



Computer Systems Department

BUIC SYSTEM ANALYSIS

12 September 1970



**Keesler Technical Training Center
Keesler Air Force Base, Mississippi**

Designed For ATC Course Use

Computer Programmer Branch
Keesler AFB, Mississippi

WB 3AZR68770-2
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BUIC SYSTEM ANALYSIS

This workbook provides exercises to be performed in support of Block V and Block VI, Course 3AZR68770-2.

TABLE OF CONTENTS

| <u>TITLE</u> | <u>PAGE</u> |
|---------------------------|-------------|
| Objectives | |
| Procedure | |
| BUIC III System Interface | |
| Air Surveillance | |
| Weapons | |
| Information Transfer | |
| Simulation | |

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PURPOSE OF WORKBOOKS

Workbooks are training publications authorized by Air Training Command (ATC) for student use in ATC courses.

The WORKBOOK (WB) contains work procedures designed to help you achieve the learning objectives of the unit of instruction. Knowledge acquired from using the study guide will help you perform the missions or exercises, solve the problems, or answer questions presented in the WORKBOOK.

Training publications are designed for ATC use only. They are updated as necessary for training purposes, but are NOT to be used on the job as authoritative references in preference to Technical Orders or other official publications.

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BUIC SYSTEM ANALYSIS

OBJECTIVES

From the information gained in the completion of this workbook, you will be able to write BUIC III programs in subsequent blocks of this course that correctly relate to BUIC III System Interface, Air Surveillance, Weapons, Information Transfer, and Simulation.

BUIC III SYSTEM INTERFACE

PROCEDURES

1. Figure 1 on the following page provides boxes for the names of facilities and weapons which interface with a BUIC III NCC via ground-to ground data link, ground-to-air data link, teletype, or voice. Fill in the boxes with the names of these facilities and weapons from the following list.

EARLY WARNING SITES
MANUAL CONTROL CENTERS
GAP FILLER RADARS (GFRs)
LONG RANGE RADAR (LRR)
HEIGHT FINDERS (HF)
GROUND-TO-AIR TRANSMITTER SITES (GAT)
AIRBORNE EARLY WARNING AND CONTROL (AEW&C)
MANNED INTERCEPTORS (MI)
BOMARCS
ASSOCIATE BUIC III NCCs
NORAD COC
PARENT REGION CONTROL CENTER
ADJACENT BUIC III NCCs
ADJACENT RCC
INTELLIGENCE
SAC BASES
ARMY AIR DEFENSE COMMAND POST (AADCP)
WEATHER
FIGHTER INTERCEPTOR SQUADRON (FIS)
COMBAT ALERT CENTER (CAC)
AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC)
INTERCEPTOR MISSILE SQUADRON OPERATIONS CONTROL CENTER (IMSOC)
AIR TRAFFIC CONTROL CENTER (ATCC)
AIR MOVEMENTS INFORMATION SECTION (AMIS)

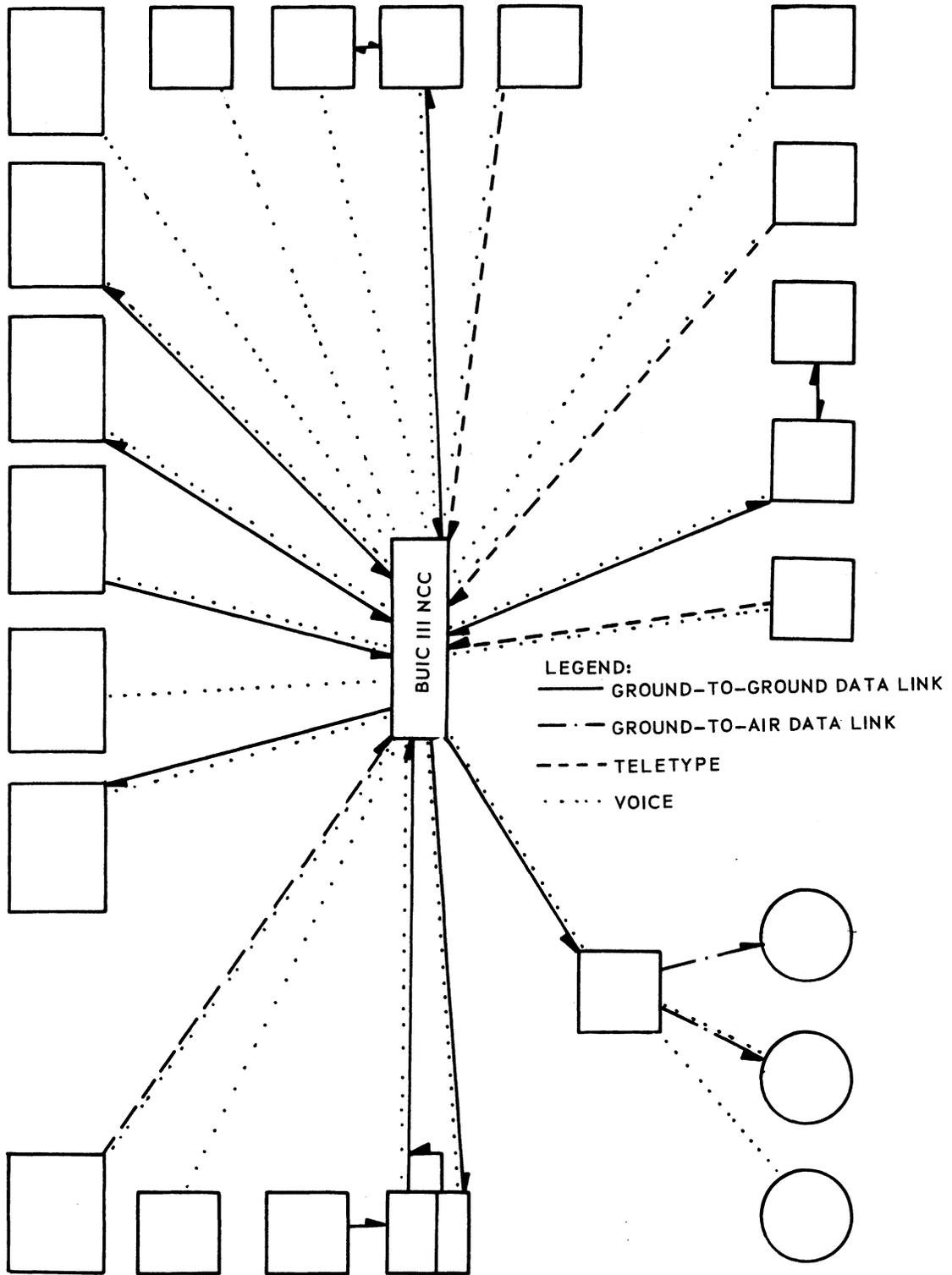


Figure 1. Facilities and Weapons Interfacing with BUIC III NCC.

2. Figure 2 represents the manning at a BUIC III NCC. Using the legend in Fig. 3 write the position titles in the symbols representing the various positions.

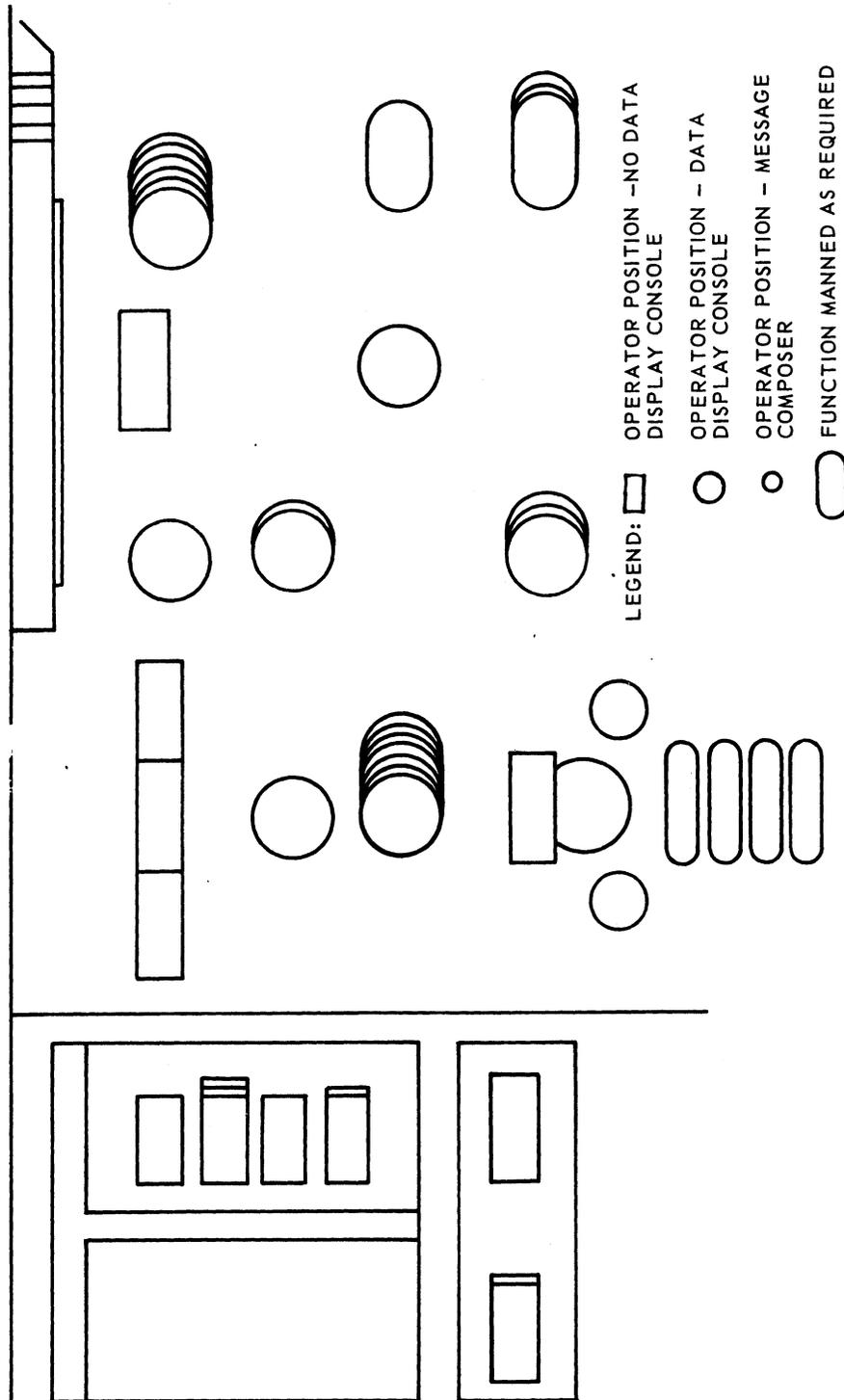


Figure 2. BUIC III Manning Diagram

3. List the four Master Computer Programs and explain the functions of each.

a.

b.

c.

d.

4. Define the following terms:

a. Computer Program Component (CPC)

b. Conditional Program

c. Unconditional Program

d. Sequence Parameter Table

e. Control Program

f. Cycle

g. Bi-cycle

h. Semi-cycle

5. Answer the questions or complete the statement:

a. Name the three types of Situation Displays.

(1)

(2)

(3)

b. Define a track.

c. Track displays are organized so that weapons and simulation operators will receive displays pertinent to their functions in the _____ and _____ features, while identification and surveillance operators will receive displays pertinent to their functions in the _____ and _____ features. Attention displays for tracks appear in the _____ features for weapons operators and in the _____ features for surveillance operators.

d. _____ vectors include graphic representation for boundaries of division responsibility, coastlines, or other local geographic outlines. _____ vectors include track velocity vectors.

e. Tabular displays (TDs) are grouped into what three classifications? Explain how displays from each classification are made to appear on the TD.

6. The displays and switch actions provide the operator of the data display console a capability of evaluating and modifying the Air Defense Program. It is therefore necessary for the programmer of the BUIC III facility to become familiar with them. Displays and switch actions can be categorized into two basic areas - general and operational. The initial introduction to this area is intended to cover only those displays and switch actions that are general in nature and available at all data display consoles regardless of assignment.

- a. List the necessary steps for requesting a console assignment TD.
- b. Using the Operational Conditions DIS shown in figure 3, answer the following questions:
 - (1) What is the current zulu time?
 - (2) Which NCC in the Division is the Master NCC?
 - (3) How many track channels are available?
 - (4) What was the duration of the last bi-cycle?
 - (5) What is the mode of operation of the NCC?
 - (6) What is the Bomarc status?

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| - | G | T | 1 | | | | B | O | T | H |
| 0 | 1 | 0 | 9 | | | | S | A | F | F |
| F | T | L | F | 5 | 5 | 8 | | 1 | 1 | |
| 1 | 3 | 7 | 5 | A | | | T | K | 1 | 8 |

Figure 3. Operational Conditions SID

7. The manual inputs function processes data that are entered by the manual inputs operator to be used by the Air Defense Program (ADP). Manual inputs as a topic of instruction will be presented with the associated functional area.

The data display console function in a BUIC III NCC is variable and must be established or changed by the Console Function Manual Input Message. Using AF Form 1530, code the necessary input message to allow the following assignment:

| CONSOLE | POSITION |
|---------|---------------------------------------------------|
| 1 | SD |
| 2 | WD 2 |
| 3 | WD 1 |
| 4 | ASOper (Height, Telling subfunctions) |
| 5 | RICMO/ASO (Active Tracking, Telling subfunctions) |
| 6 | Sim Sup |
| 7 | FPS 1 |
| 8 | IDOper 1 |
| 9 | TM |
| 10 | WD 3 |
| 11 | ADAD 1 |

8. The Date Time Message is used to enter the date and time. The information entered on the Date Time Message is used by ADP when other manual inputs are inserted, and is displayed in the Operational Conditions SID. Using AF Form 1530, code the Date Time Manual Input Message for 2256Z, 20 July 1969.

9. The manual input message, N 1-04 2-06 3-09 4-11, represents a Group Category Assignment Message. Interpret this message and answer the following questions:

a. Give the number and the name of each logical group assigned by this message.

b. Prior to this message, the logical group All Consoles was assigned a physical group category. Will the All Consoles remain after this message is read in?

c. What is the maximum number of group category assignments that can be made on one manual input card?

AIR SURVEILLANCE

1. The RICMO/ASO is responsible for the control of radar inputs to the NCC. The following switch actions and displays are those that relate to the Radar Inputs Program. Answer the questions on the switch actions and displays.

a. When the RICMO/ASO decides that the present display of radar is too congested and is not a good representation of the current air picture, he is able to Erase Uncorrelated Search Radar History. What are the required switch actions?

b. There are two displays that are forced to the RICMO/ASO to indicate abnormal conditions of radar inputs from an LRR. What are these two displays?

(1)

(2)

2. Using either an outline or flow chart, indicate on page 12, the path of a search return from an LRR through program:

a. RAP

b. RAC

c. TRK

Place your answer on page 12 (blank page).

3. The Radar Channel Assignment and Height Request Line Availability Message is used to: (1) assign a radar site to an input channel, (2) record the availability of the height request lines for the height function, and (3) set the height test option. In the blank space provided below, code the Radar Channel Assignment and Height Request Line Availability Messages to define the following environment.

A particular BUIC III air defense environment contains five LRRs and an ALRR. The LRRs are Z10 (D), Z50 (E), Z65 (L), Z14 (S), Z45 (U). The ALRR is Z2 (P). LRRs Z10, Z65, and Z14 require two input channels each and the remaining LRRs and ALRR require one input channel each. All LRRs are connected to message processor 1. Any LRRs requiring a second channel and the ALRR are connected to message processor 2. The height test option for the NCC will be normal and the initial range delay is zero. Height request lines are available to the B HF of each LRR and to the A HF of the ALRR.

4. The RICMO/ASO can request TDs that provide specific data on the radar sites. Answer the following questions, referring to figures 5 and 6.

a. The Radar Site Load TD contains information about a particular LRR and its tied GFRs. Examine the sample Radar Site Load TD in figure 5 and then answer the following questions:

- (1) The site letter display designator is _____.
- (2) The special set status is _____.
- (3) The strobe set status is _____.
- (4) The registration azimuth error is _____.
- (5) The MK X collimation range error is _____.
- (6) What kind of returns are being rejected?

- (7) The MK X range delay is _____.
- (8) What is the total number of returns being accepted from Gap Filler C?

b. Refer to the Radar Count Summary TD in figure 6 and then answer the following questions:

- (1) What is the number of search radar returns that was accepted last bi-cycle for site Z10?

- (2) What site appears to have MK X radar data difficulty?

- (3) What site has an indication of receiving ECM?

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| | | | | | | | | | | | | | | | | | | | |
| S | I | T | E | L | D | | Z | 1 | | | | | | | | X | | M | |
| | | | | S | C | H | | S | T | | M | K | X | | | B | O | | |
| S | T | A | | N | | | | F | | | N | | | | | | | | |
| A | C | P | | 2 | 7 | 5 | | | | | | 9 | 9 | | | | | 9 | |
| R | E | J | | | | | | | 3 | | | | | | | | | | |
| C | O | R | | 2 | 6 | 5 | | | | | | 9 | 9 | | | | | 9 | |
| G | F | R | | | | A | = | | 1 | 5 | | B | = | | 1 | 2 | | | |
| E | = | | | 9 | | C | = | F | | | | D | = | F | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | R | E | G | | | C | O | L | | | | D | L | Y | | |
| R | G | - | | 5 | Φ | - | 1 | 2 | 5 | - | | 5 | Φ | | | | | | |
| A | Z | + | | 5 | | + | | 3 | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

Figure 5. RADAR SITE LOAD TD

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|--|---|---|---|--|---|---|---|---|---|--|
| R | D | R | | C | O | U | N | T | | S | U | M | | | | | | | |
| 7 | | S | C | H | | S | T | | | M | K | X | | B | O | 7 | | | |
| | | | | | | | | | | | | | | | | | | | |
| D | | 1 | 4 | 2 | | | | 0 | | | 1 | 7 | | | | | O | D | |
| E | | 2 | 7 | 6 | | | | 0 | | | 1 | 4 | | | | | O | E | |
| L | | 1 | 2 | 0 | | | | 2 | | | 2 | 1 | | | | | O | L | |
| P | | 2 | 3 | 2 | | | | 0 | | | 1 | 8 | | | | | O | P | |
| S | | 1 | 2 | 1 | | | | 0 | | | | 1 | | | | | O | S | |
| U | | 2 | 1 | 2 | | | | 0 | | | 1 | 6 | | | | | O | U | |

Figure 6. RADAR COUNT SUMMARY TD

5. When you have filled in the blanks in the following paragraph it will describe a radar return's path through the Radar Inputs.

The search radar return is _____ from the site's polar coordinates to the division (U, V) coordinates. A quantity analysis check is made against the _____ to see if that site has exceeded its allocated limit. If the radar return is accepted, it is associated with a group of possible tracks it could correlate with. This association is accomplished through a _____ slice. The associated tracks are compared in sequence to the radar position and if it falls within the _____, it is associated with that track. After the rough correlation, the next sequence of checks is made for fine correlation. The first fine correlation check made is a comparison against the _____. If the track does not fall within this area, a _____ check is made. When a track lies within this area, a barrier check is tried. When the radar return passes the area check, it is displayed as _____.

6. After a radar return has correlated with an established track, it is used for smoothing based upon a priority scheme. List in order the priority scheme used for smoothing.

7. When a track has radar data in the Small Search Area, these data are used for smoothing and the data in the _____ are disregarded. When there are not any radar data in the Small Search Area and there are search data in the Large Search Area, a _____ check is made to allow the use of these data.

8. The smoothing function finds the center position of all correlated search data and uses this for _____ smoothing and _____ smoothing. When there are not any correlated data for the smoothing function to use, the smoothing function _____ the track's position based upon the last position and velocity.

9. In Figure 7 below, indicate which data will be selected for smoothing by placing an X in the proper box.

| TYPE TRACKING DATA TYPE AVAILABLE | ASSIGNED SIF TRACKS INCLUDING BOMARC | | | | COMPUTER SIF TRACKS | | BEACON TRACKS | SEARCH TRACKS |
|--------------------------------------|--------------------------------------|------------|----------|----------|---------------------|------------|---------------|---------------|
| | ONLY | SIF - PLUS | | | SIF - ONLY | SIF - PLUS | | |
| | | NO CSC | CSC ONLY | CSC PLUS | | | | |
| MATCHING ASSIGNED SIF CODE | | | | | | | | |
| MATCHING COMPUTER SIF CODE | | | | | | | | |
| BEACON | | | | | | | | |
| ALRI BEACON | | | | | | | | |
| SEARCH | | | | | | | | |
| ALRI SEARCH | | | | | | | | |

CSC = COMPUTER SIF CODE

Figure 7

10. The following initial report, on a live track using ECM jamming, was received by teletype from an early warning station:

Identity -----Friendly
Telling Source -----AR
Track Number -----A301
Time Observed -----0010
Magnetic Heading -----230°
Flight Size -----1
Altitude -----50,000 feet
Speed -----720 knots

In the space below code the Track Data Message for this track.

11. a. You are the ASOper (AT). A new radar trail appears in your area of responsibility. It is heading north at approximately 450 knots. Initiate a track on this return using the track number A350. List all steps required to take the switch action.

b. The track starts to have tracking difficulty. What SID characters tell you of this problem?

c. List the steps necessary to reinitiate the track.

d. As track A350 continues north, it crosses very close to track number A300. The computer switches the track symbology of the two tracks. List the steps necessary to exchange the symbology back to the proper data trails.

e. Fill in the blank track SID using the following information: Track number is A340; Identity is Hostile; track status, Established; flight size, one; altitude, 20,000 feet; assigned to WD 3; tracking on search data; and being told out for interception.

| | | | | |
|--|--|--|--|--|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

12. The Passive Tracking Function correlates established tracks with strobe radar inputs. Describe how the passive radar displays appear on the SID.

13. What is the function of the Select Active/Passive and the Select Passive Only switch actions?

14. The operator can restrict the track to correlate on only passive inputs. What is the indication on the SID to indicate tracking on passive only?

15. The surveillance operator takes a _____ action when he is sure that the strobe intersection does NOT represent an aircraft.

16. The air surveillance operator is tracking a confirmed jammer raid. The raid is close to the northern division boundary. What action is he able to take to receive the strobes from the adjacent division? Assume that all required manual input cards have been read in.

17. What is the Semi-Automatic Control Unit (SATCU)?

18. Refer to figure 8 and answer the following questions concerning the Height Request Feedback TD.

- a. This TD appears in response to _____.
- b. Which NCC display console will receive this TD?
- c. This TD is forced to the appropriate NCC display console for _____ cycle(s) except when a positive reply is from a height finder in the standby mode, in which case the TD is forced for _____ cycle(s).
- d. The TD represented by figure 8 indicates the new altitude for track C210 is 31,000 feet. Is this new altitude to be considered valid? Why?

| | | | | | | | | | | | | | | | | | |
|---|---|--|---|---|---|--|---|---|---|---|---|--|--|---|---|---|--|
| | | | | | | | | | | | | | | | | | |
| H | T | | R | E | Q | | C | 2 | 1 | 0 | | | | 3 | 1 | 0 | |
| | | | | | | | | 7 | | G | B | | | 2 | 5 | 5 | |
| | | | | | | | | | | | | | | | | | |

Figure 8. Height Request Feedback TD

19. Answer the following questions concerning the Height Status TD by referring to figure 9.

- a. What is the display duration of this TD?
- b. What is the display duration of the Reply Trouble Indicators (Lines 13 and 16)?

22. Answer the following questions concerning the Manual Height Request TD, shown in figure 12.

- a. Which NCC display console will receive this forced display?
- b. When would information appear in line 8 of this TD?
- c. What is the primary method of transmitting the request to the HRIOp (LRR or ARP)?
- d. What method is used by the ASOper(HT) to insert the altitude received from the HRIOp into the program?
- e. In the space below, interpret the TD represented by figure 12.

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| H | T | | R | E | Q | C | A | | | | | | | | | | | | |
| T | R | K | C | 1 | 5 | 0 | | | | | | | | | | | | | |
| B | N | G | 1 | 7 | 5 | 5 | | | | | | | | | | | | | |
| R | N | G | 1 | 8 | 5 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| H | T | | 2 | 5 | 5 | | | | | | | | | | | | | | |

Figure 12. Manual Height Request TD

23. Name and describe the four program-initiated height requests.

a.

b.

c.

d.

24. Name and explain the four types of height replies.

a.

b.

c.

d.

25. Name and explain the three types of negative height replies.

a.

b.

c.

26. Name and explain the four types of aborted height replies.

a.

b.

c.

d.

27. List the methods of identification.

28. List the automatic identification features that are available to the IDOper when requested by switch action.

29. List all of the various AMD SIDs and TDs that are available to the IDOper.

WEAPONS

1. A BUIC III NCC receives a teletype report from operational airbase PDQ revising aircraft counts for squadron JK. The counts are to be revised as follows:

| | |
|-----------------------------------|----------------------------------|
| # on less than 5 min alert clean | -3 |
| # on less than 5 min alert tanked | +5 |
| # in survivable force | +2 |
| # operationally ready | Unchanged, previous count was 20 |

JK is live, PDQ is its home base, and the time of report is 1205Z. Code the Weapons Status manual input card required to enter the revised counts into the computer.

2. In figure 13, the Manned Interceptor Airbase SID reflects the updated counts at PDQ. Interpret the sample display in figure 13 and answer the following questions:

- a. How many squadrons are displayed at PDQ?
- b. How many aircraft with tanks are on 5 min alert at squadron JK?
- c. Are any of the squadrons on mandatory scramble status?
- d. How many aircraft are there in the survivable force for squadron GP?
- e. How many aircraft are operationally ready at airbase PDQ?

| | | | | | | | | | |
|---|---|---|---|---|---|--|---|---|---|
| V | H | | 3 | | | | 6 | 1 | 2 |
| G | P | | 1 | | | | 1 | 1 | 5 |
| P | L | 2 | 1 | 5 | M | | 8 | 1 | 6 |
| J | K | 2 | ∞ | P | D | | 5 | 2 | 0 |

Figure 13. MANNED INTERCEPTOR AIRBASE SID

3. Name the two tables used for squadron stored weapons parameters. How are these tables loaded?

a.

b.

4. Name the two tables used for variable status information. How are these tables loaded?

a.

b.

5. In Weapons Commitment:

a. Name and define the three manned interceptor missions.

(1)

(2)

(3)

b. Which personnel have the capability to commit a manned interceptor?

c. Explain how automatic initiation is accomplished for a manned interceptor.

d. What will start the transmission of guidance commands via TDDL to a manned interceptor? Assume that the manned interceptor is committed against a target.

6. The Commit Manned Interceptor For Interception switch action in either the active or monitor mode will generate a Scramble Track SID with symbology located at the airbase. List the steps for taking this action if you are given the following inputs:

- | | |
|----------------------------|-------------------------|
| a. Squadron HK | d. Profile 1 |
| b. Two-digit designator 05 | e. Tanked Configuration |
| c. Departure Base DEF | f. Target - A320 |

7. During an Interceptor Mission:

a. How many Manned Interceptor Mission TDs may be displayed simultaneously in the same TD? _____

b. In requesting a Mission TD, the track specified must be an existing _____ or _____.

c. If the interceptor track is dropped, the Mission TD _____.

d. Is it necessary to specify a particular quadrant in order for the Mission TD to appear? _____

8. Examine Scramble TD and Scramble Track SID shown in figure 14 HK05 and answer the following questions:

- a. HK05's command altitude is _____ feet.
- b. HK05 is _____ Command tracking.
- c. HK05 is assigned to WD _____.
- d. HK05's primary armament is _____.
- e. What is the profile of HK05? _____.
- f. Was the profile computer selected or operator selected?

- g. HK05's command heading is _____ degrees.
- h. What radio frequency is assigned to the controlling WD?

- i. What is the track status of HK05?

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| S | C | R | A | M | B | L | E |
| T | R | K | | H | K | 0 | 5 |
| C | O | N | | T | N | K | |
| F | R | Q | | 2 | 2 | 8 | 9 |
| W | D | | | 2 | | | |
| I | N | T | | A | 3 | 2 | 0 |
| S | I | Z | I | A | R | M | F |
| H | D | G | | | 4 | 5 | |
| A | L | T | | | 3 | 3 | 5 |
| P | R | O | | L | | | |
| F | U | L | | R | S | 3 | 5 |
| | | | | | | | |

SCRAMBLE TD

| | | | | | |
|---|---|---|---|---|---|
| | | S | C | M | B |
| | | A | 3 | 2 | 0 |
| N | T | S | 2 | | |
| | H | K | 0 | 5 | |

SCRAMBLE TRACK SID

Figure 14. Scramble TD and Scramble Track SID

9. After examining the figure 15 Interceptor Mission TD and the Interceptor Track SID, fill in the answers to the following questions:

- a. Is the interceptor ON COMMAND or OFF COMMAND?

- b. The target range is _____ miles.
- c. The interceptor command speed is _____ mach.
- d. The configuration of the interceptor is _____.
- e. The target bearing and range is _____.
- f. The Time-to-Go is _____ minutes.
- g. The interceptor is on the _____ attack option.
- h. The attack option is _____.
- i. What overrides (temporary or permanent) are in effect?

| | | | | | | | |
|---|---|---|---|--|---|---|---|
| P | J | 1 | 1 | | C | | B |
| S | | | 2 | | | 3 | 5 |
| | | 3 | 0 | | | 2 | 5 |
| S | 1 | 2 | 0 | | 1 | 3 | 0 |
| | 9 | 3 | | | | 9 | 3 |
| 3 | 0 | 0 | | | 3 | 5 | 0 |

INTERCEPT MISSION TD

| | | | | |
|---|---|---|---|---|
| | | | | |
| | K | 1 | 2 | 1 |
| C | S | 1 | 2 | 0 |
| | P | J | 1 | 1 |

INTERCEPTOR TRACK SID

Figure 15. Intercept Mission TD and Interceptor Track SID

10. A large variety of interceptor attention displays exist to aid the weapons controller. These displays flash on and off in an attention getting fashion. They appear in the Interceptor symbology at the assigned WD console. Answer the following questions regarding the sample Interceptor Track SID Attention Displays shown in figure 16.

- a. Do any of the displays indicate a change in command altitude?
- b. What does attention display 2 indicate to the weapons controller?
- c. Is attention display 3 applicable to an Interceptor or a Bomarc? _____ Could it apply to both? _____
- d. What do the A features of display 1 indicate to the controller?
- e. Display 4 is forced to the SD or WAO until the track is _____ or _____.

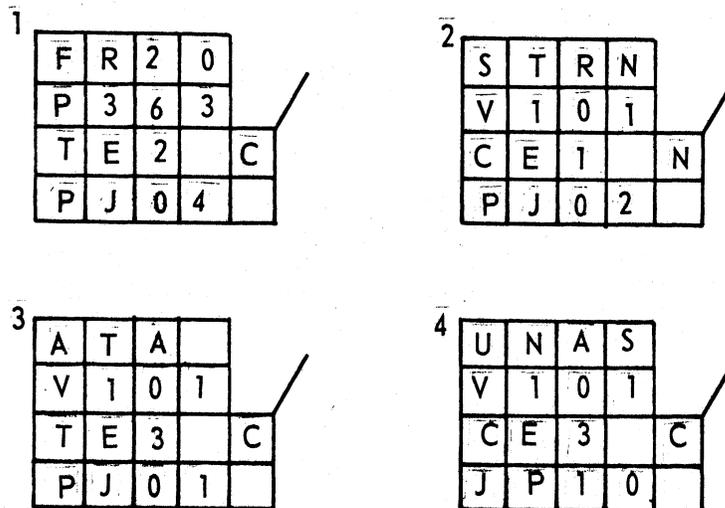


Figure 16. Interceptor Track SID Attention Displays

11. Name and describe the geometry of each of the manned interceptor attack options.

12. Name the restrictions that must be satisfied to commit a live Bomarc.

13. After looking at figure 17, Bomarc Missile Base SID, answer the following questions:

a. What Bomarc squadron is represented by this display?

b. The number of Bomarc missiles in Ready Status is _____.

c. Does this display represent a live situation? _____.

14. Bomarc Commitment

a. If either Bomarc _____ or Bomarc _____ is in effect, the Bomarc track is simulated.

b. If a fuel impossible or speed impossible condition exists for the intercept, the Bomarc Commitment Cancelled SID appears where?

c. What causes the Bomarc Precommit SID?

d. The Bomarc Precommit SID is forced to the assigned SD or WD until _____ is initiated or until commitment is _____.

e. If the predicted intercept point is outside the range of the Bomarc but the intercept is possible with a delayed launch, a _____ condition exists.

f. Guidance calculations are made every _____ until wait time expires.

| | | | | |
|---|---|---|---|---|
| | | | | |
| | | | | |
| V | M | 2 | 6 | △ |
| | L | B | A | M |

Figure 17. Bomarc Missile Base SID

15. Name and describe the geometry of each of the attack options for a Bomarc.

16. Examine figure 18 ADA Alert Summary TD and answer the following questions:

- a. The number of fire units on 3-hour alert for AADCP RM is _____.
- b. Five fire units are on _____ alert for AADCP EL.
- c. For AADCP GS, fourteen fire units are on _____ alert.
- d. The simulation status of AADCP GS is _____.
- e. A maximum of _____ AADCPs can be summarized.

| A | D | A | | A | L | E | R | T | | S | U | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | R | M | | E | L | | G | S | | |
| 0 | 5 | M | | 3 | | | 5 | | 1 | 0 | | |
| 2 | 0 | M | | 4 | | | 3 | | 1 | 4 | | |
| 1 | H | R | | 7 | | | 7 | | 2 | 2 | | |
| 3 | H | R | | 5 | | | 3 | | | 4 | | |
| S | I | M | | L | | | L | | | L | | |
| L | I | V | | | | | | | | | | |

Figure 18. ADA Alert Summary TD

17. The ADAD is provided with certain displays and switch actions which inform him of and enable him to change the operating options of each AADCP adapted for his BUIC III NCC. Study figure 19 ADA AADCP SID and complete the following statements:

- a. The type of AADCP referenced is a _____.
- b. The operating option of the AADCP is _____.
- c. The number of fire units on 5- and 15-minute alerts is _____.

| | | | | |
|---|---|---|---|---|
| | | | | |
| A | B | | M | |
| 2 | A | 1 | 2 | 1 |
| 1 | 1 | 2 | 5 | |

Figure 19. ADA AADCP SID

18. Air Defense Artillery

- a. Name and explain the difference between the two physical types of AADCPs.

b. The number of AADCPs that can be represented in the ADA Alert Summary TD is _____.

c. The number of ADA channels that can be represented in the ADA Channel Assignment TD is _____.

d. Is the ADA Tactical Action TD accompanied by an audible alarm?

e. What action must the ADAD take to prevent further engagement and, if possible, destroy those missiles currently in flight against a target?

f. Is the Cease Fire command automatically transmitted to the AADCP?

g. Tracks at the NCC are classified into one of three categories with respect to a given AADCP. These categories are:

(1)

(2)

(3)

h. The radius of the D-ring is a unique-to-site constant and is dependent upon the _____.

i. In the centralized mode, fire units engage only targets that are _____, while in the decentralized mode, fire units may engage Hostile tracks _____.

j. Name and define the three ADA replyback messages.

(1)

(2)

(3)

19. The Exercise Track SID is requested by switch action at the Target Monitor console when the Exercise track has a safety status of **Safe**. When the track has a status of Unsafe, it is forced to the console. Study the Exercise Track SID in figure 20 and answer the following questions:

- a. The altitude of the exercise track is _____ feet.
- b. This exercise track has a flight size of _____.
- c. The identity of the exercise track is _____.
- d. The track is emitting mode _____ SIF.
- e. How would the Exercise Track SID be alerted to indicate that an unsafe condition exists?

| | | | | |
|---|---|---|---|---|
| | | | | |
| | | C | ≡ | 4 |
| 2 | B | E | ≡ | |
| | T | 3 | 0 | 3 |

Figure 20. Exercise Track SID

20. Examine the Air Movement Data (AMD) TD and Air Movement Data SID in figure 21 and answer the following questions.

- a. The AMD number is _____.
- b. Is the flight plan correlated? _____.
- c. The GEOREF of the AMD is _____.
- d. Is the AMD live or sim? _____.
- e. There are _____ remaining AMD channels.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|--|
| A | M | D | | 1 | 0 | | | |
| S | I | F | | 6 | 1 | 0 | 0 | |
| A | L | T | | 4 | 5 | 0 | | |
| S | P | D | | | 6 | 5 | | |
| S | I | Z | | 1 | | | | |
| L | O | C | | A | B | J | K | |
| L | I | V | | 5 | 0 | 1 | 0 | |
| I | D | | | B | E | E | | |
| T | Y | P | | B | 5 | 2 | | |
| C | O | R | | T | 3 | 0 | 0 | |
| C | A | P | | 1 | 0 | | | |
| C | A | L | L | | S | G | N | |
| B | R | E | A | K | 4 | 5 | | |

AIR MOVEMENT DATA TD

| | | | |
|---|---|---|---|
| | | 1 | 0 |
| | K | 1 | 0 |
| W | B | R | E |
| | K | 4 | 5 |

AIR MOVEMENT DATA SID

Figure 21. Air Movement Data TD and Air Movement Data SID

21. Positive Target Control

- a. Which console may request the AMD TD for an Exercise track?
- b. A target monitoring team at a BUIC NCC consists of an _____ and a _____.
- c. The primary concern of the Target Monitor is _____.
- d. The TM console must be assigned by a _____
action.
- e. The track number prefix is always _____ for an Exercise track.
- f. The TM can easily determine exactly which flight plan is paired with a given track by referring to his _____ display.
- g. When transition is made from monitor to active mode during a mission, the TM must insure that certain actions are taken. Name the four steps that must be taken in order to use Positive Target Control.
- (1)
- (2)
- (3)
- (4)
- h. Automatic height requests are _____ for Exercise tracks and manual height requests are _____.
- i. The Exercise SIF code contained in a flight plan is a _____ code which the tracking program uses.
- j. At what consoles are Exercise data displayed?

INFORMATION TRANSFER

1. Name and define the three types of data messages.
 - a.
 - b.
 - c.

2. Name and define three of the checks made on incoming messages.
 - a.
 - b.
 - c.

3. How many channels of the message processor can be assigned for incoming messages from the various receiving facilities? How many for the outgoing messages?
 - a. Incoming messages

 - b. Outgoing messages

4. What do the symbols and represent? Where do they appear and for how long?

5. The following is seen on a TD. Where must you be to receive it and what information is contained in the display?

HAND U323 DIV U
WD2 IND3 FRQ2385

6. Name and define the four purposes for telling track data.

a.

b.

c.

d.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|--|---|---|---|---|
| | | | | | | | | | O | P | | S | T | A | T |
| D | I | V | | B | | C | | | | | | | | | |
| D | C | | | A | | □ | | | | | | | | | |
| N | C | C | - | M | | A | | | | | | | | | |
| N | C | C | = | M | | A | | | | | | | | | |
| N | C | C | ≡ | | | | | | | | | | | | |
| F | A | S | | | | | | | | | | | | | |
| P | A | R | E | N | T | | D | C | | □ | | | | | |
| A | S | S | O | C | | N | C | C | | A | | | | | |
| A | S | S | O | C | | N | C | C | | | | | | | |

Figure 22. Adjacent Division Operational Status TD

7. Using the information contained in figure 22, draw in figure 23 the communication links necessary to fulfill the information transfer function. Include labeled examples of backtell and lateraltell by both the direct and relay route status.

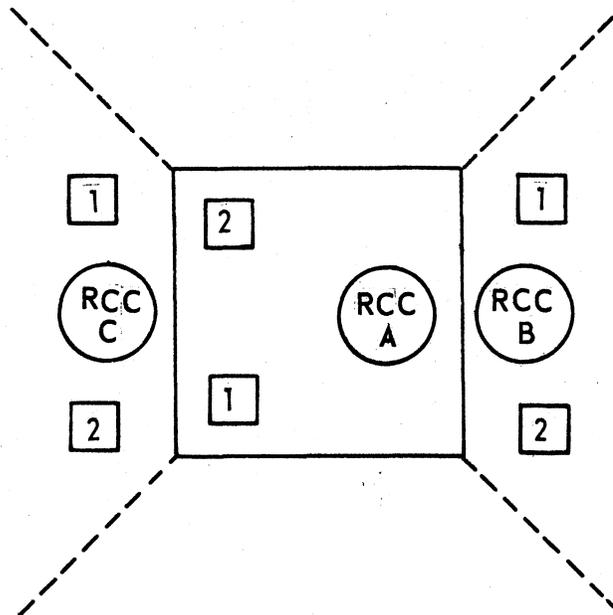


Figure 23

8. BUIC III NCC in division A is entering the active mode. It is assuming control of two AADCPs, RM and AD, and two IMSOCs, VM and AM. It anticipates direct lateral tell from NCCs 1 and 2 in the adjacent division N. Select input channels in message processor 2 and code the Input Channel Assignment manual input message to establish the above environment.

SIMULATION

1. List the actions required to start simulation.
2. List the actions that will terminate simulation.
3. List the features that are not initially available at the start of simulation unless asked for by an OCS card.

4. Code an OCS card that will make available the items listed in question 3.

5. List and explain the functions that automatically become available at the start of simulation.

