SUBCOURSE
EN5308

EDITION
8

US ARMY ENGINEER SCHOOL

MAP EDITING

THE ARMY INSTITUTE FOR PROFESSIONAL DEVELOPMENT

ARMY CORRESPONDENCE COURSE PROGRAM

MAP EDITING

CARTOGRAPHY VIII

U.S. Army Topographic Element (DOTD)

SUBCOURSE No. EN5308

Six Credit Hours

GENERAL

The Map Editing subcourse, part of the Cartographic Specialist MOS 81C Basic Cartography Course, is designed to teach the basic skills and knowledges necessary to be able to perform section quality control checks and edits during map production. The subcourse is presented in three lessons, each lesson corresponding to a terminal objective as indicated below.

Lesson 1: QUALITY CONTROL IN MAP EDITING

TASK: Identify map defects that diminish the accuracy and usefulness of a map.

CONDITIONS: You will be given information on identifying map defects.

STANDARDS: Demonstrate knowledge on identifying map defects by responding correctly to 70 percent of the examination questions pertaining to this lesson.

Lesson 2: PERFORM EDIT PROCEDURES

TASK: Perform edit procedures to identify errors and defects on compilation/revision manuscripts and color separated materials.

CONDITIONS: You will be given information on how to perform edit procedures to identify errors and defects on compilation/revision manuscripts and color separation materials.

STANDARDS: Demonstrate knowledge on performing edit procedures to identify errors and defects on compilation/revision manuscripts and color separation materials by responding correctly to 75 percent of the examination questions pertaining to this lesson.

Lesson 3: ANNOTATE MAP ERRORS AND DEFECTS

TASK: Annotate map errors and defects in a legible, understandable, and complete manner.

CONDITIONS: You will be given information on annotating map errors and defects in a legible, understandable, and complete manner.

STANDARDS: Demonstrate knowledge on annotating map errors and defects by responding correctly to 70 percent of the examination questions pertaining to this lesson.

TABLE OF CONTENTS

PAGE

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INTRODUCTION

Topographic maps have many uses as basic tools for planning and developing projects that are necessary to our way of life. With our military forces dispersed throughout the world, we rely increasingly more on maps to supply information to our combat elements. Much of the planning for transporting troops, materials, and resolving logistical problems is done with maps. This is one of the many reasons why the map must be a reliable, complete, and an accurate tool for the user.

To ensure a quality product for the map user, a quality control program is a basic and an essential part of map production. Quality control reviews and inspections are the primary means of ensuring consistency of treatment, accuracy, completeness, adherence to specifications, and the general appearance of all published military maps. Quality control is maintained throughout the map preparation process by careful editing of the completed compilation/revision manuscript, and of the color separated materials prepared for reproduction. Editing is the process of checking a map or chart in its various stages of preparation to ensure accuracy, completeness, and correct preparation from and interpretation of the sources used, and to assure legible and precise reproduction.

Essential elements to successful editing are good judgment, and an ability to recognize map errors and defects. You must also possess a thorough knowledge of the standards of map accuracy, specifications, and current methods of map compilation and revision. It is necessary that the editor be able to annotate errors and defects in a legible, complete, and understandable manner. It is the editor's responsibility to see that all detail contained in the map is correct and that no errors or inconsistencies are present.

As a map editor, you will find this subcourse helpful, however, it will not teach you everything you need to know about map editing. Your proficiency at map editing will be further developed through on-the-job experience in editing various map projects.

NOTE: To help you to fully understand the concepts of the edit process, this subcourse frequently refers to color concerning the graphics; however, all graphics have been printed in black and white.

Lesson 1

QUALITY CONTROL IN MAP EDITING

TASK: Upon completion of this lesson you will be able to identify map defects that diminish the accuracy and usefulness of a map.

CONDITIONS: You will be given information on identifying map defects and an ACCP examination response sheet.

STANDARDS: Demonstrate knowledge on identifying map defects by responding correctly to 70 percent of the examination questions pertaining to this lesson.

CREDIT HOURS: 2

REFERENCES:

DMAHTC TM 1-40130, Quality Control Program Manual

Learning Event 1

IDENTIFY LEVELS OF RESPONSIBILITY

Quality control is the overall system of activities whose purpose it is to ensure that a quality map product is provided and that it meets the needs of the user. To produce map products that are accurate and meet established standards and requirements, a quality control program is essential in the map production process.

Production personnel are responsible for quality control. Each project proceeds through various levels of responsibility for quality assurance checks. This learning event explains the various levels of quality assurance checks that are performed by production personnel in the map production process.

Production Supervisor. The production supervisor has the responsibility for establishing and monitoring the quality control program, monitoring map preparation to ensure compliance with specification, and assigning personnel to perform the map edit(s).

Map Editor. The map editor has the responsibility for analyzing all job specifications, technical instructions, and source materials pertaining to a particular mapping project; performing compilation/revision edits, and performing color separation edits. As an editor you are responsible for quality control checks and your main concern will be the final edit. The final edit is done after the major production phases have been completed on the project and furnished to you by a production element. Your purpose, as an editor will be to provide quality assurance to the production elements, your organization, and to the map user by your careful inspections to reveal any defects that may be present in the map product.

Cartographic Supervisor. The cartographic supervisor is responsible for monitoring map preparation during the various phases of map production. The cartographic supervisor ensures compliance with specifications conducting quality control checks and inspections and performs map edit(s).

Cartographic Draftsman. The cartographic draftsman is responsible for adhering to project and standard mapping specifications. Cartographic draftsman must also perform a complete and comprehensive inspection of all line work, prepared negatives, and positives to ensure accuracy and completeness.

While the cartographic draftsman must adhere to project and standard mapping specifications, the cartographic supervisor ensures quality control by conducting periodic checks and inspections. These include, but are not limited to evaluating the use of source material, verifying the engraving of scribe sheets, positioning of type, and reviewing computations. The cartographic supervisor's responsibility for the quality assurance of the project concludes with an edit of all prepared materials.

Learning Event 2

IDENTIFY KINDS OF MAP DEFECTS

It is important that you understand what creates a defect and how that defect will diminish the accuracy and usefulness of the map product. This understanding greatly enhances your effectiveness in editing. Defects may be placed in the critical, major, or minor categories.

Critical Defect--one that could result in hazardous or unsafe conditions for individuals using the product; could prevent performance of a tactical function; will cause rejection by the user; or will force the user to expend substantial effort or resources. Critical defects are intolerable and will be cause for rework (corrected and reprinted, even in the case of a map for which the reproduction phase has been completed). Each of the items listed constitutes a critical defect. Critical defects which may occur in a language other than English are indicated by an asterisk(*). Defects other than those listed will be identified as critical in the project instructions.

The following items create critical defects:

1. Defects that will result in incorrect identification of the map are--

- Incorrect sheet number.
- Incorrect stock number.
- Incorrect series number.
- Incorrect edition number.
- Incorrect sheet name or missing sheet name on an unnumbered sheet.

2. Defects in the marginal data that give false guidance for use of the map are--

- Incorrect or no scale note.
- Incorrect bar scales (incorrect reduction ratio).
- Incorrect or missing contour interval note.
- Incorrect or missing major, or overlapping grid identification note.
- Incorrect or missing grid zone designation in the grid reference box.

- Incorrect or missing major grid data in the declination diagram.
- Incorrect 100,000 meter (m) grid square identification letters in the grid reference box.
- Missing 100,000 m grid square identification letters in the grid reference box--information does not appear anywhere on the sheet.
- Incorrect or incomplete geographic value--correct values not obvious to user by reference to other values.
- Incorrect major or overlapping grid values in corners--correct values not obvious to user by reference to other values.
- Incorrect information in legend notes for major communications and international boundaries.
- *• Missing boundary disclaimer note--when international boundary appears in the body of the map or in the margin.
- *• Incorrect country name(s) in boundary diagrams or geographic location name--correct name not obvious to the user.
- Incorrect highest terrain elevation note.

3. Defects within the body of the map that will seriously misinform the map user are--

- Missing international (including de facto) boundary.
- Incorrect country name along international (including de facto) boundary--correct name not obvious to the user.
- Incorrect alignment of international (including de facto) boundary.
- Incorrect grid zone or junction identification.
- Incorrect grid values or letters--correct values or letters not obvious to user by reference to other values or letters.
- Features printed in incorrect color--correct identification of feature not obvious to user.
- Features printed in incorrect screen--correct identification of feature not obvious to user.
- Features printed in incorrect position (upside down or reversed) --correct identification of feature not obvious to user.
- Missing prominent features (conspicuous isolated structures and terrain features).
- Missing major features, such as--major communications and major populated places that will adversely affect usability of the map.

- Missing major grid.
- Misspelling the name of a major feature--correct spelling not obvious to user.
- Incorrect identification or portrayal of major feature--correct identification not obvious to user.
- Nonexisting major features portrayed on the map.
- Incorrect maximum terrain elevation value.

4. Other defects in appearance that interfere with the legibility of the map are--

- Excessive haze or scum.
- Closing of screen image.
- Excessive type overprint.
- Heavy printing.
- Obvious variation in registration.

5. Defects that do not adversely affect the usability of the map, but could result in a security compromise are--

- Incorrect security classification.
- Missing security classification on classified products.
- Incorrect "Special Handling" or "Restrictive Dissemination" note (when required).
- Missing "Special Handling" or "Restrictive Dissemination" note (when required).
- Incorrect "Time-phase Regarding" note on classified products.
- Missing "Time-phase Regarding" note on classified products.

Figure 1-1 shows illustrations of critical defects. Number one in the illustration is critical because it shows an incorrect geographic value. Number two shows an incorrect edition number.

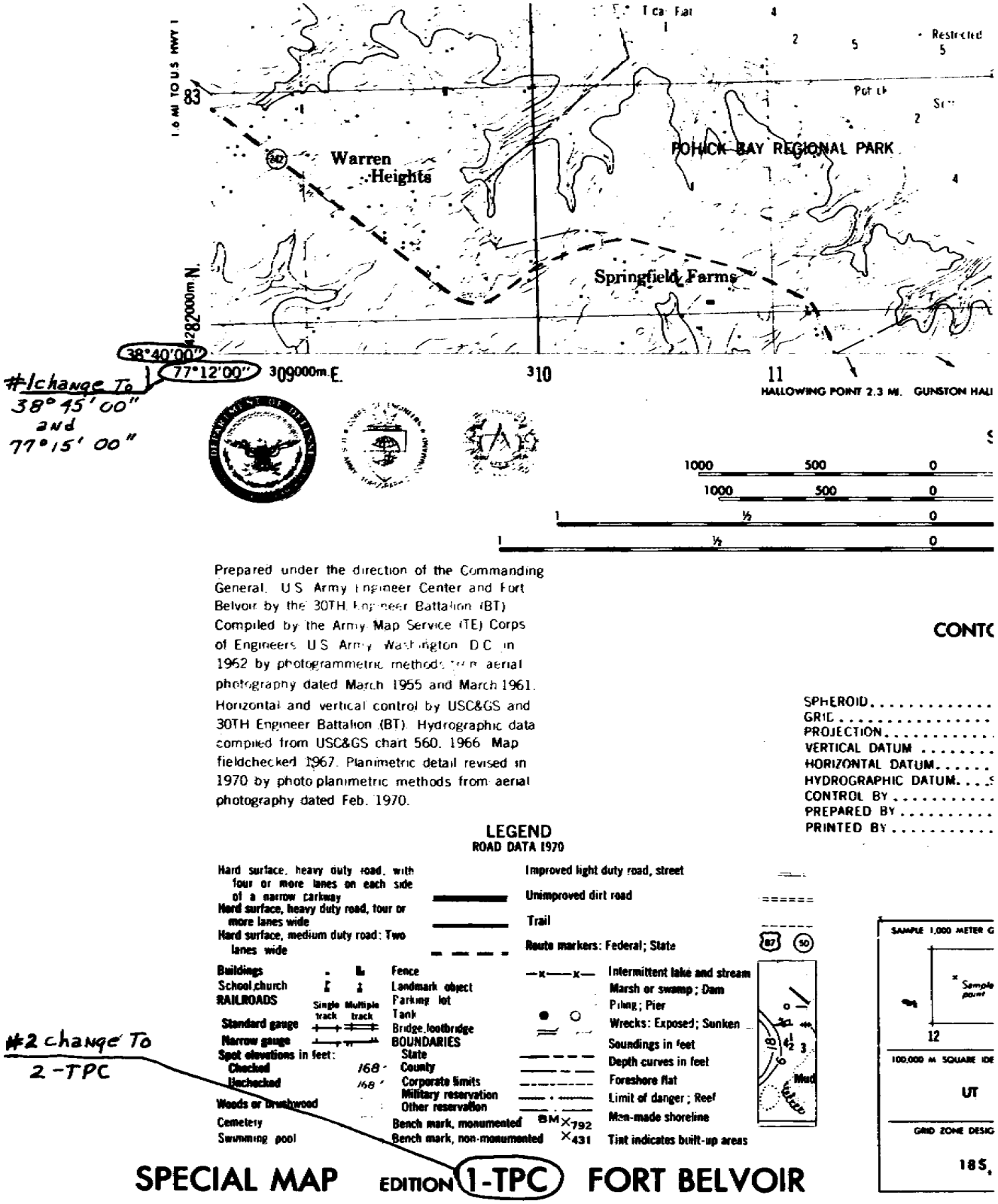

FIGURE 1-1. ILLUSTRATION OF CRITICAL MAP DEFECTS

Major Defect--one that could result in a failure of the product for its intended purpose. Material reducing the usability may cause the user to expend a moderate amount of effort. Major defects will be corrected at any operational phase in which they are encountered except post-printing. Major defects uncovered after printing will be signalled for action by filing an errata notice and will be corrected during subsequent revision. It is impossible to compile a list of major defects that might appear on Mapping, Charting, and Geodesy products (MC&G). Such defects could change identity (major versus critical) depending on type of product, scale, and density of features.

Minor Defect--one that is not likely to reduce the effectiveness of a product's intended purpose, and it is not a departure from the established specifications which have little bearing on the effective use of the product. Individual minor defects will be tolerated, and therefore, no corrective action will be needed. Repetitive minor defects signal either misunderstanding of specifications, carelessness, inadequate time, or deficient skills, and therefore, require corrective action in the way of training. A list of defects that would be identified as minor that might appear on MC&G products would be endless. But such defects are easy to identify. They include flaws in workmanship and deviations from specifications that have little or no effect on the use of the product and for the most part will go undetected by the user.

The above relationships can be visualized from the following diagram:

<table>
<tr><th>Preprinting Action</th><th>Defect Categories</th><th>Postprinting Action</th></tr>
<tr><td rowspan="2">must be corrected</td><td>CRITICAL</td><td>must be corrected</td></tr>
<tr><td>MAJOR</td><td rowspan="2">do not correct*</td></tr>
<tr><td>do not correct</td><td>MINOR</td></tr>
</table>

*File errata notice for MAJOR defects for correction during subsequent revision.

As a map editor, your identification of map defects will provide quality assurance to the production element, your organization and, most importantly, to the map user. You will maintain quality control throughout the map preparation process by careful, comprehensive, and detailed edits of the compilation/revision overlays and the color separated material prepared for reproduction.

Lesson 1

REVIEW EXERCISE

Check your understanding of Lesson 1 by completing this review exercise. Try to answer all of the questions without looking back at the lesson. When you are finished, turn to the solutions at the end of the lesson and check your responses. If you missed any of the questions, go back and restudy the place in the lesson where the information is given.

1. Identify the four quality assurance levels within a map production element.

   a.

   b.

   c.

   d.

2. Periodic checks and inspections are conducted by the cartographic supervisor to ensure _____.

3. The three kinds of map defects you will identify while editing are--

   a.

   b.

   c.

4. Which defect will result in the incorrect identification of the map?

   a. Incorrect identification letters in the grid reference box.

   b. Nonexisting major feature portrayed on the map.

   c. Incorrect series number.

   d. Obvious variation in registration.

5. Match the lettered defects with the effect it has on map accuracy and usefulness.

Defect

a. Incorrect stock number.

b. Incorrect contour interval note.

c. Incorrect identification of a major feature.

d. Closing of a screen image.

e. Incorrect restrictive dissemination note.

Effect on map accuracy and usefulness.

_____ 1. Defect within the body of the map that will seriously misinform the map user.

_____ 2. Defect in appearance that will interfere with the legibility of the map.

_____ 3. Defect in the marginal data that gives false guidance for use of the map.

_____ 4. Defect that will result in incorrect identification of the map.

_____ 5. Defect resulting in a security compromise.

Solutions on next page.

EXERCISE SOLUTIONS

1. a. Production supervisor (Page 2)

   b. Map editor

   c. Cartographic supervisor

   d. Cartographic draftsman

2. Quality Control (Page 3)

3. a. Critical (Page 4)

   b. Major

   c. Minor

4. c (Page 4)

5. c 1. (Page 4 through 6)

   d 2.

   b 3.

   a 4.

   e 5.

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Lesson 2

PERFORM EDIT PROCEDURES

TASK: Perform edit procedures to identify errors and defects on compilation/revision manuscripts and color separation materials.

CONDITIONS: You will be given information on how to perform edit procedures to identify errors and defects on compilation/revision manuscripts and color separation materials.

STANDARDS: Demonstrate knowledge on performing edit procedures to identify errors and defects on compilation/revision manuscripts and color separation materials by responding correctly to 70 percent of the examination questions pertaining to this lesson.

CREDIT HOURS: 2

REFERENCES:

STP 5-81C 24-SM-TG, Cartographer Soldier's Manual and Trainer's Guide
TM 5-240, Compilation and Color Separation of Topographic Maps

Learning Event 1

TYPES OF EDITS

The completeness, accuracy, and appearance of a published map depend to a great extent on the quality of map editing. The compilation/revision edit phase is the first "formal" type of edit. The quality of the published map depends greatly upon how helpful it is to the user. This edit consists of a comprehensive review of the compilation/revision manuscript and all accompanying overlays. This review is made from several standpoints, each of which affects the quality of the finished map. First, a check must be made regarding the accuracy of the positioning of all compiled detail with respect to the control, grid, and projection. Next review the available source material for adherence to specifications and any other established policy guidelines. Evaluate the appropriateness of the selection and density of detail.

Color Separation Edit. The second major edit phase is the color separation edit. When completed, this produces the color separated materials for preparation of press plates, one for each color that will appear on the map. The purpose of the color separation edit is to ensure that the color separated materials agree with the map manuscript, conform to final drafting specification, and is of reproduction quality. A color separation edit is performed in two stages, the preliminary color separation edit and the final color separation edit. You will base your evaluation of the work you review for all edits on how well it meets the purpose of the map and the needs of the user. Along with ensuring fidelity to map manuscript, emphasis is placed on inspecting the following items:

Proper symbolization of features.

Adherence to specification on symbol measurements and line weights.

Correct size, style, and placement of type.

Registration of all color separated materials.

Correct labeling of reproduction instructions on each color separated flat.

Learning Event 2

USE EDIT CHECKLIST AND SOURCE MATERIAL

To ensure that your edit is a complete inspection of the project materials, an edit checklist is used. The checklist is a detailed list of items which must be examined during the edit. The sequence in which the items are listed may not be in the same order that you examined each item, however, the entire list must be checked off and initialed by you. Cross out the items not applicable to the specific job. A checklist is used to record the areas that have been covered during an edit phase, and ensures that no class of feature is overlooked during the edit and prevents wasting time rechecking previously inspected features. Figure 2-1 is an example of a final compilation edit checklist.

Edit Checklist. An ideal edit allows sufficient time for a comprehensive review of the entire operation. Time may be limited, however, editorial time must be used efficiently. When time is extremely limited, the decision to perform a partial edit is the responsibility of the production supervisor. The supervisor will determine which items are most critical for the purpose of the map and the editor will edit those items throughout the sheet as carefully as possible. Partial edits are usually restricted to special map products. Standard mapping products should never be produced by using a partial edit. A standard edit checklist prepared by the editor from the production supervisor's instructions is used to perform partial edits. Items on the checklist not being checked are crossed out, therefore, the editor readily knows which items to check and initial.

If there is any time remaining, other items may be checked according to their importance. A practice which the editor should avoid is selecting a representative sample area and would then, perform a detailed edit in only that area. The editor then gives instructions to the production section to apply similar corrections throughout the sheet. This usually results in a final product with the sample area corrected and the rest of the sheet untouched.

CARTOGRAMMETRIC CHECK LIST FOR FINAL COMPILATION			DATE
SERIES NAME		SCALE	PO NO
SHEET NO	SHEET CODE	GROUP LEADER	MAN-HOURS

GENERAL EVALUATION

_____ Check MPG for recommended sources
_____ Check destruction lists

REGISTRATION

_____ All Overlays to base (key punched)
_____ Basic source plotting and paneling

GRID AND PROJECTION

_____ Grid zone and interval
_____ Grid accuracy and values
_____ Overlapping grid (zone, interval, accuracy, and values)
_____ Projection (sheet corner values and accuracy)
_____ Projection ticks (interval, values, and accuracy)
_____ Gerber tape and tab run

GEODETIC CONTROL

_____ Basic horizontal (symbols, plotting, and completeness)
_____ Basic vertical (symbols, plotting, and completeness)

MARGINAL DATA *(ENTER STYLE SHEET OR EXHIBIT NO)*

_____ Series name and scale _____ Country name
_____ Sheet no _____ Series no _____ Sheet name
_____ Edition no _____ Key no
_____ Geographic location name
_____ Rep fraction _____ Compilation scale
_____ Contour interval note _____ Credit note
_____ Index to adjoining sheets or location diagram
_____ Index to boundaries
_____ Reliability diagram _____ Coverage diagram
_____ Grid notes
_____ Projection note _____ Datum notes
_____ Declination diagram _____ note
_____ Road and RR objectives
_____ Glossary _____ Users note
_____ International boundary disclaimer note
_____ Explanatory notes
_____ Notes to craftsman
_____ Security class _____ Regarding note
_____ Grid reference data _____ Sample point
_____ Index to streets (alphabetized) (city maps)
_____ Reliability note (photo copy)
_____ WAC coverage
_____ Elevation guide
_____ Highest elevation on sheet note
_____ Guide to numbered buildings (City maps categorized with grid coordinates)

ROADS AND RELATED FEATURES

_____ Completeness
_____ Alignment _____ Symbolization
_____ Class and lane information
_____ Kilometric or mileage distance O/L
_____ Route markers
_____ Thru routes and streets in built-up area
_____ Traffic circle _____ Cloverleaf
_____ Density and hanging roads

RAILROADS AND RELATED FEATURES

_____ Alignment
_____ Symbolization, gauge
_____ RR siding
_____ RR yard
_____ RR street
_____ RR station
_____ Aerial cableway
_____ Labeling
_____ Normal gauge for country

FEATURES RELATED TO COMMUNICATIONS

_____ Overpasses or underpasses
_____ Tunnels _____ Bridges, viaducts
_____ Ferries _____ Fords _____ Power or T&T Lines
_____ Labeling
_____ Mountain passes

BUILDINGS AND POPULATED PLACES

_____ Built-up area _____ Landmark buildings
_____ Schools _____ Churches _____ Structures
_____ Ruins, destroyed areas
_____ Labeling
_____ Population classification
_____ Pattern and orientation

AREA FEATURES AND ENCLOSURES

_____ Airfields _____ Cemeteries
_____ Fences, hedgerows _____ Walls
_____ Aeronautical data O/L
_____ Labeling
_____ Corrals

INDUSTRIAL AND PUBLIC WORKS

_____ Dams _____ Located or landmark objects
_____ Reservoirs _____ Tanks _____ Wells
_____ Mines _____ Quarries _____ Pipelines
_____ Locks, breakwaters, seawalls, docks, piers
_____ Peat cuttings
_____ Lighthouses, windmills, watermills
_____ Labeling

BOUNDARIES

_____ Completeness _____ Symbolization
_____ Labeling
_____ Position or alignment (body and margin)
_____ In roads, streams
_____ De facto

FIGURE 2-1. AN EXAMPLE OF A FINAL COMPILATION EDIT CHECKLIST

DRAINAGE

_____ Shoreline _____ Perennial drains
_____ Intermittent drains
_____ Lakes, Ponds _____ Wells _____ Springs
_____ Sewage disposal and filtration beds
_____ Navigable _____ Canals _____ Ditches
_____ Swamps _____ Land subject to inundation
_____ Rice _____ Peatbogs _____ Cranberry bogs
_____ Salt evaporators _____ Principle drainage
_____ O/L _____ Labeling
_____ Utilization of photography
_____ Mangrove, nipa _____ Falls _____ Rapids
_____ Single vs double line streams
_____ Tundra _____ aqueducts, conduits

COASTAL HYDROGRAPHY

_____ Unit of depth _____ Depth curves
_____ Soundings _____ Reefs, rocks, wrecks
_____ Limit of danger lines
_____ Bottom characteristics _____ Foreshore flats
_____ Anchorage _____ Currents _____ Symbolization
_____ Labeling

RELIEF

_____ Contour interval _____ Form lines
_____ Index contours _____ Intermediate contours
_____ Supplementary contours
_____ Approximate contours
_____ Depressions _____ Scraps _____ Cuts _____ Fills
_____ Earthen dams _____ Levees _____ Sand
_____ Gravel
_____ Distorted surface _____ Boulders
_____ Topographic expression
_____ Contour values (Density)
_____ Spot elevation _____ Highest elevation
_____ Critical elevation
_____ Highest top elevation on sheet (JOG A)
_____ Highest top elevation in 15' area JOG A
_____ Glaciers, ice cliffs, snow contours, ACIC O/L
_____ Strip mines, tailing piles, mine dumps
_____ Interpolation _____ Utilization of Photography
_____ Labeling _____ Mountain passes

VEGETATION (OVERLAYS)

_____ Registration and alignment with base features
_____ Utilization of photography
_____ Labeling
_____ Tropical grass, mangrove, nipa
_____ DIA contribution
_____ Cultivated land
_____ Shelter belts

INTELLIGENCE OVERLAY

_____ Completeness
_____ Intelligence item listing
_____ Security classification note

CLARIFICATION OVERLAY

_____ Tints urban
_____ Open water
_____ Swamp
_____ Tundra

GENERAL

_____ Names (O/L and/or keyed names list)
_____ Street names (City Maps)
_____ Inset
_____ Declination note for inset
_____ Border break (can sheet or adjoining sheet be eliminated)
_____ Bleeding edge
_____ Safety copy
_____ Materials Listing and Destruction
_____ Sources returned
_____ Documents returned
_____ Film returned
_____ San Board statements

EDGE TIES

_____ Base manuscript
___ North ___ South ___ East ___ West
_____ Vegetation overlay
___ North ___ South ___ East ___ West
_____ Names and/or road class O/L
___ North ___ South ___ East ___ West
_____ Coastal hydrography
___ North ___ South ___ East ___ West
_____
___ North ___ South ___ East ___ West
_____
___ North ___ South ___ East ___ West

REMARKS

FIGURE 2-1. AN EXAMPLE OF A FINAL COMPILATION EDIT CHECKLIST (CONTINUED)

Project source materials, along with the edit checklist, is what you will use to make your inspections. Source materials usually accompanying a mapping project are--

- Geodetic control data
- Aerial photography
- Field classification surveys
- Existing maps
- Intelligence documents
- Map specifications

Map specifications are essential to understanding user requirements and symbolization.

Standard military topographic products are prepared from standard map specifications. They are supplemented by project specifications that pertain to nonstandard map requirements or symbolization.

Technical specifications or instructions are provided to stipulate the method of preparation needed for project accomplishment. Any deviations from standard specifications or production methods should be indicated here.

Learning Event 3

INSPECT AND CHECK A COMPILATION/REVISION MANUSCRIPT

Compilation/Revision Manuscript. The editor receives the base compilation/revision in manuscript form. The necessary overlays of road classification, type, vegetation, and drainage are attached. You, the editor, first study and analyze all job specifications, technical instructions, and source materials. This study is performed to familiarize yourself with the particular mapping project and its purpose. You will make a complete inspection of the compilation/revision manuscript and cite corrections to the manuscript on each of the accompanying overlays. You will use the checklist and project reference materials to inspect the following:

Check Projection and Grid. Check all projection corners and interior projection intersections for accuracy in plotting and labeling. Check grid lines and values for accuracy. Ensure that the projection and grid are plotted to within 0.15 millimeter (mm).

Control Data. Check the plotting of all horizontal and vertical control used to construct the map, and the density of the control to be shown on the final map. Ensure the planimetric features and the topography are positioned in agreement with the horizontal and vertical control. The plotted position of any control point should not be in error by more than 0.15 mm when referred to the map projection. A failure to meet specifications or instructions with respect to plotting control and positioning detail will result in the rejection of the manuscript. Continuation of an edit after discovering errors in plotting and detail positioning is a waste of time. Effort spent examining other items must be duplicated; when the control and positioning have been

corrected, the manuscript will be different. Figure 2-2 is an illustration of DA Form 1959, the source used to plot station No. 16 shown in Figure 2-3. Review both figures to understand why station No. 16 is plotted in the incorrect grid square.

COUNTRY	TYPE OF MARK	STATION	
Mexico	Bronze Disk	#16	
LOCALITY: Taco City	STAMPING ON MARK: #16 1962 ARMY MAP SERVICE	AGENCY (CAST IN MARK): CORPS OF ENGINEERS	ELEVATION: 421 (XX) (M)
LATITUDE: 31° 35' 43".633	LONGITUDE: 110° 18' 38".503	DATUM: 1927 NAD	DATUM: Datum of 1929
(NORTHING)(EASTING): 3,495,456.50 (XX) (M)	(EASTING)(NORTHING): 565,295.33 (XX) (M)	GRID AND ZONE: UTM 12	ESTABLISHED BY (AGENCY): AMS
(NORTHING)(EASTING) (FT) (M)	(EASTING)(NORTHING) (FT) (M)	GRID AND ZONE	DATE: 1962 / ORDER: Third

TO OBTAIN UTM GRID AZIMUTH, ADD 180 ° 33 ' 34.26 TO THE GEODETIC AZIMUTH

TO OBTAIN GRID AZ. (ADD(SUB.) ° ' " TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID) (MAGNETIC)	BACK AZIMUTH	GEOD DISTANCE (METERS) (FEET) XXXX	GRID DISTANCE (METERS) (FEET) XXXX
R.M. NO. 2	90 ° 46 ' 50 "	° ' "	11.412	
TT N-31	136 46 25.1		553.170	
R.M. NO. 1	180 56 25		6.828	

The station is marked by a Corps of Engineers, U.S. Army disk stamped: "#16 1962 ARMY MAP SERVICE" set in the top of a round concrete post 10 inches in diameter the top of which projects 0.1 meter above the ground.

The station is located 2.2 meters south of the centerline of a road west; 7.6 meters west of the centerline of a road north; 1.7 meters north of the center of the north edge of a concrete irrigation headwall; 1.1 meters east of a 4 X 4 inch white witness post.

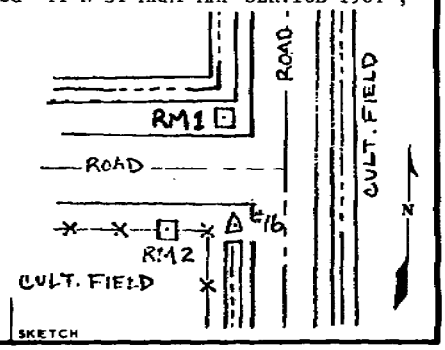
To reach from the Northen Mexico Railroad grade crossing in Taco City, Mexico, go north on the Taco City Highway for 0.1 mile to a crossroad; turn right and go east for 1.3 miles to a road to the right; turn right and go south for 0.25 mile to the station site near the center of the northwest ¼ of section 26; T-4-S;R-3-E.

R. M. NO. 1: A Corps of Engineers disk stamped "#16 R.M. NO. 1 1962 ARMY MAP SERVICE", set in the top of a round concrete post the top of which projects 0.1 meter above the ground, located 6.858 north of the station marker.

R. M. NO. 2: A Corps of Engineers disk stamped "#16 R.M. NO. 2 1962 ARMY MAP SERVICE", set in the top of a round concrete post the top of which is flush with the ground, located 11.412 meters west of the station mark and 13.1 meters west-southwest of R.M. NO. 1.

AZIMUTH MARK: A Corps of Engineers disk stamped "TT N-31 ARMY MAP SERVICE 1961", set in top of a concrete monument 0.25 meter in diameter the tip of which is flush with the ground, located 3.2 meters north of the north edge of the road bank; 4.3 meters west-northwest of a fencepost and 1.0 meter northeast of a telephone pole.

Visibility is clear in all directions from tripod height.



DA FORM 1 OCT 64 1959 REPLACES DA FORMS 1959 AND 1960, 1 FEB 57, WHICH ARE OBSOLETE.

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION

For use of this form, see TM 5-237; the proponent agency is TRADOC.

FIGURE 2-2. DA FORM 1959

Station No. 16 was plotted at 6594, one grid square below the actual location. This was caused by misreading the grid coordinates. In looking at DA Form 1959, Figure 2-3, you will see that station No. 16 should be plotted in grid square 6595.

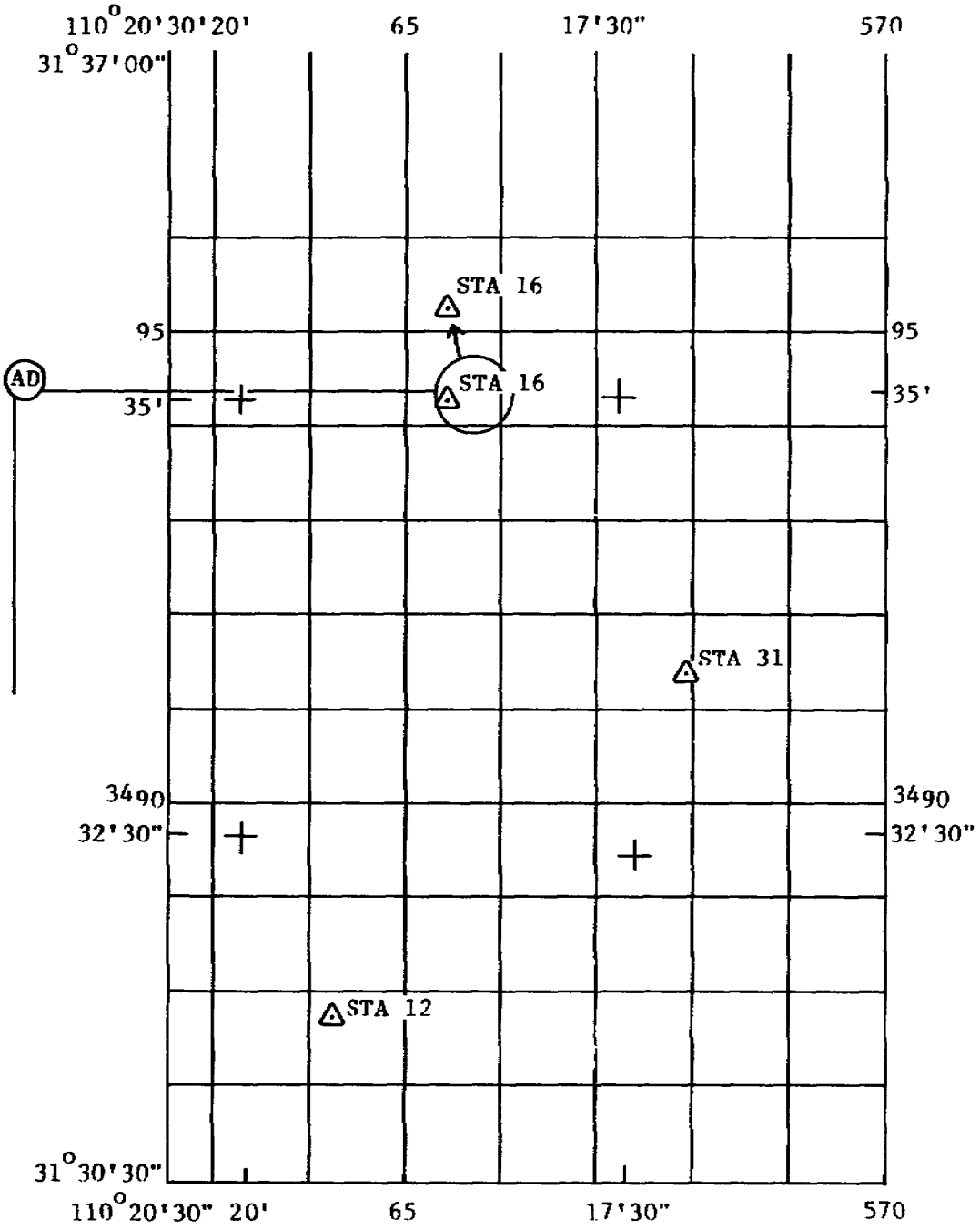


FIGURE 2-3. CONTROL PLOT

Review Mapped Features. After verifying the accuracy of the position of detail, you will make a detailed review of the cultural and hydrographic features to make certain that all data contained in the manuscript are correct and in agreement with basic specifications, source materials, and classification symbolization. When performing a map edit, you must evaluate the adequacy of selection, interpretation, density, alignment, classification, and generalization of all detail. Make a careful analysis of the portrayal of hydrography and culture. Analyze relationship of vegetation to drainage and cultural features, the selection, placement, and spelling of place and feature names. All overlays are checked for registration to base, proper legends, and correct use of color code or underlining code.

Compare Figures 2-4 and 2-5 to understand how an aerial photograph is used to edit a manuscript. While comparing the two figures, see if you can find any incorrect information concerning the following features:

- Buildings
- Lakes
- Roads

You should have observed the following incorrect information on the manuscript:

a. Three buildings to the southwest of Davison Army Airfield are shown on the manuscript, but not shown on the aerial photograph.

b. The lake northwest of Davison Army Airfield is shown as one rounded lake on the manuscript, but the photograph indicates three odd shaped lakes.

c. The two roads running northwest from Davison Army Airfield are on the aerial photograph, but not shown on the manuscript.

Review Marginal Data. Review all marginal data for accuracy, placement, and factual information using the standard style sheets and information provided in the specifications and technical instructions. Also check or add the declination data, credit note, road and railroad objectives, the boundary, adjoining sheets, and coverage diagrams.

Errors and Defects. Write all errors and defects found during the edit in a legible, understandable, and neat manner. Methods of annotating errors and defects are explained in detail in Lesson 3, Annotate Map Errors and Defects. After you have completed your annotation of errors and defects, return the project with the edit overlays and associated material to the production element for corrections. Review the corrected project to ensure that all corrections have been made.

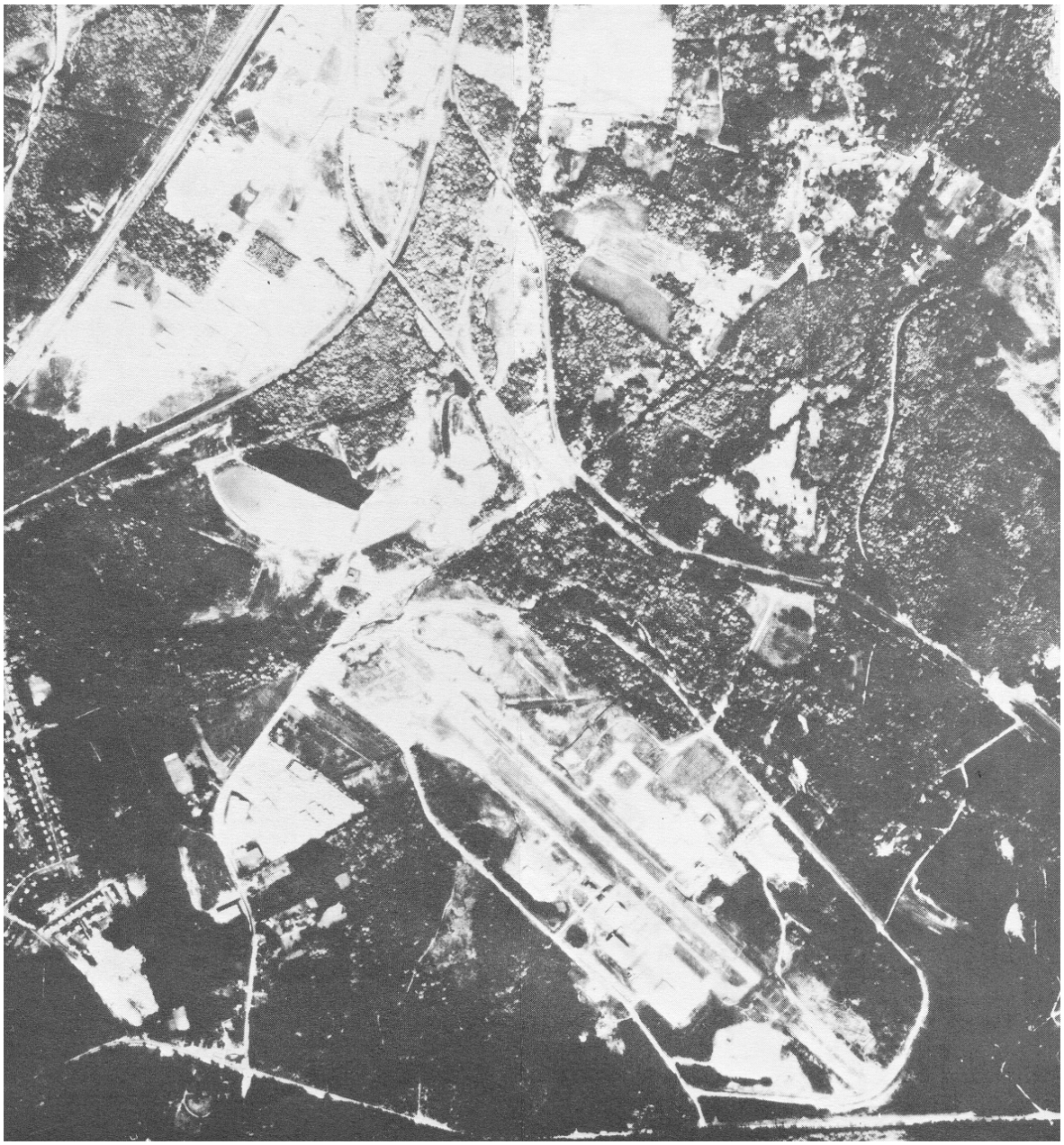


FIGURE 2-4. AERIAL PHOTOGRAPH

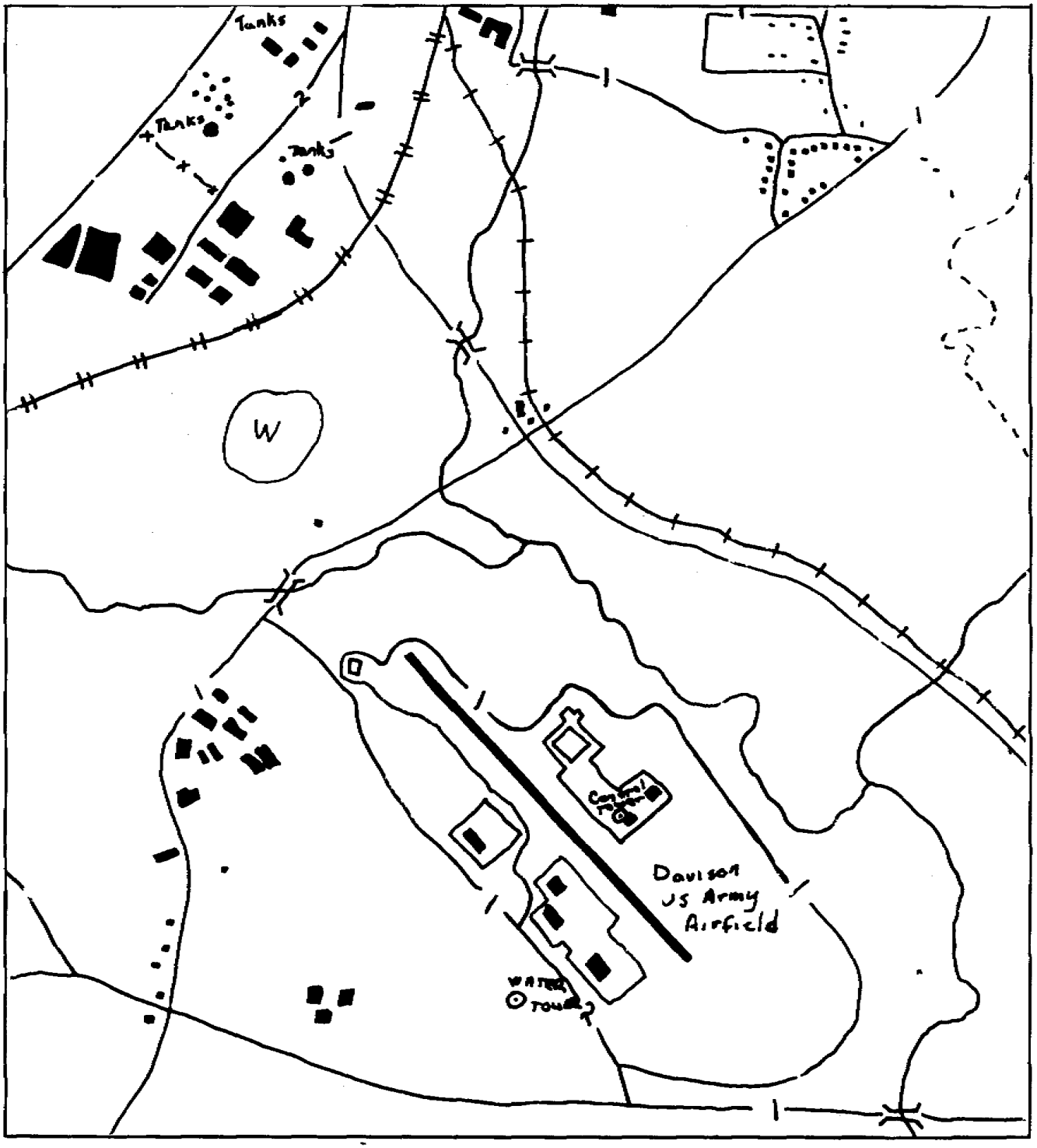


FIGURE 2-5. MANUSCRIPT

Learning Event 4

INSPECT AND CHECK A PRELIMINARY COLOR SEPARATION PRODUCT

Begin the color separation process after all corrections for the compilation/revision edit have been reviewed and approved. After the project is color separated, begin the first phase of the color separation edit procedure. A project submitted for a color separation edit will consist of negatives and/or positives. The negatives may be scribe coats, peel coats, or film negatives. Positives will usually be type overlays. The following materials and equipment are necessary to examine the accuracy, completeness, and quality of the color separated materials:

- Map manuscript(s)
- Map specifications
- Standard, project, technical specifications, or instructions
- Registration bar
- Microscope
- Light table

Preliminary Color Separation Edit Procedure. The preliminary color separation edit actually involves a detailed inspection of each color separated scribecoat, the peelcoats and type overlays for completeness, accuracy, and the quality of the scribing, such as weak linework and ragged scribing. You must also check for weak or broken type, proper symbolization, spelling of names, and correct labeling of each color separated flat. It is very important that you make a check for accuracy of registration between color separated materials. When you use the final color separation edit checklist and project reference materials, make a complete inspection of all color separated flats by checking the following:

Check control, projection, and grid. Check the plotting and scribing accuracy of the grid, projection, and control data. The grid, projection, and control must be accurate to within 0.15 millimeter (0.005 inches) of their computed measurements. Any discrepancy at this point could result in rejection of the project.

Check negatives and positives. Check all negatives and positives in the following order: Black, blue, red/brown, green, and any additional printing color, for completeness and alignment of features against manuscript (incorrect alignment and missing features in large quantities could result in project rejection). Also, check each flat for corner tick registration and accuracy of registration against the neatline.

Inspect scribe coats and peel coats. Inspect scribe coats and peelcoats by color for accurate symbolization of features. Scribing should be of smooth, clean-edge cuts, and measured to exact drafting specifications.

Inspect type overlays. Type overlays may be withheld from this editing phase. In such instances, the type is not included on the first color composite proof. After receiving the first color composite proof, the type flats will be registered to the color proof and checked for registration, type placement, and overprints. After corrections are made, the type overlays are included on the second color composite proof. When this is used, it eliminates the waste of type negatives caused by type overlay corrections to the color separated flats.

The type overlays will be checked in the following manner:

Ensure, by color, that all type is sharp, opaque, spelled correctly, and unbroken.

Check interior type overlays for preferred placement of type and overprinting of the scribed or labeled features.

Position interior type to ensure immediate and unmistakable identification of the features being labeled.

When possible, place labeling in areas of sparse symbolization to avoid obscuring important land formations and other detail. Place the labeling either in a straight line or smooth curve, depending on the character of the feature being identified as shown in Figure 2-6.

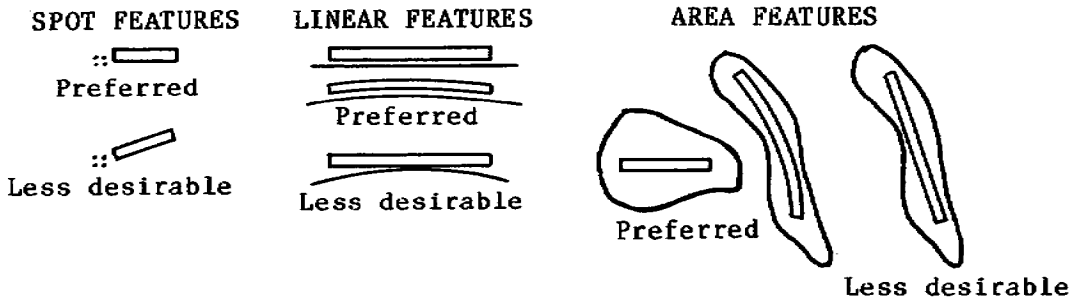


Figure 2-6. PLACEMENT OF TYPE

Align type perpendicular to the south neat line, to read from left to right when viewed from the east neat line (with the sheet in its normal orientation as shown in Figure 2-7). Type diverging from the perpendicular is placed to read from left to right when viewed from the south neat line. An exception to this rule occurs when adjacent features are nearly parallel and only one deviates from the perpendicular. In such cases, the direction of labeling is not reversed.

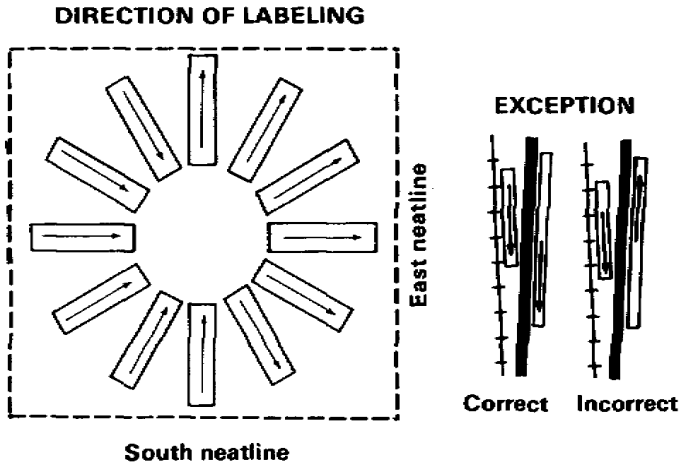


Figure 2-7. PLACEMENT OF TYPE

Position the type adjacent to the feature or symbol defined. This procedure is done when labeling individual symbols or small concentrated groups of symbols. Preferred and acceptable alternate positioning of type, with exception of control points and spot elevations, is illustrated in the following example Figure 2-8.

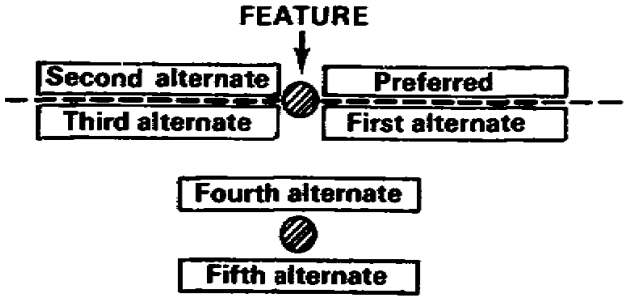


Figure 2-8. PLACEMENT OF TYPE

Check for compliance to type size and styles as indicated by specifications. Ensure the type size and style complies with the specifications.

NOTE: DMA product specifications for 1:50,000 Scale of Topographic Maps of Foreign Areas (PS/3AA/101), Chapter 2, Section 1000, should be referred to for type placement, type, size, and styles.

Check marginal data-type overlay for the placement of type against the manuscript and appropriate style sheet.

Ensure the labels of all flats contain the correct sheet name/number, series number, edition number, color, code, screen percentage, and security classification.

Annotate errors and defects in the same manner as given for the compilation/revision edit. For the preliminary color separation edit make corrections on overlays registered to each flat. Annotate map errors and defects as explained in Lesson 3.

Review all annotated corrections when the material is returned from the reproduction element, to ensure that they were made as specified.

Learning Event 5

INSPECT AND CHECK FINAL COLOR SEPARATION MATERIAL

Edit a Full-Color Composite Proof. Perform inspections and checks, during the final color separation edit, to find errors which create critical or major defects. As previously discussed, defects must be corrected before the material is approved for printing. A full-color composite proof, made from the corrected color separated materials, is used for the final color separation edit. A full-color composite product represents the first time all of the color separated materials have been combined on one copy in the appropriate colors. A color composite proof is very useful for checking registration and type overprints, as well as the reproduction quality of the line work and other detail. The edit is usually made without reference to the original color separated materials. All project specifications and the map manuscript should be at hand. Again, the items on the color separation edit checklist (Figure 2-9) provide a guide for you to ensure that your review is complete.

Color Proof Errors and Defects. Errors and defects such as poor registration of colors, type overprint, or poor registration of fills to their outlines, screens overlapping one another or overprinting their outlines, contours, and streams incorrectly aligned will all be revealed in a careful inspection of the color proof. Not until type placement is approved by this edit can linear detail, such as contours, be blocked out as necessary to eliminate the overprinting of type on contour labels. A second composite proof will be required if type overlays were not a part of the first color proof.

When making an inspection of the color proof, check for the following defects (this listing does not include all possible errors):

Type overlays
Poor registration of colors
Poor registration of fills to their outline
Screen overlapping one another
Screen overlapping their outline
Contours and streams incorrectly aligned

CARTOGRAMMETRIC CHECK LIST FOR FINAL COLOR SEPARATION			DATE
SERIES NAME		SCALE	PO NO
SHEET NO	SHEET CODE	GROUP LEADER	MAN-HOURS
MATERIALS RECEIVED	DATE	REVIEWER	

MARGINAL DATA

_____ Series name (country name, if other than series)
_____ Scale (top and bottom margin)
_____ Engineer insignia
_____ Classification (top and bottom)
_____ Regrading note
_____ Sheet name (top, bottom, and body; check with PAI)
_____ Edition and agency (top, bottom, and ID panels)
_____ Refer to note
_____ Sheet number (top, bottom, index to sheets, ID panels)
_____ Series number (top, bottom, and ID panels)
_____ ID panels (top, bottom, and ID panels)
_____ First printing note
_____ Credit note
_____ Kilometer or miles distance note
_____ Special-notes above legend
_____ Legend and registration of all colors
_____ Boundary disclaimer note
_____ Unit of depth (coastal hydrographic features)
_____ Reliability note (photo map)
_____ Scales (check length and arrangement of bar scales)
_____ Contour interval note
_____ Datum notes (sheet and inset)
_____ Projection note
_____ Grid notes
_____ Digits notes (check with full grid values)
_____ Users note
_____ Special notes below bar scales
_____ Glossary
_____ Grid reference box
_____ Declination Diagram, data, and note
_____ Plant imprint and block-out for printing data
_____ Coverage Diagram and notes
_____ Index to Boundaries
_____ Index to Adjoining Sheets (insets) (border breaks)
(check sheet number with top margin)
_____ Location Diagram
_____ Reliability Diagram and notes
_____ Altitude tint box
_____ Index to streets (City Maps)
(alphabetized, grid coordinates)
_____ Guide to numbered buildings (City maps)
(categorized, alphabetized, grid coordinates)
_____ Projection values
_____ Grid values (all colors)
_____ Center ticks
_____ Trim ticks (JOG)
_____ Terrain characteristics tint diagram and notes (JOG)
_____ Road and railroad objectives
_____ Ideograph and or script
_____ Type (style, size, spelling, color and placement)
_____ Work limits
_____ Geographic location name

CULTURE

_____ Check with compilation
_____ Buildings and populated places (tint areas)
_____ Area features and enclosures
_____ Industrial and public works
_____ Control points
_____ Boundaries
_____ Coastal hydrography
_____ Roads and related features (through roads)
_____ Features related to communications
_____ Railroads and related features
_____ Geographic labeling (JOG)
_____ Projection lines, ticks and intersections
_____ Destroyed areas
_____ Spheroid junction and notes
_____ Type (style, size, spelling and placement)
_____ Ideograph and/or script
_____ Registration with image on photo mosaic
_____ Inset
_____ Declination note for inset

RELIEF

_____ Checked with compilation
_____ Contour values, spot elevations
_____ Type (style, size, and placement)
_____ Shaded relief
_____ Blockout
_____ Registration to drains
_____ Interpolation

DRAINAGE

_____ Checked with compilation
_____ Registration with brown, black, and green
_____ Type (style, size, spelling and placement)
_____ Ideograph and/or script
_____ Registration with image on photo mosaic
_____ Swamp, mangrove, nipa, etc
_____ Rice

VEGETATION

_____ Checked with compilation
_____ Plantation symbolization (JOG)
_____ Registration to other features
_____ Legend items
_____ Clear of double-line roads

FIGURE 2-9. EDIT CHECKLIST

GRID

_____ Lines
_____ Type (style, size, spelling and placement)
_____ Grid ladder numbers
_____ Grid zone, 100,000 meter square identifications, notes
_____ Overlapping grid ticks
_____ Inset
_____ Grid junction notes
_____ Grid plotting (if applicable)
_____ 10,000 unit ticks and labeling
_____ 100 unit ticks (City maps)

RED DATA

_____ Kilometric or mileage distances and stars
_____ Special boundaries

TINT DRAWINGS OR NEGATIVES

_____ Road fills
_____ Built-up area or City tint
_____ Open water (registration, cleared from road bridges)
_____ Elevation of Gradient tints
_____ Terrain characteristics tints (JOG)
_____ Boundary overprint

ALL COPY

_____ Label and address boxes
_____ Weight, gauge or opaqueness
_____ Corner ticks
_____ Registration
_____ Engraving quality
_____ Trap and/or blockout
_____ Overprinting type or symbols
_____ Black or white type (photo map)
_____ Negatives (reproduction quality)

BORDER MATCH

_____ Culture and names
____ North ____ South ____ East ____ West
_____ Drainage and names
____ North ____ South ____ East ____ West
_____ Open water
____ North ____ South ____ East ____ West
_____ Relief
____ North ____ South ____ East ____ West
_____ Elevation or Gradient tints
____ North ____ South ____ East ____ West
_____ Grid
____ North ____ South ____ East ____ West
_____ Vegetation
____ North ____ South ____ East ____ West
_____ Coastal hydrography
____ North ____ South ____ East ____ West
_____ Terrain characteristics tint (JOG)
____ North ____ South ____ East ____ West
_____
____ North ____ South ____ East ____ West
_____
____ North ____ South ____ East ____ West
_____
____ North ____ South ____ East ____ West
_____
____ North ____ South ____ East ____ West

REMARKS

FIGURE 2-9. EDIT CHECKLIST (CONTINUED)

Final Inspections. Note all corrections directly on the color proof or on an overlay registered to the proof. Write all errors and defects found during the edit in a legible, understandable, and neat manner. Methods of annotating errors and defects will be explained in Lesson 3. Give color separated material a final examination to ensure that all corrections cited on the color proof were properly made and that necessary opaquing for type has been completed, before releasing the color separated flats for reproduction. When you are satisfied that the project meets quality standards, turn the project, to include all edit overlays and color proof, over to the operations section.

Lesson 2

REVIEW EXERCISE

Check your understanding of Lesson 2 by completing this review exercise. Try to answer all of the questions without looking back at the lesson. When you are finished, turn to the solutions at the end of the lesson and check your responses. If you missed any of the questions, go back and restudy the place in the lesson where the information is given.

1. As a map editor, which of the following critical defects would result in your immediate rejection of the compilation/revision manuscript?

   a. Incorrect series number

   b. Incorrect country name

   c. Incorrect positioning of control and detail

   d. Incorrect identification of major features

2. Which of the following would you review to determine user requirements and symbolization?

   a. Field classification surveys

   b. Intelligence documents

   c. Map specifications

   d. Existing maps

3. To check color separated materials for completeness and alignment of features, what must you compare them against?

   a. Map specifications

   b. Existing map(s)

   c. Aerial photography

   d. Manuscripts

4. Who is responsible for determining the most critical items to be checked on a partial edit when time does not allow for a complete edit?

   a. Cartographic editor

   b. Company commander

   c. Production supervisor

   d. Map customer

EXERCISE SOLUTIONS

1. C (Page 20)

2. C (Page 18)

3. D (Page 28)

4. C (Page 15)

Lesson 3

ANNOTATE MAP ERRORS AND DEFECTS

TASK: Upon completion of this lesson you will be able to annotate map errors and defects in a legible, understandable, and complete manner.

CONDITIONS: You will be given information on annotating map errors and defects in a legible, understandable, and complete manner.

STANDARDS: Demonstrate knowledge on annotating map errors and defects by responding correctly to 70 percent of the examination questions pertaining to this lesson.

CREDIT HOURS: 2

REFERENCES: None

Learning Event 1

ANNOTATE CORRECTIONS

Editing Techniques. Certain editing practices and techniques are appropriate at all stages of map preparation. These editing techniques should be followed carefully to ensure a complete and thorough edit. The techniques also standardize the methods of indicating corrections so that the cartographer completely understands them.

Symbol Correction Code. To save time and space use the symbols shown in the standard correction code in Figure 3-1.

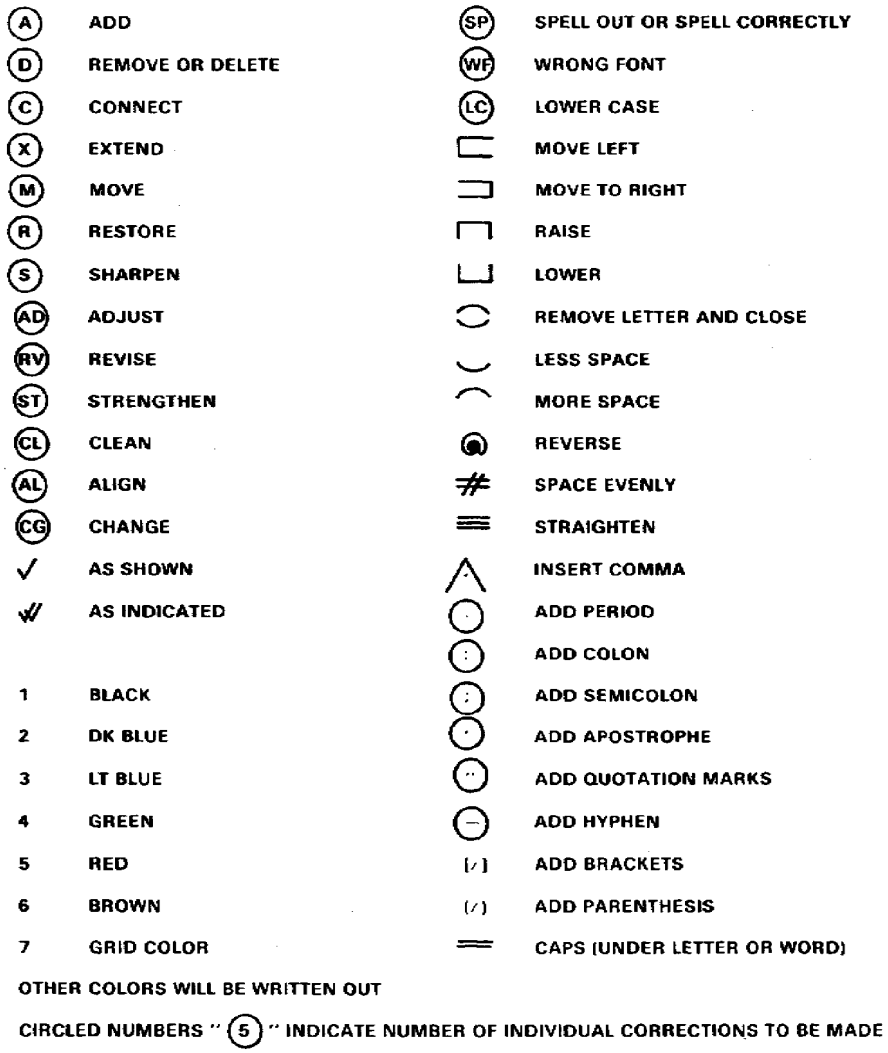


FIGURE 3-1. CORRECTION CODE SYMBOLS

Use of the standard correction code not only saves time and space but also standardizes the edit call correction process for both the edit sections and the production elements. The correction code symbol is only part of the complete edit call. The correction code represents the preparatory instruction to an edit call and it is completed with a descriptive phrase called a qualifier. The qualifier can be a reference to a particular source upon which the call is based. The correction code symbol, with the qualifier written on a leader line connected to the error, make up a complete edit call shown in Figure 3-2.

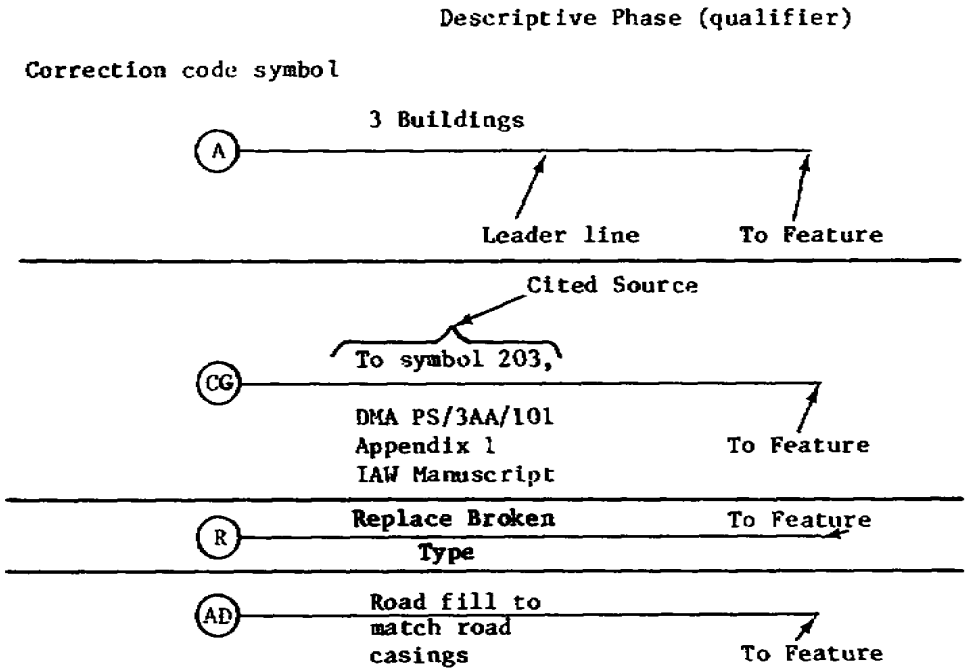


FIGURE 3-2. COMPLETE EDIT CALLS

Standard Colors. Editors use certain colors for indicating corrections and deletions during map editing. Purple is the color normally used for indicating corrections. Deletions are generally indicated in orange. Both colors are done in either pencil or ink. Though purple and orange are the standard colors, it may be a standard procedure for your operational element to use other colors indicating corrections. For example, colors for corrections may be done in the specific map color. Black for indicating corrections for cultural and marginal data (black flats); blue for hydrography (blue flats); red for relief, road fills, and overprinting data (red/brown flats); and green for vegetation (green flats). Occasionally, when an error occurs consistently throughout a sheet, the error may be circled with a specific color and explained in the margin as a general note. This is explained in more detail in Learning Event 2.

Self-Check Exercise

Refer to Figures 3-3 and 3-4. Select the appropriate correction code symbol and add a qualifier to correctly annotate map errors and defects for positions 1 through 5.

1. _____

2. _____

3. _____

4. _____

5. _____

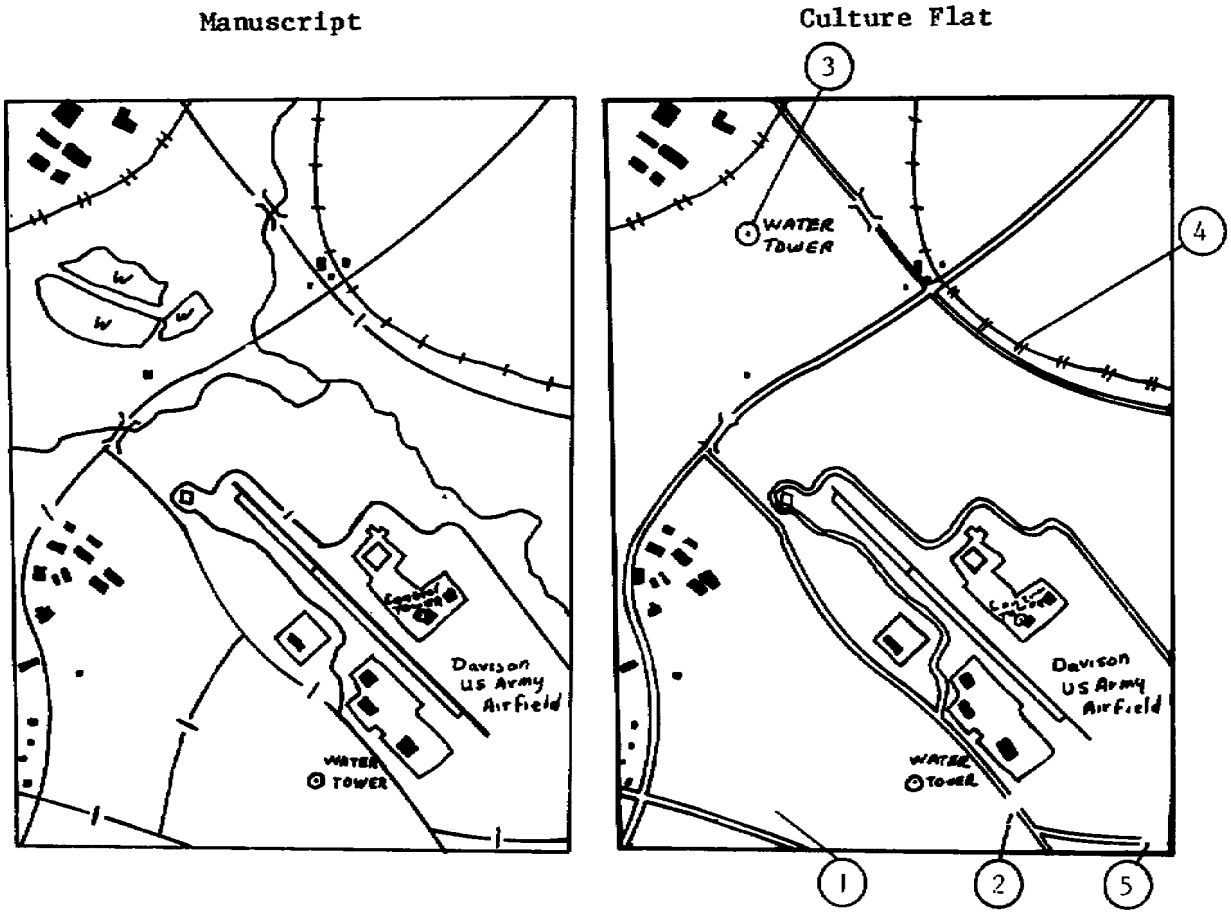


FIGURE 3-3. MAP MANUSCRIPT AND CULTURE FLAT

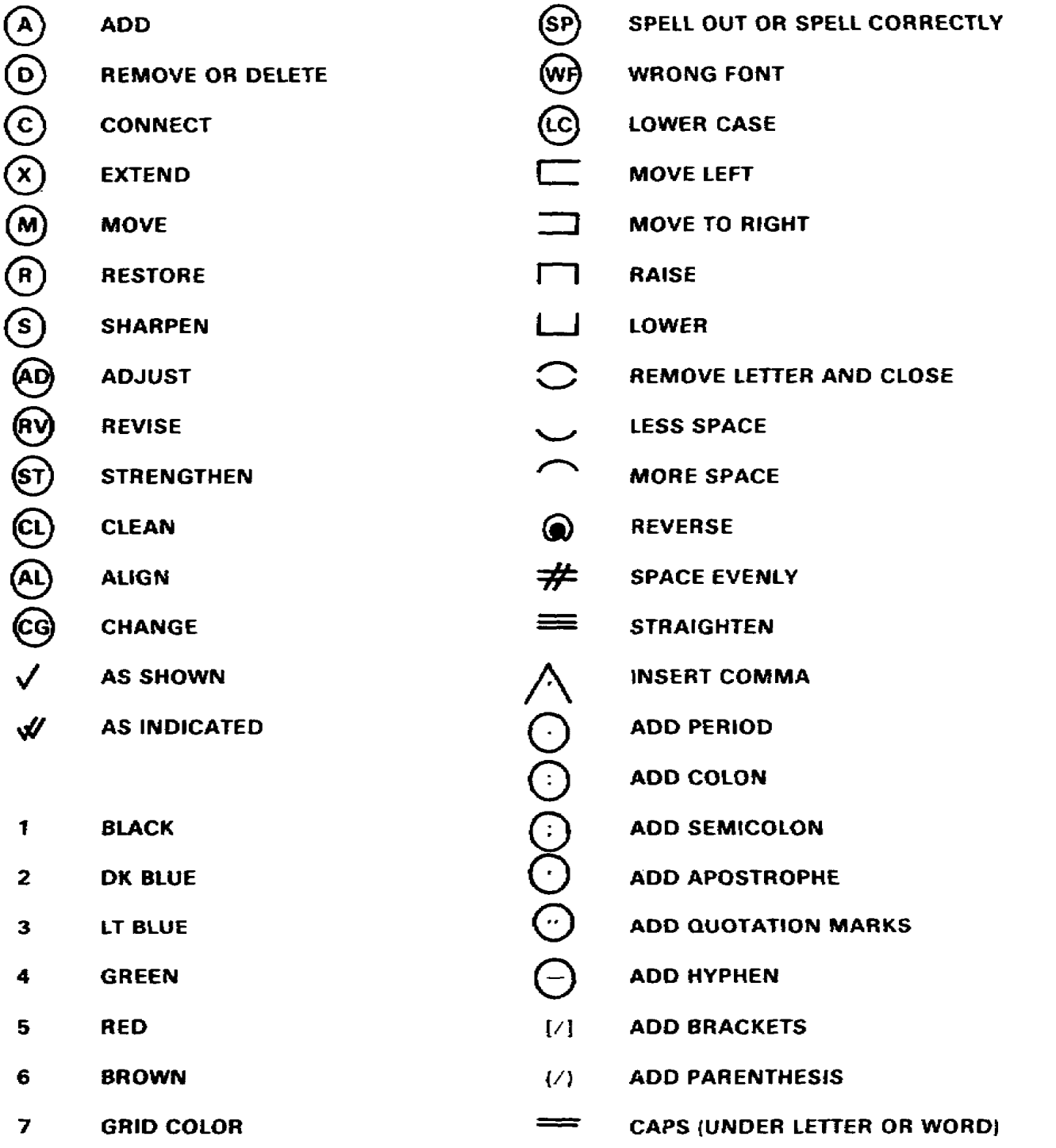


FIGURE 3-4. CORRECTION CODE SYMBOL

Self-Check Exercise Solutions

How did you do? Check your responses with these below.

1. (A) Road

2. (C) Road

3. (D) Water Tower

4. (CG) Railroad Symbol

5. (X) Extend Road

If you had difficulty, review the edit correction code symbols and the example for making edit calls. If you got them all correct, great work! Continue with the lesson.

Learning Event 2

USE EDITING AIDS

Drafting Corrections and Revisions. The necessary corrections and revisions are drafted on a transparent overlay registered to the compilation/revision manuscripts or the color separated materials.

a. Registration. Registration of the overlay must be identical to the methods of registration used for the compilation and/or color separated material. The methods for compilation and/or color separation material are punch and corner tick registration.

b. Labeling. The overlay is labeled in the lower right margin with the following information as shown in Figure 3-5.

1. Sheet name and number: _____

2. Type of edit: _____

3. Date: _____

4. Edited by: _____

5. Checked by: _____

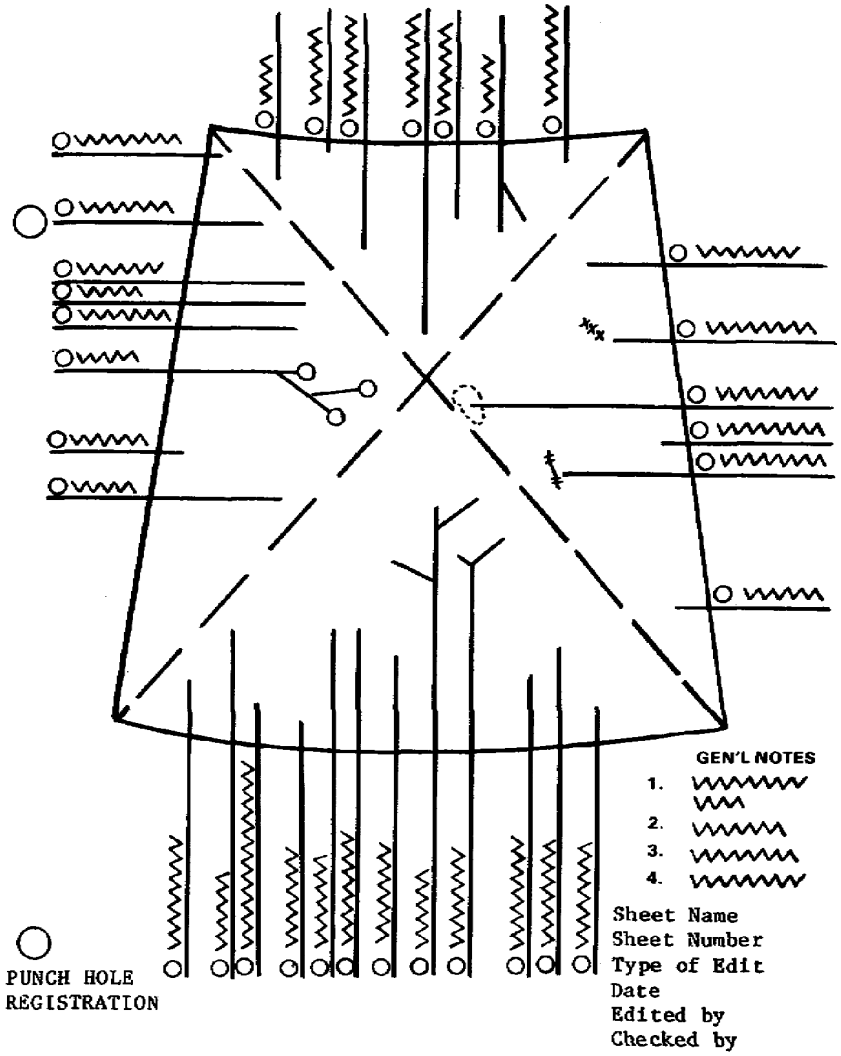


FIGURE 3-5. ILLUSTRATION OF EDIT OVERLAY

Leader Lines. The leader lines, which are sometimes called witness lines, serve to connect the editor's instructions in the margin with the specific error in the body of the map. Leader lines should be neat, straight, short, and if possible, they should never cross each other. If there are numerous corrections, it is good practice to divide the overlay sheet mentally into four pie-shaped sections (formed by imaginary diagonals). Corrections falling within the upper section are indicated along the top margin; corrections falling within the right section are indicated along the right margin and so forth. Leader lines may branch to include multiple instances of correction, but it is better to repeat a correction rather than to create a network of lines so confusing that some corrections may be overlooked. Figure 3-5 show the correct way to represent a large number of leader lines.

Citing Source. Except where the furnished sources are few and simple, or the error an obvious one, the editor should cite the source map or photograph on which they base their edit calls. This method of citing sources saves time for both the cartographer and the checker, especially when there is extensive photo coverage.

General Notes. When a certain type of error occurs consistently throughout the sheet, time can be saved and clutter eliminated by circling the errors with a special color wherever they occur. Explain corrections by using a general note in the margin of the overlay or proof. Key general notes to the specific, indicated corrections. General notes which are vague are ineffective and should be avoided. Some examples of both improper and correct use of general notes are stated in the following paragraphs:

"Schools have been incorrectly shown as buildings throughout the sheet. Show all schools by the school symbol wherever they occur."

The only way the editor can determine if such a general note has been heeded is to check every building symbol when reviewing the corrections. This can save both the editor and the compiler's time by being specific, such as--

"Schools have been incorrectly shown as buildings throughout the sheet. Add staff and pennant to building symbols where circled in red."

"Improve the selection of secondary drainage." This does not tell the cartographer whether the selection is too dense or too light. The cartographer is justified in ignoring such a call. There is no doubt about the editor's intentions, however, if the note reads "A drainage as shown in blue; D drainage overlaid with orange."

Lesson 3

REVIEW EXERCISE

1. Which standard colors are used for indicating corrections?

   a. Red, Orange

   b. Black, Red

   c. Purple, Orange

   d. Red, Blue

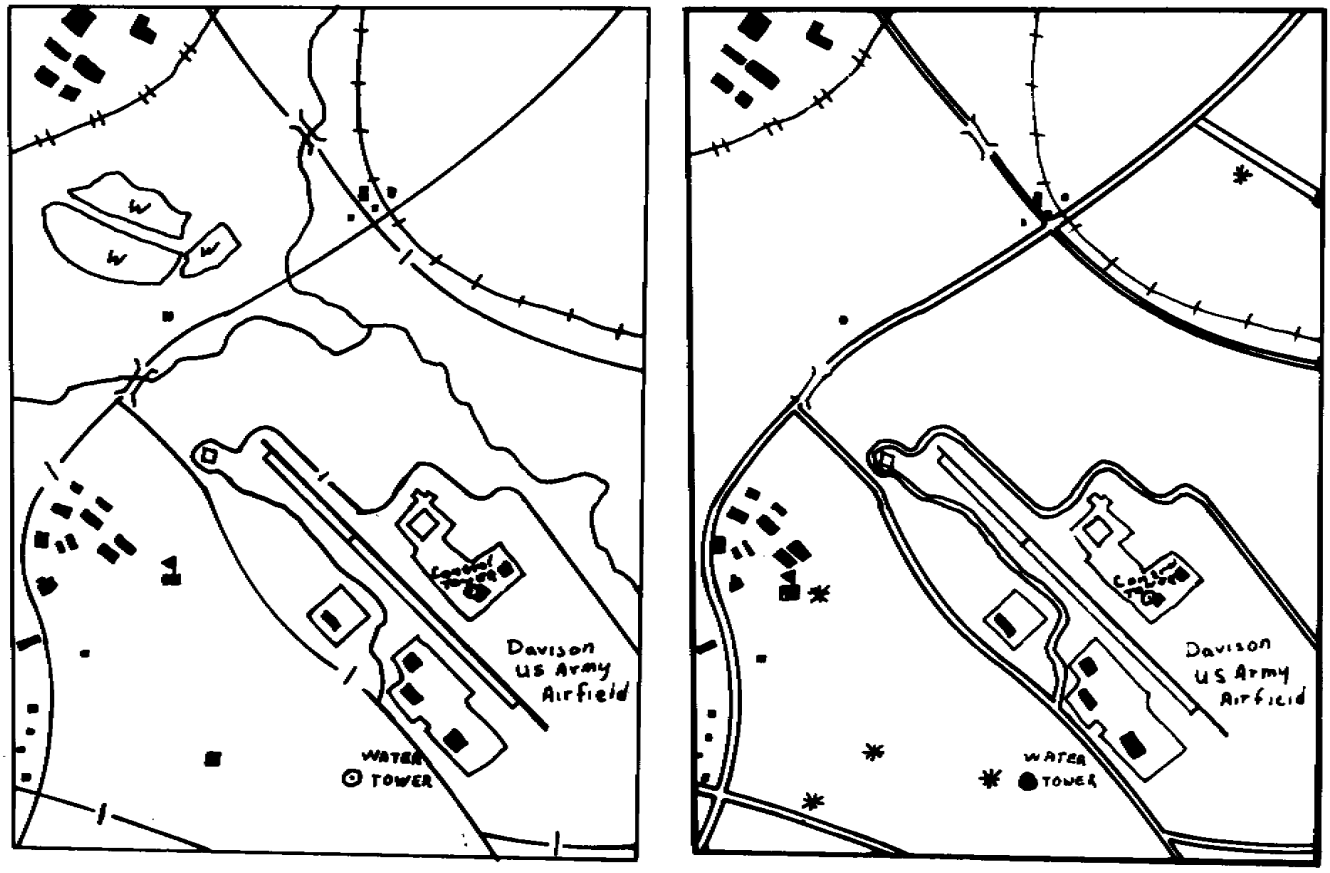
2. What two methods of registration are used to register an edit overlay to color separated materials?

   a. _____

   b. _____

3. When a certain type of error occurs consistently throughout the sheet, they should be circled with a special color and explained by a _____.

4. Refer to Figure 3-6. Identify and annotate, on the culture flat, the five errors and defects noted with an "*". Refer to Figures 3-5, Illustration of Edit Overlay, and Figure 3-7, Correction Code Symbol.



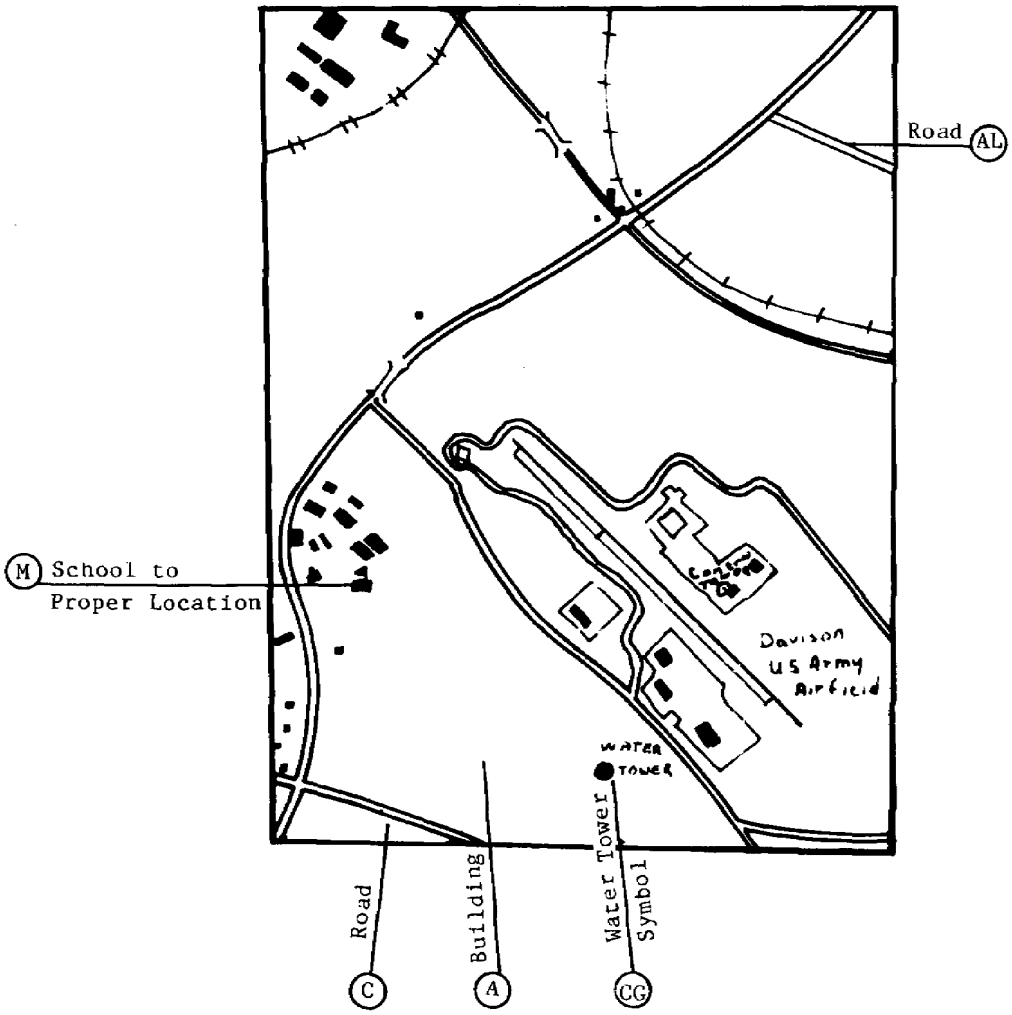
Map Manuscript **Culture Flat**

FIGURE 3-6. MAP MANUSCRIPT AND CULTURE FLAT

FIGURE 3-7. CORRECTION CODE SYMBOL

Lesson 3

REVIEW EXERCISE SOLUTIONS



1. C (Page 35)

2. Punch registration, corner tick registration (Page 39)

3. General Note (Page 41)

4.