indicate type by "J.M.S.T." code designation (See P.I. Handbook.)]	
SAND		NAVAL [Indicate type by standard U.S. Navy designations (See P.I. Handbook.)]	
SHELL			
CONTOURS (FATHOMS UNLESS OTHERWISE INDICATED)	---6---		
DANGER LINE3'....	WAVE AND SURF CONDITIONS	
SOUNDINGS (IN FATHOMS)	6	BREAKERS	
REEFS, BARS, AND SHOALS		SURF LINE	
EDGE OF CORAL REEF		[Additional symbols and abbreviations for Hydrographic designations should conform to those published in H.O. #8]	
EDGE OF ROCK REEF			
EDGE OF SAND BAR			
		AIRFIELDS AND SEAPLANE BASE	
		AIRCRAFT	

SIGNS AND SYMBOLS		(Cont'd.)
AIRCRAFT, DAMAGED		CLOUD OBSCURED 
AIRCRAFT, DUMMY		SMOKE OBSCURED 
AIRCRAFT, REVETMENT		BUILDING 
AIRCRAFT, REVETMENT UNDER CONSTRUCTION		DAMAGED (Large Scale) 
AIRCRAFT, SHELTER		DAMAGED (Small Scale) 
AIRFIELD		DESTROYED 
LANDING GROUND		BOMB BURST 
SEAPLANE ANCHORAGE		BOMB BURST, AREA OF FRAGMENTATION 
SEAPLANE ANCHORAGE, EMERGENCY		FIRE LOCATION 
SEAPLANE, BASE		LINE OF FLIGHT 
SEAPLANE, RAMP		NADIR POINT 
DAMAGE ASSESSMENT, & BOMB PLOT		
AREA		
CLEARANCE AND RECONSTRUCTION		
DAMAGED		
DEVASTATED		

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SYMBOL TEMPLATE

ENCLOSURE 3

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DEPARTMENT OF THE AIR FORCE

HEADQUARTERS AIR FORCE MATERIEL COMMAND
WRIGHT-PATTERSON AIR FORCE BASE OHIO

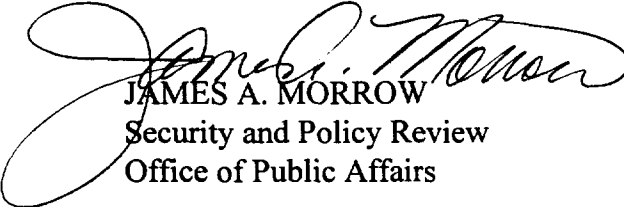
MEMORANDUM FOR HQ AFMC/HO
ATTENTION: DR. WILLIAM ELLIOTT

FROM: HQ AFMC/PAX

5 MAY 2000

SUBJECT: Security and Policy Review, Case AFMC 95-276

1. The reports listed in Attachment 1 were reviewed for security and policy IAW AFI 35-205 (now AFI 35-101), and were cleared for public release. According to our logs, the material was reviewed by HQ AFMC/PA and by SAF/PAS. It was our case number AFMC 95-276, and Air Staff's number SAF/PAS 95-0995. It was cleared for public release 22 Nov 95. All the material is releasable to the public, without restriction.
2. If you have any questions or comments, please call me at 77828. Thanks.


JAMES A. MORROW
Security and Policy Review
Office of Public Affairs

Attachment:

1. HQ AFMC/HO Ltr 12 Oct 95

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