IDA DOCUMENT D-1626

DISTRIBUTED JANUS

Including:
System Administration Manual
Operator's Manual
User's Manual
Exportable Training Document

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ARPA Assignment A-132

PREFACE

This documentation supporting Distributed Janus 42.3000 comprises eight parts. The first provides a brief overview of the system and its uses. Part II is a system administration manual describing how the system is assembled and configured. Part III is an operator's manual that covers matters dealing with user accounts and the structure of various files used by Distributed Janus during its initialization and operation. Part IV documents the menuing system used to build and manipulate scenarios, run Janus utilities, and run Distributed Janus in both the local and distributed modes. Part V discusses planning and conducting distributed operations. Part VI is a revision of the Janus/A exportable training document that describes the operation of Distributed Janus during a run, including the enhancements that distinguish Distributed Janus from Janus/A. Part VII describes procedures to upgrade Janus 3.xx scenarios for use by DJ 42.xxx. Finally, Part VIII provides information regarding how to run the "slideshow" utility for a distributed after-action review.

Part I

OVERVIEW

PART I—OVERVIEW

Distributed Janus is an adaptation of the Janus-Army training system that was designed to link geographically distant brigade and battalion battle staffs in a single coordinated command post exercise emphasizing battle staff synchronization.

A brigade suite of equipment, distributed among brigade headquarters and the six subordinate battalions, comprises, at each site, one or two Hewlett-Packard 715/50 workstations, one Silicon Graphics Indigo Extreme workstation, twenty Sun Classic workstations and a printer, all connected to an ethernet. The ethernets are connected to each other by ordinary telephone lines and modems. This configuration permits brigade-wide exercises, exercises at a single site, and exercises using a subset of sites.

To permit these modes of operation, two classes of software have been written. The first--collectively referred to as "agent," provides a user interface tailored to Distributed Janus's modes of operation and facilitates operation over local-area and wide-area networks.

The second class of software constitutes changes to Janus itself. These changes emphasize combat service support so that the forward support battalion and engineer battalion staffs can be more effectively engaged during an exercise, if desired.

Part II

DISTRIBUTED JANUS SYSTEM ADMINISTRATION MANUAL: DJ SYSTEM ADMINISTRATION AND HARDWARE SETUP

CONTENTS

CHAPTER I
INTRODUCTION

This manual is intended for individuals who will be setting up hardware and installing software on the Distributed Janus (DJ) Suite developed under the ARPA Simitar Project. Procedures for installing and setting up the operating system for the DJ suite of equipment will be provided. Procedures for installing the DJ software will also be provided.

The DJ Suite of Equipment

The DJ suite of equipment currently consists of three different types of computers: Hewlett-Packard 9000/715's, Sun Sparc Classics, and a Silicon Graphics Indigo Extreme. These systems are networked together through one or more network hubs that are also included in the DJ suite. Additionally, there are usually a Hewlett-Packard Laser Jet IVP laser printer and several modems included in the suite.

Typical DJ Computer System Configuration

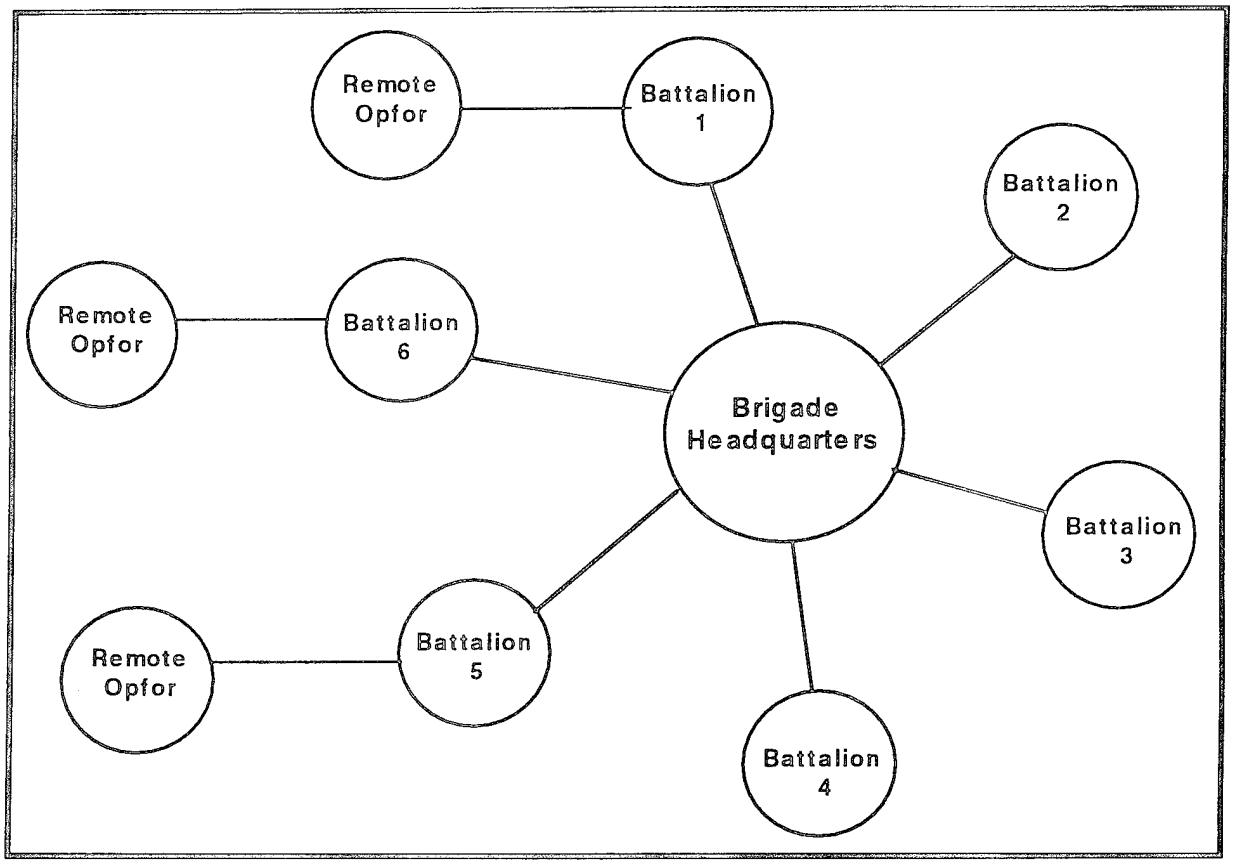
There are two typical DJ equipment configurations. The configuration at Brigade headquarters is different from the other sites in that there may be two HP-9000/715 machines and a special Sun Classic with a Magma serial port expansion card in it allowing it to support six or more modems. Furthermore, a third network hub is required at Brigade headquarters to support the additional HP machine.

At every site there are usually 20 Sun Classics and a single SGI Indigo Extreme, an HP 9000/715, an HP LaserJet IVP, and two network hubs. All machines at the same site are networked together on the same local-area network with twisted pair ethernet wiring using RJ45 connectors. Furthermore, at every site there must be at least two modem telephone lines. At Brigade headquarters there must be at least eight modem telephone lines connections.

The Wide Area Net

The DJ configuration is different from the simple Janus/A suite used by the Army in that it consists of an arbitrary number of independent suites networked together into a

wide area network via commercial, voice-grade telephone connections. The network is configured into a modified "star" configuration because communications are centered around the site that is designated as Brigade headquarters (and has the special Magma serial port expansion board which supports more modem connections).



The "Star" Network Configuration of the WAN

The most important implication of this configuration is that if any battalion site wishes to communicate via e-mail or play a distributed DJ scenario, the Brigade headquarters' Sun Classic with the Magma card (often referred to as the "server") must be turned on along with all of its modems. For example, if Battalion 1 wished to train together with Battalion 3, the modem at Battalion 1 would call Brigade headquarters and establish a modem connection and then the server at Brigade headquarters would call the modem at Battalion 3 and establish a second connection. Communications would then commence with Brigade headquarters acting as the "middleman" and routing the network packets from Brigade 1 to the appropriate recipient. The WAN is not set up to have direct battalion-to-battalion computer communications. This would significantly increase the complexity of the setup and also require more phone lines, modems, etc.

Up to three battalions may be connected via telephone lines to remote opfor sites. This can be done both when the brigade is exercising in distributed mode as shown above as well as when battalions are operating in standalone mode.

CHAPTER II
SETTING UP TO INSTALL THE DJ SUITE

Introduction

Installation of the DJ suite involves attaching all equipment to the local area network, configuring the operating system on each machine, and installing the DJ software. A list of items required to do this is presented below. The list of machine names and internet addresses (IP addresses) will help guide you as to which machines are to be named what; it list will be provided with your DJ installation tape. It is important that the Sun machine that has been designated the "server" at your site be identified because it runs software that is licensed for only that cpu. The unique host id belonging to that machine will be printed on your site's configuration sheet. You will also be provided with at least one tape that can be loaded on your HP. This contains several operating system patches and all of the DJ software. You may also be provided with a separate tape to be loaded onto your Suns, although we most often load the Suns through the network from the HP (described in a later section).

Items Required for Installation

1. DJ site hostname / IP address list
2. DJ tape for the HP
3. 2 (or 3) network hubs (each hub can be configured with 12 connections including a daisy-chain connection to a second or third hub if you need to support more than 12 machines). All hubs at the same location must be daisy-chained together using the hub expansion cables.
4. Sufficient twisted-pair network wires to connect every machine to the hubs. This usually comprises 2 twisted-pair wires for each computer: one from the back of the computer to the wall connection and one from the wall connection at the hub termination point to the hub itself. For a full complement at brigade, 23 wires are needed to run from the wall to the back of each computer plus 23 wires to run from the wall at the hub termination point into the hub. This totals 46 wires for brigade. For a full complement at a battalion, a total of 44 wires are needed because it has fewer machines and hubs.
5. 1 (or 2 at bde hdqtrs) HP 9000/715 (base unit, monitor, and tower)
6. Up to 20 (at least 1) Sun Classics
7. Sun Compact Disk Player, CD caddy, SCSI cable, and SCSI terminator

8. Sun Solaris Installation compact disk

Setting Up the Hardware

1. Set up network hubs (see Annexes)
2. Assemble all machines and connect to network hubs (see Annexes)
3. Identify which Sun is your "server" machine by turning on the monitor and the cpu box and looking for the host id number (which prints out on the screen) which is listed next to the server machine on your Site Hostname / IP Address Configuration Sheet. Label this machine with its name.: svr-XXXXX.
4. Brigade headquarters only: attach the Magma card to the svr-XXXXX machine.
5. Attach modem (6 modems at brigade headquarters) to your "svr-XXXXX" machine.
6. Label all other machines with their name (host id's are not important on non-server machines).
7. Install the Operating System on each of the Suns (see Annexes).
8. Configure the Operating System on the HP(s) (see Annexes).
9. Configure the Operating System on the SGI (see Annexes).

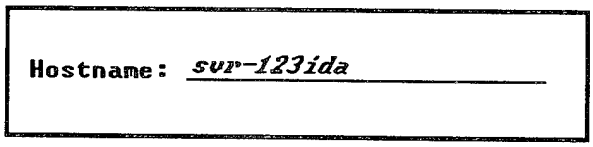
ANNEX 1
INSTALLING AND CONFIGURING A SUN OPERATING SYSTEM

Required Items: cd caddy, Sun 2.3 cd disk.

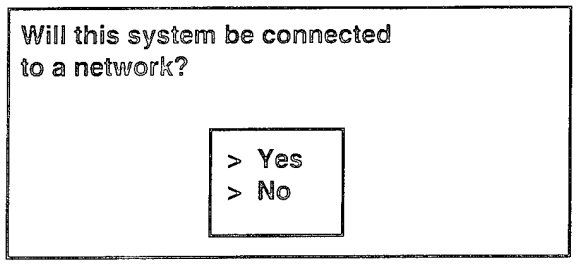
You Will Need to Know: the system root password, the hostname and IP address of the machine to be installed.

The following instructions tell you how to install the Sun operating system (Solaris 2.3) from the Sun cd player. Words printed in `this font` are messages from the system.

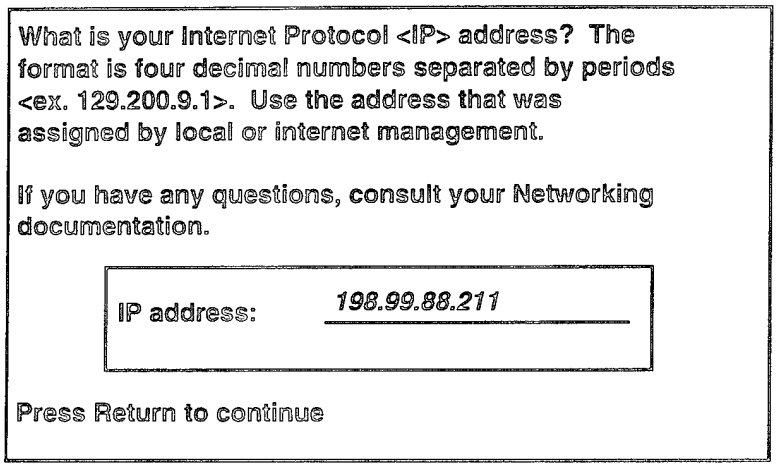
1. Set up and assemble the machine as described in *Assembling a Sun Classic.*
2. Attach the CD player as described in *Attaching the CD or TAPE Player to a Sun.*
3. Put the Sun 2.3 operating system cd disk into the cd caddy. The printed side of the cd should face up and be visible through the clear plastic cover of the caddy.
4. Insert the cd caddy with the disk into the cd player (see the arrow on the cd caddy for the right direction).
5. Turn on the power on the cd player.
6. Turn on the power on the system unit and monitor.
7. As soon as the monitor lights up and there appears to be some activity, simultaneously hit the STOP key and the "a" key. This will halt the automatic boot process. The monitor should show an OK prompt.
8. Type: *boot cdrom* at the `OK` prompt. The machine will boot from the cdrom. This takes approximately 10 to 15 minutes. A series of screens will appear prompting you for input. You should enter the data for the particular machine that you are configuring from your site's DJ configuration sheet. In the following example we will assume that we are installing a machine name svr-123ida with an IP address of 198.99.88.211. Text that you should type in will appear in `italics`.
9. You should enter the hostname of the machine that you are configuring as listed on your site's DJ configuration sheet.



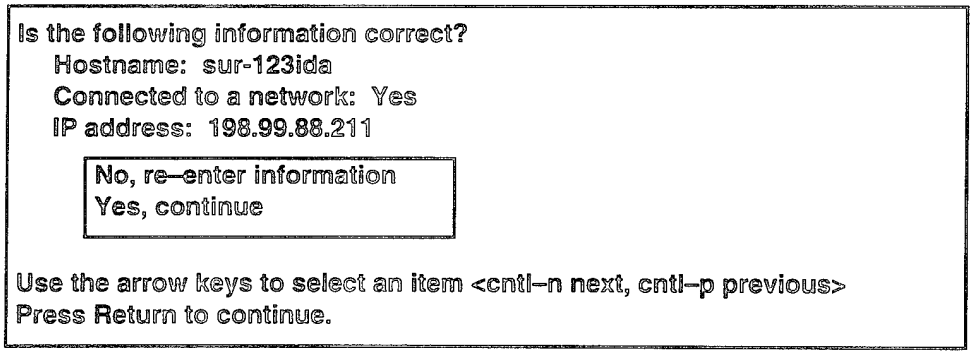
10. Select "yes" using the arrow keys to position over "yes," then press the enter key.



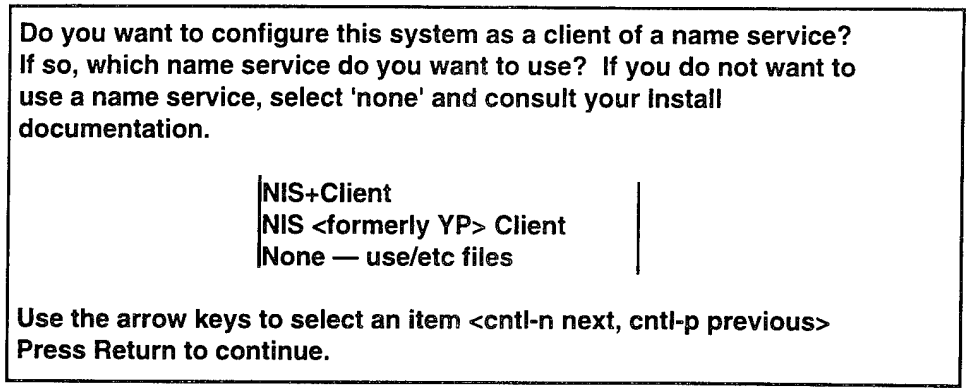
11. You should enter the IP address of the machine that you are configuring as listed on your site's DJ configuration sheet. Press the enter key.



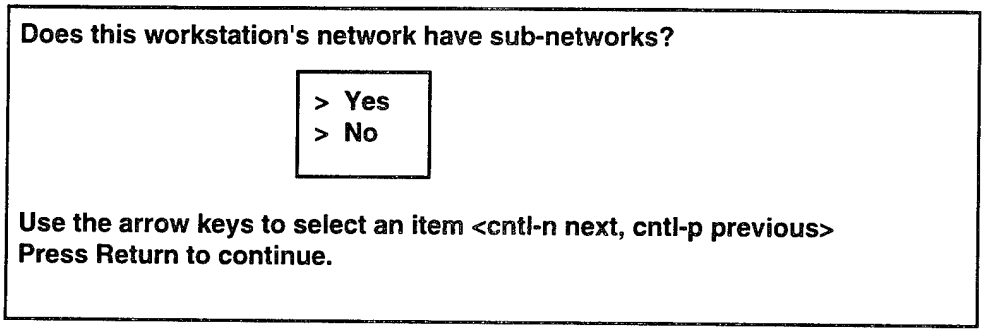
12. Confirm the information entered so far.



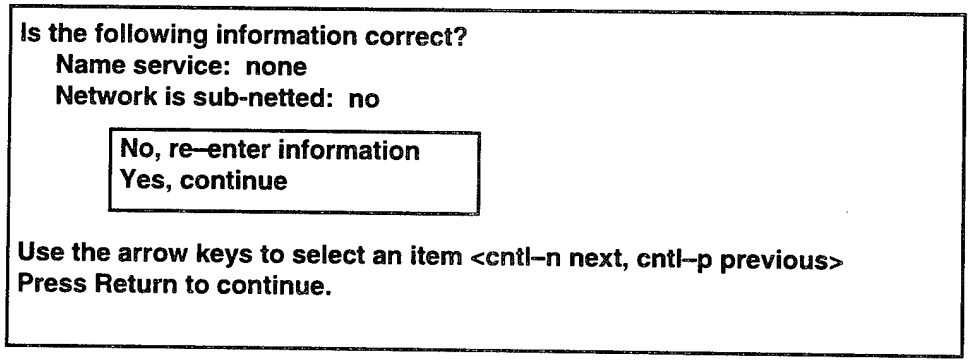
13. Select "none - use /etc files" with the arrow keys and then press the enter key.



14. Select "no" using the arrow keys and the press the enter key.



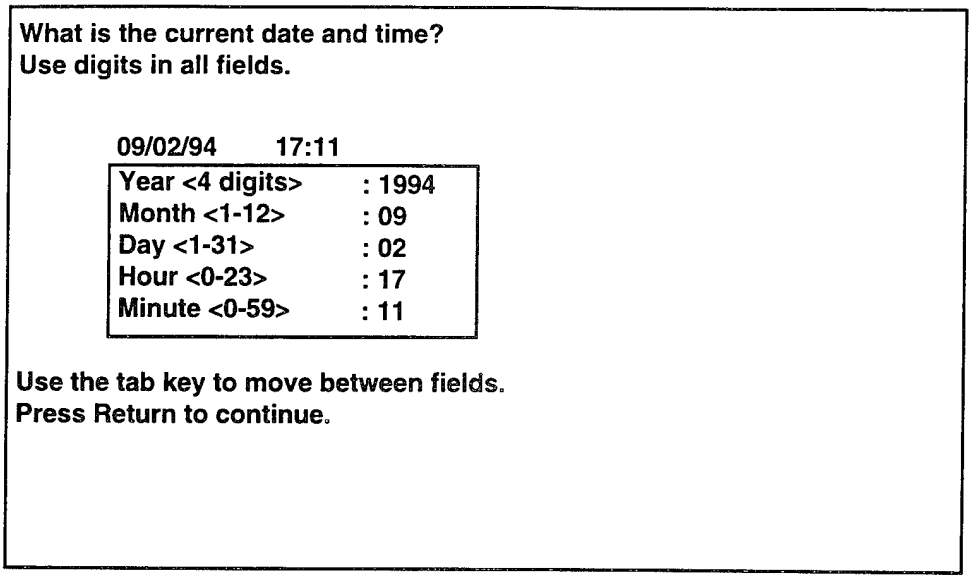
15. Confirm the information entered so far.

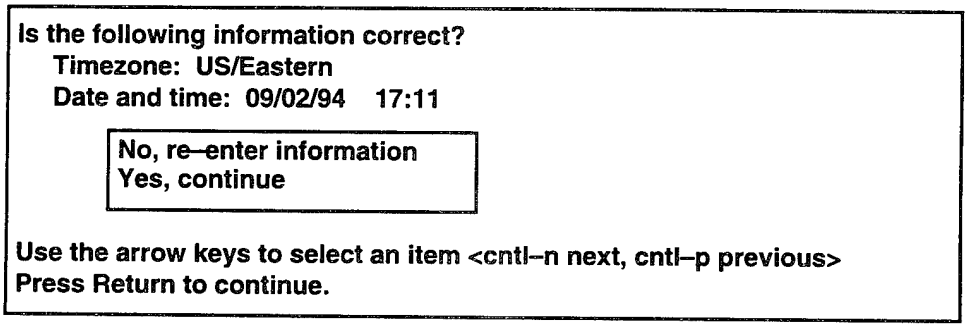


16. Answer all the miscellaneous questions about the time zone and dates as appropriate.

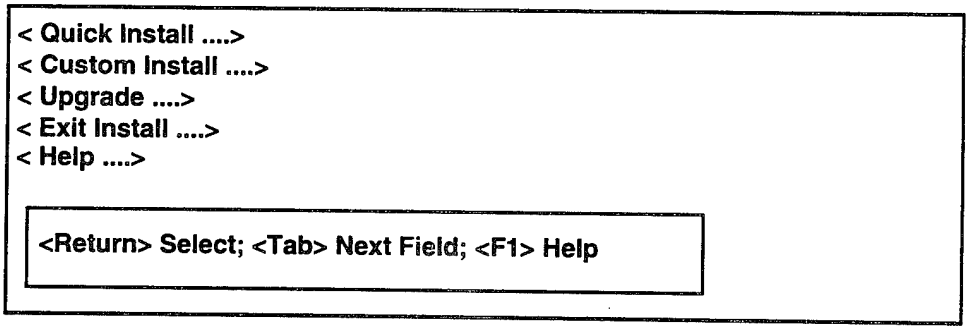
```
What is your geographic region?

        Africa
        Western Asia
        Eastern Asia
        Austrailia/New Zealand
        Canada
        Europe
        Central America
        South America
        United States
        Other—offset from GMT
        Other—specify rules file

Use the arrow keys to select an item <cntl-n next, cntl-p previous>
Press Return to continue.
```

```
What is your time zone?

        Eastern
        Central
        Mountain
        Pacific
        Yukon
        East-Indiana
        Arizona
        Michigan
        Somoa
        Aleutian
        Hawaii
        none of these — return to regions menu

Use the arrow keys to select an item <cntl-n next, cntl-p previous>
Press Return to continue.
```

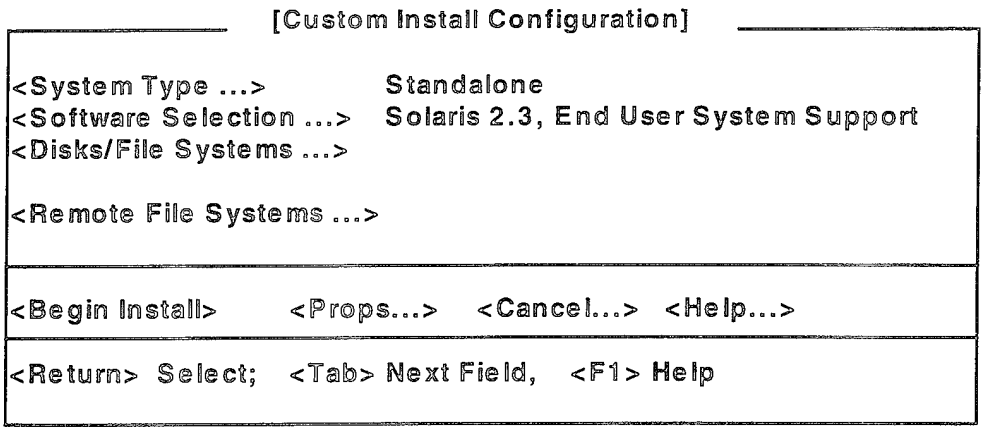




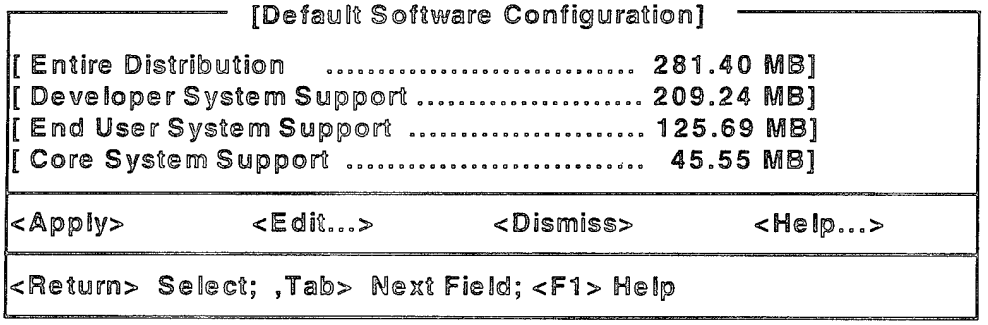
17. Select "Custom Install" with the tab key and press the enter key.



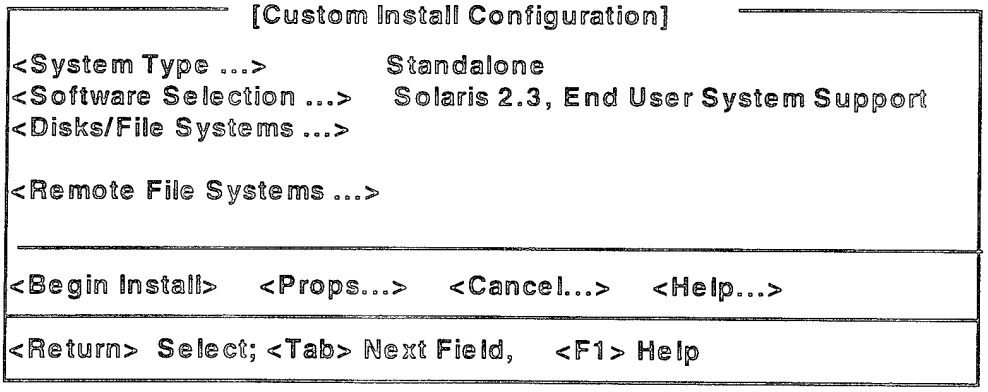
18. Tab to "Software Selection" and hit return to select it.



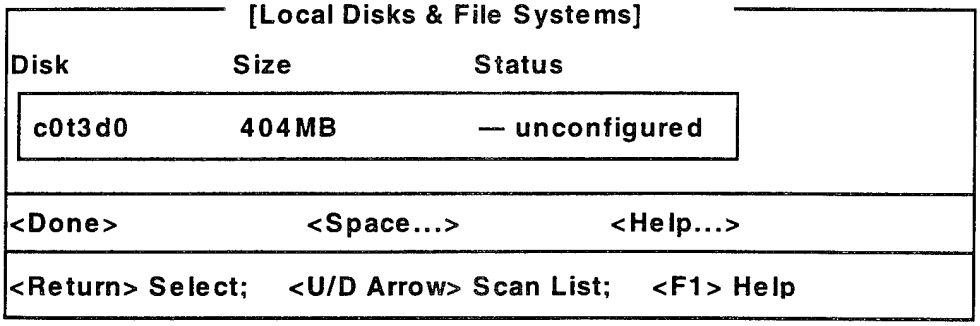
19. Tab to "Developer System Support" and hit return to select it, then tab to "Apply" and hit return.



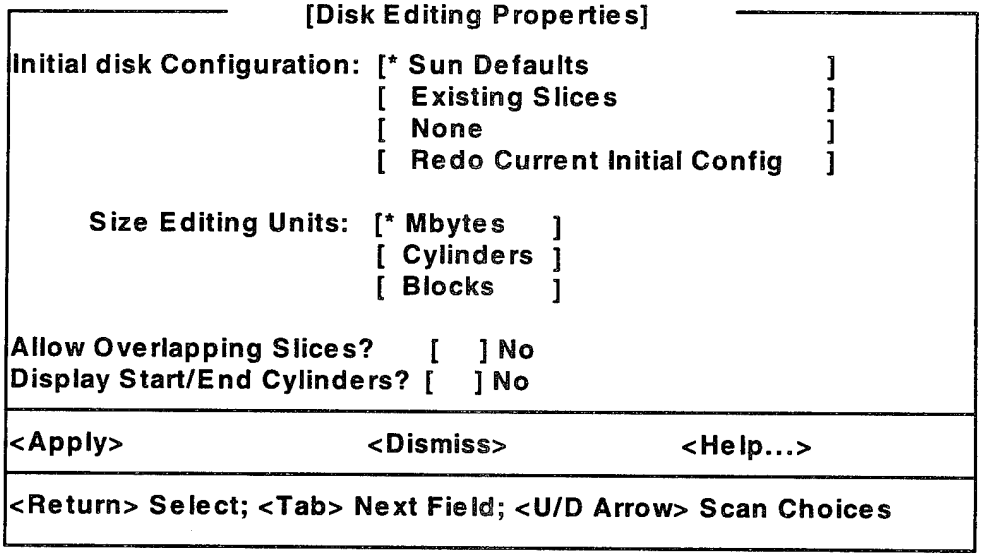
20. Tab to "Disks/File Systems" and hit return to select it.



21. Use the tab key to highlight c0t3d0 and hit enter to select it. A pop-up menu will appear and you should select "Configure Disk" by hitting the tab key and then hitting enter,



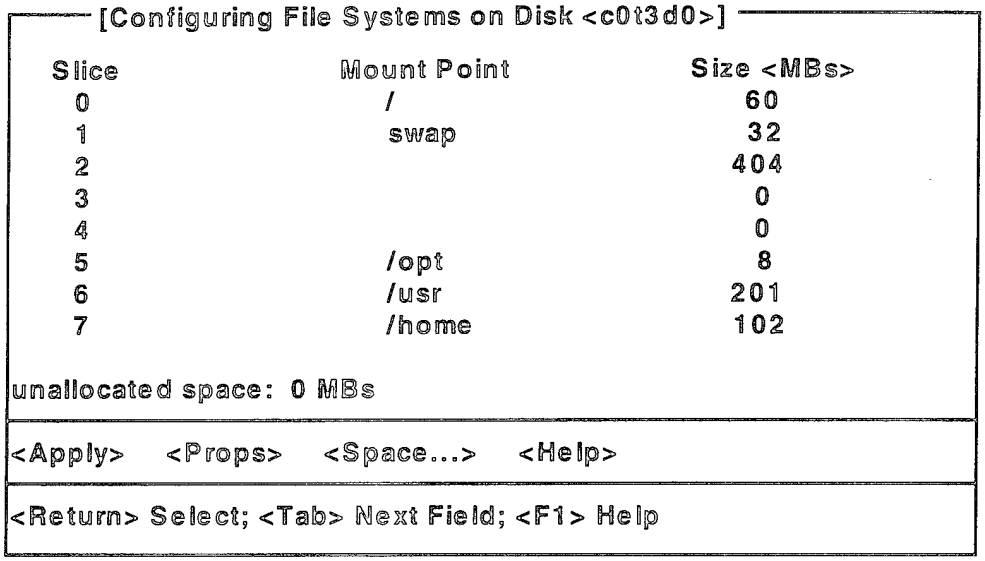
22. Do not change any values on this menu. Use the tab key to highlight APPLY and press the enter key to select it.



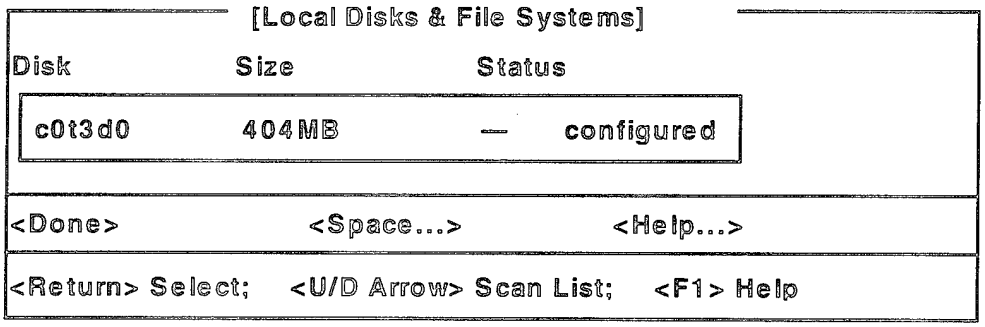
23. Use the tab key to highlight 16 on the slice 0 line and change 16 to 60. Use the tab key to highlight slice 7. Change it to read

```
7        /home        XXX
```

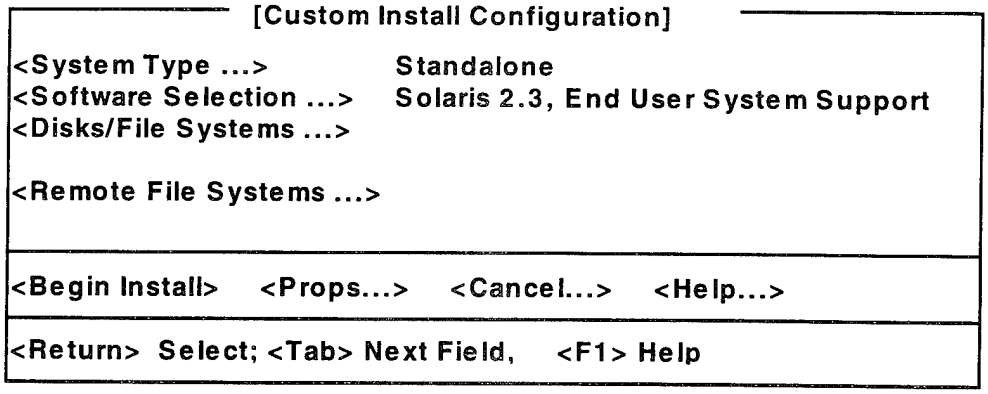
XXX should be the total amount of remaining disk space as reported on the current screen as "Unallocated Space". Use the tab key to highlight APPLY and press the enter key.



24. Use the tab key to highlight DONE and press enter to select it.



25. Tab to "Begin Install" and press the enter key to select it.



It takes approximately 1 hour for the system to finish the installation process. Upon completion it will ask you for the root password. You should find out the exact spelling of the root password from your installation team. The system will reboot after you have entered in the password as required by the system.

When the system has rebooted, log on as user "root" using the password you just entered. Make the following changes to system files.

26. Start open windows by typing: `/usr/openwin/bin/openwin`
27. Use the text editor or the vi editor to create the file `/.rhosts` whose contents should be a single plus sign on the very first line. Make sure to save the file.
28. Type: `cp /.rhosts /etc/hosts.equiv`
29. Use the text editor or the vi editor to edit the file `/etc/hosts` and add the hostname and the IP address of your site's HP machine, for example:

    h-116bde 198.97.175.101

    Save the file.
30. Use the text editor or the vi editor to edit the file `/etc/default/login` and add a # (hash mark) to the line that reads

    #CONSOLE=/dev/console

    Save the file when you have made this change.

ANNEX 2
INSTALLING THE HP-UX OPERATING SYSTEM

IMPORTANT: The HP machine should be plugged into the network hub during configuration. It can be either plugged into the hub directly or through wiring in the wall. It doesn't matter, as long as it is ultimately connected to the network hub.

The HP machines come pre-loaded with their operating system (HP-UX). However, if you should have a system crash or a system arrives with a damaged operating system, you may have to re-install it from the HP distribution compact disks. HP provides directions on how to do this. The following are answers to some of the questions that you will be asked during the OS configuration program:

Installing the HP-UX Operating System from disks:

Required Items: the HP-UX Media Kit, which contains HP-UX cd's and the Installing and Updating HP-UX manual. The two required cds are labeled "Install" and "Core OS".

You Will Need to Know: the root password, the system name, and the system IP address.

1. Insert the "Install" cd into the cd caddy and insert the caddy into the compact disk slot on the tower.
2. Turn power on for the tower, the monitor, and lastly the main cpu box.
3. Hit the escape key to stop the selection process when the system begins to boot up. The system should then display the following devices to select from:

```
P0    scsi.6.0   microp 2112                  (internal hard disk)
P1    scsi.4.0   HP35480A                     (tape)
P2    scsi.3.0   Toshiba CDROM XM-3301TA      (cdrom)
P3    scsi.1.0   HP C3010                     (hard disk)
```

4. Boot off the cd disk by typing

```
b P2
```

5. The system will boot from the install cd and begin prompting you for configuration information. Reply with the following answers:

```
Select MICROP2112 to be the root disk.

Long file names: yes

Swap space: 98986
```

6. At this point, the configuration process should be prompting you to insert an "update" cd. Eject the current cd and replace it with the one labeled "Core OS".
7. Select "All File Sets" on the update menu and the system should load all available software automatically from this point on.
8. After you have completed the installation of HP-UX, you need to perform the tasks listed under **Configuring an HP-UX System**.

ANNEX 3
CONFIGURING AN HP-UX SYSTEM

1. Boot the system (the system may boot automatically if you have just installed the HP-UX from the cdroms; otherwise just turn the tower, cpu and the monitor on and it should boot up in few minutes).
2. Log in as the root user.
3. Edit the /etc/inittab file and change the first line from

   ```
   init:2:initdefault:
   ```

   to

   ```
   init:4:initdefault:
   ```
4. Save the file and exit the editor. At the command line, type:

   ```
   init 4
   ```
5. The Vue graphical interface system should start and the login window should appear shortly. Log in as the root user from the login window.

Start the SAM application

6. Click on the toolbox icon (calculator, compass, protractor) found on the bottom icon bar. This will open up the toolbox window and there will be icons for each application you can run.
7. Double click on the SAM (System Administration Module) icon to run it.

Add the Hard Disk in the Tower Unit

8. Select `Disks and File` Systems by selecting it with the mouse and then clicking on the Open button on the SAM menu.
9. Select `CD-ROM, Floppy and Hard Disks` by clicking on this menu item with the mouse and then click on the `Open` button.
10. To add the hard disk, you should select the line that reads `SCSI 3010 Disk Drive` and then pull down the `Actions` menu at the top of the SAM window and select `Add a Hard Disk Drive`.
11. Click on `Select A Disk to Add` and select the item `HP_C3010` and then select `OK`.
12. Set the Disk Usage and Options form screen to have the following values:

    ```
    Mount Directory: /home
    Create New File System: yes
    ```

Mount on Boot: yes

Mount Now: yes

After all these settings have been entered, select OK.

Add the Tape Device Files

13. Select the Peripheral Devices menu item and open it.
14. Select the Tape Drives menu item and open it.
15. Select SCSI Tape Device and then pull down the Actions menu from the top menu bar and select Create Device Files. Select OK and wait for the system to indicate that it is finished performing this task and then close the window and return to the previous level.

Add the File System Swap Space

16. Select Disks and File Systems by selecting it with the mouse and then clicking on the Open button on the SAM menu.
17. Select Swap from the menu.
18. Select Actions from the pull-down menu and select Add File System Swap.
19. Enter the following parameters:

    /home

    minimum swap: 48000

    maximum swap: 98000

    and then select the OK button.

Configure the Kernel Parameters

20. Select the Kernel Configuration menu item.
21. Select the Configurable Parameters menu item and open it.
22. For each of the following kernel parameters, perform this procedure.

    MAXUPRC 150

    MAXFILES 200
23. Scroll down the list until you see the desired kernel variable name and click on that item to select it.
24. Pull down the Actions menu from the top menu bar and select Modify Configurable Parameter.
25. Under Specify New Formula/Value, Formula/Value: enter the desired number and then select OK.
26. Pull down the Actions menu from the top menu bar and select Create A New Kernel.

27. Your HP system must be rebooted, so answer yes to the reboot questions and answer yes to the question concerning putting the kernel in place.

Adding Automatic Backups

28. Select `Backup and Recovery` from the main menu and then `Open`.
29. Select `Automated Backups` and then `Open`.
30. Select the tape drive unit and the pull down the `Actions` menu from the top menu bar and select `Add an Automated Backup`.
31. Select `Local Backup Device` and select the tape unit then press `OK`.
32. Select `Backup Scope` and choose `Entire System` and then press `OK`.
33. Select Backup time and make the following entries:

```
Full Backup:
   Time 11:00 pm
   Days of week: Friday
Incremental Backup:
   Time 11:00 pm
   Days of week: Monday Tuesday Wednesday Thursday
```

(hold the shift key and select the desired days to get more than one day selected)

34. Press OK until you return to the Sam menu selections.

ANNEX 4
SETTING UP THE NETWORK HUBS

Required Items: You will need the appropriate number of hubs (12 machines per hub) and a hub expansion cable (male on one end and female on the other end) to connect each hub, after the first hub, together. You will also need the appropriate number of twisted-pair wires (2 per machine usually).

1. Place the hub close to the room's network concentration point. (where all the network connections in the room come in to one area).
2. Plug the hub into the electricity (it has no on/off switch).
4. Daisy-chain the hubs together by plugging a hub expansion cable from the first hub into the back of the second hub and so forth for additional hubs until they are all connected. You can only daisy-chain up to 4 hubs together, according to the hub manufacturer.
5. Make sure that the switch on the front of the each hub is set to the "X" position in order to get use of all 12 ports.
3. Plug an RJ45 connector wire into the wall socket and into one of the ports on the hub numbered 1-12.
6. Connect all machines to the network by plugging in an RJ45 connector wire from the wall socket closest to the machine and connecting the other end to the machine.

NOTE: The HP machines require a device called a transceiver in order to connect the RJ45 wire.

ANNEX 5
ASSEMBLING A SUN CLASSIC

1. Remove all of the equipment depicted on the next page from its box and set up on a table. Make sure to leave room for the user to sit at the system. We currently do not use the Vertical Stand or the Sun Microphone in our equipment setup. These items can be stored away for possible future use.
2. Plug mouse into the keyboard. It can be plugged into either the left or right side of the keyboard depending on whether the user is left handed or right handed. *WARNING: pins on the keyboard and mouse bend easily.*
3. Plug the keyboard cable into the keyboard (whichever plug is not used by the mouse).
4. Plug the other end of the keyboard cable into the keyboard port at the back of the system unit (see diagram to identify system unit).
5. Plug the video cable (has wide connectors with several small pins and 3 large ones).
6. Plug one end of the monitor power cord into the back of the monitor. Plug the other end into the power strip (or electric receptacle).
7. Plug one end of the system unit power cord into the system unit AC power receptacle located on the back of the system unit. Plug the other end into the power strip (or electric receptacle).
8. Plug one end of the twisted-pair ethernet cable (with RJ-45 connector, which looks like a modular telephone plug but a little wider) into the ethernet port located in the back of the system unit. Plug the other end of the twisted-pair ethernet cable to the ethernet jack on the wall or directly into the hub if no internal wall wiring is present.

Figure 1-5 Keyboard Cable (Included with System)

Figure 1-6 Mouse and Cable (Included with System)

Figure 1-7 13W3 Video Cable (Included with System)

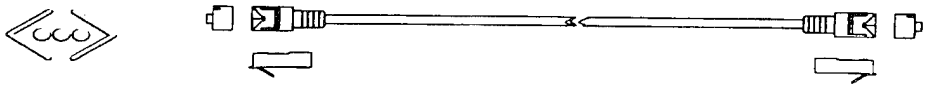


Figure 1-8 Twisted-Pair Ethernet Cable (Included with System)

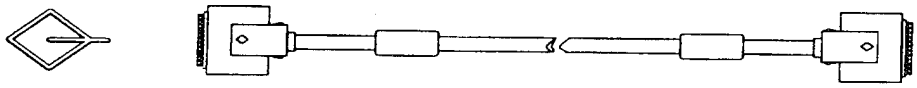


Figure 1-9 Small Computer System Interface (SCSI) Cable (Option)

Sun Cables and Connection Icon Descriptions

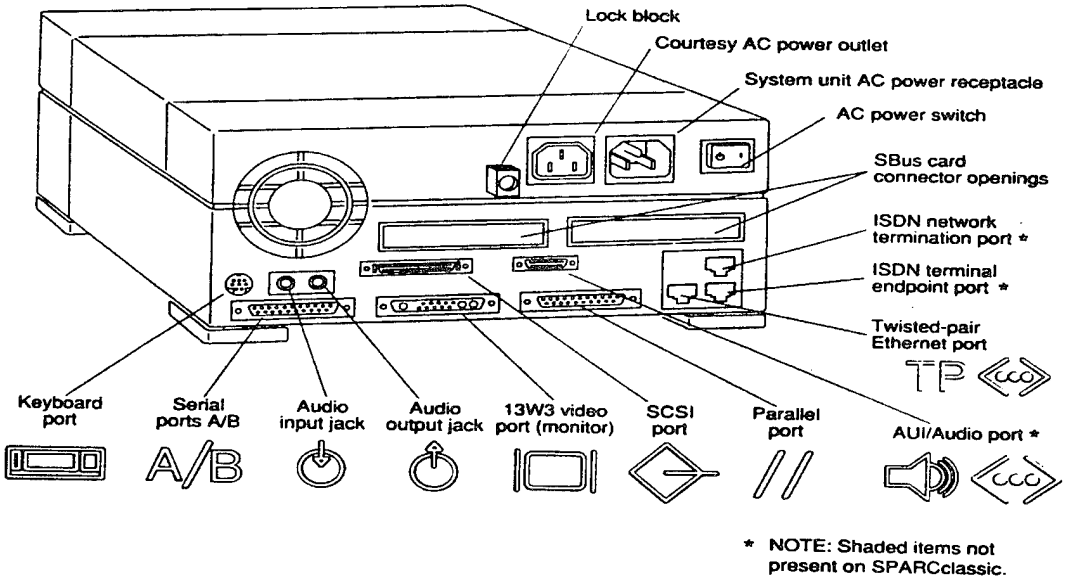
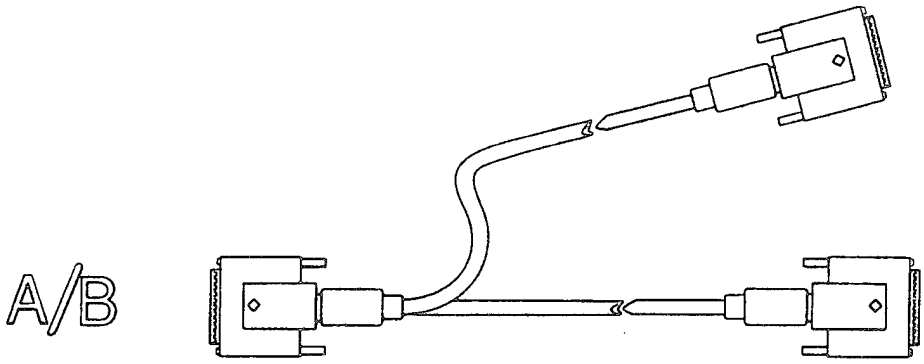
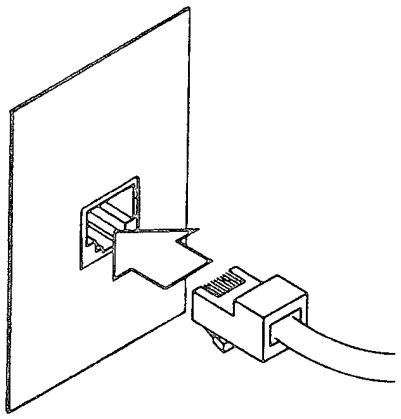


Figure 1-19 Back Panel of the System Unit — SPARCclassic/SPARCstation LX

Diagram of Back of Sun Unit



Sun A/B Serial Cable



RJ45 twisted-pair connector into receptacle

ANNEX 6
ASSEMBLING AN HP

Assembling an HP is straightforward. It is important, however, that the SCSI addresses in the tower be appropriately set.

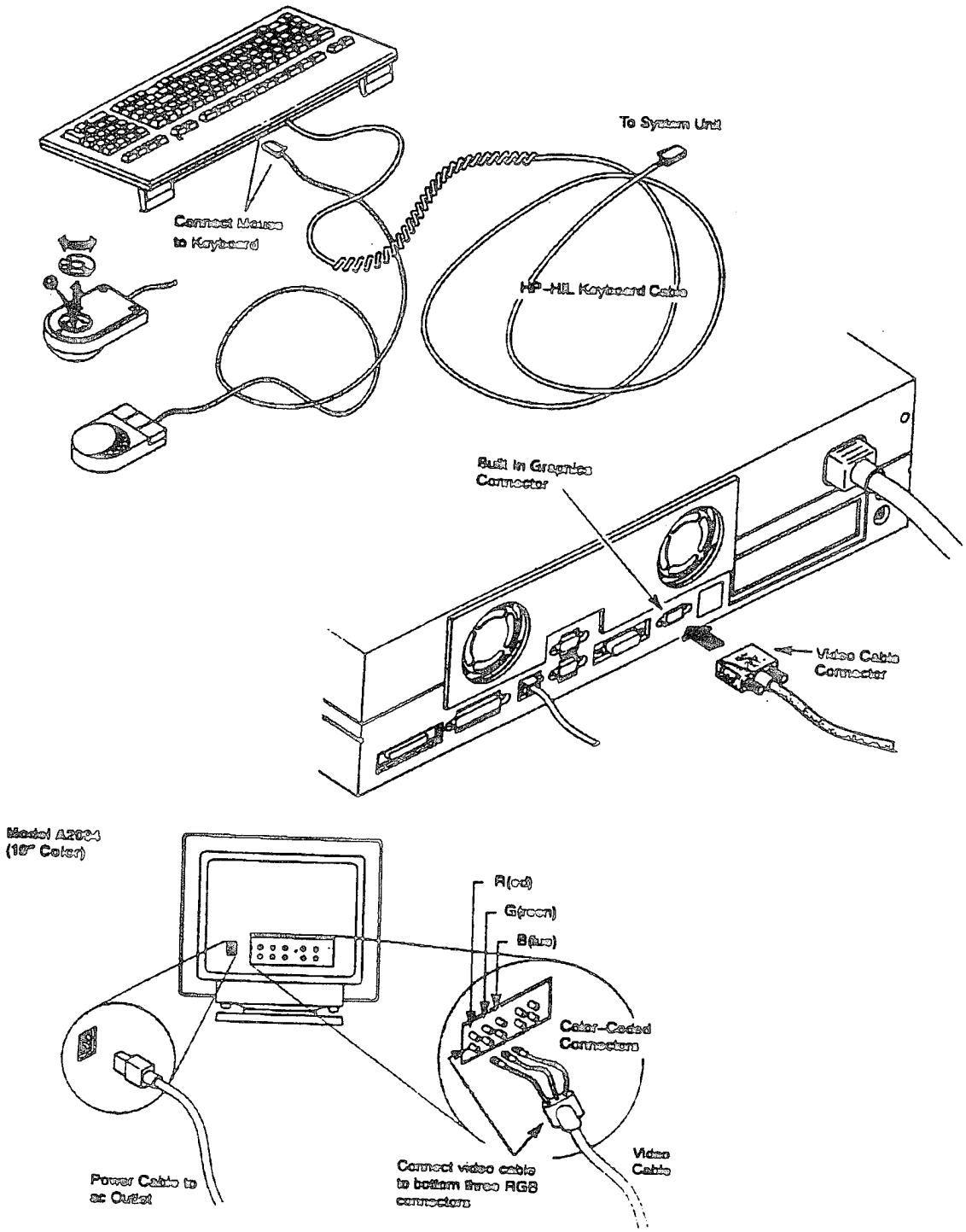
1. The SCSI tower contains a 1.5 gigabyte hard disk, a 4mm tape reader, and a cdrom drive. The tower can be opened by loosening the two screws at top rear with a medium TORX screwdriver. The cover can then be slid forward slightly, then up. At the top of the tower structure are a series of dip switches for locations 1 through 7 on the tower. Location 1 is at the bottom. Examine the items in the tower to determine their locations. Typically, the hard drive is in location 1, the cdrom in location 6, and the tape drive in location 7. It is important that the switches be set so as to identify the following SCSI addresses with these items: tape reader--address 4; cdrom--address 3; hard disk--address 1. Once these are set, reinstall the tower cover.

2. Connect the tower to the CPU using the heavy cable and using the SCSI connection on the CPU. Connect the keyboard to the CPU and the mouse to the keyboard. Connect the monitor to the CPU using the monitor cable. The monitor-end of this cable has color-coded wires to connect to the red, blue, and green video input bayonet connectors on the monitor.

3. Insert the RJ45 ethernet connector into the socket on the CPU.

4. Install the power cords to the tower, monitor, and CPU and connect them to power. Turn on the tower, monitor, and CPU in that order. The power switch on the CPU is a flat button on the right hand side as you face it. Press it once.

5. Watch the monitor as the system comes up. Pay particular attention to whether the network comes up as "OK" or "Failed." If "failed" appears, check to make sure that all network connections are sound and the hubs are on, shut down the system properly and reboot.


To System Unit
Connect Mouse to Keyboard
HP-HIL Keyboard Cable
Built In Graphics Connector
Video Cable Connector
Model A2074 (16" Color)
R(ed)
G(reen)
B(lue)
Color-Coded Connectors
Power Cable to ac Outlet
Connect video cable to bottom three RGB connectors
Video Cable

ANNEX 7
INSTALLING THE MAGMA SERIAL PORT EXPANSION DEVICE ON A SUN

You Will Need: The Magma device and all of its parts and manual, a phillips screwdriver, a flat head screwdriver, the Sun CPU base unit of the brigade headquarters svr-XXXXX machine.

IMPORTANT: It is important that you correctly identify the svr-XXXXX machine because the software that drives the DJ communications over the modems is licensed for only that machine.

1. Install the Magma S-bus card as described in the Sun Hardware Owner's Guide and the Magma manual (be sure to see pgs 28 - 30 in the Magma manual).
2. The software portion of the Magma installation will be performed when you install the DJ software on the brigade headquarters svr-XXXXX machine.

WARNING: The breakout box on the Magma card can be very hard to screw in. If you find that after all the installation processes (software and hardware) that you do not have TR lights on your modems, check that the Magma breakout box is seated well.

ANNEX 8
ATTACHING A MODEM TO A SUN WITHOUT THE MAGMA DEVICE

1. Plug the "forked" serial cable end labeled A/B into the back of the Sun System Unit in the plug labeled A/B.
2. Attach a male-to-male gender changer to the back of the modem in the RS-232 port.
3. Plug the phone line into the back of the modem into the port labeled "To Line". Plug the other end of the phone line into the phone jack coming into the wall.
4. Plug the end of the "forked" serial cable labeled A into the back of the gender changer on the modem.
5. Plug the power cable into the back of the modem and plug into electricity.
6. Turn the modem on using the toggle switch on the back of the modem.
7. When the modem is turned on *without* the computer being booted up, the following lights should be illuminated on the front of the modem: HS (red), AA , MR (green). When the computer is booted up, you should see the green TR light as well.

ADDING A SECOND MODEM TO A SUN WITHOUT THE MAGMA DEVICE

After doing steps 1 thru 7 above, do the following:

On the second modem do steps 2 thru 7 EXCEPT in step 4, plug the second modem into the end of the "forked" serial cable labeled B.

ANNEX 9
ATTACHING A MODEM TO A SUN WITH THE MAGMA DEVICE

Install the Magma device first!

1. Gather the total number of modems to be attached to your Magma server. You should not stack the modems on top of one another as they get very hot and sometimes fail.
2. Attach a DB25-to-RJ45 changer to the back of each modem in the RS-232 port.
3. Plug a telephone cable into the back of every modem in the "To Line" plug. Plug the other end of the telephone cable into the wall telephone jack.
4. Using the short gray RJ45 serial cables, plug one cable into the back of each modem's DB25-to-RJ45 changer.
5. Plug the other end of the short gray RJ45 cable into the sockets on the back of the Magma card. Start at the socket labeled 0 and work sequentially up.
6. Plug the power cables into each of the modems and plug them into the electricity.
7. Turn all the modems on with the toggle switch located on the back of the modem.
8. When the modems are turned on without the computer being booted up, the following lights should be illuminated on the front of the modem: HS (red), AA , MR (green). When the computer is booted up, you should see the green TR light as well.

ANNEX 10
ATTACHING THE CD OR TAPE PLAYER TO A SUN

Required Items: cd/tape player, power plug, SCSI cable, SCSI terminator.

1. If the machine is booted up, shut down the machine and power down according the procedure described in *Shutting Down or Rebooting the Sun Computer.*
2. Plug one end of a micro SCSI cable (lots of tiny pins) into the back one of the 2 SCSI ports on the back of the cd/tape player (it doesn't matter which one).
3. Plug a SCSI terminator into the remaining SCSI port on the back of the cd/tape player.
4. Plug the other end of the micro SCSI cable into the back of the System Unit. (See diagram of back of System Unit in *Assembling a Sun Classic.*)
5. Plug the power cable into the back of the cd/tape player and the other end into an available electric receptacle.

ANNEX 11
REMOVING THE CD/TAPE PLAYER FROM A SUN

1. First, shut down the Sun machine to the power down state (see the section entitled *Shutting Down or Rebooting the Sun Computer).*
2. Unplug the SCSI cable from the back of the System Unit.
3. Turn the power back on to the System Unit and the Monitor. The system should reboot automatically.

ANNEX 12
INSTALLING THE DJ SOFTWARE ON AN HP

Important: Whenever you perform a DJ installation, make a note in your system administrator's notebook at to the date and version of the software installed.

Items You Will Need: A DJ Tape labeled with a version number and HP (for the HP).

You Will Need to Know: the root password, the name of the machine you are installing, the name of the site you are installing.

1. Log onto the system as the root user.
2. Insert the tape into the tape drive.
3. When the tape unit stops blinking, open up an HP-term window and perform the following commands.
4. `cd /etc`
5. `tar xvpf /dev/rmt/c201d4c nguard-load.csh`

   The device c201d4c is the normal device number for the DJ suite of equipment. If you have other HP equipment, your device may be different. Type `/etc/ioscan` to find out what your SCSI device number your tape unit is assigned if c201d4c does not work for you. Once you see the file named nguard-load.csh print out on the screen, wait 5 seconds and then type `cntl-c` so you don't have to wait for the tape to reach the end.
6. Type the following command and substituting in the real machine name for NAME and the real site name for SITE in the command below:

   `./nguard-load.csh -host NAME -site SITE -cleanup`

   In most cases, the tape will proceed without intervention until the very end, where it will ask if you want to reboot the system now. You should answer y to this question. However, in other cases you will be required to perform some other procedures. These cases are listed below.

Case 1: The current machine name does not match what you specified in the nguard-load.csh command

The machine name must match what is specified in the nguard-load.csh command. The installation procedure will not proceed if this is not the case. If you really want to change the name of the machine to be installed, you should do this first and then do the nguard install. (See *Changing the Machine Name on an HP.*) When you have completed

the task of changing the machine name, you will need to run the nguard-load.csh procedure again until it runs to completion and asks to reboot.

Case 2: You need to install a "Manual Patch"

The nguard-load.csh program tries to do everything it can without user intervention. However, there are some instances where the user must perform the task. There is an important operating system patch that must be applied manually. The script will check to see if it has already been installed on your system. If it has not, then you must install this patch. The installation program will get the patch ready for you, but you must then follow the directions *Installing a Manual Patch on an HP*. Once you have completed this procedure, you need to run the nguard-conf.csh procedure again until it runs to completion and asks to reboot.

Example:

/home/admin/scripts/nguard-conf.csh -host HOSTNAME -site SITENAME

ANNEX 13
INSTALLING THE DJ SOFTWARE ON A SUN

Case 1: Installing from the local HP that already has the DJ software on it

You Will Need: The root password, the machine name, and the IP address.

Important: You will need to perform the following procedure on your local HP before you start the Sun install from the HP.

1. Log in as the root user.
2. `cd /home/admin/scripts`
3. `cat NGUARD_VERSION`

Make a note of the current version number to be used as VERSION_NUMBER in the next step.

4. `./make-tar.csh -arch solaris -device disk -copy`

   The make-tar script will ask you to document this version, just type "solaris tar file copy" or something to that effect and then type cntl-d to continue on. The scripts will proceed to make an installation file on disk for you.

5. Once the make-tar script returns you to a prompt, log out of the HP and go to the Sun that you want to configure.
6. AT THE SUN, log in as the root user. DO NOT use the "su" command at the Sun or from the HP!
7. `rcp HP_NAME:/home/tar.solaris /home`

   Substitute the name of the local HP machine for HP_NAME above.

8. `cd /etc`
9. `tar xf /home/tar.solaris nguard-load.csh`

   Type the following command, substituting in the real machine name for NAME and the real site name for SITE in the command below:

   ```
   ./nguard-load.csh -host NAME -site SITE -cleanup -device /home/tar.solaris
   ```

   In most cases, the installation will proceed without intervention until the very end where it will ask if you want to reboot the system now. You should answer y to this question and then answer 'r' to the reboot or halt question.

Case 2: Installing the DJ software from a Sun tape unit

You Will Need: A DJ tape prepared specifically for a Sun workstation.

1. Attach the Sun tape unit using the procedure described *Attaching the CD or Tape Player to a Sun.*
2. Turn the system, monitor and the tape unit on. When the system monitor lights up, quickly interrupt the boot up process by hitting the "Stop" and the "a" key simultaneously. The system should halt and display the OK> prompt. Type the following command and the system will boot
3. `boot -r`

   The system will reboot and add the tape unit device files if they do not already exist.
4. Put a DJ tape which is labeled for Solaris into the tape unit.
5. Log into the Sun as the root user.
6. cd /etc
7. tar xvpf /dev/rmt/0c nguard-load.csh
8. When the tape is completed reading the nguard-load.csh program off (wait at least 30 seconds and you can type cntl-c to avoid waiting for the tape to go to the end), type the following command and substituting in the real machine name for NAME and the real site name for SITE in the command below:

   ```
   ./nguard-load.csh -host NAME -site SITE -cleanup -device /dev/rmt/0c
   ```

   In most cases, the tape will proceed without intervention until the very end where it will ask if you want to reboot the system now. You should answer y to this question and then answer 'r' to the reboot or halt question.

ANNEX 14
SHUTTING DOWN OR REBOOTING A SUN COMPUTER

You Will Need to Know: the system root password.

Shutting Down

1. Either log out the current user and log in as the root user or type the su command to become the root user at the prompt.
2. Type: `cd /`
3. To shut down the machine (to turn power off), type the following command:

   ```
   shutdown -i0 -g0 -y
   ```

   Wait until the system shows the OK prompt or the > prompt to turn the power off. The Sun power switch is located on the back of the unit. It is a toggle switch which is labeled with a 0 and a 1. To turn the machine off, press the side with the 0 on it. NOTE: the switch resumes the "neutral" position after you press it. It does NOT work like a light switch.

Rebooting

1. To reboot the machine, type the following command:

   ```
   shutdown -i6 -g0 -y
   ```

   The machine will reboot and a screen saying LOGIN: should eventually appear.

ANNEX 15
SHUTTING DOWN OR REBOOTING AN HP COMPUTER

You Will Need to Know: the root password.

Shutting Down

1. Either log out the current user and log in as the root user or type the su command to become the root user at the prompt.
2. Type: `cd /`
3. To shut down the machine (to turn power off), type the following command:

   ```
   /etc/shutdown -h -y 0
   ```

   Wait until the system says that it is ok to power down, then turn the power on all components off.

Rebooting

1. To reboot the machine, type the following command:

   ```
   /etc/shutdown -r -y 0
   ```

   The machine will reboot and the Vue login screen will eventually appear.

ANNEX 16
CONFIGURING THE MODEM INTERNAL PARAMETERS

You Will Need: to connect the modem to a Sun that already has been installed with the DJ software.

1. Log in as any user.
2. If you are logged into the brigade svr-XXXXX machine with the Magma card, you need to make a note of which modem you want to configure by determining the number of the Magma card slot into which the modem is plugged. If you are on the brigade svr-XXXXX machine, then the name of the modem device will be "Magma" where "n" is the slot number. If you are on an svr-XXXXX machine that does not have a Magma card, then the name of the modem device is "hardwire". Using the appropriate device name, type the following command:

   ```
   tip DEVICE_NAME
   ```

3. Type in the following command and them press enter (this will reset the modem to the original factor settings):

   ```
   AT&F
   ```

4. Type in the following commands, one per line (press enter to go to the next line): (all 0's in the following commands are zeros, not the letter O)

   ```
   ATS7=60
   ATS0=1
   ATS11=055
   ATQ0
   AT&W
   ```

5. Type in a tilde and a period (~.) to disconnect from the modem.

   When the modem is turned on *without* the computer being booted up, the following lights should be illuminated on the front of the modem: HS (red), AA , MR (green). When the computer is booted up, you should see the green TR light as well.

ANNEX 17
CHANGING THE MACHINE NAME ON AN HP

You Will Need to Know: The root password, the new name of the machine, the IP address of the machine.

1. From the HP-VUE login window, press the Options button and select the "No Windows" option, then log in as the root user.
2. Type `/etc/set_parms` and answer the questions appropriately. The system will reboot when you have entered all of the required information.

ANNEX 18
INSTALLING A MANUAL PATCH ON AN HP

You Will Need to Know: The root password.

1. From the HP-VUE login window, press the Options button and select the "No Windows" option, then log in as the root user.
2. Copy the desired patch from /home/admin/files.hp/patches/PATCHNAME to /tmp
3. cd /tmp
4. type: ./PATCHNAME (this will extract the patch files)
5. Check that the first line of the /etc/inittab file reads as follows. If it does not, change it to the following.

```
init:4:initdefault:
```

6. At the command line type:

```
init 4
```

7. When the HP-VUE login window comes back up, perform step 1 again and log in as root.
8. Type:

```
/etc/shutdown -y 0
```

Wait for at least one minute or until the system reports that it is in single-user mode.

9. Type:

```
/etc/mount -a
cd /tmp
/etc/update
```

10. You will now be running the update program. You need to know the name of the patches that you are installing. It will be something like: PH_940507 usually. Substitute the name of the correct patch in the responses below where the term PATCH_name appears.

```
Change Source or Destination

     From Tape Device to Local System

          Source: /tmp/PATCH_NAME.updt
```

Press F4 (the "DONE" key) to go back to the main menu and then select:

```
Select/View Partitions and Fileset
```

put a 'y' on all lines and then press F4 for "Start Loading Now".

These patches can take some time to complete. The system will typically reboot or do something obvious to let you know that it has completed.

11. Clean up the /tmp directory. Do an "ls" and then delete all the files having to do with the patch from the /tmp directory.

ANNEX 19
USING THE CDROM ON AN HP

Start the SAM application

1. Click on the toolbox icon (calculator, compass, protractor) found on the bottom icon bar. This will open up the toolbox window and there will be icons for each application you can run.
2. Double click on the SAM (System Administration Module) icon to run it.

Add the CDROM Device Files

3. Insert cd caddy (with cd inside) into the cdrom device.
4. Select `Disks and File Systems` by selecting it with the mouse and then clicking on the `Open` button on the SAM menu.
5. Select `CD-ROM, Floppy and Hard Disks` by clicking on this menu item with the mouse and then click on the `Open` button.
6. To add the cdrom, you should select the line that reads `Toshiba CDROM XM-3301TA` and then pull down the `Actions` menu in the top of the SAM window and select `Add a Hard Disk Drive`.
7. Click on `Select A Disk to Add` and select the item `Toshiba CDROM XM-3301TA` and then select `OK`.
8. Set the Disk Usage and Options form screen to have the following values:

```
Mount Directory: /cdrom
Create New File System: no
Mount on Boot: no
Mount Now: yes
```

After all these settings have been entered, select `OK`.

ANNEX 20
CONFIGURING AN SGI

The SGI computers come with their operating system already loaded. You should attach the SGI to the network, and turn it on. When it first comes up, you can configure the machine's name and IP address. You should use the appropriate name and IP address for your site. If further configuration is necessary, you must refer to the documentation suppplied with the machine.

ANNEX 21
CHANGING THE NGUARD.DATA FILE

The nguard.data file contains information about all the machines participating in a Distributed Janus Wide Area Network for a particular site. Currently, sites that have nguard.data files are Georgia ,Idaho, Ida, Ftknox and Ftleaven. The nguard.data file is stored in /home/admin/sys.nguard/<site>. The machines that can be declared in an nguard.data file are Suns, HPs, HPTERMs and SGIs.

The nguard.data file has the following columns: <machine name> <ip> <LAN server name> <ppp license> <phone number> <role> <machine type> <host id> <phone prefix> <opfor phone>

*** If a Sun machine is a PPP server for the brigade or battalion headquarters, the above columns get the values shown below:

- <machine name> gets a value which starts with "svr" and contains the unit name of the National Guard location. Correct configuration is dependent on this naming convention. For example, the 116th brigade server is named: svr-116bde. The 148fa server machine is named: svr-148fa
- <ip> see IP Addresses section.
- <LAN server name> has a value which is the same as machine name.
- <ppp license> has a value which is the ppp license key for the specific machine name and host id.
- <phone number> is the phone number that other machines will use to call it.
- <role> has the value "none" if the PPP server machine is not a magma server and the value "magma_server" if the server is a magma server.
- <machine type> is a type field, which has the value "sun" for all Sun machines.
- <host id> is a number field that contains the host id number.
- <phone prefix> has the value of a prefix that has to precede the area code and phone number for outgoing calls.
- <opfor phone> is the phone number of the line used to communicate with offsite opfor.

*** If the SUN machine is an offsite PPP opfor server, it has the values shown below:

- <machine name> gets a value which starts with "svr" and contains the unit name of the National Guard location as well as the "opfor" string. Correct configuration is dependent on this naming convention. For example, the 148fa remote opfor server is named: svr-148fa-opfor
- <ip> see IP Addresses section.
- <LAN server name> has a value which is the same as machine name.
- <ppp license> has a value which is the ppp license key for the specific machine name and host id.
- <phone number> is the phone number that other machines will use to call it.

- <role> has the value "none".
- <machine type> is a type field, which has the value "sun" for all SUN machines.
- <host id> is a number field that contains the host id number.
- <phone prefix> has the value of a prefix that has to precede the area code and phone number for outgoing calls.
- <opfor phone> is the phone number of the line used for opfor outgoing calls.

*** if the SUN machine is a plain workstation, it has the values shown below:

- <machine name> gets a value which starts with "sun<x>" and contains the unit name of the National Guard location. <x> is an incremental numbering convention assigned to designate plain Sun workstations. Correct configuration is dependent on this naming convention. For example, a Sun workstation in the 48th brigade LAN is named: sun1-48bde; another one could be called sun2-48bde and so on.
- <ip> see IP Addresses section.
- <LAN server name> has a value which is the name of the PPP server.
- <ppp license> has a value of "no_ppp_license".
- <phone number> has a "no_phone" value.
- <role> has a "none" value.
- <machine type> is a type field, which has the value "sun" for all Sun machines.
- <host id> is a number field that contains the host id number.
- <phone prefix> has a "no_prefix" value.
- <opfor phone> has a "no_phone" value.

*** If the machine is an HP, the nguard.data columns take the values shown below:

- <machine name> gets a value which starts with "h" and contains the unit name of the National Guard location. Correct configuration is dependent on this naming convention. An HP hostname cannot exceed 8 characters. For example, the HP residing at 2-116 armor battalion is named: h-2-116.
- <ip> see IP Addresses section.
- <LAN server name> has a value which is the name of the PPP server
- <ppp license> has a value of "no_ppp_license".
- <phone number> has a "no_phone" value.
- <role> has the value "printer_server" since the HP machine is the printer server for the LAN
- <machine type> is a type field, which has the value "hp" for all HP machines.
- <host id> is a number field that contains the host id number.
- <phone prefix> has a "no_prefix" value.
- <opfor phone> has a "no_phone" value.

*** If the machine is an HPTERM, the nguard.data columns take the values shown below:

- <machine name> gets a value which starts with "x" and contains the unit name of the National Guard location. Correct configuration is dependent on this naming convention. For example, the HPTERM at the 2-116 armor battalion is named: x-2-116
- <ip> see IP Addresses section.
- <LAN server name> has a value which is the name of the PPP server

- <ppp license> has a value of "no_ppp_license".
- <phone number> has a "no_phone" value.
- <role> has the value "none".
- <machine type> is a type field, which has the value "hpterm" for all HPTERM machines.
- <host id> is a number field that contains the host id number.
- <phone prefix> has a "no_prefix" value.
- <opfor phone> has a "no_phone" value.

*** If the machine is an SGI, the nguard.data columns take the values shown below:

- <machine name> gets a value which starts with "sgi" and contains the unit name of the National Guard location. Correct configuration is dependent on this naming convention. For example, the SGI machine at 182 mech battalion is named: sgi-182mech
- <ip> see IP Addresses section.
- <LAN server name> has a value which is the name of the PPP server
- <ppp license> has a value of "no_ppp_license".
- <phone number> has a "no_phone" value.
- <role> has the value "none".
- <machine type> is a type field, which has the value "sgi" for all SGI machines.
- <host id> is a number field that conta host id number.
- <phone prefix> has a "no_prefix" value.
- <opfor phone> has a "no_pthe same first three components
- values greater than 0 and less than 254
- values which are unique.

IP Addresses

IP is a number value that declares a machine on the same local area network as the other workstations with the same unit number.

All ip addresses on a LAN must have:

- the format: AAA.BBB.CCC.DDD
- the same first three components
- values greater than 0 and less than 254
- values that are unique

The current naming conventions include specific values for the last component of the ip address (.DDD) for each machine type. If the machine is the:

- brigade or battalion SUN server, .DDD component is replaced by .100
- brigade or battalion HP, .DDD component is replaced by.101
- second brigade HP, .DDD component is replaced by.102
- brigade or battalion SGI, .DDD component is replaced by .103
- brigade or battalion HPTERM, .DDD component replaced by.106
- brigade or battalion SUN workstation, .DDD component is replaced by.<x> (<x> is an incremental numbering convention assigned to designate plain SUN workstations which equals to the value of <x> as mentioned in its <machine name> definition).

For example, all the machines on the 116th BDE LAN have the same three components and so AAA.BBB.CCC is equal to 198.97.175. The last component of the IP address of all machines depends on each of the machine types as explained above. Thus, the:

- Sun server has an IP address equal to 198.97.175.100
- HP has IP address equal to 198.97.175.101
- second HP has IP address equal to 198.97.175.102
- SGI has IP address equal to 198.97.175.103
- HPTERM has IP address equal to 198.97.175.106
- Sun workstation with machine name sun1-116bde has IP address equal to 198.97.175.1

ANNEX 22
ADDING AND DELETING WORKSTATIONS

To add or delete a workstation, one has to be familiar with the nguard.data file, which is described in the "Changing the nguard.data file," Annex 21.

The first step is to add a new line to the appropriate nguard.data file for your site. The second step is to add the new machine to the XASSIGN.<hp hostname> file which is residing in

/home/admin/sys.nguard/<site>/xassign directory

<hp hostname> is the machine name of the HP residing on the same LAN as the machine being added. Thirdly, run nguard-conf.csh on the HP, then install all the machines on the same Local Area Network (LAN) and Wide Area Network (WAN).

No action is required to delete a machine from the LAN if the IP address is not to be re-used. If the IP address is to be re-used, then delete the lines that define the old machine from the nguard.data file and XASSIGN.<hp hostname> file. Then all machines on the same LAN and WAN must be reinstalled if they previously have been configured.

Part III

DISTRIBUTED JANUS OPERATOR'S MANUAL

CONTENTS

CHAPTER I
INTRODUCTION

The DJ (Distributed Janus) system is an enhanced version of the Army's Janus/A (version 4.2-based) simulation program. The DJ version has been enhanced to perform functions beyond that of Janus/A. This document discusses how to set up DJ to run. This document does not explain how to use DJ once it is running nor does it describe the enhancements beyond those involved in setting up the system to run. This information is covered in the DJ User's Manual.

DJ Generated E-Mail

DJ generates e-mail messages that are sent to designated users for them to take action on during a DJ run. These messages are used to alert medic units to go and pick up wounded, forward support units to go and repair/retrieve damaged vehicles, security units to retrieve POW's, etc. It is possible to direct this e-mail to any legitimate user on the network or to no one at all. This is controlled by a special configuration file called GSIMAIL.DAT. The format of this file will be discussed in the chapter named *Controlling DJ E-Mail Destinations.*

What Distributed Means in DJ

One of the most important enhancements of DJ is its ability to run simultaneous enhanced Janus programs at remote sites which interact with one another. The DJ program that you would run at your site is not the same program that would be run at other sites. Each is a separate instance of DJ running a different, but related scenario. This enhancement significantly affects the way that DJ is initiated.

A program called "Agent" must be run in order to start DJ. It reads a configuration file called the GSINGX.DAT file located in the DJ Operator's home directory. This file controls how many DJ programs (called clients) will be initiated. Agent then attempts to establish a connection over the wide area network (WAN) with each of the Janus clients listed in the GSINGX.DAT file. Once communications are established, Agent starts Janus at each site and tells each client what scenario to load and run.

Distributed Mode

When there is more than one Janus client listed in the GSINGX.DAT file ("distributed mode"), the Janus program looks for all of the information about what scenario to bring up and various other data elements in this GSINGX.DAT file. Janus does not display the initial three screens that allow you to change various parameters nor does it allow you to perform initial planning. It is assumed that the scenario is already designed and set up properly. When DJ comes up in distributed mode, the clock begins ticking once all the clients are brought up and become active. This requires *no* intervention from the DJ Operator. The only person who does anything to start a distributed session is the person who runs Agent.

Non-Distributed Mode

Running DJ in non-distributed mode is very similar to distributed mode except that there is more interaction with Janus once it comes up. Agent is first run and it reads the GSINGX.DAT file to determine how many Janus clients are listed. When there is only one Janus client, Agent will bring up Janus and present the usual three initial screens to allow the user to change certain game parameters. It does not ask the user what scenario to run because it gets this information from the DJ menu system. It will run whatever scenario you currently have loaded through the menu system. Janus will ask what run number the user wants to use for this run, however.

In non-distributed mode (sometimes called "single Janus" mode), you can adjust the workstation assignments and do initial planning. Generally, preparation of a distributed scenario will involve running the scenario in single-Janus mode to set up the distributed scenario. Single Janus mode can also be used to run exercises that will not require interaction with other units over the WAN.

Remote Workstations and Remote OPFOR Workstations

It is possible to run a workstation at a remote site from a DJ host at another site. Although this appears to be distributed, it is not distributed in the sense that is described above. In this approach, the Agent/Janus operator can specify a workstation in his/her XASSIGN.DAT file that is actually located on a remote network. If a communication path over the WAN can be established with this workstation, then the local DJ program can display a workstation on that system just as it displays a workstation on local systems. However, if the WAN is low bandwidth as is the case when using modems and standard

phone lines, it takes a relatively long time (20 minutes or so) to bring up each workstation at the remote site. Generally, each workstation at a remote site will take an additional 20 minutes. This mode of operation should be carefully thought out before using.

CHAPTER II
USER ACCOUNTS AND LOGGING IN

On the HP there is one user account named ngedit that should be used to run DJ and create/modify scenarios. Its password is nguardedit.

In order to run DJ, the DJ operator should log into the HP at the Vue login window. Vue (the HP's window manager system) must be up and running. You can tell that is running because it offers a graphics-based login window instead of just a character-based login prompt.

When the login process is completed, the user should see the Simitar insignia on the screen background. The user can then start the DJ menu system by depressing the right mouse button over the screen background and selecting DJ Menu from the pop-up menu that appears. The user can perform all necessary functions through the menu system.

When a computer is to be used only as a workstation (all the Suns are used as only workstations), each computer should be logged in as the user named `user1`. The password for `user1` is nguard. When the user logs in as `user1`, the Suns will automatically start up the X-server and eventually, the Simitar screen will appear. No further action is required of this user until the Janus screen appears. It is important to note that all computers that are to be used as workstations during a Janus run must be logged in as `user1` before DJ is started.

CHAPTER III
THE GSINGX.DAT FILE

As previously mentioned, the GSINGX.DAT file is the main file that controls what Janus clients will be run in DJ. It is first read by Agent which in turn copies this GSINGX.DAT file for each of the Janus clients and puts it in a temporary place on each client machine. When Agent starts up each Janus client, the first thing it does is read the GSINGX.DAT file from the temporary location to determine which client instance it is supposed to be.

Client instances are specified by a triplet, which consists of the following three values:

```
<unitname> <hostname> <username>
```

Example 1. Janus Client Triplet Specification

Generally each machine has a default unit name designation. This is controlled in a file name GSIUNIT.DAT and is discussed in the chapter named *Unit Names.*

At least one triplet is required in the GSINGX.DAT file. This is the minimal configuration of the GSINGX.DAT file. When there is only one triplet, the run is considered to be a "single client" run. No other values are read from the GSINGX.DAT file in a single client configuration. However, in multiple client configurations, the following parameters are required (where | means "or"):

```
scenario <scenario_num>
run <run_num> | initial
saverun <saverun_num> | no
```

Example 2. Required Parameters for Multiple Client Run

The keyword **scenario** must be followed by a three digit scenario number The **run** keyword must be followed by a two digit run number or the keyword **initial**. The keyword **saverun** must be followed by either the two digit run number to be saved or the word **no** if the run is not to be saved. Agent will use the current unit name, the scenario number and the run number in order to determine which directory in the user's archive directory to retrieve the scenario from. It will copy all the files in that directory into Janus' temporary working directory before Janus is started. The current run will be the same run number as the one loaded in if the **saverun** keyword is followed by the word **no**. Otherwise, the current run will be set to the 2 digit run number following the keyword **saverun**. Upon exiting the Janus run, if the **saverun** keyword was other than **no**, then the resulting data files will be automatically copied into the user's archive directory. If the keyword is **no**, then the resulting data files will not be saved anywhere.

The following parameters are optional:

```
ckptrun
ckptfreq <ckpt_every_N_minutes>
```

Example 3. Optional Parameters for Multiple Client Run

The optional parameter **ckptrun** directs Agent to restart a failed session from the last existing checkpoint file found in the tes directory. Agent does not attempt to load in a scenario from the user's archive directory in this case. The optional parameter **ckptfreq** controls how often the checkpoint file is written out to disk. The default is every 1 minute. This can be increased to whatever value you wish. The only consideration is the amount of work that might be lost if a large number is used should the system fail for any reason.

The following file is an example of a single client GSINGX.DAT file for brigade headquarters in Boise:

```
116bde h-116bde ngedit
```

Example 4. Single Client GSINGX.DAT File

This GSINGX.DAT file would automatically be generated for you if you choose the "Run Local Janus" in the menus. However, the GSINGX.DAT file is never automatically generated for a distributed run. The following GSINGX.DAT file is an example of how to bring up brigade headquarters and 3 battalions running distributed scenario 600 , run initial, saving the results as run 01. Checkpoints will be taken every 3 minutes.

```
116bde h-116bde ngedit
129eng h-129eng ngedit
145fs h-145fs ngedit
148fa h-148 ngedit
scenario 600
run initial
saverun 01
ckptfreq 3
```

Example 5. Example GSINGX.DAT File for Multiple Client Run

CHAPTER IV
UNIT NAMES

Unit names are generally used to designate the identity of Janus clients. Each Janus client usually will represent a particular military unit. This unit name is used in the scenario naming convention used in the archive directory. Because distributed scenarios actually consist of many scenarios, a way to associate them together had to be found and yet each scenario had to be distinguished from the others. The way this is done is that all related scenarios have the same beginning scenario number, such as 600, but the full name of the scenario is qualified with the unit that it is designed for. For example, for scenario 600 you might see in the archive directory the following scenarios:

```
600.116bde.ngx
600.145fs.ngx
600.148fa.ngx
600.129eng.ngx
600.2-116armor.ngx
600.3-116armor.ngx
```

Example 6. Scenario Names

The general approach of putting all scenarios on all HP's has been adopted in order to provide maximum flexibility. This would be unmanageable if it were not for this naming convention.

Unit names are assigned default values associated with the name of the machine. These defaults are contained in the file in /home/nguard/site/GSIUNIT_DEFAULT.DAT. The following is a listing of the GSIUNIT_DEFAULT.DAT file for the 116th National Guard Brigade of Idaho.

```
h-116bde   116bde
h-129eng   129eng
h-145fs    145fs
h-148fa    148fa
h-182      182mech
h-2-116    2-116armor
h-3-116    3-116armor
```

Example 7. GSIUNIT_DEFAULT.DAT File

The unit names are arbitrary; however, they must be limited in length to 15 characters. Great care must be taken to change unit names if there are existing scenarios for that unit because the unit name is used in the archive directory. One would have to go re-name all the scenarios with the old unit name to ones with the new unit name by hand.

It is possible to assume the identity of a unit other than your default unit by creating a file named GSIUNIT.DAT in your (ngedit's) home directory. In that file, the desired unit name should appear as the sole entry. Example GSIUNIT.DAT file:

```
145fs
```

Example 8. GSIUNIT.DAT File

With this entry in your home directory, it does not matter that you are running on the machine named h-3-116. Your unit name will be 145fs and the scenarios that are retrieved for you will be the ones with the unit name component of 145fs. Care should be taken regarding the use of this file. Generally, you would only change your default unit designation if you were designing and testing distributed scenarios. *Warning:* If a distributed run is initiated and you have a different unit name than the one specified in the GSINGX.DAT file, the distributed run will fail to commence.

CHAPTER V
CONTROLLING DJ E-MAIL DESTINATIONS

As mentioned before, DJ generates e-mail that can be sent to designated users at particular machines. Currently DJ generates five different types of e-mail: kill, pow-red, pow-blue, recover, and medic. These mail messages are used to alert the pertinent personnel of kills, potential red POW's, potential blue POW's, vehicles that need to be recovered, and injured personnel in need of an ambulance and/or medical attention. These mail messages are in addition to the vehicle message that appears on the workstation.

The file located at /home/nguard/site/GSIMAIL_DEFAULT.DAT controls the default e-mail destination for each type of e-mail for each unit name. If there is no designation line for a unit-name and mail type, then the e-mail will not be mailed anywhere. The syntax of this file is:

```
<unit name> <e-mail type> user_id user_id user_id .... user_id
```

Example 9. GSIMAIL_DEFAULT.DAT File Syntax

The following is an example of the full blown GSIMAIL_DEFAULT.DAT file for the 116th. Every type of mail for every unit is accounted for in this default file.

```
116bde kill user1@sun3-116bde
116bde pow-red user1@sun12-116bde
116bde pow-blue user1@sun4-116bde
116bde recover user1@sun18-116bde
116bde medic user1@sun1-116bde
145fs kill user1@sun3-145fs
145fs pow-red user1@sun12-145fs
145fs pow-blue user1@sun4-145fs
145fs recover user1@sun18-145fs
145fs medic user1@sun1-145fs
148fa kill user1@sun3-148fa
148fa pow-red user1@sun12-148fa
148fa pow-blue user1@sun4-148fa
148fa recover user1@sun18-148fa
148fa medic user1@sun1-148fa
129eng kill user1@sun3-129eng
129eng pow-red user1@sun12-129eng
129eng pow-blue user1@sun4-129eng
129eng recover user1@sun18-129eng
129eng medic user1@sun1-129eng
182mech kill user1@sun3-182mech
182mech pow-red user1@sun12-182mech
182mech pow-blue user1@sun4-182mech
182mech recover user1@sun18-182mech
182mech medic user1@sun1-182mech
2-116armor kill user1@sun3-2-116armor
2-116armor pow-red user1@sun12-2-116armor
2-116armor pow-blue user1@sun4-2-116armor
2-116armor recover user1@sun18-2-116armor
2-116armor medic user1@sun1-2-116armor
3-116armor kill user1@sun3-3-116armor
3-116armor pow-red user1@sun12-3-116armor
3-116armor pow-blue user1@sun4-3-116armor
3-116armor recover user1@sun18-3-116armor
3-116armor medic user1@sun1-3-116armor
```

Example 10. GSIMAIL_DEFAULT.DAT for 116th

It is possible to override these default values much as it is possible to override the default values of the unit names. In order to do this, the user who is going to run Agent creates a file named GSIMAIL.DAT in their home directory. This file should be of the same format as the GSIMAIL_DEFAULT.DAT file described above. If you wish for no e-mail at all to be generated, then this GSIMAIL.DAT file should be completely empty. If you wish for only certain types of e-mail to be generated, then only those lines for the

appropriate units should be included in the file. Agent will always first look for a GSIMAIL.DAT file in the home directory (/home/nguard/ngedit) before looking for the GSIMAIL_DEFAULT.DAT file.

It should be understood that there will be a GSIMAIL_DEFAULT.DAT (or GSIMAIL.DAT) file on every HP in the wide area net. However, it is the file that is located on the machine where Agent is run is the one that controls the mail destination.

CHAPTER VI
XASSIGN.DAT

Below is a sample XASSIGN.DAT file. It is similar to the XASSIGN.DAT file used with Janus/A with the exception of the "x" option that can follow the A, B, and C options (as illustrated with workstations 3 and 5). Any workstation with this option becomes a technical controller workstation and can be used to redeploy forces after the initial planning period.

Care should be taken that "mo" (mouse) is specified for tablet 1 and that there is no specification for tablet 2, and that the rtx_path be either P1 (for Suns, in which case option C should be specified) or P2 (for Hewlett-Packards, in which case option B should be specified). The use of option A, which specifies that the Janus display appears on the workstation as an icon rather than an open window, is up to the user.

Generally the DISPLAY NODE and the RTX XQT NODE are the same machine. However, it is possible to run RTX on one machine and display it on another. This is useful if you do not have rtx installed on the display machine such as is the case with the SGIs. In this case you could run rtx on any other machine that has rtx and display it on the SGI. It does not matter what kind of machine runs RTX as long as RTX is present. The following line in the XASSIGN.DAT file would run RTX on the HP and display it on the SGI at the 116th:

```
21 sgi-116bde:0.0 h-116bde        mo      -        P2     A B
```

If you wanted to run RTX on an unused Sun in order to reduce the process load on the HP, you would use a line like the following:

```
22 sgi-116bde:0.0 sun19-116bde    mo      -        P1     A B
```

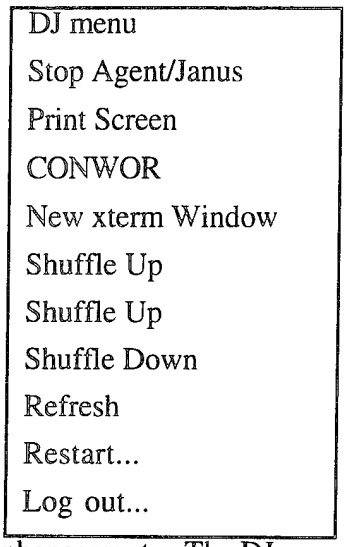
IMPORTANT NOTE: The machine that is the RTX XQT NODE determines what settings are used for RTX_PATH and OPTIONS. For Suns, you must use RTX_PATH = P1 and you must use the A under Options. For HPs, you must use RTX_PATH = P2 and you must use the B under OPTIONS.

```
C
C WARNING: Dont use TABS in this data file !!!!!!!!!!!!!!!!!
C
C WS # Display   RTX XQT Node  Tablet 1   Tablet 2   rtx_path   Options
C ---- --------  ------------  --------   --------   --------   ---------
   1 sun1-116bde:0.0  sun1-116bde     mo        -          P1       A C
   2 sun2-116bde:0.0  sun2-116bde     mo        -          P1       A C
   3 sun3-116bde:0.0  sun3-116bde     mo        -          P1       A C x
   4 sun4-116bde:0.0  sun4-116bde     mo        -          P1       A C
   5 sun5-116bde:0.0  sun5-116bde     mo        -          P1       A C  x
   6 sun6-116bde:0.0  sun6-116bde     mo        -          P1       A C
   7 sun7-116bde:0.0  sun7-116bde     mo        -          P1       A C
   8 sun8-116bde:0.0  sun8-116bde     mo        -          P1       A C
   9 sun9-116bde:0.0  sun9-116bde     mo        -          P1       A C
  10 sun10-116bde:0.0 sun10-116bde    mo        -          P1       A C
  11 sun11-116bde:0.0 sun11-116bde    mo        -          P1       A C
  12 sun12-116bde:0.0 sun12-116bde    mo        -          P1       A C
  13 sun13-116bde:0.0 sun13-116bde    mo        -          P1       A C
  14 sun14-116bde:0.0 sun14-116bde    mo        -          P1       A C
  15 sun15-116bde:0.0 sun15-116bde    mo        -          P1       A C
  16 sun16-116bde:0.0 sun16-116bde    mo        -          P1       A C
  17 sun17-116bde:0.0 sun17-116bde    mo        -          P1       A C
  18 sun18-116bde:0.0 sun18-116bde    mo        -          P1       A C
  19 sun19-116bde:0.0 sun19-116bde    mo        -          P1       A C
  20  h-116bde:0.0        h-116bde       mo        -          P2       A B
  21  h-116bde:0.0        h-116bde       mo        -          P2       A  B
RTX Possible Paths
  P1 = /home/nguard/bin/hp/dj.3
  P2 = /home/nguard/bin/solaris/dj.3

 RTX Option Table
   A = -iconic
   B = -rsh rsh
   C = -rsh remsh
   D = -cache_view_1
   E = -nocache

C  Dual data-tablets may be invoked in the following way:

C  On snv:
C  cd /home/hpf3/peterson/jrconfig/sun/rtx
C  do appropriate setup:

C  rtx -iconic -tablet2 tek4957 /dev/ttya font.0     # 1 tek tablet
C                                        # and 1 mouse
C  (or)
C  rtx -iconic -tablet2 summa2  /dev/ttya font.0     # 1 summa bitpad 2
C                                        # and 1 mouse
C  (or)
C  rtx -iconic  -tablet1 tek4957 /dev/ttya\          #two data tablets
C            -tablet2 summa2  /dev/ttyb font.0     #one is tek
C                                           # one is summa 2
C  (or)
```

```
C  rtx -iconic -tablet1 summa2 /dev/ttya font.0     # 1 summa bitpad and
C                                                   NO mouse
C
C  On gwp:
C  cd/home/hpf3/peterson/jrconfig/hpx/rtx
C  do appropriate setup:

C  using two data tablets on hp:
C  rtx -iconic -nocache -tablet1 summa2 /dev/tty00\
C                       -tablet2 summa2 /dev/tty01 font.0

C  On jan1 (DEC):
C  cd/home/hpf3/peterson/jrconfig/dec/rtx
C  do appropriate setup:

C  rtx -iconic -tablet1 summa2 /dev/tty01\
C            -tablet2 summa2 /dev/ttyd0 font.0

C  On jan2 (SGI):
C  cd/home/hpf3/peterson/jrconfig/sgi/rtx
C  do appropriate setup:

C  rtx -iconic -tablet1 summa2 /dev/ttyd1\
C            -tablet2 summa2 /dev/ttyd2 font.0

C  Note:
C  /dev/tty01 and /dev/ttyd0 are the two ports on jan1 (DEC Station)
C  /dev/ttyd1 and /dev/ttyd2 are the two ports on jan2 (SGI)
C  /dev/tty00 and /dev/tty01 are the two ports on gwp (HP)
C  /dev/ttya and /dev/ttyb are the two ports on snv (Sun)
```

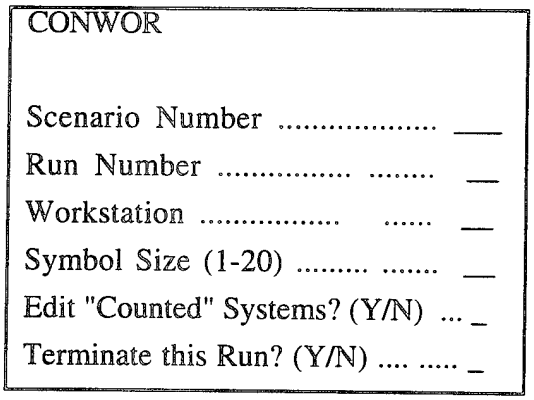
CHAPTER VII
PULL-DOWN MENUS UNDER NGEDIT

Ngedit login has a pull-down menu capability that can be retrieved by pressing the right most button on the HP mouse. The pull-down menu is titled "National Guard GSI Menu" and consists of the following options:



The following options are DJ enhancements. The DJ menu option retrieves the Distributed Janus menu options as discussed in Distributed Janus User's Manual. The Stop Agent/Janus option halts DJ execution once the Janus clock starts running. The Print Screen option once selected it generates screen dumps as described in Distributed Janus Operator's Manual. The CONWOR option retrieves the appropiate data to run CONWOR through the following requests:

Enter the Scenario Number for this run (1-999):[ ]



The Shuffle Up, Shuffle Down, Refresh, Restart and Log out are HP VUE menu options which assist in user's window administration.

CHAPTER VIII
HOW TO START DJ AND HOW TO SHUT DOWN DJ

DJ is run through the DJ menu system. The user can start the DJ menu system by depressing the right mouse button over the screen background and selecting GSI Menus from the pop-up menu that appears. Once in the menu system the user should select "Scenario Operations", then select "Load Scenario" in order to load a scenario. Then the user should return the main menu and select "Janus Operations", then "Run Local Janus". Janus will eventually start normally if all the workstations are appropriately logged in as user1. Running Janus in distributed mode does not require that you load up a scenario, but it does require that you edit the GSINGX.DAT file appropriately. Then the user selects "Run Distributed Janus" from the "Janus Operations" menu.

In all cases the appropriate way to shut down DJ is to get the clock ticking by pressing start on all the workstations if necessary and only when the clock is running, move the mouse to the screen background on the HP where Agent is being run, and select "Stop Agent/Janus" from the pop-up menu. **It is important to remember that the clock must be ticking in order to stop DJ.** If the clock cannot be started for any reason, then the person starting the DJ system at the HP should type a cntl-c in the window where Agent is running. It may take up to a minute, but several processes will be started; that attempt to neatly clean up the aborted DJ run. When the menu system reappears, the Agent controller can try to restart DJ (after correcting the problem). If after typing cntl-c in the Agent window and the DJ menu has reappeared, if any of the Janus workstation windows still appear, you should type the following command in an hpterm window on the HP:

janus_kill_jobs janus

This command should close all the Janus workstation windows. You may then try to restart Janus as usual. NEVER try to restart Janus if old workstation windows are still open.

CHAPTER IX
WHAT TO DO IF A WORKSTATION IS UNAVAILABLE

Run the scenario in single client mode and specify a different workstation in the workstation assignment screen. Be sure to remember to save the scenario.

CHAPTER X
DOING SCREEN DUMPS

Printing screens of an HP or a Sun is supported by all the DJ systems (HPs, Suns, SGIs). There exists a print option on the system menus which, when executed, prints a screen dump on the local printer.

The print screen option on a Sun machine is executed by selecting the "WINDOW OPERATIONS" from the main menu and then by choosing the "PRINT SCREEN" option. Once the print option is selected, the cursor symbol that is usually an arrow becomes a cross. At this point you need to move the cursor into the window that you want to print, or place it in the background if the whole screen is to be printed. To complete the print screen action, once the cursor is at the correct location on the screen, push the left most button and release it. You should hear two distinct beeps and the screen dump output will be sent to your local printer.

The print screen option on an HP machine is executed by scrolling down and selecting the "PRINT SCREEN" option from the main menu. The main menu appears on the screen by pressing the left-most mouse button. Once the print option is selected, the cursor symbol that is usually an arrow becomes a cross. At this point you move the cursor into the window that you want to print, or place it in the background if the whole screen is to be printed. To complete the print screen action once the cursor is at the correct location on the screen, push the left most button and release it. You should hear two distinct beeps and the screen dump output will be sent to your local printer.

The print screen on an SGI machine is done by executing the following command from an HP machine:

xwd -display <SGI hostname>:0.0 -root |xpr -device ljet -cutoff 42|\lp -oraw

The <SGI hostname> is the machine name of the SGI that the screen dump is created from. By executing this command you will print the whole screen of the SGI machine. Once you press enter to execute the above command you should hear two distinct beeps and the screen dump output will be sent to your local printer.

Part IV

DISTRIBUTED JANUS USER'S MANUAL

CONTENTS

OPERATION OF DISTRIBUTED JANUS MENUS

1. INTRODUCTION

The Distributed Janus menu system is a menu-driven user interface to facilitate execution of Janus on a wide area network and a suite of editor programs required to create, edit and analyze distributed data sets. The menus support a Janus data set configuration control and archiving strategy. They also support design, distribution and maintenance of the large sets of scenario data files that will constitute a single distributed scenario.

2. STARTING THE MENUS

Select DJ Menu from the Distributed Janus menu display by depressing the right mouse button and moving the cursor over the DJ Menu option. The mouse cursor must be positioned on the backdrop of the display before depressing the right mouse button; i.e., not overlapping one of the HP text windows.

3. INITIAL MENU

Description

```
 -----------------
| DJ Menu Options |
 -----------------

Scenario Designer ............................. SS
Create Scenario ............................... CC
Modify Scenario ............................... MM
Janus Operations .............................. JJ
Post Run Operations ........................... PP



Exit .......................................... XX
```

4. SUB-MENUS

4.1. Scenario Operations

A scenario consists of a group of files referred to as a data set. The contents of the data set will depend on the operation performed; i.e., if a scenario is created by initializing a scenario, executing the force editors, or merging two scenarios, a minimum data set will be created consisting of four data files: DPLOYxxx.DAT; FORCExxx.DAT; JSCRNxxx.DAT and SYSTEMxxx.DAT, where xxx represents the scenario number. Distributed Janus refers to this as the initial data set. Executing Janus will modify some of initial data set files and create new ones referred to as runs. The files created during a run will be used by Janus Analyst Workstation (JAAWS) and the After Action Review (AAR) process.

A scenario is identified by a three digit number, the owner of the scenario and whether it is a distributed exercise (ngx) or a local exercise. A run is identified by a two digit number. Runs are usually consecutively numbered from 01 to the last run number included in the scenario. A run labeled 'initial' indicates it contains the four basic Janus file (DPLOYxxx.DAT, FORCExxx.DAT, JSCRNxxx.DAT and SYSTEMxxx.DAT) and the CAC files. For a scenario labeled initial to exist, the user must have saved a scenario as initial after a scenario has been created.

Before any work is performed on an existing scenario, the scenario must first be loaded into the environment using the load scenario menu option. After a scenario has been created or modified, it must be saved. This can be done using the save scenario menu option or upon exiting the editor if 'y' is entered when the user is prompted to update the scenario.

Description

```
 --------------------
| Scenario Operations |
 --------------------

Load Scenario ..................................... LL
Save Scenario ..................................... SS
List Scenario ..................................... LS
Copy Scenario ..................................... CS
Document Editor ................................... DE
Print Document .................................... PP
Copy CACFILES ..................................... CC
Export - Import Scenarios ......................... EE



Return to previous menu ........................... XX
```

Load Scenario

Description

A scenario has to be loaded before attempting to modify, execute or conduct post run analysis. Loading a scenario copies it from the archive to the Janus directory (tes). A scenario can be loaded either before or when an editor is invoked. To load a scenario before the editor is invoked, use the load scenario menu option. If a scenario has not been loaded, and an editor is invoked, the user will be prompted for a scenario.

Three types of scenarios may be loaded using the load scenario option: an initial run, a branch point or a completed run. Runs are usually numbered from 01 (if 01 has been created) to the last run stored in the archive. Branch points are identified by a three digit number and are associated with a run, i.e., the same branch point number can be used for separate and uniquely identifiable runs.

Selection

To load a scenario, select the load scenario option LL from the Scenario Operations menu. Enter the number in the first column to select the desired scenario. A list of runs will be displayed. Enter the number in the first column to select the desired run.

Save Scenario

Description

Scenarios and runs can be saved using this menu option. Although not essential, the editors can save the scenario to the archive when they are exited providing a save was requested. If for some reason the scenario was not saved before the DJ menus are exited or before loading a new scenario, then the data set will be lost. However, the menus do prompt the user to save his work before it is lost.

Runs can be saved as new scenarios or added to existing scenarios.

Selection

To save a scenario data set, select the save scenario option SS from the Scenario Operations menu. If the scenario being saved already exists, the user has the option to overwrite it or select an alternative number for the scenario by answering 'y' to overwrite or 'n' to select an alternative scenario. Enter the number in the first column that refers to the desired scenario, or select the 'save as new scenario' option to create a new scenario. If an existing scenario is selected, then a list of current run numbers for that scenario will be displayed. An existing run may be overwritten or a new run created by entering a two digit run number or an upper or lower case 'i' for initial. If the 'save as new scenario' option is selected from the menu, then a three digit scenario number must be entered when prompted for a new scenario number. Valid numbers for the scenario are 001 to 998. A list of run numbers will be displayed for the scenario. Enter a two digit number representing the run number; i.e., 01 for run 01, 02 for run 02 etc, or an upper or lower case 'i' for initial. As with runs, if the scenario is saved to initial and initial already exists, then the old initial data set will be overwritten.

A scenario saved as initial will save the four Janus files: DPLOYxxx.DAT; FORCExxx.DAT; JSCRNxxx.DAT and SYSTEMxxx.DAT and the CAC files. Scenario saved as any run, such as run01 for example, will save all of these files plus all the files required to run JAAWS. Branchpoints are saved to separate directories. It should be noted that in NO instance are checkpoint files saved to archive.

The scenario document will be checked back in to the archive during the save operation. Before this can be done, the user must enter a comment documenting his actions when prompted for a reason for saving the scenario, followed by a Ctrl-d to signal the end of the text entry. The user will then be prompted for his name, which will be added to the history document along with the comment.

List Scenario

Description

Lists the scenario data sets stored in the archive.

Selection

Select the list scenario option LS from the Scenario Operations menu.

Copy Scenario

Description

Allows users to copy scenarios. The user can either overwrite an old run or create a new one. The user can copy an initial run, branchpoint, all subdirectories of a run or copy all runs belonging to a scenario. An example of the options available is shown below:

1) a - copy all runs
2) i - initial
3) run 01
4) run 01 BrPt 258
5) run 01 BrPt 724
6) run 02

Items 3) and 6) copy the completed run and all branch point runs included in the scenario; i.e., selecting item 3 will copy the completed run and branchpoints 258 and 724 to the new scenario.

Selection

Select the copy scenario option CS from the Scenario Operations menu.

Enter the number in the first column that refers to the scenario to be copied from. A list of copy options will be displayed. Enter the number in the first column that refers to the required option. The options are to copy an initial run, a branch point, all subdirectories under a run or to copy all runs.

Enter the number in the first column that refers to the scenario to which the run(s) will be copied to or select 'Save as New Scenario' to create a new scenario. If the Save as New Scenario option is chosen, then a three digit scenario number, whether the scenario is to be saved as a local or ngx exercise and a two digit run number or 'initial,' must be entered. If an existing scenario is selected a list of current run numbers for the scenario will be displayed. Enter the number in the first column that refers to the required run. If the 'Save as New Run' option is selected, then a run number or 'initial' must be entered. If

the option to copy all runs was selected, then the user will not be prompted for a run number.

Document Editor

Description

The Distributed Janus menus provide the user with the ability to include or add to existing documentation to aid the development of scenarios. The documentation facility provides the user with a free-text field allowing the user to describe work performed or modifications made to the scenario. This builds up a history for the scenario as it is developed. The level of detail provided is at the discretion of the user. After scenario execution is completed, the user is encouraged to enter an exercise summary.

Whenever a scenario is saved, the user is prompted to enter a reason for performing the save and prompted to enter their name. This document can then be reviewed on the screen by invoking the document editor or printed using the print document feature. There are also sections to enter OP-ORD and OP-PLAN references. These fields can be modified by invoking the document editor. Below is an example of such a document.

Scenario 600 User Document

Document created on 5 Aug 94

EXERCISE OBJECTIVE Train BN staff in battle syncronization skills during defense in sector.

BATTALION NAME 7th Michigan

OPERATIONAL PLAN Keep confederate army away from Washington and Baltimore.

OPERATIONAL ORDERS Stop advance east of Little Run.

HISTORY

Date: Fri Aug 21 1994

reason:

Unit postions initialized.

Modified By: Jon Elliot

Date: Mon Aug 31 1994

reason:

Advance routes to stone fence planned.

Modified By: Fred Willis

Selection

Select the document scenario option DE from the Scenario Operations menu. An edit window will appear containing the scenario document. To exit the document editor select the file option from the menu bar using the mouse; the left mouse button operates mouse in the editor. Select 'Yes' to save changes. Changes made to the document will be saved when the scenario is saved.

To edit a scenario document, a scenario must first be loaded. If a scenario has not been loaded, then the user is asked if this a new scenario. The user's response can be yes or no. If the user responds 'y' then he is prompted to enter a new scenario number before the document editor is invoked. If a scenario has not been loaded and the user responds 'n' then the user is advised to load a scenario before invoking the document editor.

Print Document

Description

This allows scenario documents to be printed.

Selection

Select Print Document option PP from the Scenario Operations menu. Enter the number in the first column to select a scenario, followed by a two digit run number to print a scenario document.

Copy CACFILES

Description

Copy CACFILES allows CAC files to be shared among scenarios by copying them from one scenario to another.

Selection

Select the copy CACFILES option CC from the Scenario Operations menu. Enter the number in the first column referring to the scenario the CAC files are to be copied from. A list of run numbers will be displayed for the scenario. Enter the run number where the

CAC files reside. A similar operation is performed to enter the scenario to copy the CAC files to.

Export - Import Scenario

Description

```
 --------------------------
| Export - Import Scenario |
 --------------------------

Copy Scenario to Tape ..... TT
Copy Scenario from Tape ..... FT


Return to previous menu ..... XX
```

Copy Scenario to Tape

Description

The Copy Scenario to Tape option copies a list of scenarios to tape.

Selection

Select the Copy Scenario to Tape option TT from the Export - Import Scenario menu. A list of scenarios stored in the archive directory is displayed. The number in the first column referring to the desired scenario must be entered. Multiple scenario numbers may entered by separating each item by a space. This will save the list of scenarios entered on the command line to the tape.

Copy Scenario from Tape

Description

This option recovers scenarios archived to tape using the Copy Scenario to Tape option.

Selection

Select the Copy Scenario from Tape option FT from the Export - Import Scenario menu. The scenarios stored on the tape are then automatically restored to their correct location.

4.2 Create Scenario

Description

```
-----------------
| Create Scenario |
-----------------

Change Database ................................ CC
Initialize (INITSCEN) ......................... II
Force Definition (FORCE) ...................... FF
Merge Scenarios (MERGE) ....................... MM
Print report .................................. RR


Return to previous menu ....................... XX
```

Change Database

Description

This option allows you to select an alternative database. Currently there is a choice of three databases: day, dusk or night.

Selection

Select the Change Database option CC from the Create Scenario menu. Day, dusk or night can be selected, making it the current setting. Any future operations using the database will use the new value. Select the item number in the first column referencing the desired setting.

Initialize Scenario (INITSCEN.EXE)

Description

Use this option to initialize unit positions, artillery firing queues, movement routes and other features for a scenario. Before Initialize Scenario creates a new scenario, the previous scenario has to be saved if it has been modified since the last save. The menus will inform the user that he has not saved his work and will prompt him to do so before continuing.

Selection

Select the Initialize Option II from the Create Scenario menu to invoke this utility.

Reference

See Chapter 2 of the Janus/A User's Manual for more information on Initialize Scenario.

Force Definition (FORCE.EXE)

Description

Use this option to define the forces for a new scenario.

Selection

Select Force Definition option FF from the Create Scenario menu to invoke the editor. Before the Force Editor creates a new scenario, the previous scenario has to be saved if it has been modified since the last save. The menus will inform the user that he has not saved his work and will prompt him to do so before continuing.

Reference

See Chapter 3 of the Janus/A User's Manual for more information on the Force Definition editor.

Merge Scenarios (MERGE.EXE)

Description

Use Merge to create a scenario using the Blue forces from one scenario and Red forces from another. This allows the planning of Blue and Red scenarios to take place separately. Before Merge creates a new scenario, the previous scenario has to be saved if it has been modified since the last save. The menus will inform the user that he has not saved his work and will prompt him to do so before continuing.

Selection

Select Merge Scenarios option MM from the Create Scenario menu to invoke this utility. Select a scenario and run number from the list for blue and red forces. These will then be merged and stored in the archive directory under the run selected for the merged scenario.

Reference

See Chapter 5 of the Janus/A User's Manual for more information on merging scenarios.

Print Report

Description

```
 --------------
| Print Report |
 -------------
Scenario Force Report to Screen ..... SS
Scenario Force Report to Printer ..... PP




Return to previous menu ..... XX
```

Print Report will print the reports produced by the Force Definition Editor. These reports are stored in /home/nguard/ngedit. Reports have a .LIS file extension. Reports may be displayed on the screen or printed on paper.

Selection

Select SS to display a report to the screen or PP to send a report to the printer. Select the item number in the first column to choose a report. A report must be generated before they can be printed.

Reference

See Chapter 3 of the Janus/A User's Manual for details on generating a Force Definition (FORCE) report.

4.3 Modify Scenario

Description

```
 -----------------
| Modify Scenario |
 -----------------
Initialize Scenario (INITSCEN) ..... II
Force Definition (FORCE) ..... FF
Scenario Performance Data Editor (PED) ..... DD
Print report ..... RR


Return to previous menu ..... XX
```

Initialize Scenario (INITSCEN.EXE)

Description

Use this option to reinitialize unit positions, artillery firing queues, movement routes and other features for a scenario. Before Initialize Scenario creates a new scenario, the previous scenario has to be saved if it has been modified since the last save. The menus will inform the user that he has not saved his work and will prompt him to do so before continuing.

Selection

Select the Initialize option II from the Modify Scenario menu to invoke this utility. If a scenario has already been loaded, then the Initialize is executed. If a scenario has not been loaded, select a scenario and run number from the list.

Reference

See Chapter 2 of the Janus/A User's Manual for more information on Initialize Scenario.

Force Definition (FORCE.EXE)

Description

Use this option to redefine the forces for an existing scenario. To redefine the forces for an existing scenario a scenario must have been loaded into the Janus directory. If a scenario has not been loaded then the user will be prompted to load a scenario.

Selection

Select the Force Definition option FF from the Modify Scenario menu to invoke the editor. If a scenario has already been loaded then the editor is invoked. If a scenario has not been loaded, select a scenario and run number from the list.

Reference

See Chapter 3 of the Janus/A User's Manual for more information on Force Definition editor.

Scenario Performance Data Editor (PED.EXE)

Description

The Performance Data Editor is used to install and maintain system performance data pertaining to the capabilities of systems represented as Janus icons. To manipulate the

data, a scenario must have been loaded into the Janus directory. If a scenario has not been loaded, then the user is prompted to load a scenario.

Selection

Select the Scenario Performance Data Editor option DD from Modify Scenario menu to invoke the editor. If a scenario has already been loaded, then the editor is invoked. If a scenario has not been loaded then one is loaded, select a scenario and run number from the list.

Reference

PED.EXE is not documented in the Janus/A documentation.

Print Report

Description

```
              --------------
             | Print Report |
              --------------

Scenario Force Definition to Screen ..... FS
Scenario Force Definition to Printer ..... FP
Scenario Performance Data to Screen ..... PS
Scenario Performance Data to Printer ..... PP


Return to previous menu ..................... XX
```

Print Report will print the reports produced by the Force Definition and Performance Data Editors. These reports are kept in /home/nguard/ngedit. Reports have a .LIS file extension. Reports may be displayed on the screen or printed on paper.

Selection

Select FS to display a Force Definition report on the screen; FP to send a Force Definition report to the printer; PS to display a Performance Data report on the screen or PP to send a Performance Data report to the printer. Then select the item number in the first column to choose a report. A report must be generated before they can be printed.

Reference

See Chapter 3 of the Janus/A User's Manual for details on generating a Force Definition (FORCE) report.

4.4 Janus Operations

Description

```
 ------------------
| Janus Operations |
 ------------------

Run Local Janus ............................... JJ
Distributed Janus ............................. DJ
Verification, Tabular (VFYSCEN) ............... VV
Verification, Graphic (GRAFVFY) ............... GG
Print report .................................. RR


Return to previous menu ....................... XX
```

Run Janus

Description

Use this option to execute Janus on one Hewlett Packard. A scenario must have been loaded into the Janus directory for Janus to be able to execute a scenario. If a scenario has not been loaded, then the user will be prompted to load a scenario.

Selection

Select the Run Local Janus option JJ from the Janus Operations menu to invoke Janus. If a scenario has already been loaded, then Janus is executed. If a scenario has not been loaded, select a scenario and run number from the list.

Distributed Janus

Description

```
 -------------------
| Distributed Janus |
 -------------------

Edit GSINGX File .............................. EG
Edit EDNGX File ............................... EE
Create Distributed Janus Scenario.............. CC
Run Distributed Janus ......................... JJ


Return to previous menu ....................... XX
```

Selection

Select DJ from the Janus Operations menu to display Distributed Janus menu.

Edit GSINGX file

Description

The GSINGX.DAT file contains information that is pertinent to the execution of Janus in distributed mode. This file resides in /home/nguard/ngedit and must exist for Janus to run in distributed mode. It contains information about players to be included in the exercise, scenario number, run number to be executed and a save run option which saves the scenario to a specified run number. An example of this file is shown below.

```
145fs          h-145        ngedit
2-116armor     h-2-116      ngedit
3-116armor     h-3-116      ngedit
129eng         h-129        ngedit
148fa          h-148        ngedit
116bde         h-116        ngedit
scenario       500
run            initial
saverun        no
```

Selection

Select Edit GSINGX option EG from the Distributed Janus menu.

Edit EDNGX File

Description

The EDNGX file contains information that allows the user to create a subset of a scenario for each battalion when preparing a distributed scenario.

This is an example of the EDNGX file:

```
1    15.000    132.000      0.500    0.000
2    15.000     88.000      0.500    0.000
116bde          1   1   16.500   131.000   1.000   0.00
116bde          1  11   16.500   130.000   1.000   0.00
116bde          1  21   16.500   129.000   1.000   0.00
116bde          2   6   16.500    89.000   1.000   0.00
116bde          2  11   16.500    90.000   1.000   0.00
116bde          2  20   16.500    91.000   1.000   0.00
148fs           1  31   16.500   128.000   1.000   0.00
```

148fs	2	14	16.500	92.000	1.000	0.00
148fs	2	15	16.500	93.000	1.000	0.00
148fs	1	50	16.500	127.000	1.000	0.00

For instructions on completing this table, see Part V of this document.

Selection

Select Edit EDNGX option EE from the Distributed Janus Menu.

Create Distributed Janus Scenario

Description

The Edngx editor creates a set of scenarios for a Distributed Janus run from a master scenario. After editing the EDNGX file, a scenario for each units listed in the EDNGX file is saved to the archive. All scenarios are assigned a game extension of 'ngx'.

Selection

To execute the Edngx editor, run the Create Distributed Janus Scenario option CC from the Distributed Janus menu. If a scenario has already been loaded, then the editor is executed. If a scenario has not been loaded, then the user will be prompted to load a scenario first.

Run Distributed Janus

Description

Use this option to invoke Janus in distributed mode. The Agent program reads the GSINGX.DAT file to determine which HPs will be included in the distributed exercise. The GSINGX.DAT file is a list of machine assignments and Agent starts a Janus process on each of the machines in the list.

Selection

Select Run Distributed Janus JJ from the Distributed Janus menu to execute Distributed Janus.

Exiting Janus

To stop Janus, the Janus game must be executing. Janus is exited by selecting the Distributed Janus menu display by depressing the right mouse button and moving the cursor over the Stop Agent option. The mouse cursor must be positioned on the backdrop of the display before depressing the right mouse button; i.e., not overlapping one of the HP

text windows. Workstations must not be in the CAC process when halting Janus. All workstations must be in the default run mode prior to exiting Janus.

Verification, Tabular (VFYSCEN)

Description

Tabular Verification reads the database parameters for the systems in the scenario and produces a report. The report can be displayed on the screen or printed on paper. It looks for errors in the database, chiefly missing data.

Selection

Select the Tabular Verification option VV from the Janus Operations menu to invoke the Tabular Verification utility. If a scenario has already been loaded, then the Tabular Verifier is invoked. If a scenario has not been loaded, select a scenario and run number from the list.

Reference

See Chapter 4 of the Janus/A User's Manual for further information on verification.

Verification, Graphic (GRAFVFY)

Description

Graphical Verification reads the database parameters for the systems in the scenario and produces a report. The report is displayed on two workstations. It is primarily used to look at weapon-on-weapon characteristics, sensor, and probability of hit/kill data.

Selection

Select the Graphical Verification option GG from the Janus Operations menu to execute the Graphical Verification utility. If a scenario has already been loaded, then the Graphical Verifier is invoked. If a scenario has not been loaded, select a scenario and run number from the list.

Reference

See Chapter 4 of the Janus/A User's Manual for further information on verification.

Print Report

Description

```
 --------------
| Print Report |
 --------------

Scenario Verification Report to Screen ........ SS
Scenario Verification Report to Printer ....... PP


Return to previous menu ....................... XX
```

Print Report will print the reports produced by the Scenario Verification Analyzer. These reports are stored in /home/nguard/ngedit. Reports have a .LIS file extension. Reports may be displayed on the screen or printed on paper.

Selection

Select SS to display a report to the screen or PP to send a report to the printer. Select the item number in the first column to choose a report. A report must be generated before they can be printed.

Reference

See Chapter 4 of the Janus/A User's Manual for details on generating a Scenario Verification (VFYSCEN) report.

4.5 Post Run Operations

```
 ---------------------
| Post Run Operations |
 ---------------------

Post Processing (POSTP) ....................... PP
Janus Analyst Workstation (JAAWS) ............. JJ
Print report .................................. RR


Return to previous menu ....................... XX
```

Post Processor (POST.EXE)

Description

As a scenario is executed by Janus, it records all the activities that occurred during a run: artillery impacts, direct fire shots, movement routes, kills and so forth. The Post Processor lets you retrieve reports compiled during a simulation run.

Selection

Select the Post Processing option PP from the Post Run Operations menu to invoke the Post Processor. If a scenario has already been loaded, then the Post Processor is invoked. If a scenario has not been loaded, select a scenario and run number from the list. If there are no PP output files in the scenario that is loaded a message is displayed informing the user that there are no output files. The user is then returned to the menus.

Reference

See Chapter 11 of the Janus/A User's Manual for more information on the Post Processor.

Janus Analyst Workstation (JAAWS.EXE)

Description

The Janus Analyst Workstation (JAAWS) uses the data from a simulation run to display the results on a workstation. You may track movement routes, see direct fire shots, display artillery impacts, etc. You may track the movement of a single vehicle showing where it went, what it saw, who fired on it and on whom it fired. It is a powerful analytical device because the users can see why a plan did or did not run as expected.

Selection

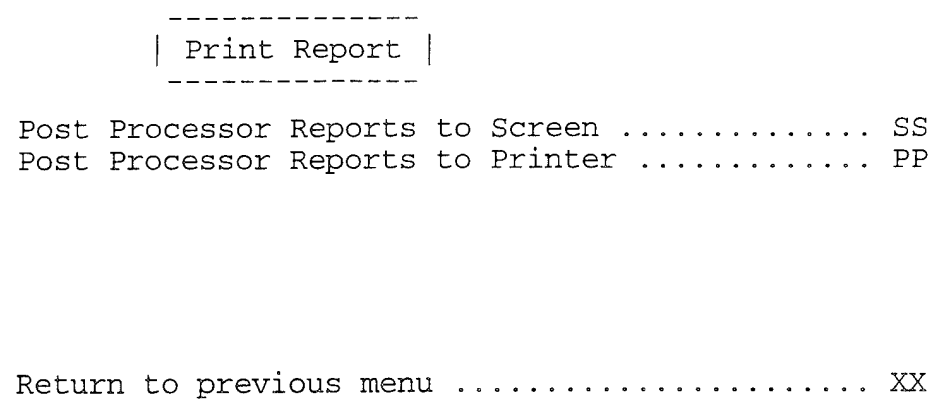
Select the Janus Analyst Workstation option JJ from the Post Run Operations menu to execute JAAWS. If a scenario has already been loaded, then the JAAWS is invoked. If a scenario has not been loaded, select a scenario and run number from the list. If there are no PP output files in the scenario that is loaded, a message is display informing the user that there are no output files. The user is then returned to the menus.

Reference

See Chapter 12 of the Janus/A User's Manual for more information on JAAWS.

Print Report

Description



Print Report will print the reports produced by the Post Processing editor. These reports are stored in /home/nguard/ngedit. Reports have a .LIS file extension. Reports may be displayed on the screen or printed on paper.

Selection

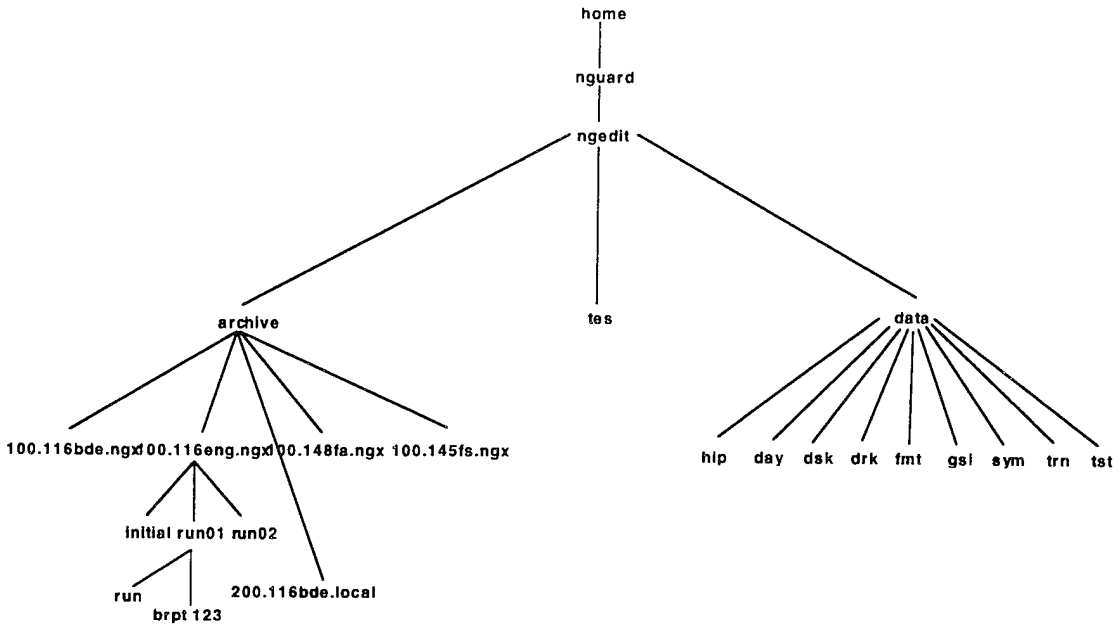
Select SS to display a report on the screen or PP to send a report to the printer. Select the item number in the first column to select a report. A report must be generated before it can be printed.

Reference

See Chapter 11 of the Janus/A Users Manual for details on generating a Post Processor (POSTP) report.

5. DIRECTORY ARCHITECTURE

The DJ menus support Janus data file configuration control and archiving strategy for Janus scenarios and after action reviews. Janus scenarios developed by the user will be stored in the archive directory. Prior to process initiation, Janus data files will be copied to the Janus directory (tes). Upon completion, the user will be given the option to save scenario enhancements/ modifications to the archive. The Janus directory is a temporary workspace and hence work should always be saved to the archive upon completion. After the execution of Distributed Janus, the scenario is saved automatically if saverun was set in the GSINGX.DAT file.



tes directory

This is the Janus directory where Janus stores all of its scenario data files. Each time a new scenario is loaded, it is loaded into this directory. At a minimum, the Janus files must exist in, or be loaded into, this directory using the menus before executing Distributed Janus.

Archive directory

The data collected consist of scenario and run data produced by a Janus simulation. Since a complete scenario data set is required for each Janus host that will be participating in a distributed exercise, a naming scheme is implemented. The unit name of each scenario is contained within the scenario name. The name also distinguishes between distributed and local scenarios. For example

200.116bde.local is a local (non-distributed) scenario owned by 116bde.

200.145fs.ngx is a distributed scenario owned by 145fs.

Each scenario contains one or more subdirectories containing iterations (runs) of the scenario.

Distributed Janus Files

This section lists files used by Distributed Janus:

Day database	/home/nguard/ngedit/data/gsi/DATAPATHS.DAY
Dusk database	/home/nguard/ngedit/data/gsi/DATAPATHS.DSK
Dark database	/home/nguard/ngedit/data/gsi/DATAPATHS.DRK
Development Database	/home/nguard/ngedit/data/gsi/DATAPATHS.TST
Data file used by Agent	/home/nguard/ngedit/GSINGX.DAT
Reports to Janus the scenario loaded	/home/nguard/ngedit/.GSIRUN.IN

Remembers whether Day, Dusk, Dark or tst was used/home/nguard/ngedit/.GSIRUN.DAT

This section lists directories used by Distributed Janus:

ngedit's home directory	/home/nguard/ngedit
Scenario archive for scenarios saved by user	/home/nguard/ngedit/archive
Work directory used by Janus	/home/nguard/ngedit/tes
Miscellaneous files used by Janus	/home/nguard/ngedit/data/gsi
Symbol tables	/home/nguard/ngedit/data/sym
Master terrain, terrain and terrain screen files	/home/nguard/ngedit/data/trn
Master Database files for day configuration	/home/nguard/ngedit/data/day
Master Database files for dusk configuration	/home/nguard/ngedit/data/dsk
Master Database files for drk configuration	/home/nguard/ngedit/data/drk
Development Database	/home/nguard/ngedit/data/tst

6. JANUS SAVE FUNCTIONS

Distributed Janus provides the following means of saving a Janus game.

Plan Save

Plan Save allows the user to save alterations made during the deployment phase of the game. Plan Save can be performed from either the Janus Admin menu during the deployment phase of the game or as the game is started after the start button on every Janus workstation has been pressed. For JAAWS to run properly, a plan save must be performed if objects have been deployed.

Plan Save saves all of the Janus files to the archive. The scenario is saved as the run number being executed by Janus. If the run already exists in the archive, it is overwritten.

New Scenario Save

When New Scenario Save is selected, the user is prompted for a new scenario number. The new scenario will then be saved to the archive. The four Janus system files (JSCRN, DPLOY, FORCE and SYSTEM) and CAC files are saved to the new archive. If

there is already a scenario by the new name, the user is asked if he wishes to overwrite this scenario. If the user decides not to overwrite the archive, then he is prompted again for a new scenario number.

Branch Point File Save

Save Branch Point File saves all the Janus files and the Branch Point file to the current Janus run number. The Branch Point File number can be in the range 1 to 999. The Branch Point File cannot be saved to a new scenario, it can only be saved to the scenario and run number executed by Janus.

Save Scenario to Archive

A Janus simulation run has finished when "Stop Agent" has been selected from the background menu. The user is asked if he wishes to save the Janus run to the archive. If the user decides not to archive the run, then the data will be lost once the menus are existed or when a new scenario is loaded. If the user chooses to save the run, then the system will check if an archive with the same number already exists. If it does, then the user will be asked if he wishes to overwrite the scenario. If the user chooses not to overwrite the run, then he will be prompted for a new scenario number.

ANNEX A
MASTER DATABASE DESIGNER

Description

```
-----------------------------------
| Master Database Designer Functions |
-----------------------------------

Database Operations ..................... DD
Combat Systems Database ................. CC
Terrain (TERRAIN) ....................... TT
Edit Terrain  (TED) ..................... EE
Create Terrain (TRNFLTR) ................ FF
Symbols Editor .......................... SS
List Master, Terrain and Symbol Files ... LL
Print Reports ........................... RR



Return to previous menu ................. XX
```

The Master Database Designer provides facilities to perform operations on the Combat Systems Database, terrain files and symbol files.

Selection

Master Database Designer is a hidden option invoked from the main DJ Menu. This means that it is available but is not displayed on the screen. To perform Master Database Designer operations, type DD from the DJ Menu.

Database Operations

Description

```
 ---------------------
| Database Operations |
 ---------------------

 1) Change to Day database
 2) Change to Dusk database
 3) Change to Night database
 4) Change to tst database
 5) Copy Day to tst
 6) Copy Dusk to tst
 7) Copy Night to tst
 8) Copy tst to Day
 9) Copy tst to Dusk
10) Copy tst to Night
```

This option allows you to select an alternative database. When a database is selected, it is referred to as the current database. There is a choice of four databases: day, dusk, night or tst. Selecting options 1, 2, 3 or 4 makes day, dusk, night or tst the current database, respectively. Copying the day, dusk or night database (menu options 5, 6 and 7) to tst also makes the tst database the current database and copying tst to day, dusk or night (8, 9 and 10) changes the current database back to day, dusk or night.

Selection

Select the Database Operations option DD from the Master Database Designer menu.

Select the item number in the first column to select the desired setting.

Combat System Database (CSDATA.EXE)

Description

The Combat Systems Data Editor is used to enter or edit data on combat systems. It allows access to the database areas concerned with system, weapon and sensor performance.

Selection

Select Combat Systems Database CC from the Master Database Designer menu to invoke the editor.

Reference

See Chapter 2, Section 2 of the Janus/A Database Manager's Manual for more information on using the Combat Systems Database Editor.

Run Terrain (TERRAIN.EXE)

Description

The Run Terrain function extracts a data set from a larger terrain data set that can be used by Edit Terrain.

Selection

Select Run Terrain TT from the Master Database Designer menu to invoke the editor.

Reference

TERRAIN.EXE documentation is available separately from TRAC.

Edit Terrain (TED.EXE)

Description

The Edit Terrain function provides the ability to enhance the terrain features in a data set that is acceptable to Janus.

Selection

Select Edit Terrain DD from the Master Database Designer menu to invoke the editor.

Reference

TED.EXE documentation is available separately from TRAC

Create Terrain (TRNFLTR.EXE)

Description

This editor prepares a terrain screen file from a terrain file. The results of customizing process are used by Janus model to display terrain and determine lines of sight and movement factors.

Selection

Select FF from the Master Database Designer menu to invoke the editor.

Reference

See Chapter 3, Section 1 of the Janus/A Database Manager's Manual for more information on using the Terrain Editor.

Symbols Editor (SYMBOLS.EXE)

Description

The symbol file contains the icons used by Janus for screen displays during simulation runs. Two symbol tables are required to support each scenario. One contains system symbols used to display systems on the screen during a Janus simulation run. The other contains unit and control measure symbols used by command and control (CAC) graphics package. The CAC symbol's file number must numerically follow the system symbol table file for the CAC symbols to be associated with the symbols table, e.g., if the systems symbol file is SYMTAB003.DAT then the CAC symbol file must be SYMTAB004.DAT.

Selection

Select Symbols Editor SS from the Master Database Designer menu to invoke the editor.

Reference

See Chapter 3 of the Janus/A Database Manager's Manual for more information on using the Symbols editor.

List Master, Terrain and Symbol files

Description

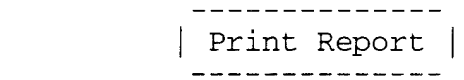
Provides the user the ability to list master terrain, terrain and symbol files.

Selection

Select LL from the Master Database Designer menu to view the sub-menu. Then select LM to list master terrain, LT to list the terrain files stored in the terrain directory (trn) and LS to list the symbol files stored in the symbols directory (sym).

Print Report

Description




```
Combat Systems Database Report to Screen ..... SS
Combat Systems Database Report to Printer ..... PP


Return to previous menu ..................... XX
```

Print Report will print reports produced by the Combat Systems Database Editor. These reports are stored in /home/nguard/ngedit. Reports have a .LIS file extension. Reports may be displayed on the screen or printed on paper.

Selection

Select SS to display a report on the screen or PP to send a report to the printer. Select the item number in the first column to select a report. A report must be generated before they can be printed.

Reference

See Chapter 2, Section 8 of the Janus/A Database Manager's Manual for details on generating a Combat Systems Database (CSDATA) report.

ANNEX B
DISTRIBUTED DESIGNER MODE

Description

Distributed Designer mode provides features that support the development of distributed scenarios.

A unit's name; i.e., 116bde, 148fa, 145fs etc., is displayed in the top section of the menu. The unit name displayed determines whose group of scenarios can be viewed, loaded, modified, copied or saved. If 116bde is listed in the top section of the menu, then by default only scenarios belonging to 116bde can be operated on.

This option allows the user to switch between operating on scenarios for all units and only those scenarios belonging to the unit specified in the top section of the menu. The default setting is for only the those scenarios created by the unit listed in the top section of the menu to be displayed.

Selection

Distributed Designer Mode is a hidden option within the Scenario Operations. This means that it is available but is not displayed on the screen. To select the Distributed Designer Mode, type DD at the Scenario Operations menu. The user can switch between the two modes by selecting 'y' to view all units or 'n' to view scenarios only belonging to the unit specified in the top section of the menus.

ANNEX C
USEFUL JANUS HINTS

Part 1 describes tasks that not covered in the rest of the User's Manual.

Part 2 is a troubleshooting guide.

Part 3 answers some of the commonly asked questions about the DJ menus.

Part 1. How do I ...

1. Edit the Master Database?
   Refer to Annex A of the Distributed Janus Users Manual
2. Create distributed scenarios for an ngx exercise?
   Select Distributed Designer Mode and use the edngx editor to create the scenario's sub-sets for each battalion.
3. Add the Op Ord and Op Plan references in the scenario document?
   Selecting Edit Document from the Scenario Operations menu will allow you to edit the following information:

   Exercise Objectives
   Battalion Name
   Operational Plan Reference
   Operational Orders Reference
4. Rename a scenario?
   Use the copy scenario function in the Scenario Operations menu. This allows the user to copy a scenario to a new number.

Part 2. What do I do when ...

1. Messages continuously scroll off the screen, making them unreadable?

   Press Ctrl s.

   If the message displayed is the following:

   get_msgq: Problem in routine
   QreadSwrite (0 q142): Error problem starting queue (142)
   msgq exists, remove it
   get_msgq: Problem in routine

SreadQwrite (0 q100): Error problem starting queue (100)
msgq exists, remove it

then press Ctrl q followed by Ctrl c.

The following messages will appear on the screen:

Killed
Killed

Done

Hit Return to continue

Hit return to continue and try executing Janus again.

2. The Modems don't answer.

a. Check the auto answer is set on the remote modem and on all the modems at Brigade HQ.

b. Check the svr machine is switched on at the remote site and at Brigade HQ.

c. Check with the remote site that the telephone numbers have not changed.

d. Check the telephone numbers in the site configuration file are correct. The nguard.data file for your specific site can tell you what telephone number was used for your site's configuration. The nguard.data file can be found in /home/admin/sys.nguard/'site name' where 'site name' is your location.

If all of the above are OK, then try manually dialing the remote site by typing the following:

tip hardwire
Note: tip hardwire will not work at Brigade HQ.

and try dialing the remote modem manually using Hayes manual dialing command:

ATDT 'remote telephone number'

To exit tip type: ~ ∘

If you are able to dialup the remote site and the remote site answers, then it is likely that the problem is at Brigade HQ. If you are unsuccessful at obtaining a response from the remote site, then there may be a problem at the remote site.

Part 3. Commonly asked questions

1. What is the difference between running Janus in local and distributed mode of operation?

   a. Running Janus in distributed mode allows the Brigade and up to seven battalions to practice a war game simulation together. Battalion to Battalion war gaming may also be simulated.

   b. Running Janus in Local mode runs one instance of Janus allowing a battalion to reherse by itself, independent of all the other battalions.

2. What is the difference between the Initialize Scenario Utility/Force Editor in the Create Scenario and in the Modify Scenario menu?

   Running initialize scenario in the Modify menu allows the user to re-initialize an existing scenario. Before re-initializing a scenario, one must first be loaded. Alternatively, if the scenario directory is empty, then a scenario is loaded when initialize is selected from the menu.

   Similarly, running the force editor in the Modify Scenario menu allows the user to redefine the forces. A scenario is load when the force editor is selected if one has not already been loaded.

   Running Initialize Scenario on the Force Editor from the Create Scenario menu creates a new scenario.

3. What is Distributed Designer mode?

   Distributed Designer allows the user to perform tasks specific to developing a scenario for a distributed exercise. These utilities are not required when running Janus locally.

Part V

DISTRIBUTED OPERATIONS

CONTENTS

DISTRIBUTED OPERATIONS

The original approach to enhancing the Janus capabilities to support battle staff synchronization training was concentrated on BDE-based operations with at least some BN staffs participating. As a consequence of this emphasis, the development design initially created a distributed Janus that required the BDE and all Bns to participate. This version was to be enhanced so that the BDE could perform CPXs without needing all its Bns to be on line.

The current use plan for the 48 and 116 BDEs is to use distributed Janus at individual BN CPXs and grow into full BDE operation. Interactions by appropriate staff in the **support** Bns can be included in maneuver BN CPX using distributed Janus with the staff members operating **from their home armories** and without requiring a full complement of support staff to participate. This approach creates an opportunity to provide unique interactions between small groups of staff members in the battle preparation phase (before start of combat). Members of the maneuver BN would be able to integrate their actions with staff from the engineers, artillery and support Bns to establish the initial posture prior to a full staff CPX.

This approach to enhancement of distributed Janus continues the work towards the original goal of BDE staffs being able to run CPXs without requiring all Bns to participate.

1. THE CONCEPT PHASE

a. Training Directive [Examples of Directives are exhibited at the end of this section]

The first step in creating training that will be based on using distributed Janus is the writing of a Training Directive. The commander reviews the potential operations that are desired for the unit to be proficient in performing, the units existing experience levels, and the capabilities of distributed Janus to support the training and issues broad guidance for an exercise that includes CPX operations supported by the distributed Janus simulation. This directive will also establish the date for the distributed exercise.

b. Exercise Directive

Elements of the BDE staff and members of the training team will interpret the commander's Training Directive into desired learning outcomes (DLOs) for a CPX that can be achieved using Distributed Janus for support. The authors of the Exercise Directive will need at least a "first use" standalone experience using Janus to establish realistic DLOs. These objectives will include combat support and combat service support operations as well as combat and maneuver operations. An Exercise Directive can then be created that is based on the DLOs. This directive describes the CPX, the type of elements that are to be represented by simulation and the process of transmitting information from the simulations to the TOCs and orders from the TOCs to the simulations. It will also contain the basis for evaluation of the exercise. This directive specifies the terrain to be used, the BDE and BN combat and support systems, non BDE systems involved such as field train logistics, div arty and/or aviation, AND guidance for the OPFOR. This directive will establish the time lines for activities that lead up to the distributed CPX. This directive is implemented via the creation of Directives for the CPX, Simulation and After Action Review.

c. CPX Directive

This directive establishes a formal name for the scenario, provides a description of the combat situation and specifies the type of exercise, e.g., meeting engagement, hasty defense. Combat objectives are specified for each subordinate unit including CS, CSS, rear area security, and the interface for each unit with non-unit resources. It formalizes a time line for all activities in preparation for the CPX.

This directive establishes the objectives for the OPFOR and identifies the members of the OPFOR team. It also establishes the coordination and review points with the Simulation Directive; specifies activities required during the prep, combat, recovery and AAR phases; identifies the TOC staff positions involved and long line communications required; provides for distribution of support materiel for the TOCs such as maps and forms; and provides guidance for development of the exercise OPPLANs, OPFOR PLAN and Administration Plan.

d. Simulation Directive

This directive initiates the Distributed Janus computer simulation activities for the CPX scenario. It assigns the computer designation for the scenario and insures the required data sets (terrain, combat system types and capabilities) are available. It

formalizes a time line for all simulation activities required to support the CPX preparation effort. It identifies the location and communications to the OPFOR workstations. It specifies what data sets and capabilities are required to support the AAR, how data will be communicated between the distributed computer hosts and what recovery features will be used. This directive provides guidance for the development of SIMPLANS for each computer host involved.

e. AAR Directive

This directive interprets the DLOs into specific actions and decisions that will be observed during the CPXs and into computer data that will be required to support the AAR. It will specify who are the observer/controllers, their preparation actions (such as participation in or review of the BDE standalone test), and the communications facilities they will need. These facilities include a telephone net that is active during the distributed CPX and may include use of FAXs to transfer "screen capture" graphics made at each computer host site. Potential areas for AAR emphasis include: losses and kills, positioning elements for best line of sight, maneuver planning, number of WIA's recovered within the Golden Hour, number of damaged vehicles repaired, POL and ammunition status, effectiveness of counter battery fire, simulation controller compliance with exercise concepts, etc.

This directive outlines the distributed AAR process and its use of distributed JAAWS and post processor reports. The AAR team should also review the impact of the 3 action phases and make recommendations for improvement of the distributed CPX process.

2. THE EXERCISE PREPARATION PHASE

This phase starts when staff create:

OPPLANs	standard contents for CPX planning including Annexes for Engineering, fire support and Admin/Log
OPFOR PLAN	guidance to the OPFOR team for CPX support
SIMPLANs	guidance to each BDE and BN simulation team for support of the Distributed exercise and for the BDE standalone test
Administration Plan	Management control of resource usage and integration of time lines into the Distributed CPX time line.

This phase allows small groups of staff members to create the initial disposition of forces of each maneuver BN and integrate them with the engineer, artillery and support

elements, i.e., defensive positions may be created by the engineers with support from the FSBN. FARRPs, ATPs, mine fields and UMCPs would be gamed into position using Distributed Janus. This use would allow a "building block" approach to development of the initial posture and could provide short time "what if" excursions into initial combat for testing these postures. BN staff would log into the BDE Janus from their BN armory and enter the elements that belong to their unit.

The SIMPLAN should also include descriptions of the TOC to Janus interfaces including:

controller roles
OPFOR
workstation assignments
scenario numbering
Email addresses
data set communications to/from BN CPUs
data backup & recovery procedures

This phase concludes with the BDE standalone test which is done to insure that the scenario that has been developed will adequately support the CPX. Observer/controllers from the Bns may observe this test by displaying CONWOR at their home armories on their HP computer. The BDE staff may include this test as an additional training exercise. The details for this test are in the SIMPLAN for the BDE test.

3. THE COMBAT AND MANEUVER PHASE

This phase starts with the BDE simulation personnel running the distributed scenario editor on the data sets used for the BDE standalone test. This produces the appropriate files of Janus icons assigned to each subordinate while keeping the distributed icons consistent at each distributed host. The arrival of the scenario files and the OPPLAN and SIMPLAN at each unit allows each unit to verify their portion of the distributed simulation.

The next step is to "cock" the Distributed Janus systems (probably the night before) to be ready to support the CPX. During the distributed CPX the BN TOC staffs will receive information from the simulation in their armory and directives from the BDE TOC. They will report combat events to the BDE TOC and issue commands to the personnel simulating their subordinates. The distributed simulations may receive indirect fire from the FSBN simulation and reorganization of forces from other units.

There are several special Distributed Janus functions that may be useful to support a specific CPX scenario:

The status of vehicles may be set at any value prior to starting the simulation clock including the percent of POL in vehicles, in external tanks on the vehicles, in bulk tanks both on refueling vehicles and in bladders; and the number of rounds of ammunition available.

The ability to top off or "hot refuel" combat vehicles.

The ability to repair damaged vehicles in the field or to tow them to repair points.

The ability to recover WIAs within the "Golden Hour."

The ability to commit the reserves or to reorganize into new task forces.

The ability to have Email messages about combat losses arrive at a BDE workstation.

The ability to share CAC overlay files.

The ability to capture any Janus situation map and print it out.

The ability to use the White Board to log CPX events, edit this data, include Janus screen captures, distribute the results to all armories and use the large screens in lieu of an overhead projector with display controlled at the BDE. Note that OPPLANs, SIMPLANs and FRAGOs can be sent this way.

The ability to start a subsequent distributed CPX from the point where a previous one ended.

The simulation controllers will manipulate the scenario forces in accordance with the SIMPLAN. The observer/controllers will monitor both the TOC and the simulation workstations and coordinate their observations on the O/C telephone network to support the AAR data gathering effort.

4. THE COMBAT RECOVERY PHASE

The BDE TOC notifies each BN TOC that the combat phase has ended (and the OPFOR). Each BN TOC will continue WIA recovery and vehicle repair, consolidate its forces, IAW the OPPLAN and initiate any reconstitution required. During this time the O/Cs organize their data and prepare to support the AAR (most likely using the White Board). At the end of this phase, the simulation personnel save the results in the local data archive. The SIMPLAN should specify if a distributed branch save should be done to allow restarting the CPX exercise at this point at some future date.

5. THE AAR PHASE

The AAR will be in two parts. The distributed AAR will use the distributed data generated during the CPX and organized during the recovery phase as the central visual aide. The O/C telephone net will be used for voice. The HPUX and HPX screens should be organized so that the CPX and simulation staff can see the White Board. An additional tool can be made available ahead of time by sending the BDE standalone test data to each armory so that JAAWS of this test run can be used during the distributed part of the AAR.

Each armory will also have similar facilities to enhance its individual AAR. This includes local White Board use and JAAWS on their specific combat interactions.

TIME LINE		
June-July	Field Exercises	
September	Clean up	
October	Training Directive	BDE Cmdr
October	Exercise Directive	Training Team
November	CPX Directive	CPX Team
November	Simulation Directive	Simulation Team
November	AAR Directive	O/C Team
December	Admin Plan	BDE Staff
December	BDE OPPLAN	CPX Team
December	BDE SIMPLAN	Simulation Team
January	OPFOR Plan	O/C Team
January	OPPLAN-Eng	CPX Team
January	OPPLAN-CSS	CPX Team
January	SIMPLAN-Eng	Simulation Team
January	SIMPLAN-CSS	Simulation Team
February	Eng Systems Update	FEBN
February	CSS Systems Update	FSBN
February	OPPLAN-Arty & Man	CPX Team
February	SIMPLAN-Arty & Man	Simulation Team
March	Arty & Man Updates	BNs
March	BDE Test	BDE Staff
April	Distributed Files	BDE Simulation Team
April	Standalone Tests	BDE & Bns Simulation Teams
May	Cocked System	BDE & Bns Simulation Teams
May	Distributed CPX	All
May	Recovery/reconstitute	BN Simulation Teams
May	Branch Point Save	BDE & BN Simulation Teams
May	Prepare AAR	O/Cs
May	Distributed AAR	BDE Cmdr & O/Cs

Location
Time/Date Group

Distributed CPX Training Directive n-YY

1. SITUATION:

a. Identify the military operation that is to be the subject of training (e.g. Planned defense)

b. Identify units that will participate in the training (e.g. ALL)

2. MISSION: Training level to be achieved (e.g., aware, understand, practice, proficient)

3. EXECUTION:

a. Concept of Operation:

(1) Sites for TOCs (e.g., in the armories, in 577s outside armory)

(2) TOC staff manning

(3) Simulation staff manning

(4) Observer/Controller manning

(5) Terrain for simulated combat

b. Coordinating Instructions:

(1) Training team, members, suspense date for Exercise Directive

(2) Suspense date for BDE OPPLAN

(3) Date of BDE Standalone test

(4) Date of Distributed CPX

4. ADMINISTRATION AND LOGISTICS:

(1) Training periods available

(2) Manpower limit

(3) Funding limit

5. COMMAND AND SIGNAL:

(1) Simulation: Current SOI in effect

(2) Observer/Controller telephone network

SIGNATURE BLOCK

Location
Time/Date Group

Exercise Directive n-YY

Reference: Distributed Training Directive n-YY
Map Sheet Series nnn, Sheets mmm

1. SITUATION:
   a. Identify the military operation that is to be the subject of training (e.g., Planned defense)
   b. Identify units that will participate in the training (e.g., ALL)

2. MISSION: Training level to be achieved (e.g., aware, understand, practice, proficient)
   Desired learning outcomes and training level
   Design of defensive positions - practice
   Mine field layout - proficient
   Rear area security - understand
   Coordinated fire suport - proficient
   Etc.

3. EXECUTION:
   a. Concept of Operation:
      (1) Guidance for the development of the CPX Directive
      (2) Guidance for the development of the Simulation Directive
      (3) Guidance for the development of the AAR Directive
      (4) FORCES size, type and intent
      (5) OPFOR size, type and intent
   b. Coordinating Instructions:
      (1) CPX team members, suspense date for directive
      (2) Simulation team members, suspense date for directive
      (3) O/C team members, suspense date for directive
      (4) Time line for:
          BDE OPPLAN
          BDE SIMPLANs
          BN OPPLANs & SIMPLANs
          Updates to computer data sets
          BDE test
          Scenario distribution
          Distributed CPX

4. ADMINISTRATION AND LOGISTICS:
   (1) Training periods to be used
   (2) Distributed CPX meal plan

5. COMMAND AND SIGNAL:
   (1) Simulation workstation to TOC communications
   (2) BN TOCs to BDE TOC communications
   (3) OPFOR workstation communications

TRAINING TEAM LEADER SIGNATURE BLOCK

Location
Time/Date Group

CPX Directive n-YY

Reference: Exercise Directive n-YY
Map Sheet Series nnn, Sheets mmm

1. SITUATION:

a. Describe the military operation that is to be the subject of training and assign an Exercise name.

b. Identify staff positions in the units that will participate in the training.

2. MISSION: Training level to be achieved (e.g., aware, understand, practice, proficient) Desired learning outcomes and training levels are assigned to each BN.

3. EXECUTION:

a. Concept of Operation:

(1) OPFOR objectives

(2) BN objectives

(3) Specify activities in preparation, combat and maneuver, recovery and AAR phases

b. Coordinating Instructions:

(1) Assign OPFOR team members and suspense for OPFOR PLAN

(2) Assign personnel for development of:

BDE OPPLAN
BDE OPPLAN-TEST
BN OPPLANs
BDE test

(3) Establish review points with Simulation team, AAR team and OPFOR team.

4. ADMINISTRATION AND LOGISTICS:

(1) Training periods to be used

(2) TOC setup

5. COMMAND AND SIGNAL:

(1) Schedule communications tests

CPX TEAM LEADER SIGNATURE BLOCK

Location
Time/Date Group

Simulation Directive n-YY

Reference: Exercise Directive -YY
Map Sheet Series nnn, Sheets mmm

1. SITUATION:
   a. Describe the military operation that is to be the subject of training and assign Janus scenario number.
   b. Identify workstation positions in the unit that will participate in the training.
2. MISSION:
   a. Make all required computer data sets available (e.g., terrain, systems, forces.)
   b. Provide for archiving of data needed for AAR
3. EXECUTION:
   a. Concept of Operation:
      (1) Create standalone simulation for BDE by ensuring each BN logs into the correct scenario on the BDE Janus computer, updates their icon locations and archive the results.
      (2) Support BDE test and save data for JAAWS
      (3) Create scenario data sets for distributed operation
      (4) Specify computer activities in preparation, combat and maneuver, recovery and AAR phases
      (5) Provide guidance to Bns for creation of their SIMPLAN
      (6) Create procedures for distributed system operation test and "scenario cocking"
      (7) Create recovery from disaster procedures
   b. Coordinating Instructions:
      (1) Coordinate with OPFOR team in OPFOR data set development
      (2) Assign personnel for development of:
          BDE SIMPLAN
          BN SIMPLANs
      (3) Establish review points with CPX team.
4. ADMINISTRATION AND LOGISTICS:
      (1) Training periods to be used
      (2) Workstation setup
5. COMMAND AND SIGNAL:
      (1) Schedule distributed operation tests

SIMULATION TEAM LEADER SIGNATURE BLOCK

Location
Time/Date Group

AAR Directive n-YY

Reference: Exercise Directive n-YY
Map Sheet Series nnn, Sheets mmm

1. SITUATION:

a. Describe the military operation that is to be the subject of training.

2. MISSION: Provide simulation operator control and develop AAR

3. EXECUTION:

a. Concept of Operation:

(1) Interpret desired learning outcomes into specific actions and decisions to be observed

(2) Provide for observation of workstation and TOC actions

(3) Collect data needed for AAR

(4) Enter data into White Board

(5) Support AAR presentation

b. Coordinating Instructions:

(1) Insure desired data is saved by Simulation team

(3) Establish review points with CPX team.

4. ADMINISTRATION AND LOGISTICS:

(1) Training periods to be used

(2) Review complete distributed CPX process and recommend improvements

5. COMMAND AND SIGNAL:

(1) Schedule O/C telephone network operation and tests

O/C TEAM LEADER SIGNATURE BLOCK

DISTRIBUTED SCENARIO EDITOR

A distributed scenario is actually a set of scenarios, each of which resides on a particular host. Each scenario in the distributed scenario set is named with its unit name and a .ngx extension. For example, a distributed scenario set for scenario 500 would look like:

500.116bde.ngx 500.148fa.ngx 500.145fs.ngx 500.2-116armor.ngx etc...

Each of these scenarios contains all the units belonging to the entire brigade. However, for a distributed exercise to work properly, these scenarios must satisfy the following conditions:

- all units that do not belong to task forces assigned to the local host are on the "heap"
- ONLY units assigned to the local host are deployed to "non-heap" locations
- No unit can be simultaneously deployed on two hosts.

Generally, a DJ scenario designer will begin with a scenario that contains ALL of the units for the entire Brigade on the "heap". Then, the designer will create each of the individual scenarios by deploying the units for that host while leaving the remainder on the heap.

This task is tedious and error prone. The distributed scenario editor, which is implemented as executable file edngx.exe and which can be called through the menus, provides an automated way of generating a set of distributed scenarios from a master scenario.

This utility takes as input a description of what units are to be deployed to which hosts by task force, a location on the sceen to start placing each task force, a delta x and delta y for placing the individual units in the task force from the starting position, and also a location for the heap(s) (one blue heap and one read heap). The deploy and force files from the master scenario were used to generate the new files for each host described in the input file.

The input file, named EDNGXxxx.DAT, must be in the tes directory for the editor to function. This file contains the information on how the units are to be distributed among

the distributed scenarios. It can be created with any text editor and must strictly adhere to the following format:

```
          1          10.000   132.000   0.500   0.000
          2          15.000    88.000   0.500   0.000
116bde    1     1    16.500   131.000   1.000   0.000
116bde    1    11    16.500   130.000   1.000   0.000
116bde    1    21    16.500   129.000   1.000  -1.000
116bde    2     6    16.500    89.000   1.000   0.000
116bde    2    11    16.500    90.000   1.000   0.000
116bde    2    20    16.500    91.000   1.000   2.000
148fs     1    31    16.500   128.000   1.000   0.000
148fs     2    14    16.500    92.000   1.000   0.000
148fs     2    15    16.500    93.000   1.000   0.000
148fs     1    50    16.500   127.000   1.000   0.000
```

The data must line up in the exact columns that are shown above. Lines 1 and 2 describe the heap location for units on the red and blue sides, respectively. Lines 3 through N each describe host assignment and location of a task force. The content of each column is given below:

lines 1-2: side, x-heap-start, y-heap-start, delta-x, delta-y

lines 3-N: unit-name, side, task force, x-start, y-start, x-delta, y-delta

The coordinate values to be used are based on the scenario terrain. One can bring up the scenario terrain in DJ and turn on the grid to see what the lower left hand corner and upper right hand corner values are so that one can place the units on the map (be aware that there is a bug in Janus for the grid numbers on the left y axis causing the hundred's digit to be truncated).

Part VI

EXPORTABLE TRAINING DOCUMENT

CONTENTS

CHAPTER I
INTRODUCTION

ASSUMPTIONS

- The activity using this lesson plan has acquired an appropriately configured Janus suite.
- A qualified system manager is available to maintain the hardware and software systems.
- A tactically qualified Blue force interactor/instructor is available to teach this lesson.
- A qualified Red/OPFOR interactor is available to assist in execution of the training.
- Any of the individuals identified in last three above may perform more than one function.

CONCEPT

A qualified interactor will use this lesson plan as is, or with individual modifications, to train unit personnel to perform as interactors during their unit's training at the simulation center. The interactor training will require approximately three days. The unit interactors will be trained to input unit plans and graphics into the computer and then fight those plans along with the unit personnel undergoing training. This technical interactor training must not be confused with the tactical unit training they will be supporting. Data bases, symbol files, terrain files, screen files and base scenarios will be prepared and maintained by the full time simulation center personnel.

SUPPORT ITEMS

The following items must be prepared locally to support this lesson plan:

- A demonstration scenario (night and day versions).
- A "CAC" (command and control) graphics set to support the demonstration.
- An instructional set of scenarios, day and night, to be used with this lesson plan.

- A basic CAC to support the instructional scenarios.
- An operations overlay to be used with the CAC portion of the lesson plan.
- Appropriate database, symbol file, terrain and screen file to support the scenario.

CHAPTER II
SESSION 1: JANUS OVERVIEW

INTRODUCTION

Welcome to _____. I am _____. During the next three days we are going to train you to perform as interactors for the ground and air combat model, Janus. The model is named for the god of portals who guarded the gates of Rome. The god had two faces and was able to see in two directions simultaneously. The Janus model simulates a two-sided (Blue and Red) conflict operating across realistic terrain.

Janus was originally developed as a nuclear effects modeling tool by the Lawrence Livermore National Laboratory. Realistic combat systems were developed as targets, then became the object of the simulated run. TRAC-White Sands took Janus and expanded the system database so that the model became a combat development tool. Janus was developed to combine the best parts of the Livermore model (Janus(L)) and the TRAC model (Janus(T)) for use as a training tool.

JANUS OVERVIEW

Janus is a two-sided, high resolution, interactive simulation using precise color graphics to portray realistic events during two-sided (Blue and Red) combat. The model has sufficient resolution to model individual fighting systems or individual soldiers and can realistically model up to brigade-size forces. The interactive mode of operation allows commanders and staff to exercise the decisionmaking process and enforce Battlefield Operating System (BOS) synchronization. The results of battle engagements are determined by using hit and kill probabilities.

Janus uses digitized terrain data derived from Digital Terrain Elevation Data (DTED) provided by the Defense Mapping Agency (DMA). Terrain features affect line of sight and movement. Terrain is displayed in a format familiar to military users with contour lines, roads, rivers, vegetation and urban areas. The size of the terrain can be adjusted to suit the audience being trained, whether a company, a battalion, a brigade, and so on. The terrain display you will be using is ___ km by ___ km. Two types of symbols may be utilized to

represent systems or units—either military unit symbols (as used in overlays) or silhouettes (which portray actual systems such as tanks, helicopters, soldiers, and so on). Further, command and control (CAC) graphics (such as boundaries, objectives, phase lines) can be drawn as on an operational overlay.

Direct fire engagements, engineer obstacles, artillery fire, aviation, tactical fighters, and forward observers can all be simulated ("modeled"). Janus accurately models Blue and Red weapons systems as a function of each system's capabilities as affected by terrain, weather, and visibility. Maneuver commanders must consider all aspects of employing their forces just as they would in actual combat. For example, if antitank systems are employed without considering line-of-sight (LOS) and defilade status, maximum effectiveness will not be achieved. To be successful, the commander must consider METT-T, each BOS, and fully synchronize his plan. If he neglects key considerations, the simulation will highlight the planning failure during the battle. Conversely, Janus will positively reinforce a fully integrated and synchronized plan. For example, an obstacle covered by fire will be more effective than one not covered.

Janus offers a unique capability for staff C2 training, battle analysis and After Action Reviews (AAR). Battle results can be reviewed and analyzed in a number of ways. The Janus(A) Analyst Workstation (JAAWS) is a post processor which shows activities of both sides over time. JAAWS provides selective retrieval of the following items:

- Graphic replay of movement events.
- Time and location of events, such as direct fire kills.
- Terrain zoom.
- UTM grid display.
- Display of events on a workstation monitor. Graphic display of results.

This graphic display of recorded events and results provides a capability to greatly enhance an overall battle evaluation. For example, the analysis will show which systems or organizations made contributions to battle outcomes, the results of artillery and engineer support, and comparisons of Blue/Red results throughout the battle. Post processing provides game results (such as Killer/Victim scoreboards) in hard copy format for more in-depth analysis.

Another feature of Janus is the capability to re-fight the entire battle using different tactics, techniques or procedures. As an example, the fight could be played with the same forces but different arrangements of the security area, employment of the reserve, use of

indirect fire, etc. JAAWS provides the specific results of each of these alternative courses of action. Careful comparison of these results provides unique insights into the causative factors which contributed to the success or failure of the battle.

SYSTEM ORIENTATION

The Janus software can be run on any UNIX-based system. This system operates on a _____. Each Janus scenario is capable of displaying forces on up to 24 workstations at any one time configured in any mix of Blue and Red screens. We will be using _____ in this setup with Blue and Red workstations.

JANUS DEMO

[Requires previously developed scenarios with Red and Blue forces. (See Chapter 6, *Using The Explortable Training Package*)]

At this time I would like to show you a demonstration of the system.

[Start Demo and highlight the following]

1. Discuss terrain, grid, CAC. Erase CAC and grid prior to continuing for better view.
2. Unit symbols and ZOOM feature - show several primary weapons systems.
3. Line-of-sight and VIEW - change/adjust.
4. Deployment Positioning of units - defilade, prepared positions.
5. Aggregation (FORM).
6. Movement - use extend (EXT), alter (ALT), *STOP* and *GO* nodes, delete (DEL), and cancel (CAN).
7. Obstacles - minefield, ditch, etc. (breach capability).
8. Artillery - plan a mission, alter (ALTER), cancel (CANCEL), type of rounds (HE, SM, CH, IC, PG, FC, TG).
9. REPORTS - by task force and unit
10. Run demo - point out the following during demo run:

- Direct fire radials and impacts.
- Indirect fire impacts.
- Smoke clouds.
- Suppression symbols (S).

- Casually symbols(C).
- Artillery kills (A).
- INTEL functions.
- View of forces seen compared to total forces in battle.
- Movement of forces, ground and air.
- FRIENDS.

At this point, you should notice on your keyboard that there are two ENTER keys. The first exists on the keyboard just above the SHIFT key on the right side of the main character keyboard. The other is located at the lower right hand corner of the number keypad on the right hand side of the keyboard. From this point on, any written references to "RETURN" refer to the ENTER key on the right side of the main keypad just over the SHIFT key. Any written references to the "ENTER" key shall mean the lower right hand corner ENTER key of the number pad. Because they execute different functions during a Janus session, find both of these ENTER keys and understand their different locations.

SCENARIO EXECUTION

The "Execution" (EE) option permits you to do initial planning, then run the scenario. You are asked to enter the scenario and run numbers, then the three screens of run-time parameters (Jscreens) are displayed. Finally, the program draws the terrain on the workstation screen. In a new scenario, forces are displayed in the default positions on the screen. The first thing you have to do is to deploy these forces according to the plan. Type in "EE" at this time and press RETURN.

SCENARIO/RUN NUMBER PROMPT

This prompt asks you to enter the scenario number (a number between 1 and 999). This number identifies the scenario that you are going to run. At this stage we will give you the number to use from one of our prepared scenarios. Type in the number and press the RETURN key. The next prompt asks for the run number (between 1 and 99). Enter the number 1. Disregard the message that run number 1 has already been made, if it appears. You may end the run and exit by typing XX or continue by pressing the RETURN key. Press the RETURN key.

RUN-TIME PARAMETER SCREENS (JSCREENS)

The majority of the data on the first Janus run-time parameter screen (Figure 2.1) has been pre-entered by the scenario developer, but you may have some options to enter. To advance from block to block on this screen you simply press the RETURN key. If changes are to be made in a specific field, press RETURN until you get to the desired option. Normally, no changes are required and you press the ENTER key at the right of the keyboard to advance to the next screen. You may also use the up and down arrows to advance the cursor straight up and down a column. Try moving the cursor around the screen using both the RETURN key and the arrow keys.

To change the data in a block, press the TAB key to erase the current entry, type in the change, and press RETURN. If you are going to make a change and want to save the change for future runs, you will want to change the entry in the save parameters block at the top of the screen to "Y" (Yes). If you want to end the run, replace the "N" in the second block with "Y" and press ENTER. Always check with the senior interactor before saving parameter changes.

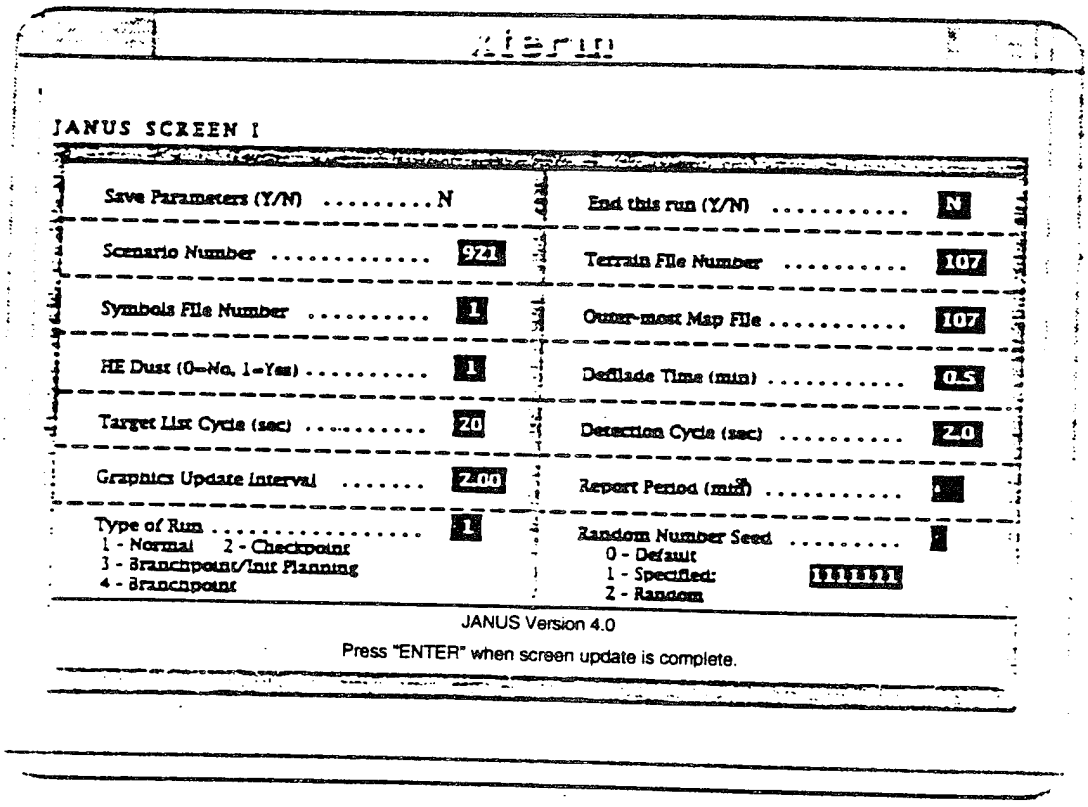


Figure 2.1. JScreen 1 Menu

The "Type of Run" block is where you will likely have a change. Let's review each of these options.

Normal

Normal runs start from time zero. This is the default option and the usual choice.

Checkpoint

Checkpoints are automatic recordings of the state of the scenario. Checkpoints can be generated at specified intervals; you can always stop the scenario and then use this option to restart at the last checkpoint. The checkpoint is a safety device used to limit the amount of run time lost should the simulation terminate abnormally. The maximum simulation data loss with a ten-minute checkpoint setting would be ten minutes. Because checkpoints are used for crash recovery only, they are never stored in the archive directory. To start a scenario from an intermediate point in a run, a branchpoint should be taken as described in the following section.

Branchpoint/Initial Planning

Branchpointing allows you to stop a run and save your data to that point. By branchpointing, you may take a break or quit for the day and restart at that point. This option (branchpoint with initial planning) allows you to make changes such as repositioning forces, drawing or displaying command and control graphics or straightening out a movement formation before you restart.

Branchpoint

A plain branchpoint restart only allows you to restart where you left off without making any changes.

We are not going to make any changes to this screen at this time, so press the ENTER key to continue.

The second Jscreen (Figure 2.2) is the workstation setup screen. This screen allows you to assign from one to twenty-four workstations to the scenario. Workstation can be assigned in any combination of Blue and Red workstations. This screen works the same as the last screen. RETURN moves you from block to block, TAB deletes data in a block, BACKSPACE allows you to back up, and ENTER advances you to the next screen. Again you can use the ARROW keys to move up and down a column. Notice that the second block at the top right of the screen now allows you to return to the previous screen. If you want to end the run for any reason, just return to Jscreen and you may end the run.

Let's review the data on this screen

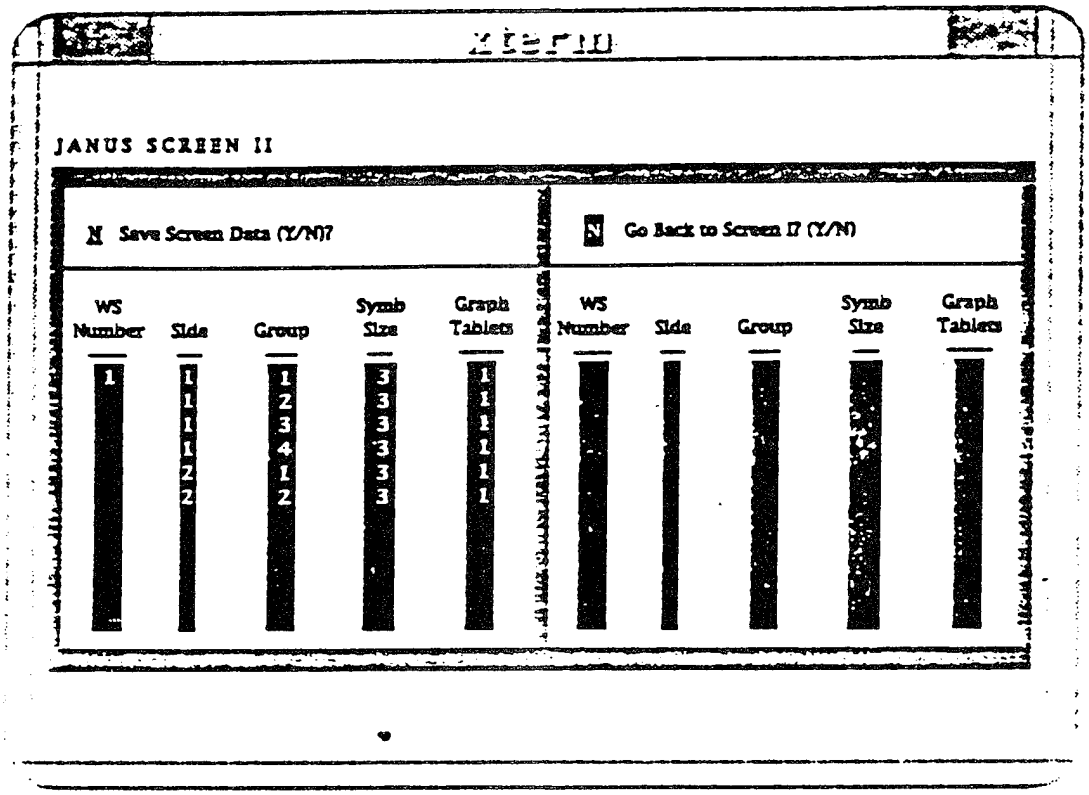


Figure 2.2. JScreen II Menu

WS Number-

This area allows you to select which workstations you will use by typing in the number of the workstation in the column below this heading (up to 24). Type in all Blue stations in order, then the numbers of the Red stations.

Side

Side 1 is Blue and side 2 is Red. You must type in the correct number next to the workstation in the column headed Side. Note that the first four workstations are Blue side (1) and the last two are Red side (2).

Group-

This column actually refers to the workstation number. They are numbered in the sequence in which they were listed in the workstation column. In the example at Figure 2.2, four Blue and two Red workstations are indicated.

Symb Size

This determines how large the symbols will appear on the screen. Size 3 or 4 is recommended.

Graph Tablets -

This column allows you to designate the number of graph tablets to be used at each workstation (one or two).

We are now ready to advance to the next screen, so press the ENTER key to display Jscreen III.

At the top of the Jscreen III (Figure 2.3) you have the blocks to save data changes made below and to return to the previous screen. You should not have to make changes to this data, but we will discuss some of it briefly.

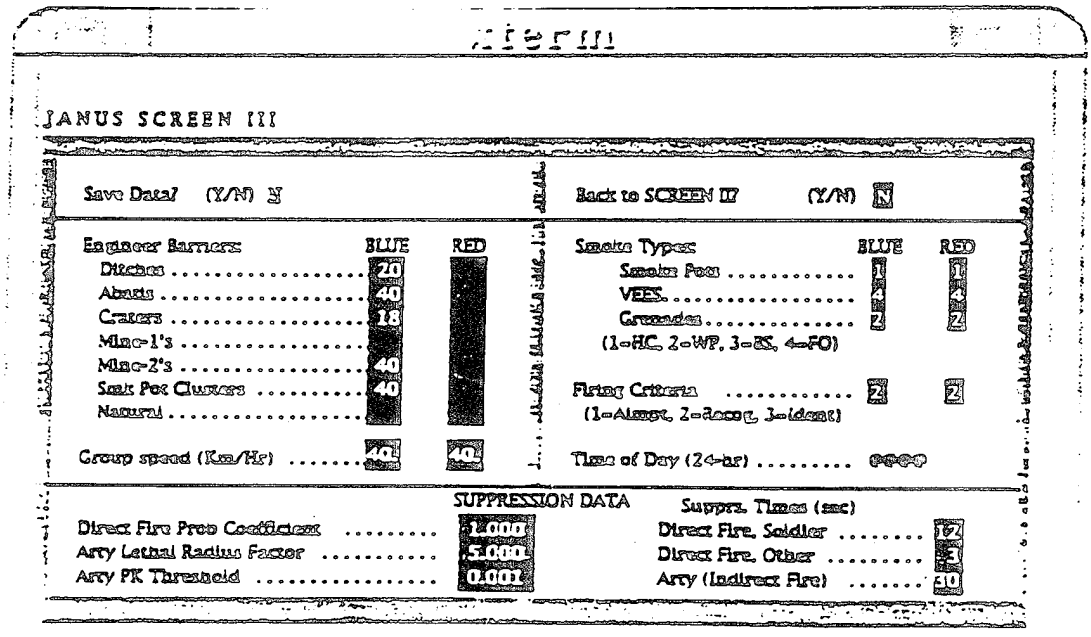


Figure 2.3. JScreen III Menu

Engineer Barriers -

This area of the screen allows you to set the number of barriers that you will be using in the scenario. There is a maximum of 50 minefields, including both Red and Blue FASCAM, mine-1's and mine-2's. You may include 200 other barriers, divided among the two sides and the five types. All Blue obstacles will appear on the Blue screens and all Red on Red screens. Obstacles may be positioned from any workstation of the same side. Natural obstacles are entered as if they were only on Blue screens, but they actually are displayed on all screens and may be positioned by any interactor.

Group Speed -

Group speed allows you to set the speed at which a task force will travel. However, no vehicle will travel faster than its individual maximum speed as established in the database.

Smoke Types-

This area of the screen allows you to set the type of smoke for both Red and Blue forces. Using RETURN and TAB, you select the appropriate smoke types and put them in the appropriate blocks.

Firing Criteria

Firing criteria allows you to set the level of identification required before a friendly unit fires on an enemy unit.

Time of Day-

This area of the screen allows you to set the initial scenario time that will be displayed on the Time of Day clock at the bottom of the menu next to the Game Time clock.

Suppression Data

This area allows you to set the suppression effects data for direct and indirect fire weapons systems.

Press the ENTER key and your computer will bring up the scenario. It initializes the data, then "paints" the screen.

CONCLUSION

The screen now displayed is your initial planning screen, Figure 2.4. Units may or may not have been positioned, movement nodes planned, line-of-sight adjusted, and so on.

The planning menu shown at the right of the screen will allow you all this and more. In addition to this menu there is a graphics menu that can be accessed by picking the menu item labeled "CAC" at the bottom of the menu. There is an execution menu that is slightly different from the planning menu that appears when the game starts. We will be discussing all of these as we continue with your training. You will find that at this point the graphics tablet and puck are your main tools in controlling the operation of the computer. We will be discussing their use in conjunction with the next menu.

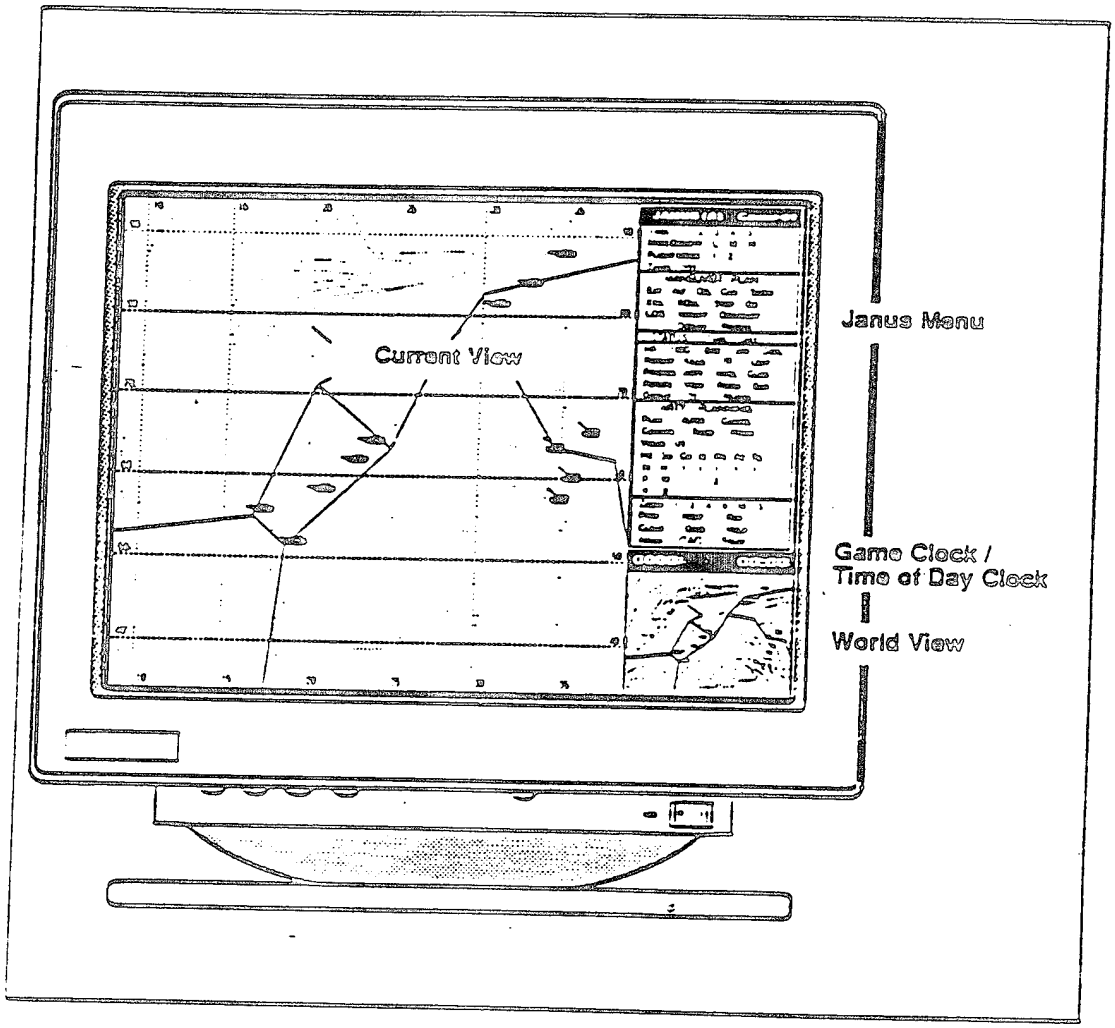


Figure 2.4. Janus Terrain and Menu Display

CHAPTER III
SESSION 2: THE INITIAL PLANNING PHASE

INTRODUCTION

Now that you have signed onto the computer, established the workstation set-up, and checked the scenario parameters, you are ready to continue with the planning phase. You have been provided with an operations plan, complete with overlay, task organization, and scheme of maneuver. Once we have gone through all the capabilities of the system and how they work, you will begin preparing your portion of the plan. For now we are going to work with a sample plan which has representative units and use them to become familiar with the Janus Simulation.

MOUSE

The mouse and its three buttons work together to allow you to control the screen. The movement of the mouse is the same as that of the cursor on the screen. The mouse has three buttons. Each button has a different function, depending on the area of the menu you are using. For the purposes of this course, when we use the term "pick," it refers to placing the crosshairs on the selected item and depressing the Left mouse button. From this point on you will be using the mouse exclusively.

WORKSTATION DISPLAY

There are four main areas in the Janus workstation display (Figure 3.1).

Current View -

The largest portion of the screen is the digitized terrain representing the area of operations. The contour interval on the screen is set by the database manager. Contours are derived from Defense Mapping Agency (DMA) satellite data. Terrain features (roads, hills, wadis, forests, etc.) affect both acquisition and movement.

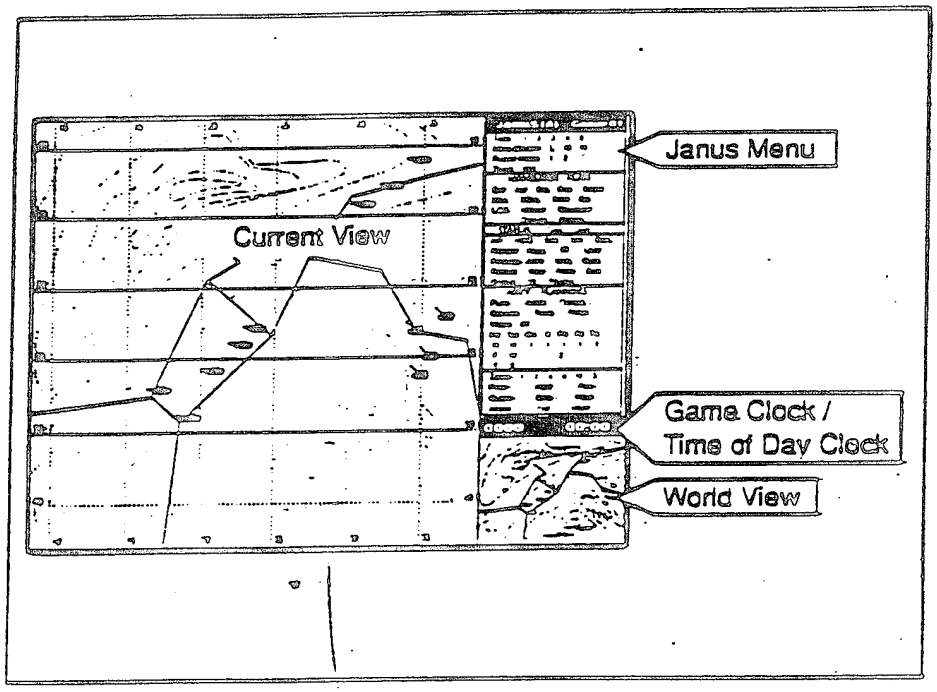


Figure 3.1. Workstation Display with Area Descriptions

Menu -

The second portion of the screen is the Command Menu. There are five divisions of the Command Menu:

- Administrative Planning

  (TASK MINE DENSITY FLIGHT MODE, TIMER)
- MANEUVER PLAN
- STATUS
- ARTY PLANNING
- Administrative Screen Control (ZOOM through START)

Game Clock/Time of Day Clock -

Directly below the menu is the clock which displays elapsed time in minutes and seconds from the start of the simulation (ex: 32:43). To the left of the Game Clock is the Time of Day Clock, which can be set to depict scenario time.

World View -

Below the clock is a small terrain map which gives an overall view of the area of operations. This map will not change in size or scale as the Current View map does. When ZOOM is used, the area shown in the Current View map will be outlined as a box on the World View map. The World View map is ordinarily used for reference, but it is an active map and can be used for artillery missions and air maneuver planning.

INITIAL PLANNING MENU

The planning menu is divided into five areas (Figure 3.2). The top menu and bottom menu items are not labeled on the menu, so for descriptive purposes, we will refer to everything above the MANEUVER PLAN block as the Administrative Planning Menu and everything below the ARTY PLANNING block as the Administrative Screen Control Menu.

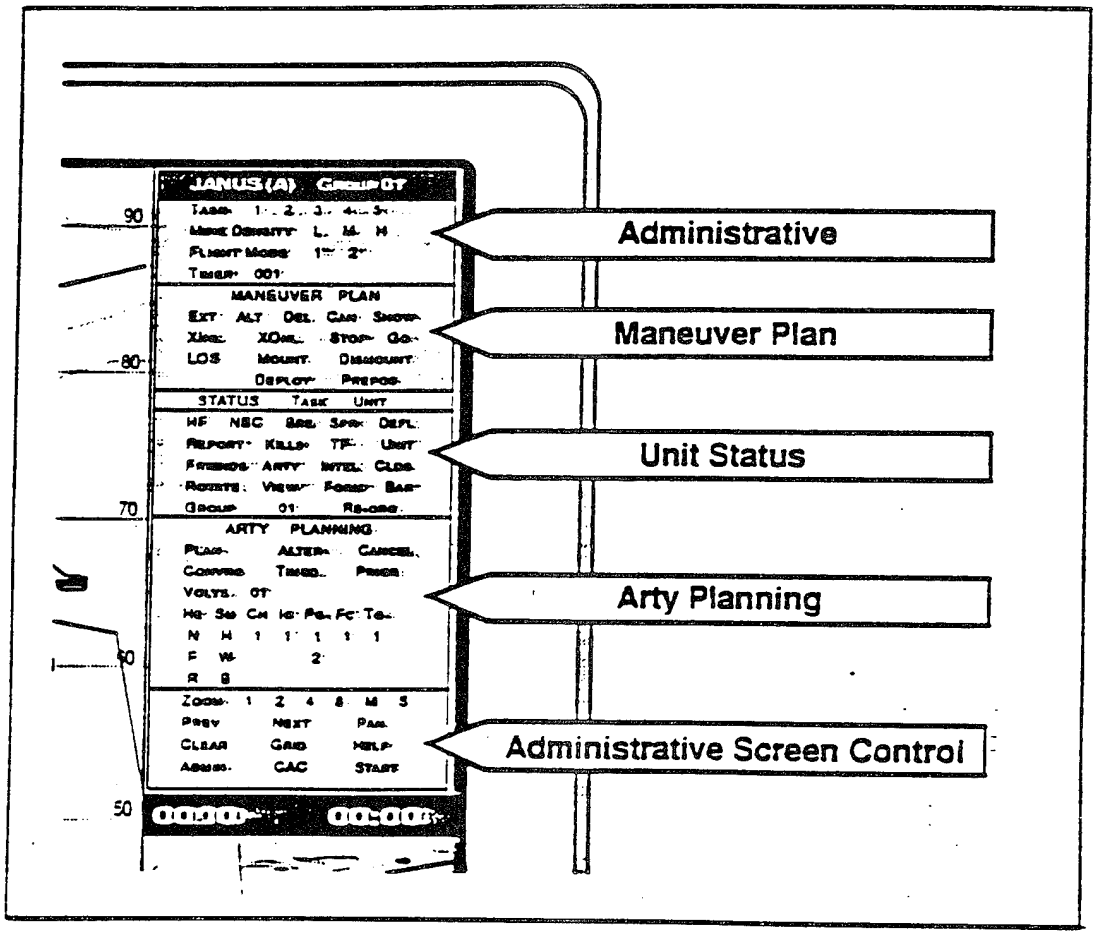
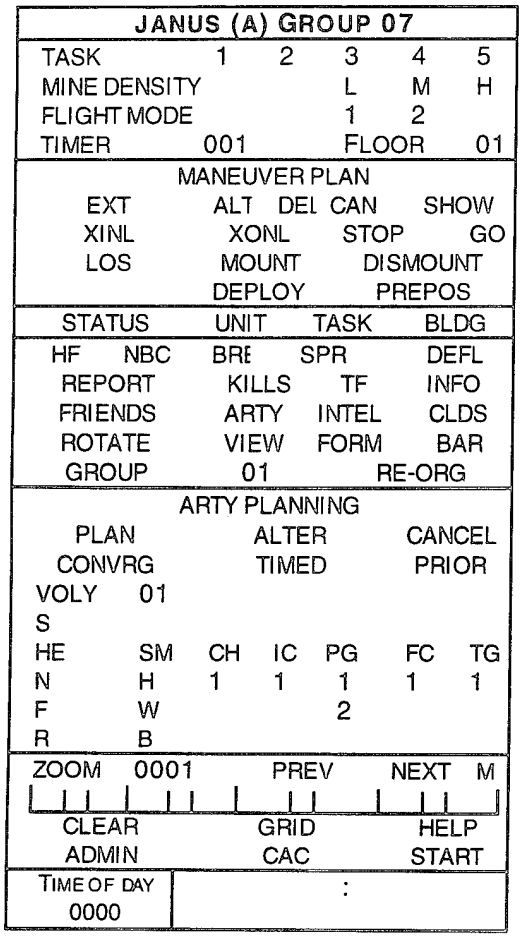


Figure 3.2. Initial Planning Menu Section Descriptions



ADMINISTRATIVE PLANNING MENU

Top Line

The top line identifies the screen number (GROUP number) of each screen. Since all the terminals were brought up individually, each is labeled GROUP (Screen) 1. If a multiple workstation simulation had been brought up, each workstation would have a different GROUP number.

Task Force (TASK 1 2 3 4 5)

Units in a Janus scenario are assigned to task forces when the scenario is built. Five task forces are assigned to each workstation on a side. When there is more than one workstation on a side, the first (GROUP 1) screen displays units in task forces 1 through 5, the second screen (GROUP 2) displays task forces 6 through 10, screen three (GROUP 3) displays 11 through 15. You may change the task force designations of any unit on your screen.

Task force designations allow you to give group commands to selected forces, change their status, or receive reports on their condition. TASK can be used to identify the task organization to which a unit is assigned. When you select a given task force number, all the units in that task force are highlighted by the appearance of a white number above and a little to the right of the unit symbol. Using the mouse, place the cursor over the number 2 on the TASK line of the menu and pick it. Notice that the number 2 has appeared next to all forces assigned to task force 2.

Mine Density (MINE DENSITY L M H)

The Janus simulation plays realistic minefields. This option allows you to set the density to three different levels: Low (L), Medium (M), and High (H). When deploying minefields, you must set the density by picking the appropriate letter. Janus allows the employment of hand, vehicle, and artillery-emplaced mines. Their densities will vary according to database settings.

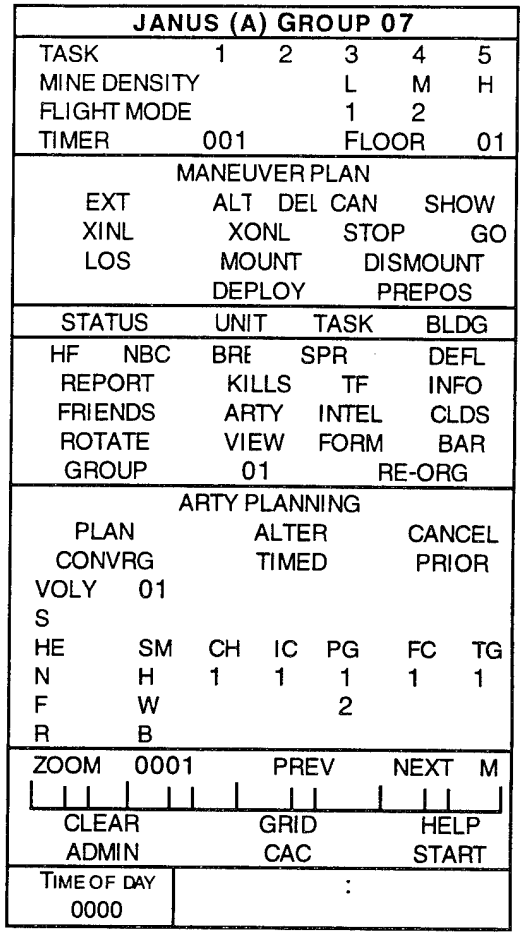
Flight Mode (FLIGHT MODE 1 2)

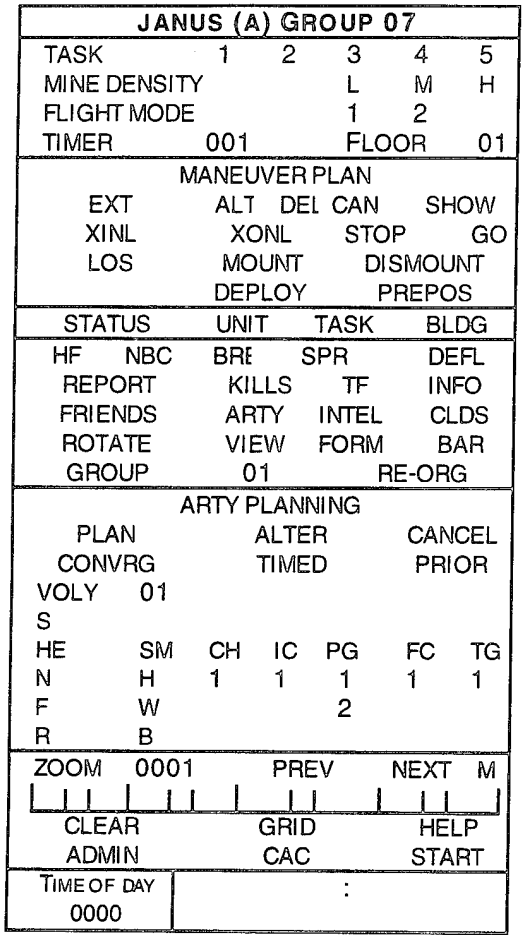
FLIGHT MODE is used in planning aircraft maneuver routes using the EXT (Extend) and ALT (Alter) commands found in the MANEUVER PLAN section of the menu. There are two flight options: FM 1 is low and slow, FM 2 is high and fast. How high or low and fast or slow an aircraft flies depends on its capabilities as defined in the database. Altitude and speed affects the ability to acquire and shoot enemy targets. The recommended method of route planning is to plan in FM 1 and then alter the route segment nodes as needed using FM 2. A route segment's mode is determined by the node at the end of the segment.

Timer (TIMER 001)

The last element in this section of the menu is the TIMER which is set in game clock minutes. The TIMER is used for pre-planned artillery missions and *TIME* nodes for unit movement. The TIMER can be set from 1 to 999 minutes. To set the TIMER, pick the time blocks with the Left mouse button to increase the time or the Right mouse button to decrease the time. Set your timer for 55 minutes with your Left mouse button. Now zero out the time with the Right mouse button.

NOTE: The lowest the Timer will go is one minute. Picking the number block with the white button will set the timer to its minimum value. Picking the number block with the right mouse button will set the timer to its maximum value.





ADMINISTRATIVE SCREEN CONTROL MENU

The section of the Initial Planning Menu at the bottom from ZOOM through EXIT is not labeled; we will refer to it as the Administrative Screen Control menu. Selections in this section change the current view map display and assist you in implementing the planning/execution functions.

Zoom

The current view (ZOOM Level 1) is the largest view available. It shows the entire area of operations and is the initial view when you bring up the scenario. Note this is the view shown on the World View map. It is difficult to identify the unit symbols (icons) from this large view. The ZOOM option allows you to magnify an area of the map region for display.

There are thirteen levels of magnification available on the scale in the Administrative Screen Control box. These magnifications are 1, 2, 4, 8, 16, 32, 64, 128, 256, 500, 1000, 2000, and 4000. Level 2 allows you to magnify a one-half section of the screen area. Level 4 magnifies 1/4 of the area, and so forth. You select a ZOOM level by picking with the left mouse button on the scale. The numeric ZOOM level will appear next to the word "Zoom." The M above and to the right of the scale corresponds to the standard military map scale 1:50,000. Whatever portion of the battlefield you magnify will appear at that scale.

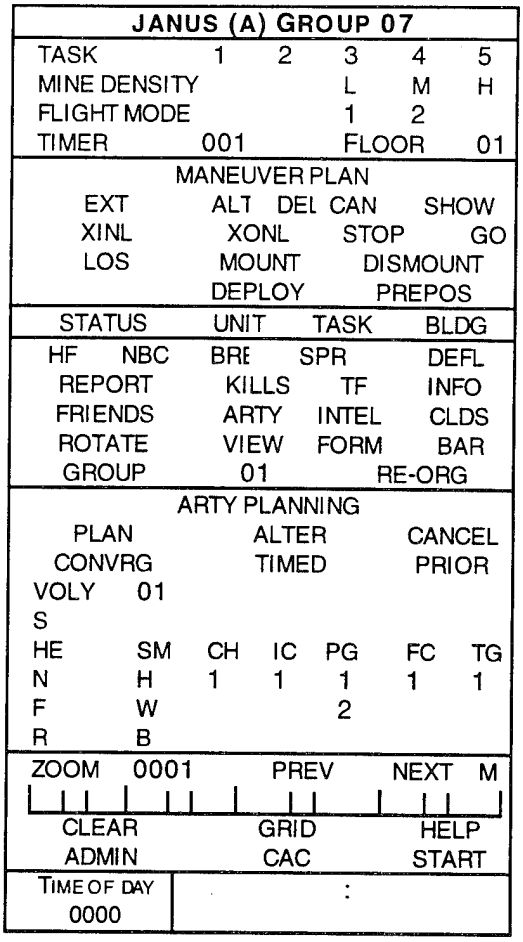
When you pick any level of magnification, a lighted square replaces the cursor. Move the mouse until the square on the screen is centered on the part of the battlefield you want to magnify, then depress the Left mouse button again. That area will fill the Current View map. Whenever you want to return to the entire battlefield, pick the left most mark on the scale.

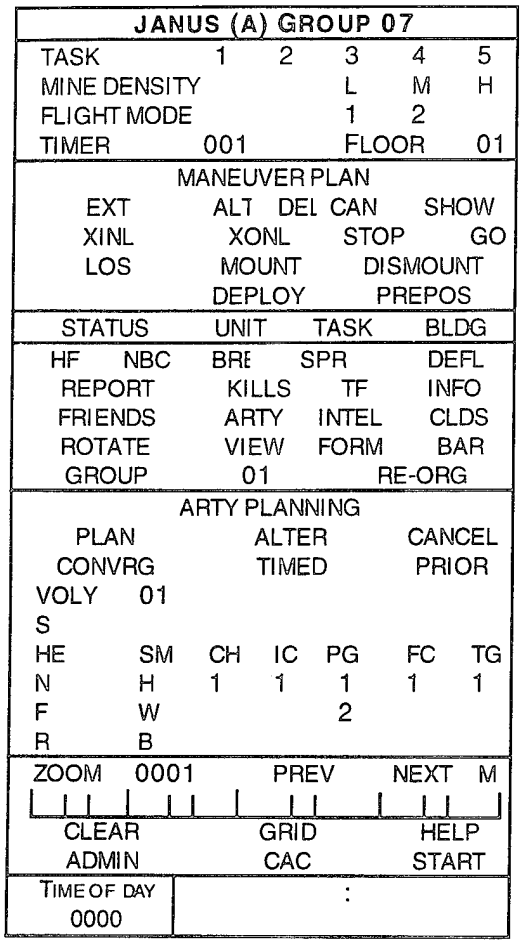
Take a couple of minutes to run through the various ZOOM levels.
Notice you can continue to ZOOM in on an area without going back to level 1 except for level M. M will always give you a 1:50,000 scale piece of the battlefield. A box appears in the World View map corresponding to the part of the battlefield you are magnifying.

Previous, and Next, (PREV, NEXT)

PREV and NEXT give you two more ways to manipulate your view of the screen. PREV and NEXT allow you to switch back and forth between zoom levels. PREV and NEXT "remember" the last five views, so you can quickly change views. PREV takes you back, NEXT takes you forward. Try this now. For example, if you ZOOM down from (view) 1 to look at a particular action on the battlefield, and then want to go back to the overview, you simply pick PREV and it will go back to (view) 1. If you want to look again at the same close-up of the battlefield, pick NEXT and the computer will remember where you were and give you the same view you had before.

Once you have zoomed in at the desired magnification, repicking the same number (with any button) will replace your screen cursor with a lighted box the same size as the screen with a small red square at its center. If you move the cursor (box) out on the screen you can pan an area approximately half of the current viewing area. Try this now.





Clear (CLEAR)

The CLEAR option is used to refresh your screen image. Picking CLEAR, with the Left mouse button, erases all temporary graphics and text from the screen. Whenever the screen becomes cluttered with movement routes, line-of-sight displays, messages and so forth, pick CLEAR. Other options are as follows:

- Shift plus any mouse button - Clears all text (leaves graphics)
- Right mouse button - Clears only report text
- Middle mouse button - Clears all temporary graphics. (leaves text)

Grid (GRID)

Pick GRID to display the UTM grid system on the screen. Go ahead and do this now. The grid stays up until you turn it off by picking GRID again. At Level 1 in our demonstration scenario, the grid system is a five kilometer grid system with the solid lines numbered every ten kilometers. When you zoom down to Level 2 the grid system changes to a one kilometer grid with every fifth grid line numbered. At Level 4 it is a one kilometer grid square with every other grid line numbered. Level 8 gives you a 500 meter grid square.

You can read grid coordinates directly off the screen. You can also find the grid coordinates of a spot on the ground using the UNIT option, under the report area of the menu and any button on the mouse. The coordinates will be displayed at the bottom of the screen. However, if you pick any icon on your own side you will get the status report, not the coordinates. Try these options. This option is especially useful when trying to call artillery fire on threat units. Pick CLEAR to clear off the coordinates display.

Help (HELP)

If you pick HELP in conjunction with any other menu item, a brief explanation of how the item works will be displayed. Pick HELP and any other item. Pick HELP again to turn off the option. Note that no other function, not even CLEAR, can be executed while the HELP menu is turned on.

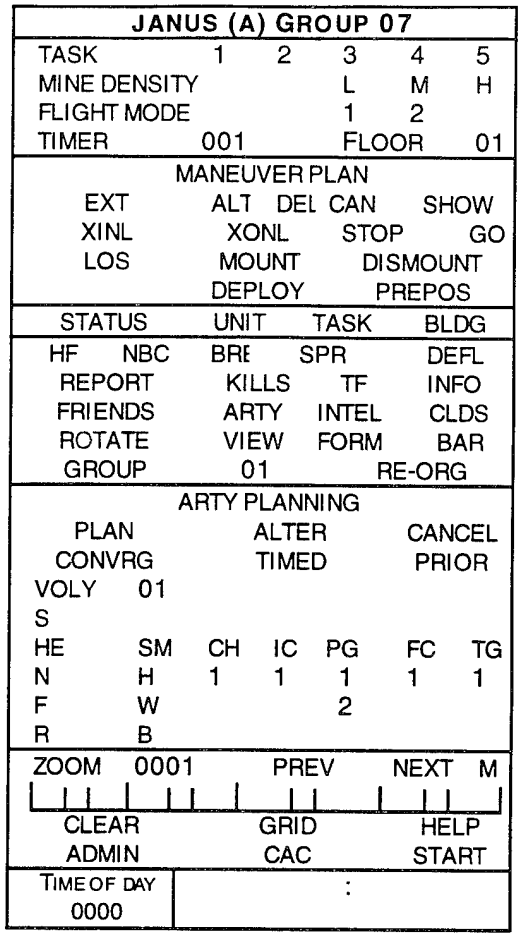
CAC (CAC)

CAC (Command and Control) is the graphics creation capability of the model. When you pick CAC, a separate drawing menu is displayed. It permits you to draw lines, symbols and enter text which can be displayed on the screen while the simulation is running. CAC is used to input the military overlays associated with a simulation run. Command and Control graphics will be discussed later (Chapter 4).

Start (START)

The START function is used to start the execution of the scenario at the completion of planning. Pick START now. Notice the menu went blank, because it changes for execution. To start the run we would do as the prompt indicates; type in RR and press RETURN. However, since we are not at that point yet, type an II and press RETURN to go back to the menu.

Note: When you start a NORMAL run by typing RR you are given one last chance to plan save; this is not true from a BRANCHPOINT restart.



JANUS (A) GROUP 07					
TASK	1	2	3	4	5
MINE DENSITY			L	M	H
FLIGHT MODE			1	2	
TIMER	001		FLOOR		01
MANEUVER PLAN					
EXT	ALT	DEL	CAN		SHOW
XINL	XONL		STOP		GO
LOS	MOUNT		DISMOUNT		
	DEPLOY		PREPOS		
STATUS	UNIT		TASK		BLDG
HF NBC	BRE		SPR		DEFL
REPORT	KILLS		TF		INFO
FRIENDS	ARTY		INTEL		CLDS
ROTATE	VIEW		FORM		BAR
GROUP	01		RE-ORG		
ARTY PLANNING					
PLAN	ALTER		CANCEL		
CONVRG	TIMED		PRIOR		
VOLY 01					
S					
HE	SM	CH	IC	PG	FC	TG
N	H	1	1	1	1	1
F	W			2		
R	B					
ZOOM 0001			PREV		NEXT	M
CLEAR			GRID		HELP	
ADMIN			CAC		START	
TIME OF DAY 0000	:					

Admin (ADMIN)

ADMIN interrupts the run and brings up an on-screen menu which permits you to change certain run-time parameters (Figure 3.3).

Pick ADMIN with the Right mouse button. Notice that the ADMIN menu appears in the term window and a WAIT prompt on the small screen. All screens will display the WAIT prompt until the control station has canceled the ADMIN function or executed an option. To execute any of these options, type in the two letter code at the right of the menu and press RETURN. (The options available on the ADMIN menu during planning are somewhat different than those available during the run.) The planning menu options are:

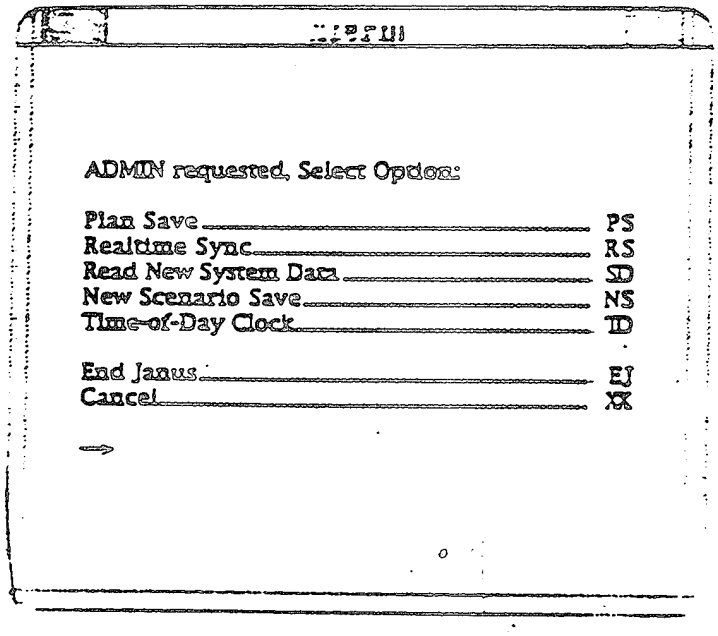


Figure 3.3. ADMIN Menu

Plan Save (PS) -

Use this option to save changes made to your scenario. A good motto is "Save Often and Early." Should you neglect to save, the next time you bring the scenario up all of your current changes will be lost. Occasionally either the scenario or the computer will fail. Saving often and early reduces the amount of work you have to do over again to recover from a failure.

Real-time Sync (RS) -

This function is used to set the run speed of the scenario. Run speed defaults to real time (one minute of game time to one minute of real (clock) time). To set a different run speed, enter RS from the keyboard. A "N" (no) answer to the question displayed on the screen sets the scenario to run as fast as the computer can make it go. If you answer "Y" (yes), a second prompt will ask you to input the run speed. Enter "1" for real time, "2" for twice as fast as real time, "3" for 3:1, and so on. Note that most scenarios are out of the interactor's control if they are run faster than about 3:1. The run speed can be adjusted at any time during a simulation run. Run speed can be set at fractional values, such as .5,1.3, and so on.

New System Data (SD) -

This function permits you to read the database parameters for your system from another scenario. This may be necessary if the database parameters are changed while the run is in progress (i.e., to correct bad system data). The main use of this function is to change from day to night database parameters and vice versa. This is done by copying a scenario once the planning is done to another scenario number. Then the second scenario is read against the day (or night) database.

New Scenario Save (NS) -

This option allows you to make a copy of the current scenario and save it to a new number. You can later modify the copy without affecting the original scenario.

Time of Day Clock (TD) -

This option allows you to set or change the Time of Day clock found at the bottom of the menu. This clock is keyed to the Game clock next to it, and updates at one minute intervals. It allows you to keep track of battle time.

End Janus (EJ) -

The End Janus option terminates the program execution and returns you to the User Options Menu. If you have not plan-saved your data, you will be given an opportunity to do so. Once you complete the "End Janus"

command, any data not saved will be lost and you will have to bring up the scenario from the last plan save.

Cancel (XX) -

This final menu option allows you to exit the ADMIN menu without taking any action. For example, you may want to enter the Admin menu and halt a simulation run for a short break, then input XX to resume the run.

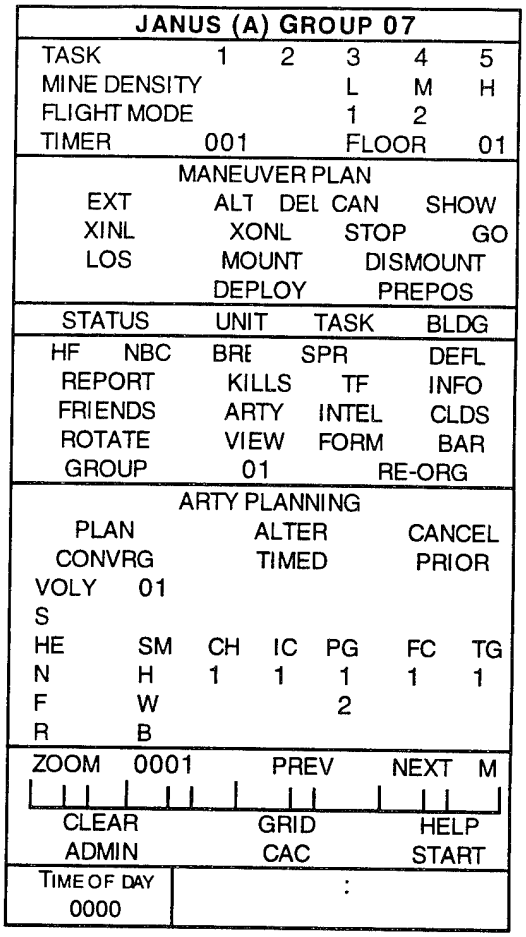
THE MANEUVER PLAN MENU

This portion of the menu is used to do initial positioning of forces and barriers and to plan movement routes for ground and air assets.

Extend (EXT)

The extend function is used to enter new movement routes for both ground and air units. It is also used to add to a route already entered. Activate this mode by picking EXT and then pick the unit whose route you want to plan. Pick EXT, then pick the tank at the top center of the screen to display its movement route.

A movement route is represented on the screen as a series of straight lines connecting triangles which represent nodes (Figure 3.4). There are three kinds of movement nodes. A *GO* node is a triangle with its point up; GO nodes are entered by picking with the Left mouse button. *GO* nodes are usually places where the route changes direction (routes cannot be entered as curved lines). A unit at a GO node continues on the route.



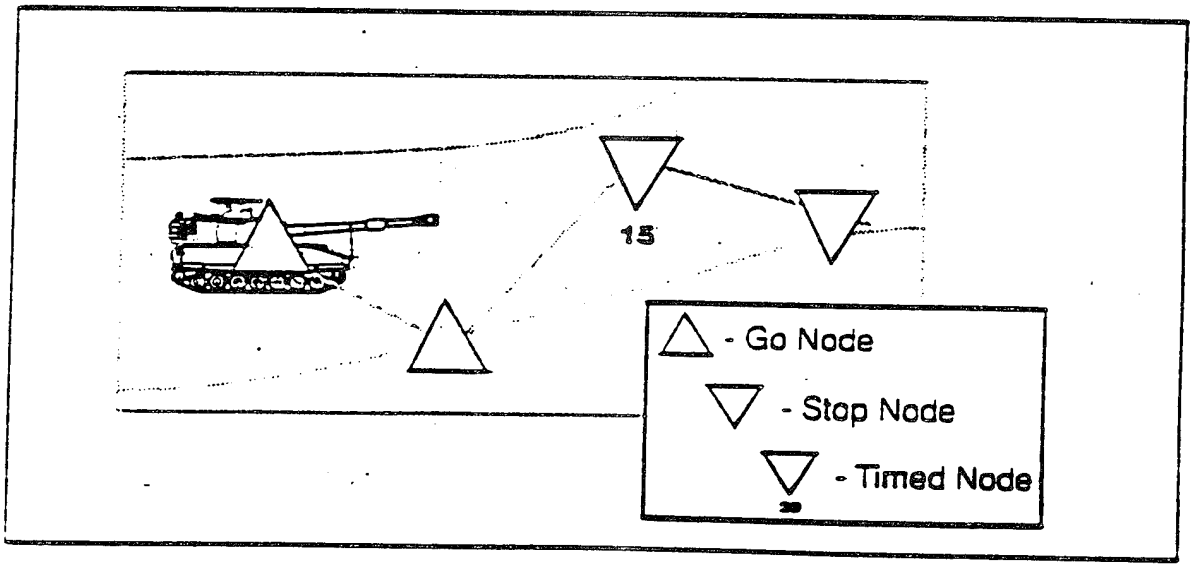


Figure 3.4. Movement Nodes

STOP nodes are represented on the screen as inverted triangles (point down). They are entered by picking with the Right mouse button. When a unit gets to a *STOP* node on its route, it will stop until the node is changed. *TIME* nodes look like *STOP* nodes, with a number displayed underneath. A unit at a *TIME* node stops until the number of minutes displayed under the node matches the game clock. Then the node switches to a *GO* node and the unit proceeds on the route. Enter a *TIME node* by setting the time on the TIMER, then selecting ALT (alter) and picking any existing node with the Shift plus any mouse button. A *STOP* node may be changed to a *TIME* node by picking the node with the Shift plus any mouse button while using EXT (extend).

The node at the end of a route should always be entered with the Middle mouse button. It will look like a *GO* node, but since there is no further route, the vehicle will not proceed any further. The node where the vehicle is currently located is called the current node. It defaults to a *GO* node, but can be changed to either a *STOP* or a *TIME* node using the ALT menu selection The current node of all units in a task force can be changed simultaneously by using task force STOP and GO commands.

Key items to remember about movement nodes are:

- The first time you pick the unit a node appears and an orange line, the "rubber band," will extend outward as you move the mouse
- The last movement node must be "dropped" with the WIG button in order to disconnect the rubber band and give you back cursor control.
- The first node of a movement route will always appear as a *GO* node. To make it a *STOP* node or *TIME* node you must go back and alter the node. Any unit on a *GO* node at the start of the game will automatically start moving.
- Any existing node can be changed by picking it again with the correct button. The Right mouse button is used to change nodes from *STOP to GO* or vice versa. The Shift plus any mouse button is used to "drop" the *TIME* node.
- To display the view from a specific spot along the route, pick the spot with the Shift plus any mouse button prior to dropping a *GO* or *STOP* node. This function only works in the Extend (EXT) mode, not in the (ALT) Alter mode.
- To add a node anywhere along the route, pick the node from which you want to extend, move the cursor to the desired location, and pick the location with the appropriate button.
- *TIME* nodes can only be added from either the Extend (EXT) or Alter (ALT) function. You must set the timer prior to "dropping" a *TIME* node. The *TIME* node is keyed to the game clock; when the correct time is reached, the node will reverse itself and the unit will begin movement automatically.

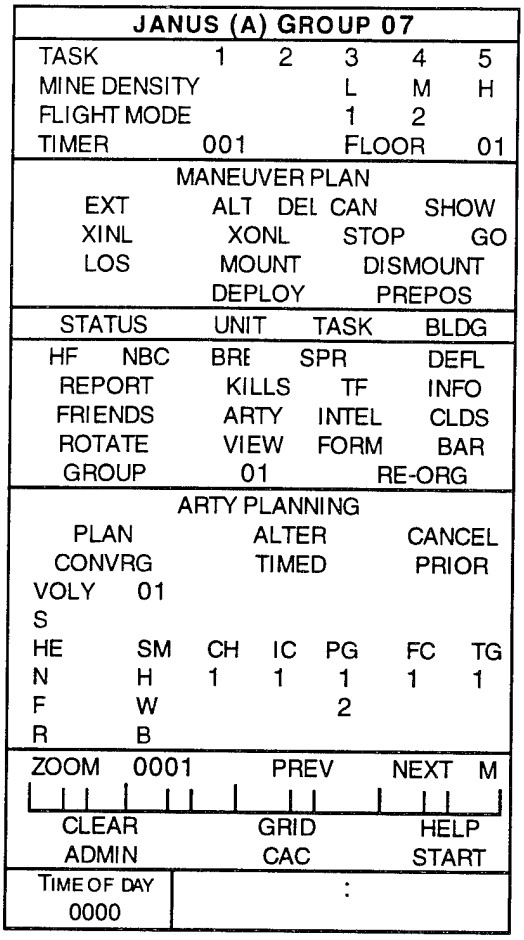
Air movement routes are planned in the same manner as ground movement routes. Air movement routes, however, need input as to the FLIGHT MODE (FM 1 and 2) discussed earlier. Remember it is easier to plan the entire route in FLIGHT MODE 1 and then change or alter the segments you desire to FLIGHT MODE 2. To change the flight mode of a segment, first pick the appropriate FLIGHT MODE, then the final node of the route segment you want to change with the Middle mouse button.

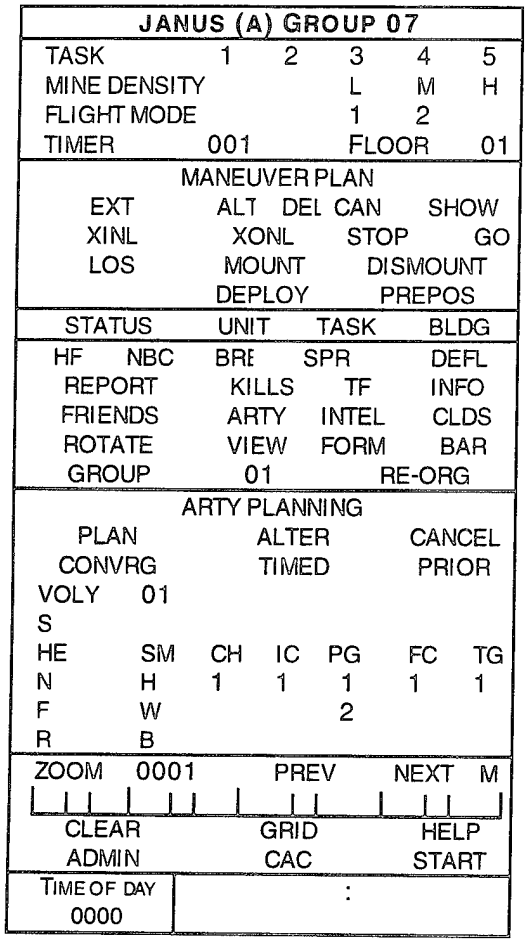
Alter (ALT)

ALT allows you to modify existing movement routes, changing the location or mode of any node. For example, we can change the *TIME* node at the start of the first route we called up to a *GO* node. First pick ALT, then pick the icon to display its route. Next pick the *TIME* node with the Right mouse button. Notice the triangle turned right side up and the time disappeared. It is now a *GO* node.

To move a node to a new location, pick the node with the Left mouse button, move the cursor to the desired location and drop it with the Left mouse button. If you want to change it from *GO* to *STOP,* pick it with the Right mouse button. Try this several times. Remember, to place a *TIME* node, you must first set the timer. Set your timer using the Left mouse button to increase time or the Right mouse button to decrease time. Now change a node to a *TIME* node using the Shift plus any mouse button.

Pick the A-10 aircraft symbol at the left center of the screen to light up its route. Now set the FLIGHT MODE to 2. Remember the entire route was planned in FLIGHT MODE 1. The FLIGHT MODE of any segment is controlled by the node at the end of the segment. Select a segment which you want to change to FLIGHT MODE 2 and pick the node at the end of the segment with the Middle mouse button. CLEAR your screen and pick the icon to highlight the route. Notice that you cannot tell that the route has changed. We will see how to determine the flight mode of the route shortly. You can also plan flight routes by selecting the appropriate flight mode at the start of each node using EXT. However, each time you change nodes you must drop the last node with Middle mouse button in order to free up the cursor to pick the appropriate FLIGHT MODE. Go ahead and practice creating flight routes with one of the other aircraft.





Delete (DEL)

The delete option allows you to delete any movement node, whether it is at the end of the route or in the center. (Note the current node cannot be deleted.) Pick DEL and pick the icon of the first ground vehicle we looked at to display its route. Now pick the node you want to delete. Note the node disappears and the middle mouse button is redrawn between the preceding and following nodes, to complete the route.

Cancel (CAN)

To cancel a route, pick CAN, then pick any movement node in the route. All of the route beyond this node will be canceled. If you pick the unit's current node, the entire route will be canceled.

Show (SHOW)

SHOW is used to display all movement routes planned for a task force. First select the Task Force number from the top of the menu, then pick SHOW. To see routes for other task forces, change the task force number. SHOW is especially useful for reviewing already planned routes and when planning additional routes.

Pick TF 1 and then pick SHOW. Do the same for each of the other task forces. All of the planned movement routes, ground and air, will be on your screen in orange. The ground routes and FLIGHT MODE 1 routes are in dashed lines. The segment you placed in FLIGHT MODE 2 will show as a solid line. Routes displayed using SHOW will not disappear until you pick CLEAR. CLEAR the routes from the screen at this time.

Group Options

Planning individual routes for each unit of a large force is tedious and time consuming. Janus has several options which speed this process.

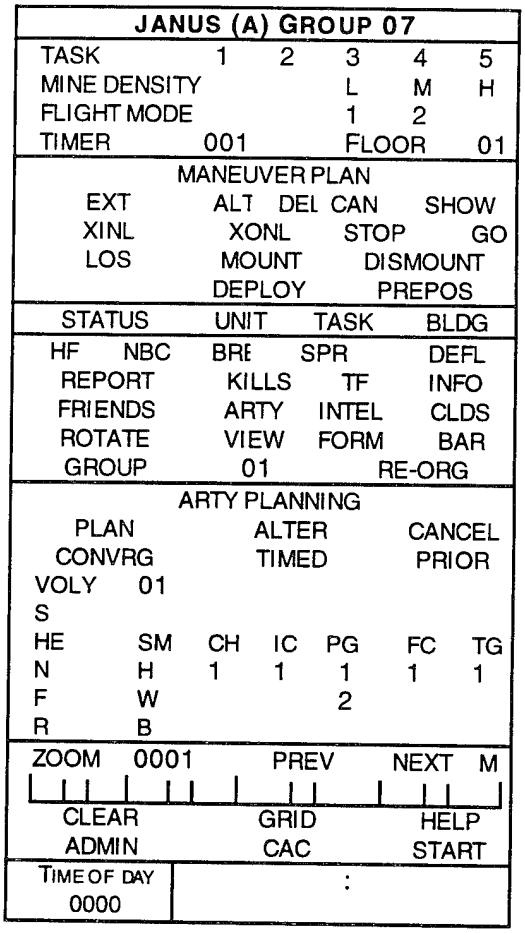
Copy (Transfer) Units (XINL and XONL)

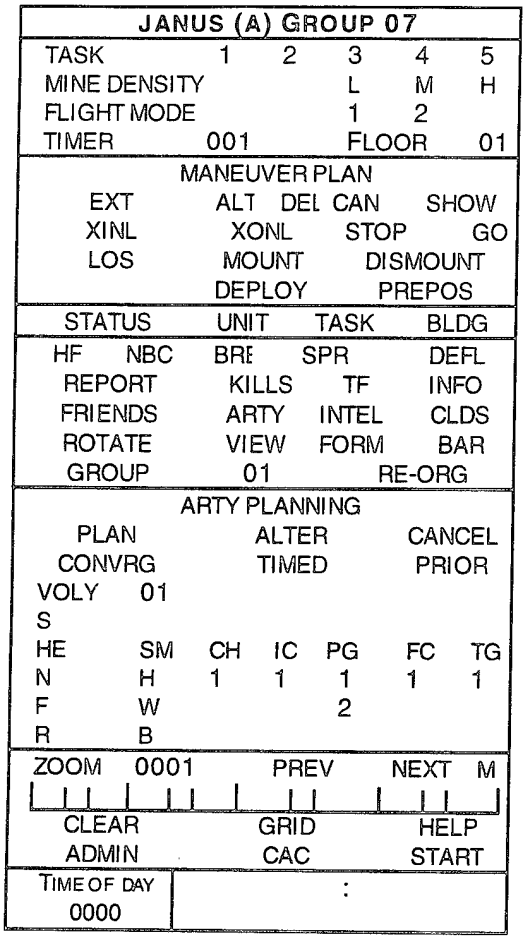
The XINL and XONL options permit you to copy routes from one unit to another. If you pick XINL (Transfer In-line) the unit to which the route is copied will follow in the tracks of (In-line) the original unit. When you pick XONL (Transfer On-line), the new movement route will parallel (On-line) the original route.

Using the tank company formation at the bottom of your screen, pick XINL, then the lead tank to display its route. To transfer this route to each of the following tanks, pick each of them in order. To view all the routes, clear your screen, then pick SHOW. Note that all following units move directly to the first node of the lead vehicle. They then follow the same route from that point on, each vehicle stopping short of the one in front. By placing the first movement node of the lead vehicle immediately in front of its start node, all other vehicles will follow the identical route. A note of caution: Vehicles moving at the same time can pile up on the same node and become difficult to control.

If you want the task force to follow the same general route, but stay in the assigned formation, you can use XONL it works the same way as XINL except each icon maintains a separate route parallel to the lead vehicle and stops in the same relative position as it started. Using the Bradley company formation at the bottom of your screen, pick XONL and the lead vehicle in the formation. Pick each of the other vehicles. When you have completed this pick SHOW to display the preplanned routes. Note that sharp turns in the route can cause routes to cross each other and reduce your ability to control. In the future, you will want to alter these routes prior to execution.

Note that with these functions, the route is copied exactly, including *STOP* and *GO* nodes, *TIME* nodes, and so on. If you put a *STOP* node in the middle of an in-line route, all units will pile up on the *STOP* node. Use GROUP STOP to stop them rather than putting *STOP* nodes in the middle of a route.





Stop and Go (STOP and Go)

These commands are issued to task forces as a whole rather than to individual units, and only affect the current node. Pick the Task Force (TF) number, then pick GO. All *STOP* nodes will turn to *GO* nodes and the force will begin movement. To stop a force already moving, pick the Task Force number and STOP.

Line-of-Sight (LOS)

LOS (Line-of-Sight) displays a unit's field of view. Display the line-of-sight fan by first picking LOS in the MANEUVER PLAN menu, then the unit.

The LOS fan (Figure 3.5) shows the direction and width of the unit's field of view. Display the LOS fan of the first tank we worked on. The width of the LOS fan of the unit is approximately 18°. The white arc at the end of the fan represents the maximum visibility range of the system. The purple arc represents the maximum firing range of the system.

> NOTE: Under certain conditions (night), a unit may not be able to see as far as the maximum range of its weapon. In these cases, the purple arc will be displayed further out than the white arc.

Janus terrain affects line-of-sight. The orange radials drawn in the LOS fan indicate areas of terrain into which the unit can see. Interruptions in the radials indicate areas which are hidden from the unit by terrain features such as hills trees and so forth.

When a vehicle is moving, the LOS fan opens to 360°. When checking LOS for aircraft the views displayed are:

- Left mouse button
  = LOS from ground level
- Middle mouse button
  = LOS from a hover (height varies by type aircraft)
- Right mouse button
  = LOS from fifty meters

When you pick a vehicle, you get the vehicle's LOS. If you should move the cursor to a place on the terrain and press the Left mouse button, will get the LOS from that point. LOS is a major function of planning your defense and is very useful during the planning of movement routes. To check a unit's LOS during movement planning, pick the Shift plus any mouse button where you want to place a movement node and a 360° LOS is displayed.

The LOS fan can be widened and the direction it points changed using the VIEW function (see page 54). Take a couple of minutes to try out these features.

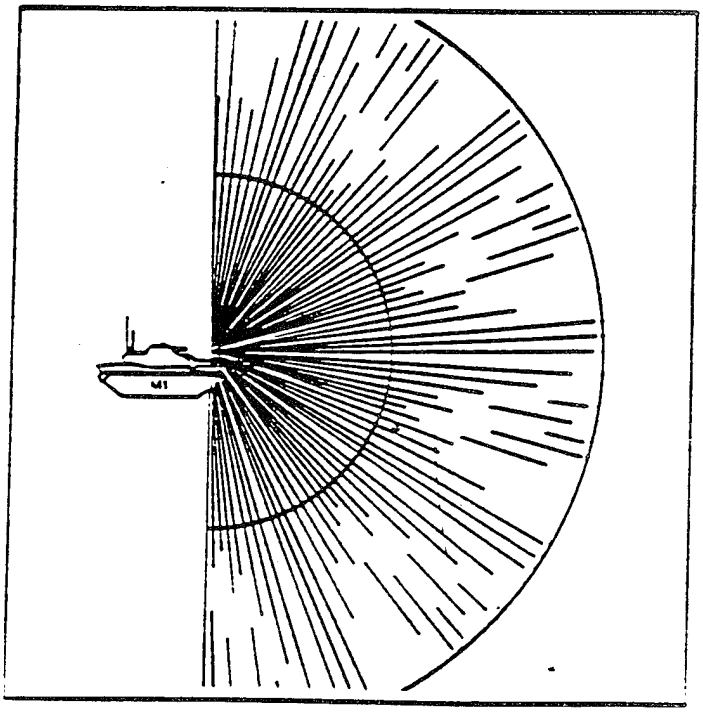
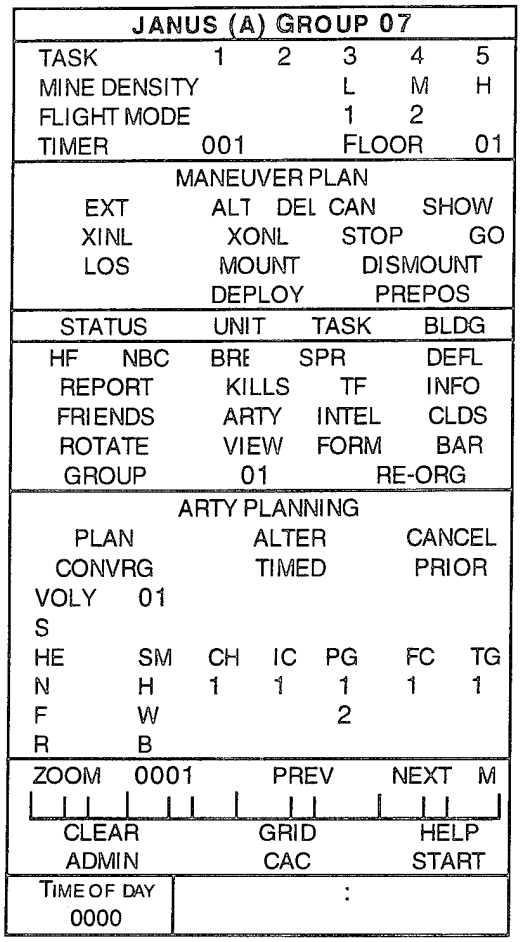


Figure 3.5. LOS Fan

JANUS (A) GROUP 07					
TASK	1	2	3	4	5
MINE DENSITY			L	M	H
FLIGHT MODE			1	2	
TIMER	001		FLOOR		01
MANEUVER PLAN					
EXT	ALT	DEL	CAN		SHOW
XINL	XONL		STOP		GO
LOS	MOUNT		DISMOUNT		
	DEPLOY		PREPOS		
STATUS	UNIT		TASK		BLDG
HF NBC	BRE		SPR		DEFL
REPORT	KILLS		TF		INFO
FRIENDS	ARTY		INTEL		CLDS
ROTATE	VIEW		FORM		BAR
GROUP	01		RE-ORG		
ARTY PLANNING					
PLAN	ALTER		CANCEL		
CONVRG	TIMED		PRIOR		
VOLY 01					
S					
HE	SM	CH	IC	PG	FC	TG
N	H	1	1	1	1	1
F	W			2		
R	B					
ZOOM 0001		PREV		NEXT		M
CLEAR		GRID		HELP		
ADMIN		CAC		START		
TIME OF DAY 0000		:				



Mounted Units

Janus allows you to mount one unit on another. It is particularly useful in mounting soldiers on troop carriers, but can also be used to mount vehicles on transports. Carrier capability, including the weight and volume of the objects mounted, is defined in the database for each unit

Mount (MOUNT)

MOUNT is used to place one or more passenger units on a carrier. The units can then be transported at the speed of the carrier unit, then dismounted at their battle position.

ZOOM on the Bradley company at the bottom of your screen and pick MOUNT. You will see a line drawn under all vehicles capable of mounting troops. To mount the infantrymen on their carriers, pick an infantryman icon. Notice that the infantryman has replaced the cursor. Now place the infantryman on top of the vehicle and press the Left mouse button. You now have the cursor back and a message appears at the bottom of the screen telling you the unit is now mounted. You can load all carriers in the same manner.

One infantryman and one MAW gunner go in each carrier. Do this now. If you try to load more personnel in the carrier than are authorized, the last system you try to mount will disconnect from the cursor and reappear in its original location. The MOUNT function can be executed using any button.

Dismount (DISMOUNT)

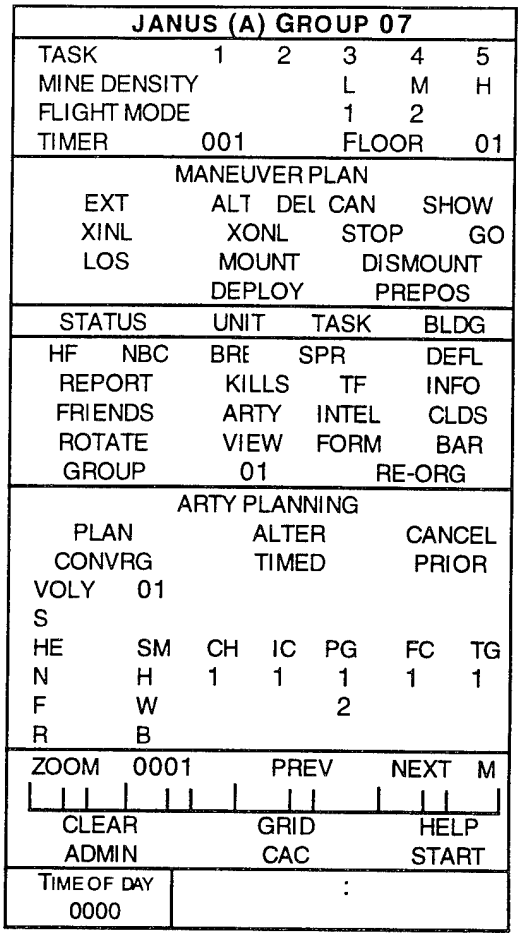
To unload mounted systems, pick DISMOUNT. All carriers (vehicles which have other units mounted) will be highlighted by a white line. Once you have selected a carrier, you can dismount all of the units mounted on it at one time, or you can select which units you want to dismount.

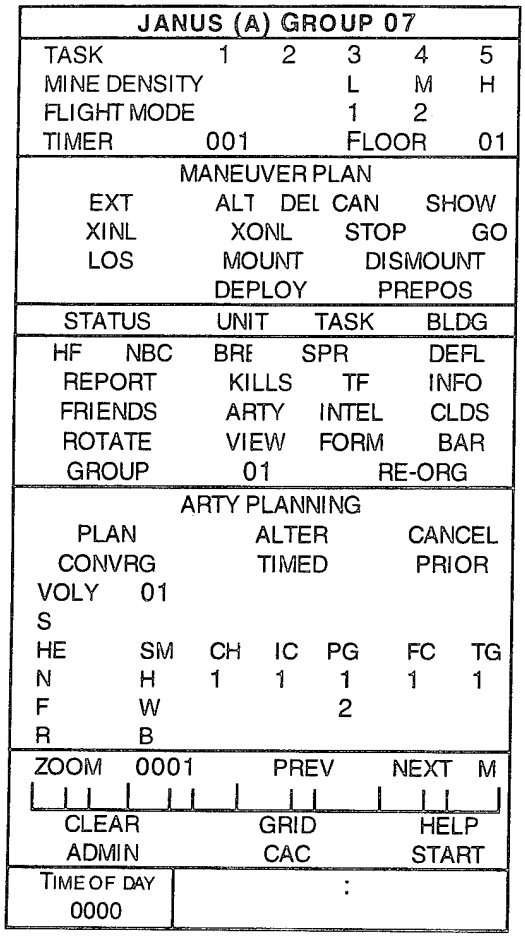
To dismount all of the mounted units, pick the carrier unit with the Left mouse button. The mounted units will all be dismounted and arrayed close to the carrier. Note that unless you have previously planned movement routes for these units, they will have no current orders.

To select units to be dismounted, pick the carrier with Shift plus any mouse button. All of the units mounted on the carrier will be displayed adjacent to it. If you want to dismount only one of these passengers, pick it with the Left mouse button. That unit will dismount and the others will automatically be remounted.

If you want to dismount more than one of the passenger units, pick each one with Shift plus any mouse button, except the last one to be dismounted. Pick the last one with the Left mouse buttons. All remaining passenger units (if any) will then be automatically remounted on the original host unit.

If you don't want to dismount any of the passenger units, you a can either pick a different carrier or pick a new screen menu item. You can use this to review the passenger units, one carrier at a time, without having to dismount then remount the passengers.





Deploy (DEPLOY)

The DEPLOY function is used to position icons on the screen and to modify the number of elements or fuel status of units. DEPLOY is available to all workstations at time 0. It is available to controller workstations only (see section on controller workstation) during the time that the simulation clock is running and it is then located in the STATUS section of the master menu.

To modify the data for an icon:

- Pick DEPLOY with any button
- Pick the icon that you want to modify using one of the following buttons:
  - Left button = move picked icon
  - Move the icon to the desired location and drop using:
    - Left button = drop icon at this location
    - Any other button = drop icon at this location and show LOS
  - Center button = set percent of maximum fuel
  - Right button = set number of elements (maximum of 14)
  - Shift plus any button = dismount units

When set fuel and set number of element options are used an instruction is printed at the bottom of the map and a white input box is created on the upper left of the map with the heading "Enter Text: (Or ZZ to cancel)". The fuel state is entered in percent from 0 to 100. The number of elements is limited to 1 to 14. When any icon selection button is used and there is no icon under the cursor, the instruction "Input unit number above" is issued and the white box will appear. If the unit number is not assigned to this workstation the response "UNIT NOT AVAILABLE" will be given. If the unit is assigned to this workstation its icon will be deployed under the cursor for deployment.

Prepared Positions (PREPOS)

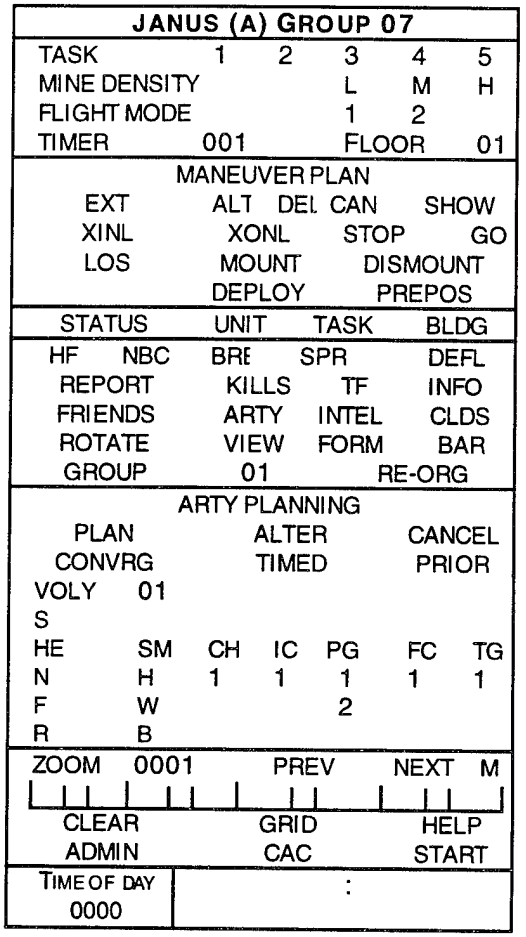
Janus supports several levels of defensive protection. Units on the move are in the open and are least secure. Thirty seconds after a unit stops, it is considered to be in partial defilade, which makes it somewhat harder to acquire and provides somewhat more security. It is possible to put units into full defilade using the Defilade (DEFL) selection on the menu. Full defilade assumes the units have adequate cover and the troops with the unit have done some work preparing the hidden position. When a unit is in full defilade it can acquire targets, but cannot shoot. On the other hand, units in full defilade are very hard to acquire by enemy forces.

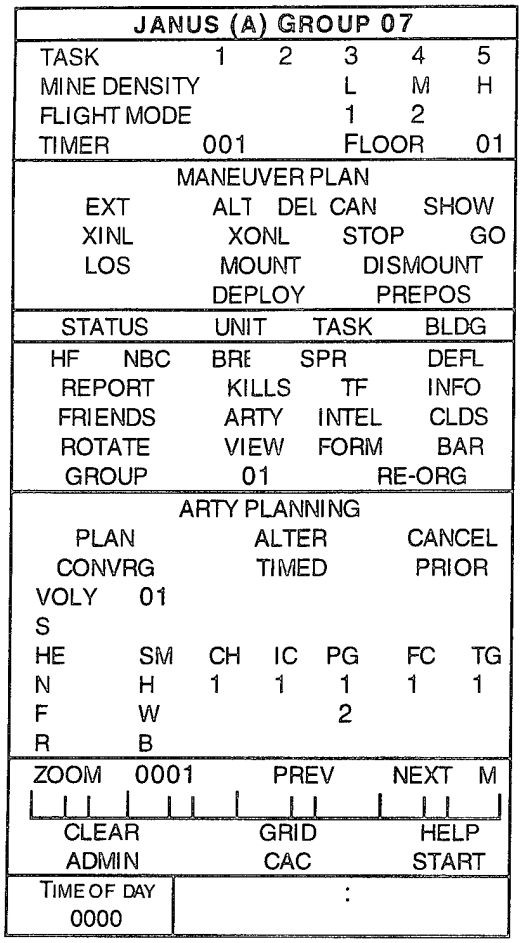
The PREPOS option on the menu permits you to place prepared positions on the ground. A prepared position simulates a two-step fighting position (infantry) or a prepared "hide and shoot" position (armor). A unit in a prepared position is in full defilade until it acquires an enemy unit, steps (pops) up to fire, then goes back down into full defilade. The time it takes to go from full defilade to firing position and back to full defilade is defined in the database for each unit.

Janus does not constrain the number of prepared positions entered in each simulation run. Since it is assumed the prepared positions must be constructed by engineers, the number you use should depend on the amount of engineer assets and time available to you. Based on these conditions you will be allocated a specified number of prepared positions.

To designate prepared positions, pick PREPOS, then move the cursor to a place on the terrain. You can use any button to drop the position which is displayed as a red cross. You can place the red cross on a unit; the unit will then be considered as occupying a prepared position. You can also pre-locate prepared positions and move units to them after the simulation run has started. To remove a prepared position, simply move the cursor to the red cross symbol and press any color button.

> **NOTE:** Aircraft movement routes can be planned to stop on a PREPOS and the aircraft will assume the POPUP posture.





THE UNIT STATUS MENU

This portion of the menu allows you to review or change the status of units in your task forces. It also allows you to reorganize the task force structure and screen display setup. When reviewing or changing the HF, NBC, BRE, SPR, or DEFL status with UNIT highlighted, only the unit picked will be affected. When TASK is highlighted, the entire task force will be affected.

HF, NBC, BRE, SPR and DEFL are all "toggles." That is, the status they represent is either on or off. When you display a unit in "off" status, a bar (___) is displayed below the figure. If the status is "on" a V is displayed.

Holdfire (HF)

Direct fire units automatically engage enemy units once they have been acquired and are within range. Holdfire (HF) permits you to order the unit or task force not to shoot, regardless of the proximity of the enemy. Placing units in "no-shoot" is particularly useful in planning reconnaissance units or in setting up ambushes. The entire task force may then be returned to "shoot" status when conditions are right.

To check the holdfire status of a unit, pick the HF option and the Task Force number at the top of the menu. If the unit is in no-shoot, a "V" appears underneath the symbol. If it is in shoot, the symbol underneath the unit is a bar (__). To change a unit's status pick HF, then pick the unit. The symbol under the unit will change to indicate its new status.

Pick HF in the status menu and Task Force 1 in the Admin Menu. Notice they are all in the "shoot" mode. Pick any unit to change its status to holdfire. Notice the bar changes to a "V". In order to change all of the units in the task force, pick the TASK field on

the STATUS menu and pick any unit in the task force. Now all units are in holdfire.

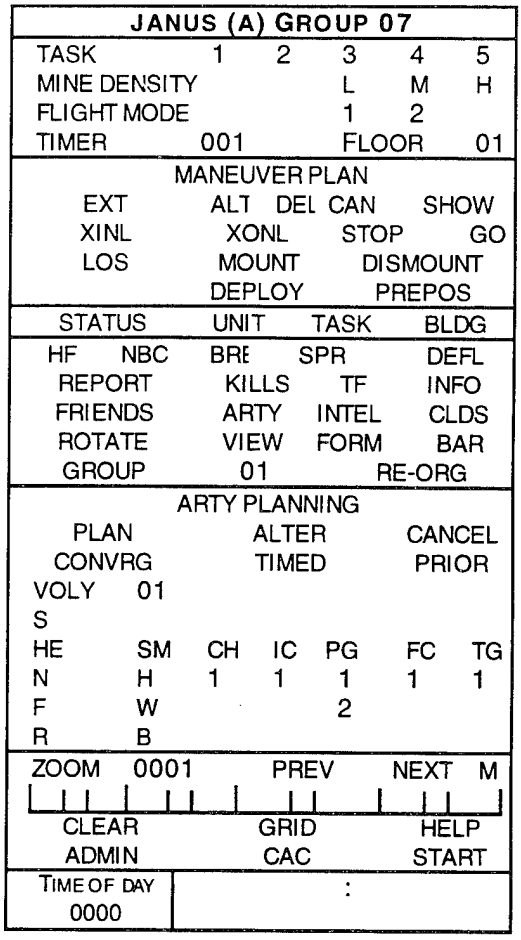
NBC (NBC)

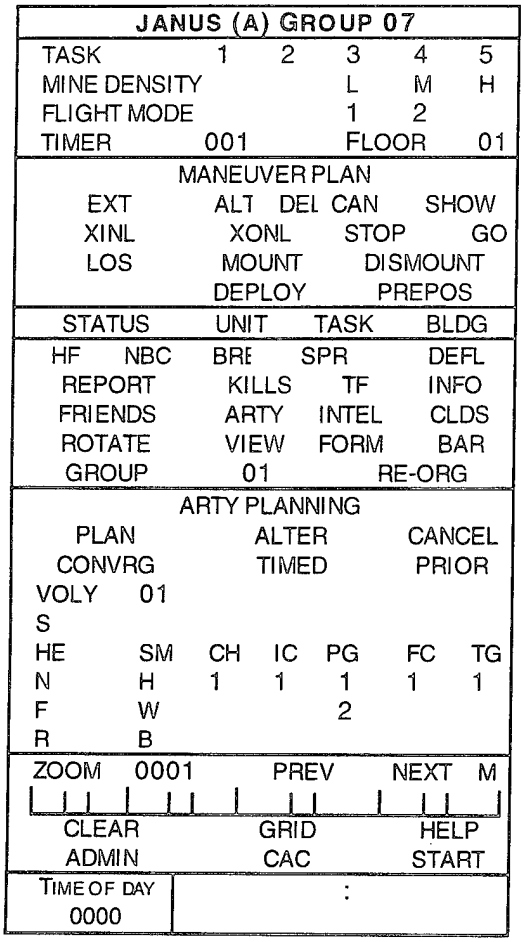
Janus supports two Mission Oriented Protective Postures (MOPP), MOPP1 and MOPP4. When units are in MOPP4, they have protection from chemical weapons, but some of their operational capabilities (such as reload time and acquisition) are degraded by approximately fifty percent. NBC permits you to toggle between the two. MOPP status may be turned on in anticipation of a threat chemical strike or turned on after chemical weapons have been used.

The unit's original MOPP status is set in the planning phase and adjusted as need be during the execution of the game. A "V" symbol below the unit indicates it is in protective posture and a"____" means it is not. The status is checked the same way as holdfire (HF). Check the status of Task Force 1 at this time. Change the status by picking each unit, or the whole task force at once.

Breach Mode (BRE)

Some units in the simulation have the capability to clear minefields. When BRE is toggled on, these units can clear minefields discovered during the battle. Breach is toggled on and off in the same manner as the previous functions. Tanks equipped with mine plows or engineer vehicles equipped with mine clearing equipment such as MICLIC must have the breach mode turned on when a minefield is acquired. When breach mode is turned on, two yellow lines will be drawn on the screen as the unit moves, marking the route it has cleared. The breach lanes will appear on all screens of a side. Other units can use these breach lanes to traverse the minefields safely. The MICLIC will clear only one 100 meter lane then appear to stop (it actually moves at 1 km/hr). You must take it out of breach to get it moving.





Sprint (SPR)

Each unit in the simulation has movement speeds and capabilities defined in the database. The speeds depend on the kind of vehicle and whether they are moving on a road or cross-country. In addition, group speed is entered into the simulation run-time parameter screen. By default, all units in a task force move together at the group speed. This facilitates keeping task forces in formation.

Occasionally you will want the units in a task force to move at their maximum individual speeds. To do this, toggle SPR on. Sprint mode is checked or changed as discussed for the previous options. The "V" symbol means each unit in a task force is traveling at its individual maximum speed and the symbol shows the entire task force traveling at group speed.

Defilade (DEFL)

A unit which is moving is considered fully exposed: it can acquire and shoot and be acquired and shot. A short time after the unit stops, the simulation automatically places it in partial defilade. It can acquire and shoot, can be acquired and shot, but not as easily as if it were fully exposed.

When DEPL is toggled on, a unit is placed in full defilade. A vehicle in full defilade can acquire enemy targets but cannot shoot them. The ability to detect a unit in full defilade is reduced to twenty percent of normal. It will be detected by the enemy if they approach within fifty meters, and may be detected at greater ranges, but the probability of acquisition is greatly reduced. Note that aircraft will not go into full defilade.

The "V" symbol means a unit is in full defilade and can't shoot. The "__" symbol means the unit is in partial defilade and can engage enemy targets. You should note that by placing a unit in full defilade you are automatically placing them in a no shoot status. Check the defilade status of your units and change them if so desired.

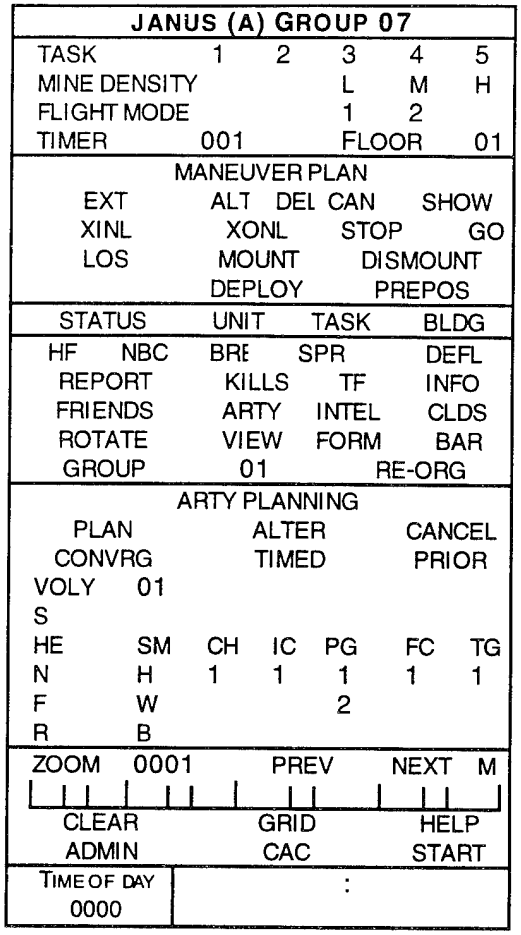
Reports (REPORT)

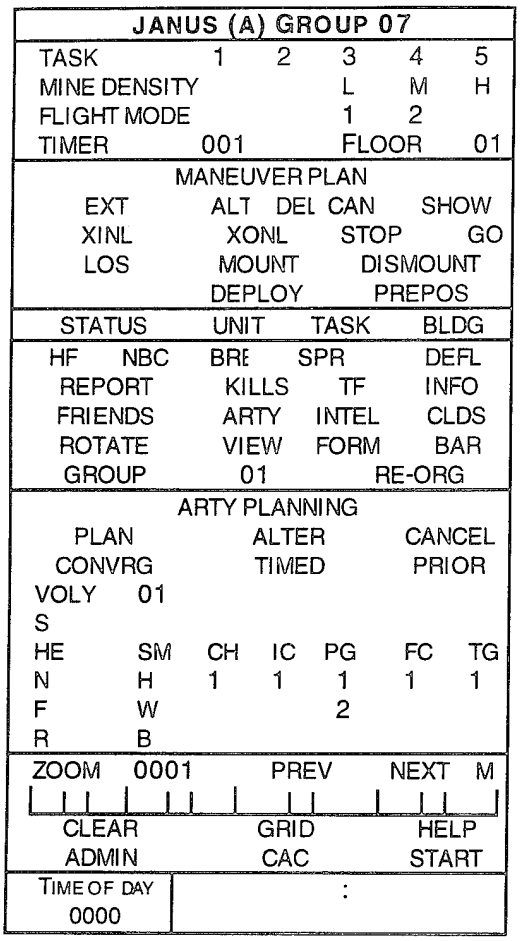
This portion of the STATUS menu enables you to obtain updated reports on friendly, and in some cases enemy units, during the battle.

Kills (KILLS)

The KILLS report displays all of the casualties suffered on your side. If you pick KILLS with the Left mouse button, casualties will be reported for the task force highlighted at the top of the menu. If you pick KILLS with the Middle mouse button, casualties are reported for all forces on your workstation (GROUP). If you pick KILLS with the Right mouse button, casualties are reported for all task forces on your side.

The KILLS report prints the type of unit, the original number of that type unit, the current number of units, the current number of unit losses and the total losses. Try this now. Since the game has not started, no losses are shown. To clear the screen, pick CLEAR with the Right mouse button.





Task Force (TF)

The Task Force (TF) Report displays the following for each unit in the selected task force when picked with the Left mouse button. Use of any other button causes the unit numbers to be drawn under each unit of the selected task force.

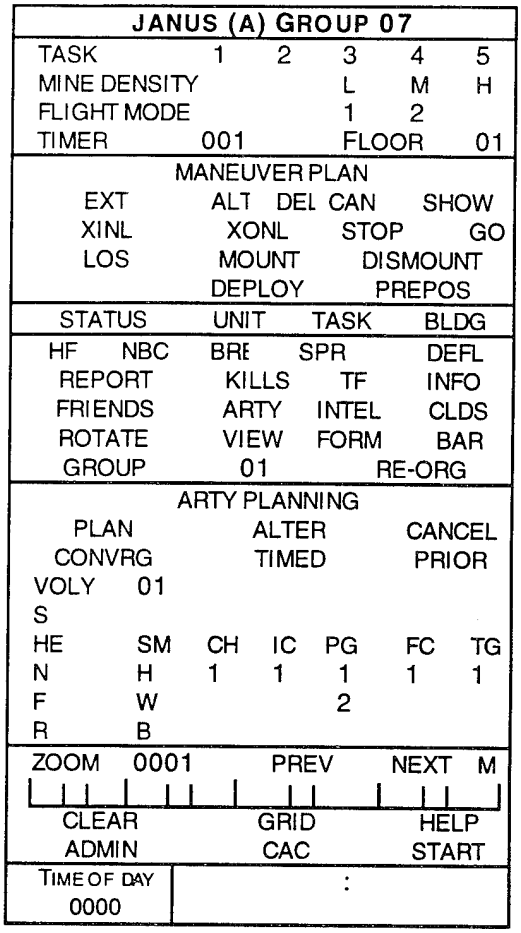
- Unit Number - The "bumper" number of each unit in the task force.
- System - The system represented by the symbol (MIAI, Rifleman, etc.).
- VR - The initial/remaining number of units in the symbol.
- DELAY - If a unit is stopped or suppressed.
- VELO - The current speed of each unit (km/ hr).
- DEFL- The defilade status of each unit
- FUEL- The current fuel on board (percent).
- HLD- Whether or not each unit is in holdfire.
- SUPR- Whether or not each unit is suppressed.
- HOST - Identifies vehicles carrying passengers.
- CHEM - Radiation/chemical state of each unit:
  INOP = inoperable,
  DEAD = killed by chemicals.

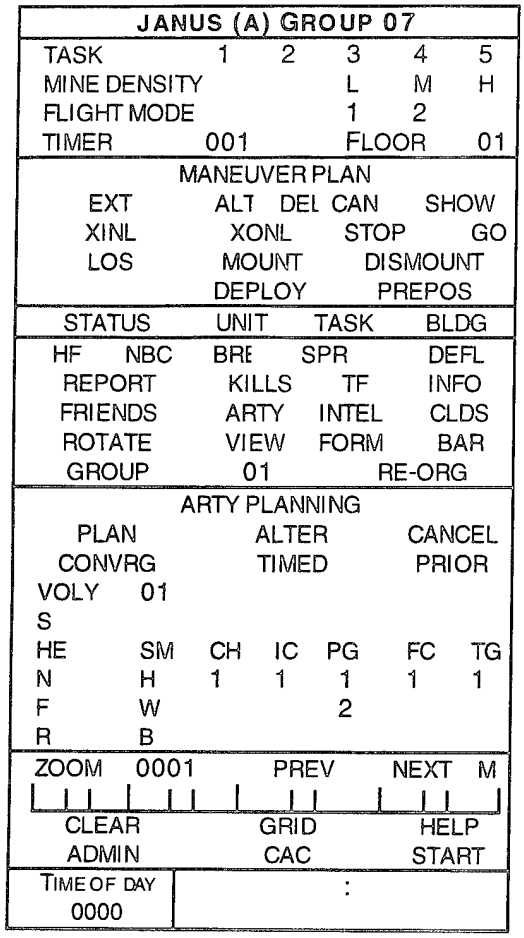
Unit (UNIT)

The UNIT report displays the same information for a single unit as is displayed in the Task Force Report. To get the general report, pick UNIT then pick a unit symbol with the Left mouse button. If you then pick the unit symbol with the Shift plus any mouse button, the ammunition status of the unit will be displayed. Picking the unit with the Right mouse button will display its movement route. Additionally, all units capable of breaching minefields are identified in the Left mouse button Unit Report

Grid coordinates and elevation may be obtained by picking UNIT, placing the cursor on the map, and pressing any button. If a friendly unit is located at the position though, you will receive a unit report rather than coordinates. If you pick an opposing force unit, the message will identify how many elements are represented by that symbol and the coordinates at that point. In order to display the grid coordinates of a friendly unit you use the Middle mouse button. Additionally, the UNIT report allows you to obtain information on friendly minefields by picking the minefield with the left mouse button. Information displayed is:

- Minefield number
- Minefield density
- Dispenser type
- Total number of mines
- Location (center of minefield)





Friends (FRIENDS)

The FRIENDS feature allows you to see friendly forces assigned to other workstations. When FRIENDS is selected, those units which your units can see will appear on your screen in green. We can try this out once we have created a multi-screen scenario.

Artillery Report (ARTY)

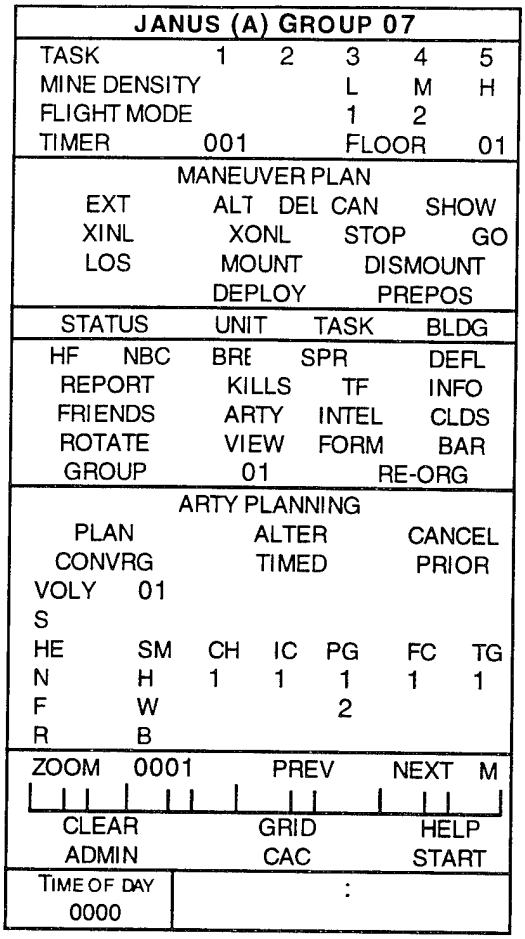
ARTY reports the status of planned artillery missions. The report categories displayed on the screen are:

- Unit - The unit's bumper number.
- Name- The name of the weapon.
- PRJ- The type of projectile fired.
- NO. - The number of weapon systems in the unit (aggregation).
- FTIME - The game time of the next mission volley.
- AIMPOINT- The grid coordinates of the target.
- SPR - Whether or not the unit is suppressed (y = suppressed).
- TOF - Time of flight (seconds) from the next firing until impact.
- RLD - The reload time (seconds).
- PLN - Planning time (seconds). Planning time and reload time determine the time between successive volleys.
- VTG - The number of volleys to go to complete the mission.

Intelligence Report (INTEL)

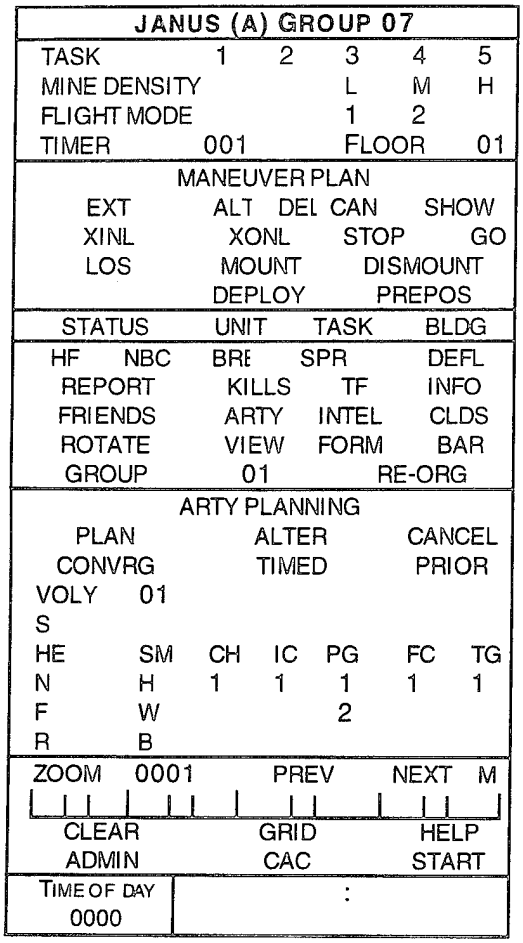
This report can only be accessed once the simulation run has started. When INTEL is picked with the Left mouse button, white lines are drawn from friendly units to the enemy units they have acquired. If you use the Shift plus any mouse button, the same thing occurs except only those enemy units that are detected at the identification level are displayed. When you pick INTEL with the Middle mouse button, enemy artillery units which are detected firing are displayed in purple. Non-artillery units which were detected in the last fifteen minutes, but are not currently being observed, are displayed in white at their last reported location.

To display the number and deployment of systems which an enemy symbol represents, pick INTEL with the Right mouse button. Each system represented by the symbol will be drawn as a small white box. The alignment of the boxes shows the orientation of the systems. A message is displayed at the bottom of the screen giving the total number of opposing forces currently being acquired. Using the INTEL function with the Right mouse button is the only means of estimating enemy losses during the simulation.



Clouds (CLDS)

CLDS is a toggle which switches the smoke cloud display on or off. Note that the clouds are modeled by Janus and their degradation taken into account regardless of whether or not you have them displayed on your screen. Only you can decide if your screen is too cluttered to have clouds on, and act accordingly. The cloud model is three dimensional which makes it possible to shoot over and under the clouds. This is especially true of the large area smoke generator. As the cloud drifts, it becomes thinner.



Rotate (ROTATE)

The ROTATE function is used to set the alignment of LOS fans (VIEW), formations (FORM) and barriers (BAR).

View (VIEW)

This function enables you to adjust the orientation and size of a unit's line-of-sight fan. Pick VIEW and a unit; the unit's LOS fan will be displayed. Place the cursor to the right of the unit and depress the Left mouse button. The line-of-sight fan moves to the right, centered on the cursor. Try this several times, selecting different directions. Move the cursor away from the icon and pick the Right mouse button to adjust the size of the line-of-sight fan. Moving the cursor further away from the icon widens the line-of-sight fan.

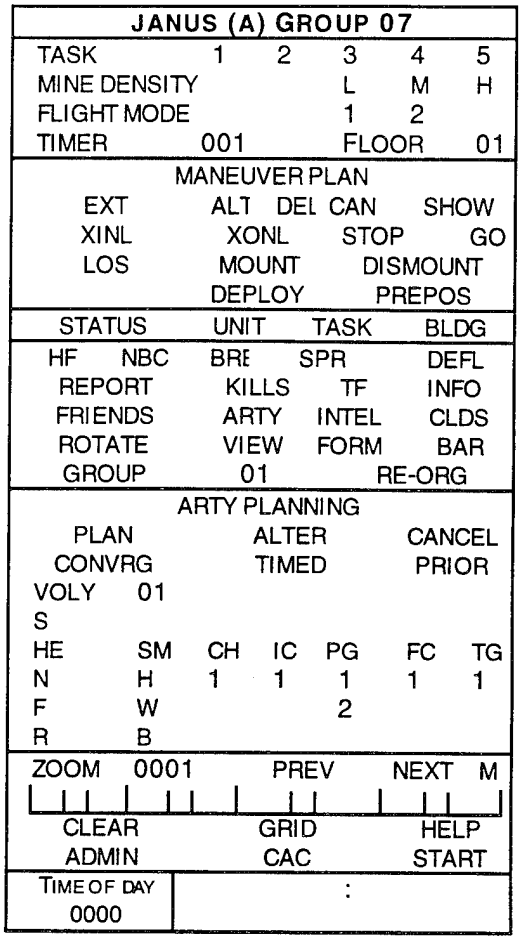
While a unit is moving, its LOS fan is automatically set to 360°. When the vehicle stops, the line-of-sight fan returns to the previous setting. At this time, try different settings. Note that regardless of the LOS setting, all units automatically adjust to a 360° view fan when moving. When the moving unit stops, the view fan adjusts back to its original setting with the primary direction oriented on the direction of last movement.

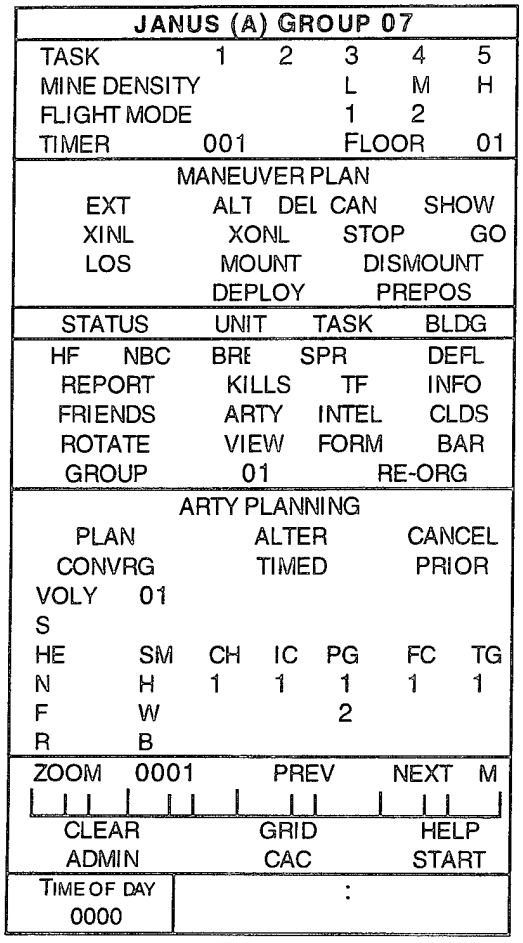
Form (FORM)

In most scenarios, the symbol appearing on the screen is aggregated. That is, it represents more than one system. FORM enables you to determine the number of friendly systems a symbol represents and the alignment of those systems on the ground. FORM also shows the number of tubes aggregated in an artillery weapon or mortar and their pattern of alignment. It is most often used to re-align the artillery tubes so they fire the correct pattern.

ZOOM on the tank and mech forces at the bottom of the screen. Now pick FORM and any one of the tank or mech icons, using any button. You will see a series of white squares in a line. By counting them you know how many elements the symbol represents. The spacing of these squares represents their distance apart on the ground and their alignment. Unit alignment can be changed by moving the cursor away from the unit in the desired direction of orientation and pressing the button again. Go ahead and try this. The elements will rotate so as to be on the line between the cursor and the center of the symbol.

Adjustment of alignment is used primarily for indirect fire weapons systems, since the alignment of the aggregated unit determines the pattern of how rounds fall on the target. If you were firing on a threat column moving on a road, you would want to align the guns so they are parallel to the road. The rounds would then fall along the length of the column, maximizing the effects. Regardless of the alignment you set while stationary, when the units move they reorient in the direction of march. When moving and contact is made, the formation reorients to an assault alignment.





Barriers (BAR)

The barrier (BAR) function is used in conjunction with DEPLOY to set the orientation of the barriers. Barriers are positioned using the DEPLOY function in the same manner as you position forces. In order to get them aligned correctly, you must first set the orientation using BAR.

Pick BAR with any button. A white circle with a line segment pointing from the circle's center to its outer edge appears on the World View map. The angle of the line segment determines how barriers will be oriented when positioned using DEPLOY. To reorient the line, place the cursor on the perimeter of the circle and pick any button. The white line will reorient to connect to the cursor. Do this until the line is oriented in the direction you want the barrier to lay.

Barriers must be oriented prior to deployment. Go to the MANEUVER PLAN menu and pick DEPLOY. Then pick one of the barriers located along the right side of the screen and position it with the Left mouse button. The orientation should be the same as the angle you set in the barrier diagram. All barriers will be positioned at this angle until you change the barrier diagram. Note that when placing minefields, you must set the mine density level at the top of the menu prior to deploying the minefields.

Reorganize (RE-ORG) and Group (GROUP)

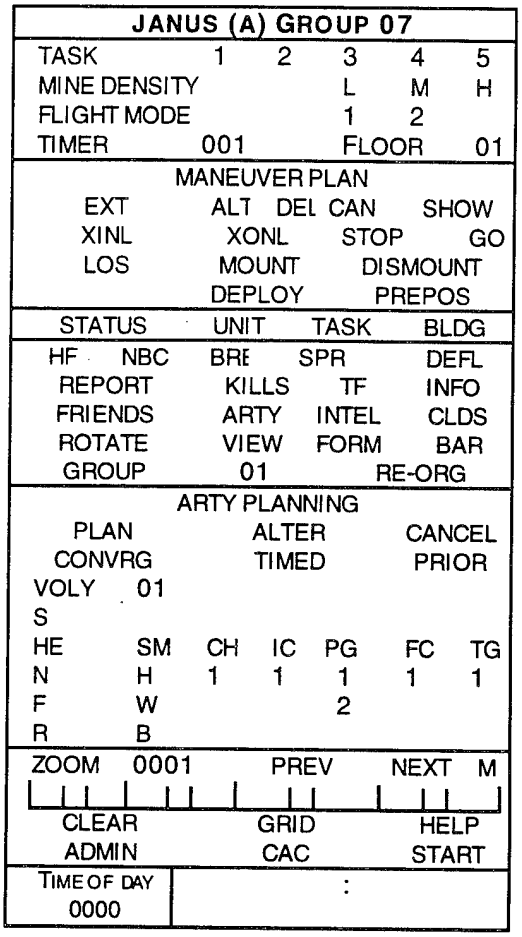
RE-ORG is used to transfer units from one task force to another. It can also be used to transfer units between workstations. One unit at a time can be transferred by picking UNIT, then one or more unit symbols. You can transfer an entire task force at one time by picking TASK, then pick the task force number at the top of the menu to be transferred. When you pick one element of the task force, they will all transfer.

RE-ORG must be used in conjunction with the GROUP identifier located to the left. The group (workstation) number is set by using the cursor to increase or decrease the number. To increase the number, pick on the number to the right of GROUP with the Left mouse button. To decrease the number, pick it with the Right mouse button.

To transfer units from one task force to another on your own screen, pick RE-ORG. Next, set the GROUP number to your workstation group number. Pick the task force (TASK) number at the top of the menu, then pick all of the units you want in the task force. When you are finished with the task force, pick another task force number.

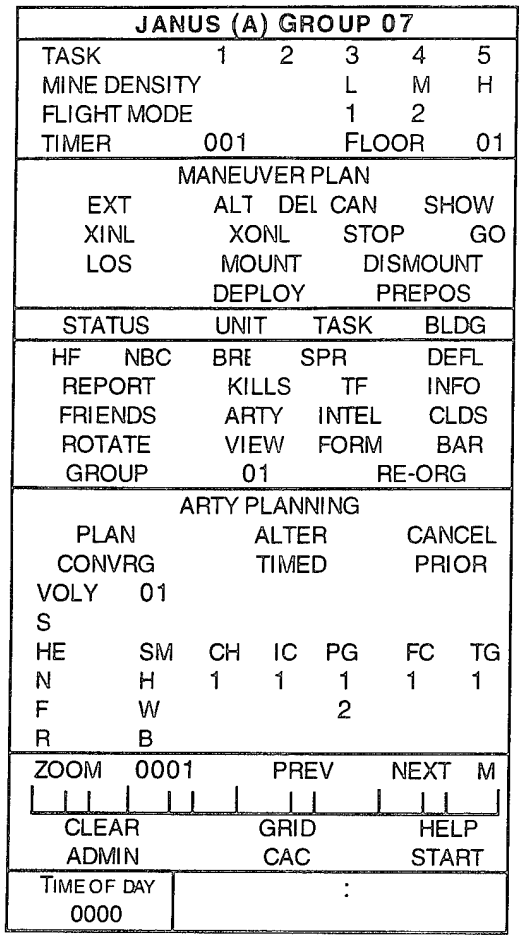
To transfer units to another workstation, select RE-ORG. Then set the GROUP number to that of the workstation you want to send them to. Next, depending on whether you wish to send one unit at a time or the whole task force, select UNIT or TASK. Now, pick the task force number at the top of the menu that you are dealing with. When you pick a unit, it will disappear from your screen and re-appear on the other workstation as a member of the corresponding task force on the screen. If you selected TASK, the entire task force will move.

Example: You are on the GROUP 1 screen. Your task forces are numbered 1 through 5. You want to transfer some of the units in your task force 1 to the GROUP 3 screen. The GROUP 3 task forces are numbered 11 through 15. First you pick RE-ORG and set the group number to 3, then TASK 1 at the top of your menu. Finally, you pick the units you want to transfer. They will be moved to the GROUP 3 screen and become part of his task force 11.



Distributed Janus uses Groups 90-99 to indicate the distributed hosts in the GSINGX.DAT file. (i.e., 90 is the first entry etc.)

Re-org to these groups causes the icon to move to the heap on the sending workstation and the receiving workstation has the icon moved from its heap to the current location.



ARTILLERY PLANNING SECTION

This portion of the menu enables you to plan and execute artillery missions. There are three types of missions: sequenced, timed, and priority. Sequenced missions are the default, firing in the order they are entered. Timed missions are programmed to fire at a specified time as determined by the game clock. A priority mission will supersede all other missions and be fired as soon as it is entered. This menu applies to any indirect fire weapon systems, artillery or mortar. It is also used to fire the rockets on the attack helicopter.

In order to plan a mission, you must select the kind of round to be fired (HE, SM, CH, IC, PG, FC, TG). All of the units capable of firing that kind of round will be highlighted on the screen.

Plan (PLAN)

Pick PLAN. Note that one of the types of ammunition (the default is HE—high explosive) in the bottom half of the artillery menu is also highlighted. The number of that type of round available also appears at the bottom midpoint of the ARTY PLANNING menu. If the letter N under HE is not highlighted, pick it now. Looking at the Current View map you should see a series of units highlighted with white X's. They are the weapon systems which are available to fire a mission using this type of round.

The first type of round is high explosive (HE). The three options below HE are normal (N), flechette (F), and rocket assisted projectile (R). The next type is smoke (SM). The sub-options are hexachloride (H), White phosphorous (W), and bi-spectral (B). CH stands for chemical and there is only one type. Instructors can play the type of agent for chemical fires (persistent or non-persistent). IC means improved conventional munitions. PG is precision guided munitions. Janus plays two types of precision guided munitions. FC represents FASCAM (Family of Scatterable Mines). PG and FC require special considerations. TG stands for terminally guided munitions.

Pick PLAN, then pick N under HE. Use the Left mouse button to increase the number of volleys and the BLUE to decrease. Next, pick any of the highlighted weapon systems. Note that you must pick it precisely. You now see two circles (Figure 3.6). The small circle is the minimum range of the weapon and the large circle is the maximum range. You cannot place a mission inside the minimum range circle or outside of the maximum range circle.

Move your cursor and you will see an orange line ("rubber band") connecting the cursor to the weapon. Place the cursor anywhere between the two circles and depress the Left mouse button. A dashed line connects the target with the weapon. The number "1" is at the top left of the target and the letters "HE" at the top right. This indicates that this is the first mission this weapon system will fire when the game starts and it will be with high explosive rounds. Missions are numbered consecutively by system. You may plan up to twelve missions per weapon. Additional missions can be added as the first missions are completed.

If you are planning a mission and decide you don't want it, you may drop it with Shift plus any mouse button and the mission will not be registered in the computer. Try this now. Likewise, if you drop it inside the minimum range or outside the maximum range circles, the mission will not be registered.

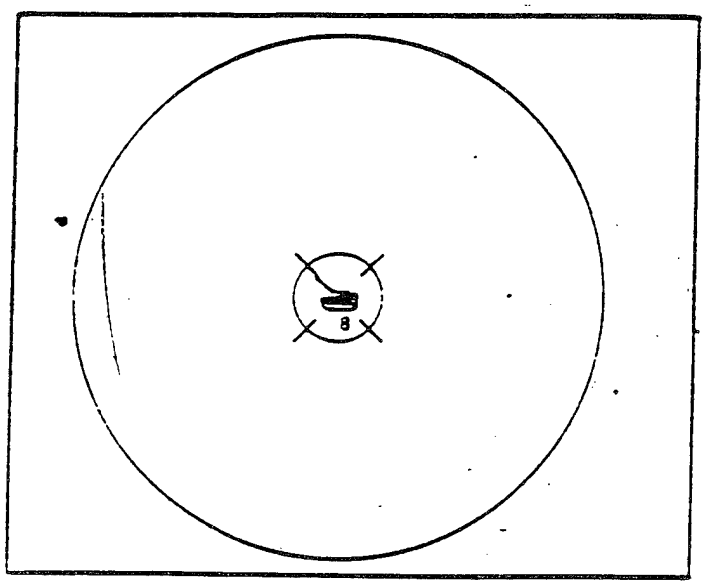
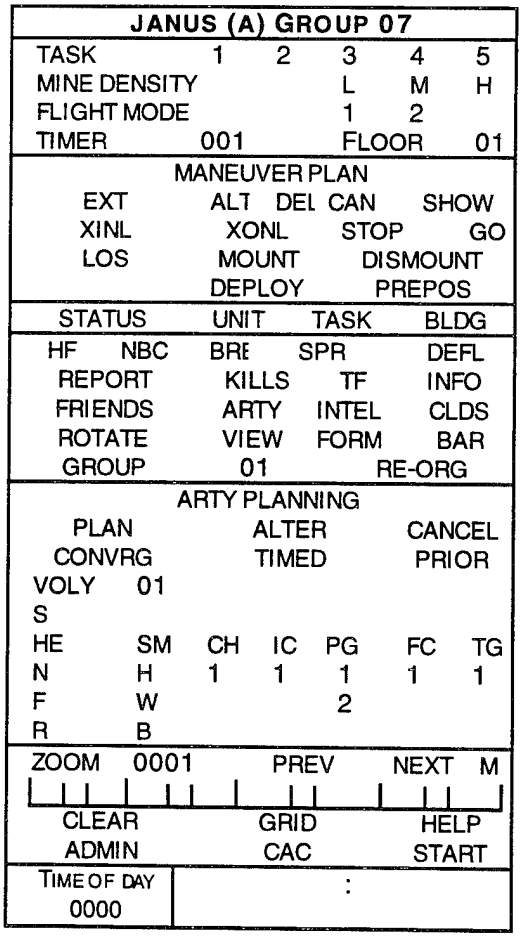
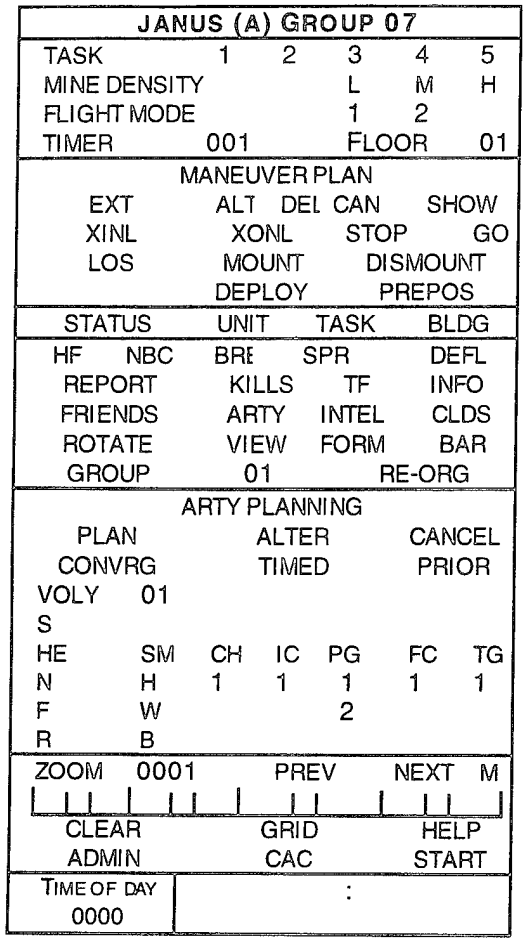


Figure 3.6. Artillery Minimum and Maximum Range





Alter (ALTER)

This function enables you to alter any pre-planned mission. Clear your screen and then pick ALTER. All weapon systems which have planned missions will be highlighted on the screen. Pick the system with the mission you want to change. If you pick it with Shift plus any mouse button the display will also give a listing of all missions. The message gives you the mission number, whether or not it is a priority mission, the time if it is a timed mission, where it is in the sequence, the type of projectile, type of sheaf, and the number of volleys.

To change a mission's target, pick the aimpoint, move it to the desired location and drop it. To change the type of round, the sheaf, number of volleys or type of mission (timed, sequenced or priority) you must pick the data area on the menu and then pick the aimpoint with Shift plus any mouse button. For example, to change the number of volleys, adjust the volley counter on the menu and then pick the aimpoint of the mission you want to change with Shift plus any mouse button. Now pick the weapon system with Shift plus any mouse button and you will receive a listing of all missions. The change just made will be shown. CLEAR your screen.

Cancel (CANCEL)

Pick CANCEL and all weapon systems with planned missions will be highlighted with the white X. Pick the system with the missions you want to CANCEL. Then pick the aimpoint of the mission(s) to be canceled and they will disappear. As with ALTER, if you pick with Shift plus any mouse button, you will get a report of the status of the unit's missions. Most missions can be canceled, even though the mission has started to fire. Only FASCAM missions cannot be canceled once they begin to fire.

Converge (CONVRG)

The default pattern of artillery is parallel sheaf; all rounds will land in a line oriented the same as the formation of the tubes. It is possible to have all tubes in the symbol fire at the same point on the ground (converge sheaf) by picking CONVRG before planning the mission. CONVRG is usually appropriate for clearly defined stationary targets.

CONVRG is a toggle. Once it is selected, all newly planned missions will be fired as converged sheaf. Turn CONVRG off by selecting it again.

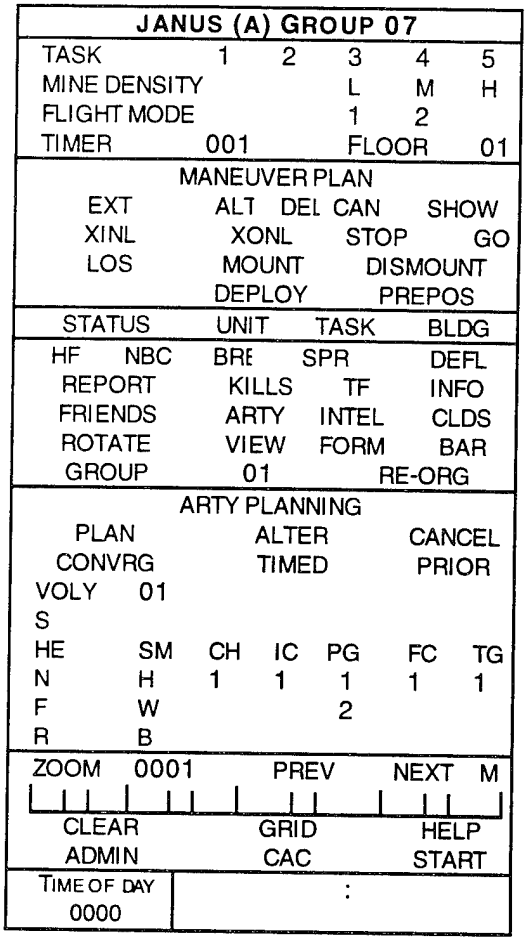
Timed (TIMED)

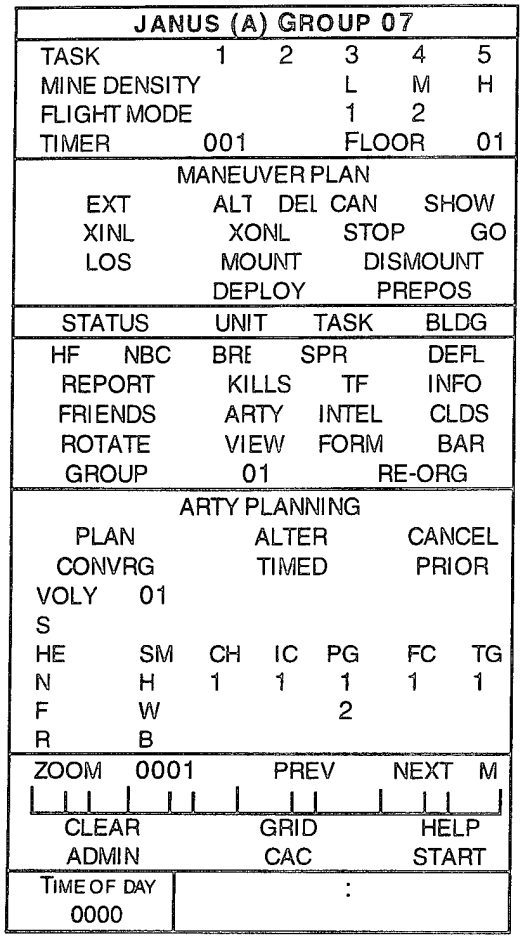
Use the TIMED option to have a mission fire at a particular game time. To plan a timed mission, set the timer to the desired time. Next pick the TIMED option, set the number of VOLYs and then pick PLAN. Select the type of round, then pick the weapon system to fire the mission and drop the mission at the desired location. Check your work by picking the weapon system with the Shift plus any mouse button to obtain a readout. Note also that the dashed line connecting the unit and the target point is much heavier than a non-timed mission. The TIMED feature is a toggle and must be turned off after use.

Priority (PRIOR)

A priority mission goes immediately to the head of the unit's mission queue. Any mission may be fired as a priority, but they don't all function the same. Priority missions cannot be preplanned. They can only be input during the game and should be reserved for critical missions.

To fire a priority mission, PRIOR must be picked and highlighted when entering the mission. Most priority missions will cancel a mission which is currently firing. A second priority mission entered on the same weapon system before the first priority mission is completed will abort the first mission. FASCAM is always planned as a priority mission, but it does not cancel the current mission.





Precision Guided Munitions (PG)

There are two types of precision guided munitions. Type 1 is artillery delivered (Copperhead) and Type 2 is non-artillery (helicopter or tactical aircraft) launched (Hellfire). These weapon systems require a unit equipped with a laser designator in addition to the system itself. Precision Guided Munitions missions can only be input as priority missions, but do not cancel the current firing mission

When you pick the 1 or 2 below PG, an X will appear on the firing units which can fire PGM. Units with the appropriate laser designators will also be shown, surrounded with an orange circle. First pick the weapon and you will get a rubberband attached to the cursor and the unit and the minimum and maximum range circles will be drawn. Then pick the laser designator unit. Another orange circle will be drawn around the laser designator, with white lines to the opposing units which are detected. The rubber band will transfer to the designator. Choose the target from those detected. If the geometric requirements of the laser designator, the weapon and the target are satisfied, the mission will fire. Otherwise a message will appear at the bottom of the screen indicating which of the requirements is not satisfied.

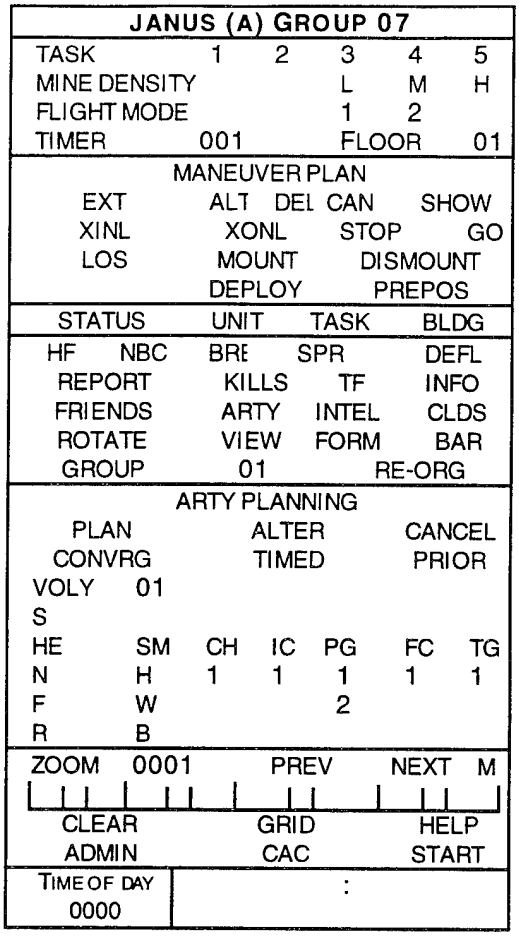
If the designator unit has no targets, you must pick another. Only Shift plus any mouse button will abort a precision guided munitions process. If the mission has been correctly entered, the message "All requirements satisfied" will appear at the bottom of the screen and the mission will be drawn.

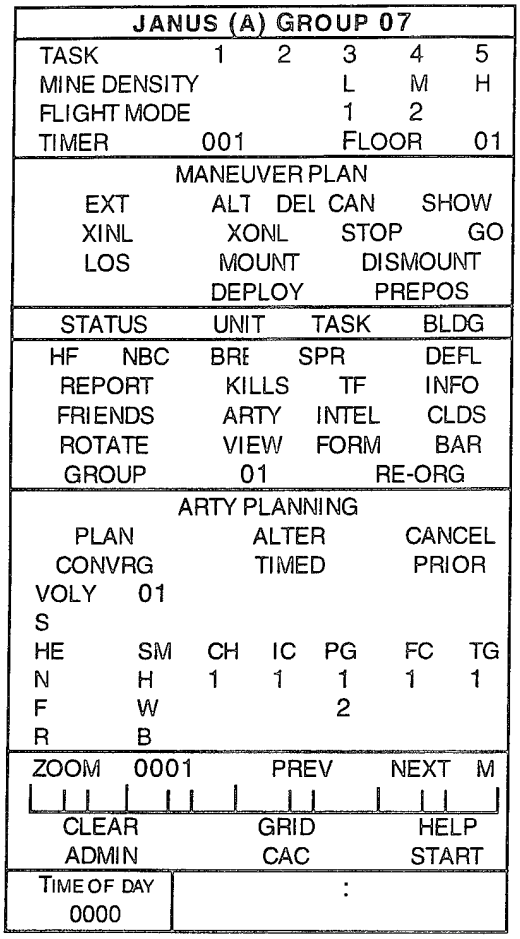
FASCAM (FC)

FASCAM missions/minefields are planned in much the same manner as other artillery rounds, with minor modifications. FASCAM missions are all priority missions and you must set the mine density at the top of the menu prior to putting in the FASCAM mission. Pick FC and all units with FASCAM capability will be highlighted with an X. Pick a unit and the minimum and maximum range circles will be drawn and the cursor will be connected to the rubberband.

Move the cursor to a spot on the ground where you want one end of the minefield and press the Left mouse button. An orange circle will be drawn to indicate the limits within which the other end of the minefield may be set. Next move the cursor to the point within the orange circle which will be the other end of the minefield and press Left mouse button. The mission will be drawn from the firing point to the minefield. A red box will then be drawn on the screen to show the preclusion area boundaries. This box will appear on all friendly screens, so all players on your side are aware of its location and can stay out of it.

Pressing Shift plus any mouse button allows you to cancel the planning process prior to completing the last step. Once the planning process has been completed, the mission cannot be canceled.





Terminally Guided Munitions (TG)

Terminally guided munitions are executed in the same manner as regular ammunition types, if they are loaded in the database.

Other ARTY PLANNING Notes

Be aware that using the CLEAR function will not clear all the artillery graphics off the screen. To clear artillery graphics, pick a function outside the ARTY PLANNING Menu.

The simulation must be running in order for you to practice planning priority artillery missions. We will have to wait until later to try these missions.

CHAPTER IV
SESSION 3: COMMAND AND CONTROL GRAPHICS

INTRODUCTION

[Instructor must provide a scenario for students to bring up prior to starting this lesson]

The Command and Control (CAC) graphics function allows you to draw on the workstation screen. It is used to create the graphic representations, usually found on military overlays, which are used with a tactical scenario. These graphics are then stored in computer data files. Each side (Red and Blue) is permitted five data files. Each data file contains a drawing (graphic) which can be used to represent a single military overlay, such as artillery planning, operational areas, or logistics planning. More than one overlay may be drawn in each data file. When that file is called up, all of the graphics stored in that file are drawn on the screen.

The CAC menu allows you to create, change, delete, or display graphics. Once created, saved, and stored, CAC can be displayed or not, as the operator desires. Pick CAC at the bottom of your Planning menu. The CAC menu replaces the Planning Menu. Note that although most of the CAC menu items are different from those in the planning menu, the Administrative block at the bottom of the menu has not changed significantly.

The CAC Menu

Like the other workstation menus, the CAC menu is divided into areas. Each area of the menu is used to perform specific activities. The areas are not labeled, but we will name them for our convenience (Figure 4.1). The top two lines on the screen are used to manage the CAC data files; we will call this the File Management areas. Use these lines to select a stored file, display the drawings in the file, save changes in the file and combine displays.

The next area of the menu, which we will call the Style Selection area, contains the choices which let you select the kind of graphic (line, text or symbol) you want to draw, the style and the color of the graphic, the attitude and position of the graphic. The third

area (SYMBOL CHOICES) displays a number of pre-drawn symbols which may be used in your graphic. The DEFAULT SIZES selection area permits you to select and/or modify the size of text and symbols. The final area is Administrative and is the same as the administrative areas of the Planning and Execution Menus, except that there is no START option.

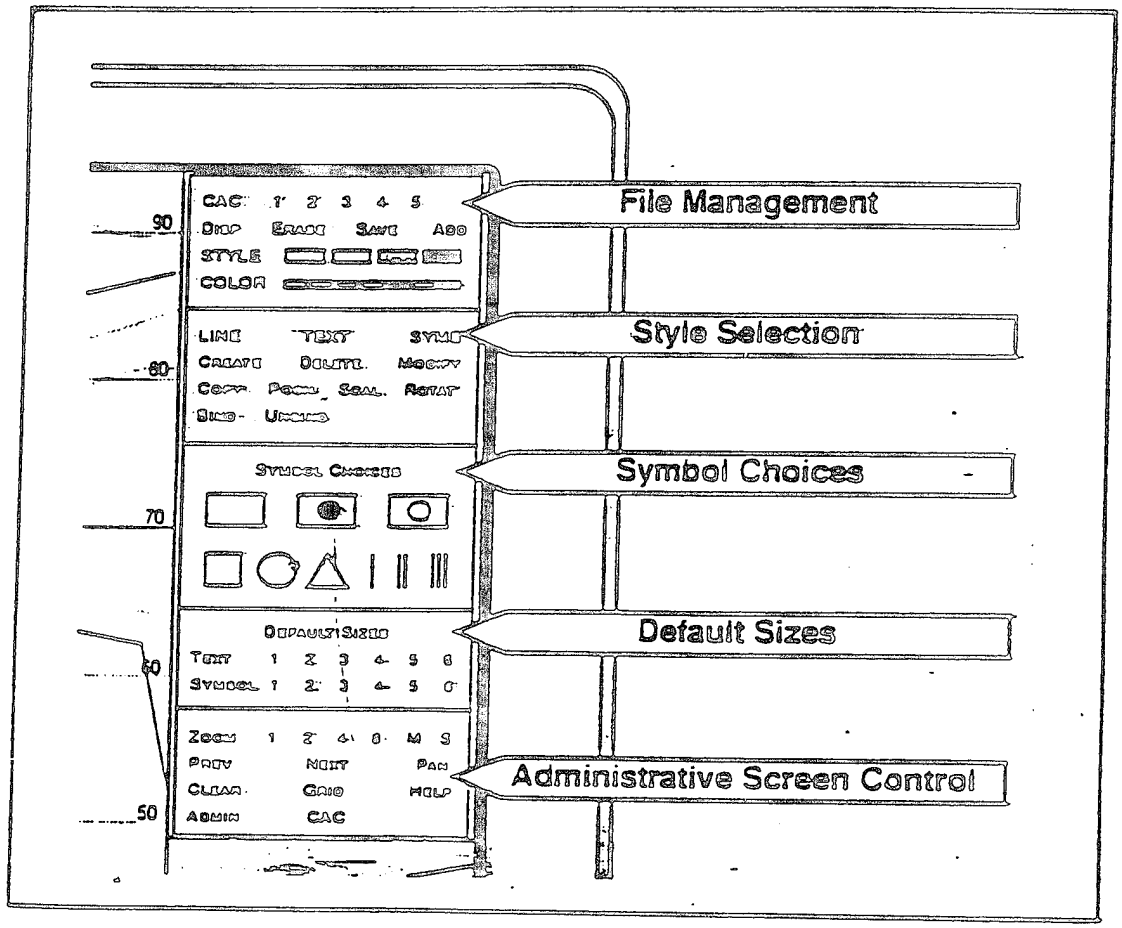


Figure 4 I. CAC Menu Section Descriptions

THE FILE MANAGEMENT MENU

Display (DISP)

When you pick DISP and a number, the graphics stored in that file will be displayed. If another set of graphics is already displayed, it will be erased.

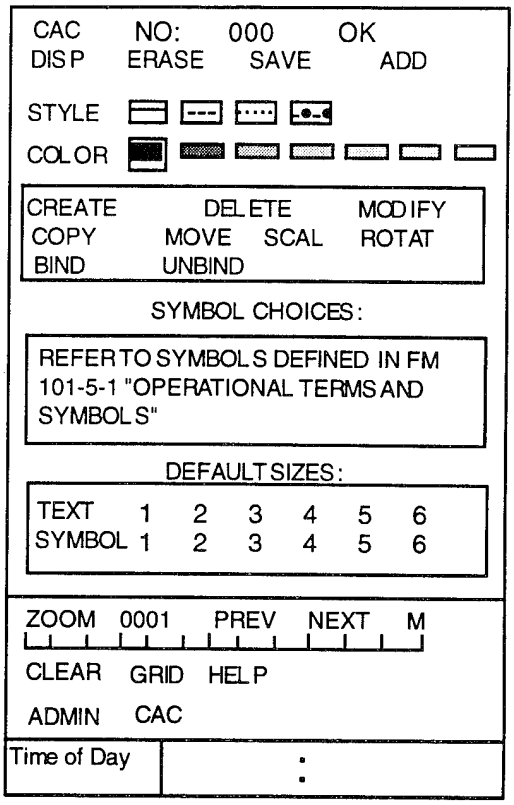
If the number is picked using the Left button, a global (shared) file will be selected. If the Center button is used, the file will be unique to the workstation.

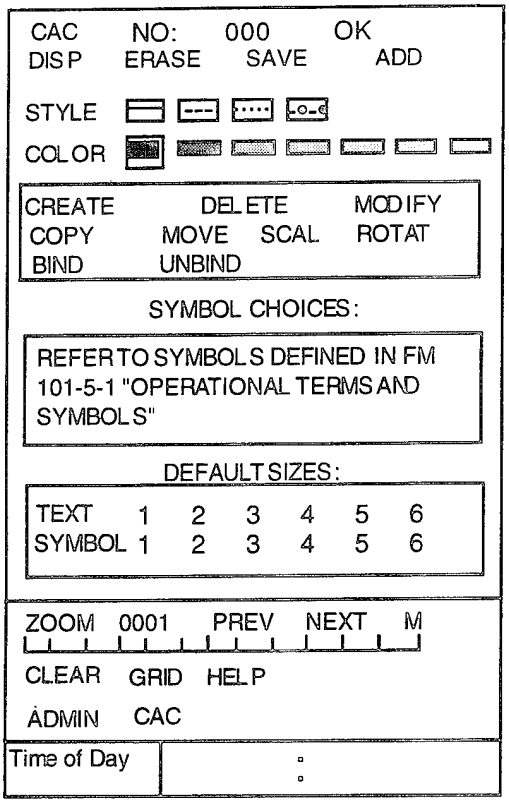
Erase (ERASE)

Picking ERASE plus a file number will erase any currently displayed file from the screen. This operation has no effect on previously saved files. You may redraw the file by following the display procedures. If the file was not saved, it will be lost forever; be very careful when using ERASE.

Save (SAVE)

Once graphics have been drawn, they can be saved to a disk file by picking SAVE followed by the number of the file to which they are to be saved. Any graphics previously saved to that number will be overwritten and lost.





Add (ADD)

ADD permits you to display two or more files of graphics simultaneously. Display the first file, then pick ADD and the number of the next file to be displayed. Both files will be displayed on the screen. This combined file can now be saved as a new file if desired. Be careful not to ADD a file to itself and then save the results. The appearance will not be affected, but the drawing time will be much increased due to drawing each element twice. These unseen files may also cause you to exceed the maximum size of the file, thereby preventing you from being able to display the file.

Now that we have discussed the basic features of the CAC file, let's practice calling up CAC.

[CAC must be pre-loaded]

- Pick DISPLAY and the file number 1 to display the Operations graphic on the screen
- Using ERASE delete the Operations graphic.
- Next display data file number 2 which contains the Fire Support graphics.
- ADD the operations graphic (file 1) to the Fire Support graphics by picking ADD and number 1. The Operations graphic will be displayed as an overlay to the Fire Support graphic. The combined graphic can be saved in a single file. Pick SAVE and number 3 to save the combined graphics.

During a simulation run you may find that the screen is too cluttered for you to see clearly. To temporarily clear the screen you can toggle the CAC off and on by using Shift plus any mouse button. Let's try this now. Whenever you enter the CAC menu by picking CAC with the Left mouse button. The currently displayed CAC will be erased, and will have to be displayed again as previously discussed.

The rest of the CAC menu items are used to create or modify CAC. ERASE the screens now.

THE STYLE SELECTION MENU

Creating CAC (CREATE)

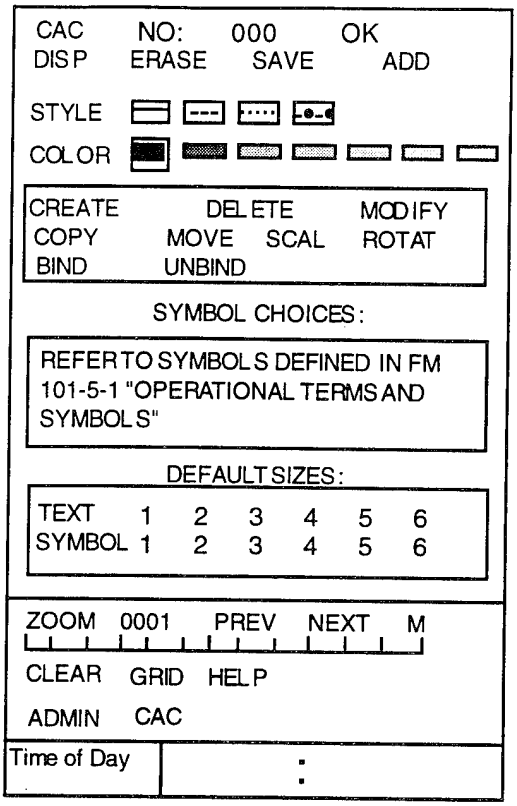
CREATE is the main element of the CAC menu. All other options, such as DELETE, MODIFY or POSN (position), are used after graphics have been created. None of these options can be activated without first picking CREATE. Pick CREATE now and then select each of these items.

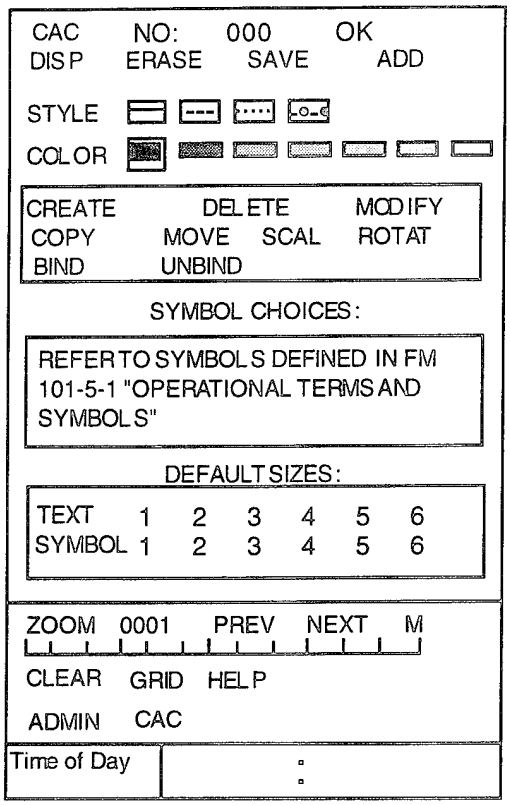
Set Line Style (STYLE)

The STYLE option allows you to select any of four line styles; one solid and three dashed versions. Use the Left mouse button on the mouse, although any button will work. As you pick options they will be highlighted on the menu screen showing which one is currently selected. Try this now. The STYLE you select will remain in effect until you change to a different line style.

Set Color (COLOR)

The next option allows you to set the color of the graphics you will draw on the screen. Select COLOR in the same manner as you did STYLE. Go ahead and pick through the color options now. All graphic representations drawn after a specific color is chosen will appear in that color.





Line, Text, and Symbol (TEXT, LINE, SYMB)

The TEXT, LINE, SYMB menu line enables you to select the type of graphics you wish to create. LINE, TEXT and SYMB can be used with the COLOR and DEFAULT SIZE options. Use the Left mouse button to select these items before picking LINE, TEXT or SYMB. The choices you select will remain in force until you change them.

LINE is used with STYLE and COLOR to draw lines, boundaries, etc. Any of the line styles available can be created in straight line segments or in continuous freehand line drawings. To draw a straight line segment, use the Left mouse button to draw each segment and the Middle mouse button to drop the final point. To draw other than straight lines, use the freehand feature by picking with Shift plus any mouse button, then end the drawing with any other button. You do not have to hold Shift plus any mouse button down while drawing.

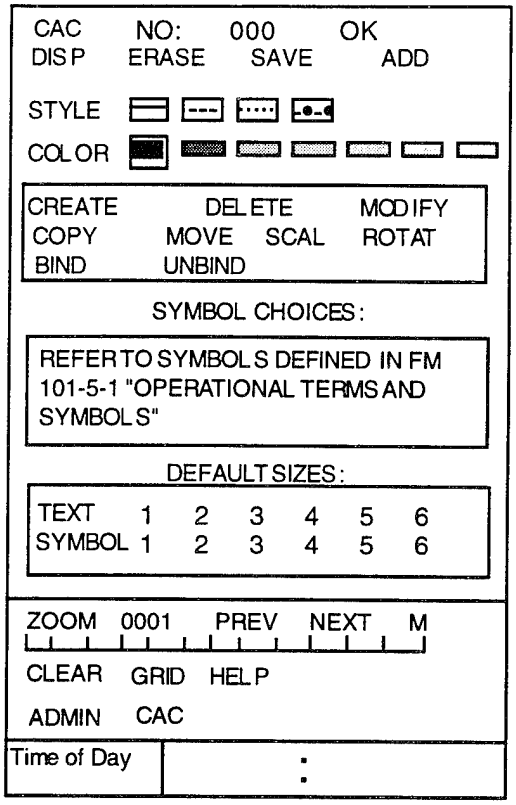
TEXT allows you to use the keyboard to enter actual text on the drawing. When you pick TEXT, a prompt will appear on the screen. Type the text in and press the RETURN key. The text will appear at the cursor and can be moved and placed anywhere on the map with the Left mouse button. The size of text entered can be selected by picking the appropriate size scale (1 is small) before picking TEXT. Multiple copies of the text can be reproduced by dropping it with the Middle mouse button. Drop the last item with the Left mouse button.

With SYMB, you may select a symbol from the menu box labeled SYMBOL CHOICES. Pick SYMB, then pick one of the symbols and move it to the appropriate place on the map. Drop the symbol with the Left mouse button. Multiple copies of the symbol can be reproduced by dropping it with the Middle mouse button.

Exercise: STRAIGHT LINES

a. *Pick CREATE.*
b. *Pick LINE.*
c. *Select a line STYLE.*
d. *Select a COLOR*
e. *Place the cursor in the top left corner of the screen and pick the Left mouse button once.*
f *Move the cursor to the right three inches and pick it again.*
g. *Move the cursor straight down three inches and pick it again.*
h. *Move the cursor to the left three inches and pick the Left mouse button again.*
i. *We have now created three sides of a box, all using the Left mouse button. Now to finish this box or any straight line drawing, you must use the Middle mouse button in order to disconnect it from the cursor. Finish your box by going up to the start point and picking the Middle mouse button.*

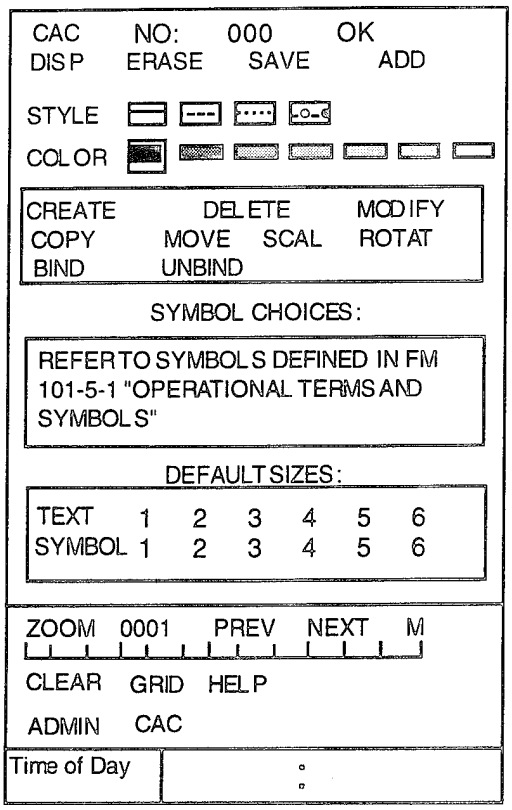
NOTE: You are limited to 100 line segments.



Now let's try the freehand feature. Pick with Shift plus any mouse button to do this. There is no need to change COLOR or STYLE unless you want to.

Exercise: FREEHAND

a. *Move the cursor to the center of the sreen and this time pick the shift plus any mouse button.*
b. *Now draw a figure eight.*
c. *To finish this figure and disconnect from the cursor, pick any other button.*



Create Text (TEXT)

The text capability is normally used in labeling graphics such as phase lines. A key part of labeling is positioning the text. We are going to practice this now.

Exercise: Create Text

a. *Pick CREATE, TEXT and set the size from the DEFAULT SIZES Menu.*

b. *The cursor has now disappeared and you have control of the keyboard. Type your name and press RETURN. Notice that the cursor has been replaced with your name. If you don't see it, it may be hidden in the menu. Move the cursor to the center of the screen.*

c. *To position the text, place the cursor where you want it and press the Middle mouse button. You may copy this text in as may places as you want by repeating the process.*

d. *To release the final copy of the text, press the Left mouse button. You now have the cursor back and can move on to the next task. If you want to add more text, you must pick TEXT again.*

e. *To remove your name from the screen, use DELETE and the Left mouse button.*

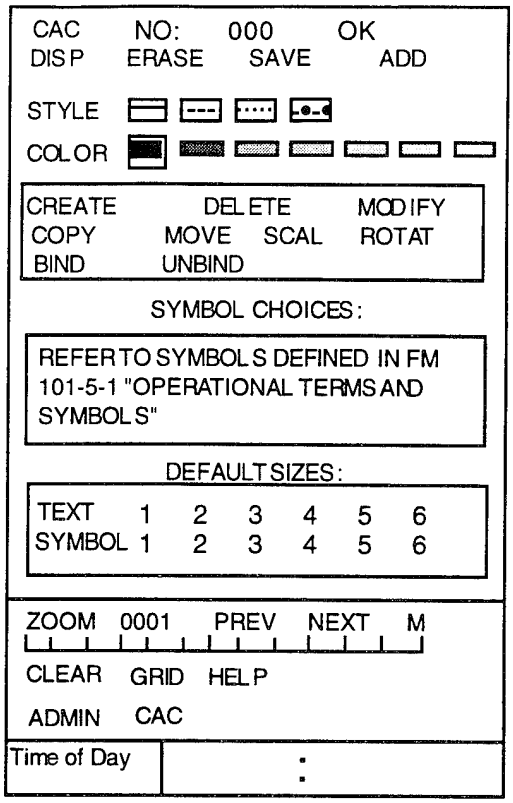
Creating Symbols

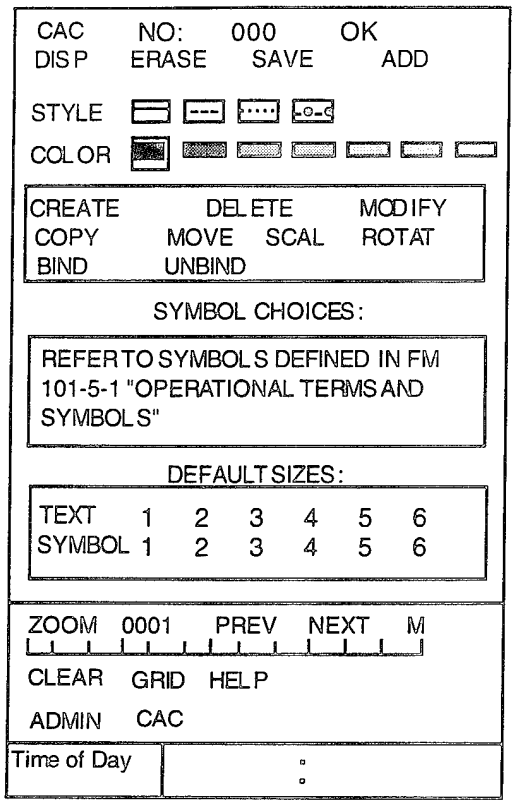
The CAC menu allows you to pre-draw and store symbols for use at a later time. In the SYMBOL CHOICES section are symbols that have been developed for our use. They may be changed by the data base manager, if need be.

To create a symbol, pick CREATE and SYMBOL, select the color you desire, set the default size and pick the symbol. The cursor will be replaced by the symbol selected.

Move the button and position the symbol in the same manner as with text, using the Middle mouse button for multiple copies, or the Left mouse button for one copy.
To create an armor brigade unit symbol, pick the armor unit symbol and position it on the screen using the Left mouse button. Now pick the brigade symbol and place it on top of the armor unit symbol. Now you have an armor brigade. You may have to adjust the default sizes.

DELETE these items in the manner that we did earlier. Both components of this combined symbol must be "picked."





Delete (DELETE)

To delete any CAC item simply pick the DELETE option, then the element you wish to delete using the Left mouse button. To "undo" a delete (redraw the last item deleted), pick with Shift plus any mouse button.

MODIFYING CAC

All of the items we have discussed so far have been oriented on creating CAC. The remaining menu items - MODIFY, Copy, POSN (position), SCAL (scale), ROTAT (rotate), BIND, and UNBIND are used to modify existing CAC graphics or elements of a graphic already created. As we discuss each of these, practice them on the CAC items that we have already created.

Modify (MODIFY)

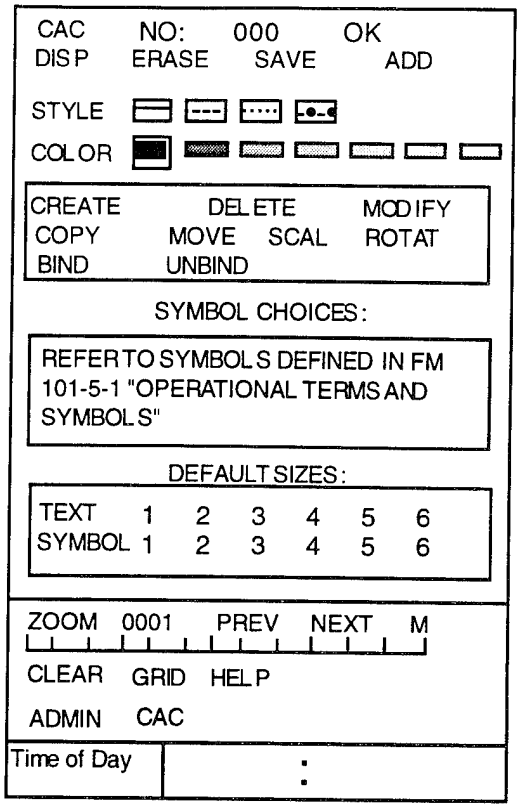
Use MODIFY to change the color or line style of the graphics you have created. Pick MODIFY, select the COLOR and line STYLE you desire, then pick the symbol you wish to change.

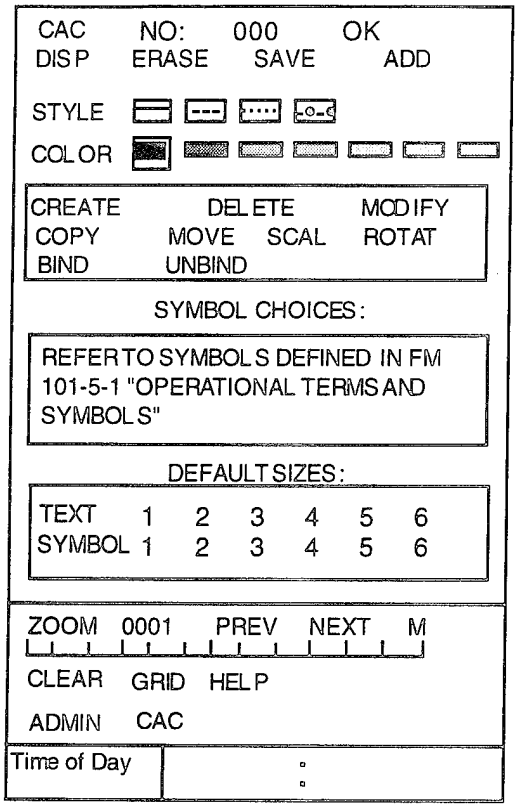
Copy (Copy)

Symbols or text which have previously been created can be copied. To copy an existing symbol, pick COPY, then pick the item to be copied. Your cursor will be replaced with a copy of the symbol. Move the cursor to the new location and release the symbol with the Left mouse button. If multiple copies are required, use the Middle mouse button to position each one until the last copy. Then use the Left mouse button to release the symbol from the cursor.

Position (POSN)

POSN allows you to move a graphic/symbol from one position to another. Pick POSN then the symbol. The graphic will replace your cursor. Move the cursor (symbol) to a new location and press the Left mouse button to release it. If you have not yet released the symbol, picking Shift plus any mouse button instead of the Left mouse button returns the symbol to its original location.





Scale (SCAL)

This option is used to enlarge or reduce the size of a symbol. To make a symbol larger (scaling up), pick the symbol with the Left mouse button. Moving the button away from the symbol enlarges it.

To make a symbol smaller (scaling down), pick it with the Middle mouse button. Moving further from the symbol reduces it. When you have obtained the desired size, pick the Left mouse button to end the scaling operation. If you have not finished the scaling operation by picking the Left mouse button, you may redraw the graphic at its original size by picking shift plus any mouse button instead of the Left mouse button.

Rotate (ROTAT)

ROTAT allows you to change the directional orientation of a symbol. Pick the ROTAT option with the Left mouse button to activate the function. To rotate a symbol counter clockwise, pick the symbol with the Left mouse button and move the cursor away from the symbol. The further away you get the more it will rotate. As you move back towards the symbol it will rotate back. Pick the Left mouse button again to set the position. To rotate the symbol clockwise, pick with the Middle mouse button and follow the same procedures. If you want the symbol in its original positions, stop the operation with Shift plus any mouse button.

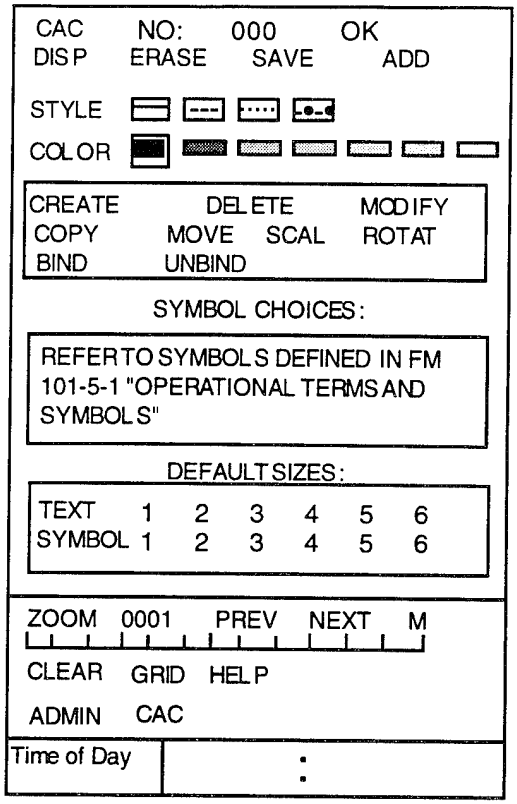
Bind (BIND)

BIND allows you to link two or more separate symbols together so that they may be positioned, moved, and so forth, as one symbol. Choose BIND with the Left mouse button. Pick each separate symbol you wish to link together with the Left mouse button. Pick the last symbol with the Middle mouse button to complete the process.

Each time you pick a symbol it will disappear from the screen until you pick the Middle mouse button. When you pick the last symbol with the Middle mouse button the new aggregate symbol will appear on the screen. Aggregated icons are treated as single icons for editing operations. (DELETE, COPY, POSN, SCAL and ROTAT)

Unbind (UNBIND)

UNBIND allows you to separate an aggregated graphic into its original individual parts. Select UNBIND with the Left mouse button, then pick the aggregated graphic. You will not see any difference in the graphic until you try to manipulate it. Then each separate component must be handled individually. UNBIND may be used to change the color, relative spacing of the aggregated parts, and so forth, for an aggregated graphic. After modifications are made, use BIND to form a single aggregated graphic.



CAC PRACTICAL EXERCISE

Show the students how to transfer an acetate overlay to the screen. Then issue them overlays and let them practice what they have just been taught. (You must have prepared an overlay in advance for the students to work from.)

CHAPTER V
SESSION 4: SCENARIO EXECUTION

INTRODUCTION

Following completion of initial planning and CAC development, you are ready to move into the execution phase of Janus operations. To leave the initial Planning phase, pick START on the menu. A prompt will appear on the control screen, asking if you want to begin the scenario run. Type in "RR" and press RETURN. (Remember that if you hit START by mistake you can return to the Planning Menu by typing "II".) You are now given a chance to do a plan save if you had not saved your latest changes. The next prompt allows you to enter a checkpoint frequency in minutes.

Checkpoints are records of the state of the simulation run which are taken at intervals you specify. You can start the game again at the last recorded checkpoint. Checkpoints are used to restart the run in the event the game terminates abnormally. Set the frequency at ten minutes. When you press RETURN, the game will begin, the Execution menu will be visible, and the game clock will start to record game time. Do this now. Next, select ADMIN to halt the game and allow us to discuss the differences between the Planning and the Execution Menus.

THE EXECUTION MENU

The changes in the Execution menu from the Planning menu occur in the MANEUVER PLAN block and the STATUS block (Figure 5.1). In the STATUS block, the BAR option (on the ROTATE line) which allows you to orient the obstacles is no longer there. In the MANEUVER PLAN area, the DEPLOY and PREPOS options are gone and those fourth line options are replaced by Pop-up (POP), UPLOAD, and Set Obstacles (SETOBS).

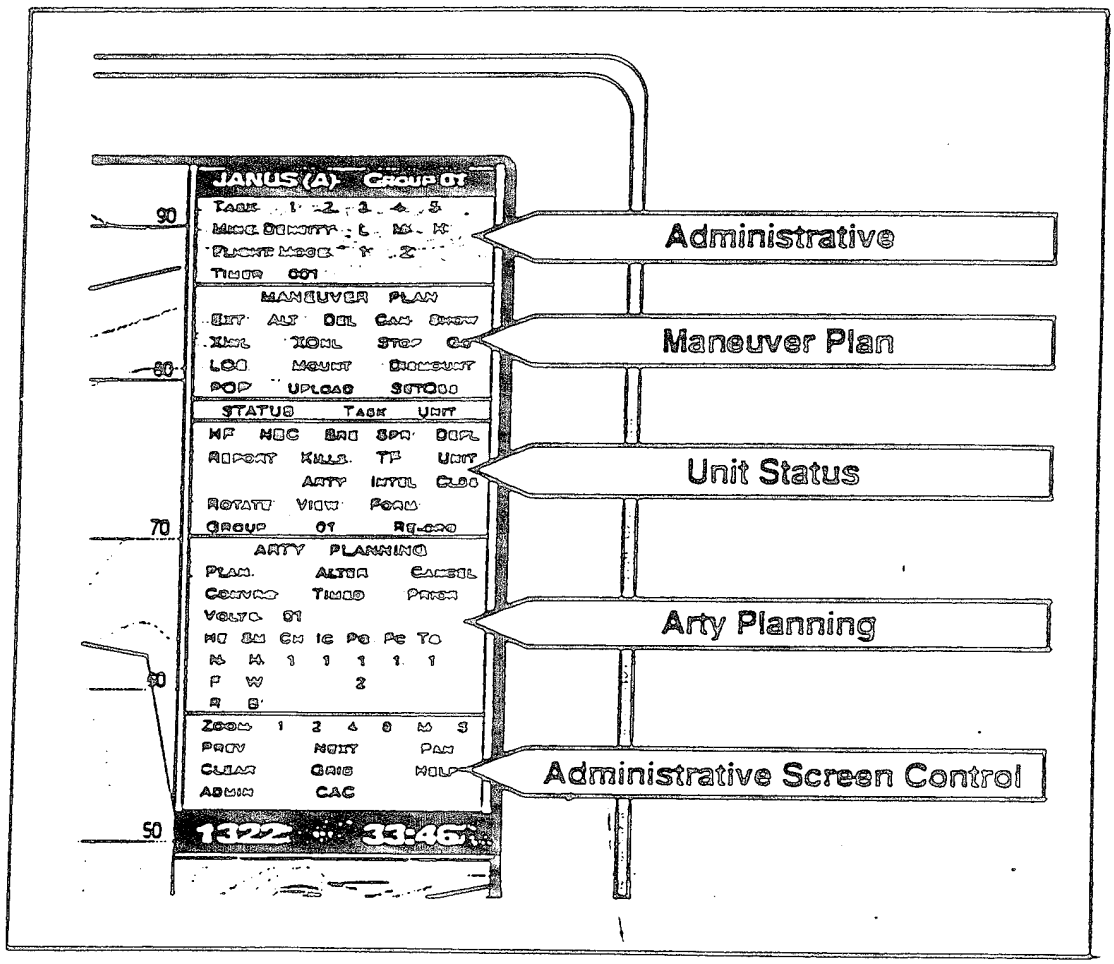


Figure 5.I. The Execution Menu

Pop-Up (POP)

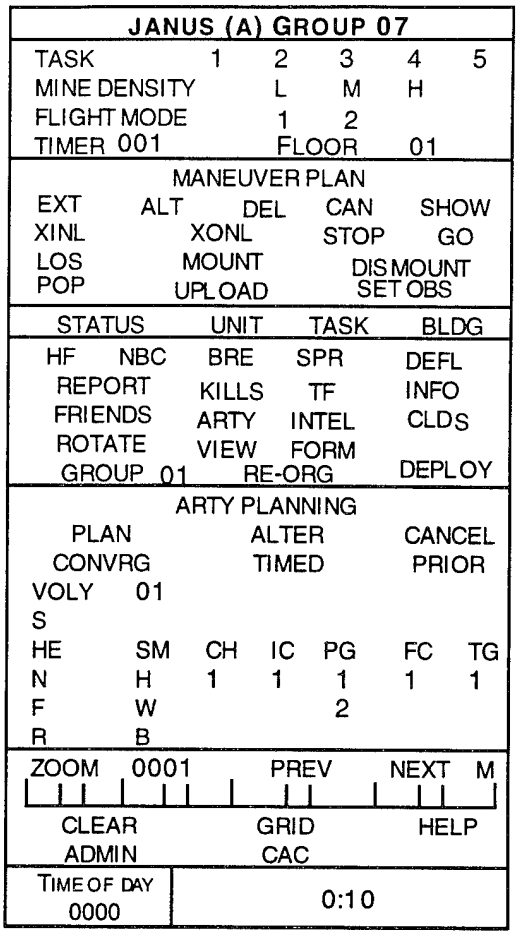
Helicopters can "pop-up" above a natural barrier (ridge or hill mass) and fire on threat forces. The helicopter will then drop back down to a secure position, reducing its potential to be acquired and shot down.

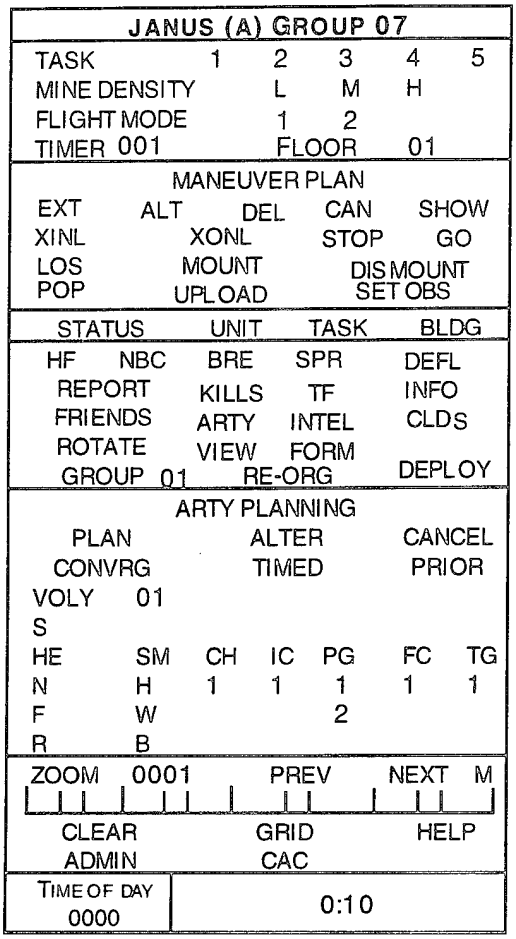
To execute this function, the aircraft must have a movement route planned, it must be on a STOP node at the time and there must be at least one more movement node after the *STOP* node. To execute pop-up when the aircraft reaches the designated *STOP* node, pick POP, then pick the aircraft with the Left mouse button. A "rubberband" will be attached to the cursor.

Choose the point on the ground you want the aircraft to observe. If it can already see that spot without rising, you will receive a message at the bottom of the screen stating that the unit already has LOS. If the aircraft must rise more than fifty meters to see that point, a message is displayed stating that it is not possible to observe the point. If it must rise above zero meters but lower than fifty meters, the height it must rise is displayed and a red circle will be drawn around the aircraft.

The aircraft will now cycle between down and up at a predetermined interval. When it is up, the red circle is displayed. When a target is acquired, the aircraft will fire at it. The aircraft will remain in pop-up until it engages a target, then the *STOP* node is changed to a *GO* node and the aircraft continues on its route.

If an aircraft STOP node is placed on a prepared position designator, the aircraft will also pop-up when it reaches the node. Put the Apache aircraft at the left of the screen in pop-up to examine this option.





Upload (UPLOAD)

UPLOAD allows you to resupply weapon systems with fuel and ammunition and repair damaged vehicles on the battlefield during the scenario run. Resupply and/or repair vehicles must first be created in the database. To execute resupply or repair, the weapon system and the support vehicle must be in proximity.

First pick upload, then the cargo vehicle closest to the weapon system to be resupplied. A circle will appear centered on the support vehicle. If the weapon system is within these limits and the support vehicle is carrying the correct ammunition, POL, or parts, the support can be completed. To complete ammo upload, pick the vehicle(s) needing support and the computer will transfer the ammo. Try this using the cargo truck and the tank company located at the bottom of the screen.

To transfer fuel from a POL tanker, pick the support vehicle and then the vehicle needing POL. If "hot refueling" is desired, the vehicle needing POL must be selected with shift plus any mouse button. A message will appear requesting the % of fuel to fill to.

When a replacement is needed for a damaged part, Janus identifies the vehicle type, part needed and damaged vehicle location on the work screen that was controlling the icon for the damaged vehicle. Janus also sends an Email message to a workstation that has been specified. This message contains the number of WIAs and potential POWs that were created by the hit. The message also suggests that if action is not taken, (e.g., sending a vehicle to the location) within 30 minutes, the controller may want to consider that these personnel have been lost. There is no further action taken by Janus about WIA/POWs.

Janus still puts the casualty "C" on the screen where a vehicle was hit. Each time another vehicle is hit, a summary of

all vehicles hit is printed on the screen. This report may be removed with the clear button. It is assumed that recovery of the vehicle will be initiated by giving a recovery vehicle a Janus path to the damage location. Recovery vehicles are those whose type in the combat systems editor is greater than 240. When this vehicle gets to the damage location (actually within 2.5 km of it), the workstation will initiate recovery selecting the UPLOAD menu button, select the recovery vehicle, and then select an area where no vehicle is located. The recovery vehicle will start a search for a damaged vehicle within its range and will select the first one found that needs repair (not ongoing repair and not under tow). If the recovery vehicle has the part needed, repair will be started and a message is put on the workstation to indicate the time the recovery vehicle will be finished and the damaged repaired. NOTE: the player can move the repair vehicle during this time, but should not in order to be realistic.

When a repair vehicle finds it does not have the part needed, it will attach the damaged vehicle for tow and request a path be created for it. The player should designate a path that takes the repair vehicle to a maintenance location. When the repair vehicle arrives at this location, the player should select UPLOAD, and then the repair vehicle twice, and the damaged vehicle will be dismounted. The maintenance icon, also a type greater than 240, will be selected and repair started.

When repair has been completed, the workstation will notify a CONTROLLER workstation, one with DEPLOY capabilities. The CONTROLLER may add the repaired vehicle to any icon of the same type. Note that when the last vehicle in an icon is hit, that icon will cease to exist.

Set Obstacles (SETOBS)

This function is used to activate engineer obstacles (craters and abatis), emplace vehicular or aircraft generated minefields, and turn on smoke screens using smoke generators, smoke pots, projectiles or vehicular smoke capabilities.

Engineer Obstacles (Craters, Abatis)

To activate these obstacles, pick SETOBS, then the white crater or abatis icon. The icon will turn red to indicate the obstacle is active. Try it on the obstacles at the bottom right of the screen.

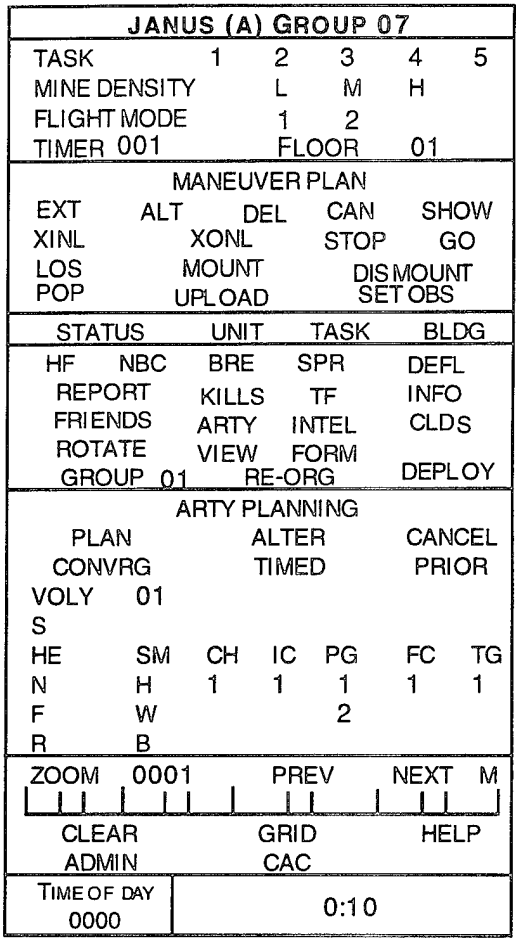
Vehicular and Air Dispensed Minefields

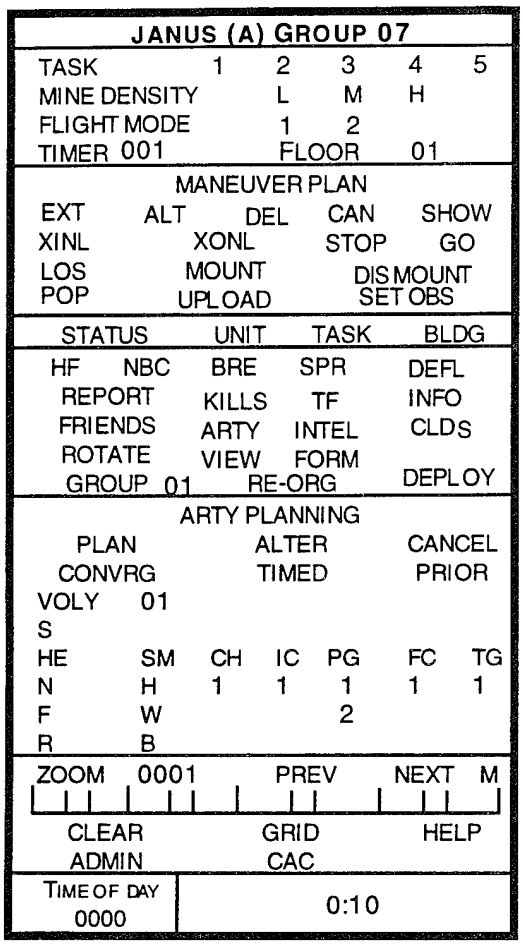
Vehicles which can lay minefields must be so defined in the database. To dispense mines, pick SETOBS. A horizontal bar will be displayed under units capable of dispensing mines. Then pick the unit with the Left mouse button. If the vehicle is an aircraft, the minefield will be centered on the aircraft's current location. If an engineer vehicle is selected, the minefield will begin at the end of the vehicle and be dispensed in the opposite direction of the vehicle's movement. The vehicle must be moving. Try this with the volcano system at the bottom of the screen

Smoke

Large Area (Smoke Generator) Smoke, Smoke Pots and Vehicular Smoke are activated by picking SETOBS, then the smoke generator, smoke pot or vehicle with the Left mouse button. Smoke from the smoke generator will begin to build and drift downwind. Vehicular smoke models an engine exhaust smoke system; the cloud will trail out behind the vehicle. Smoke pots will ignite and display a stationary cloud.

Projectile Smoke is activated by picking SETOBS, then an M-1 tank or the M2/3 Bradley equipped with a smoke projectile launcher. This is the only type of smoke activated with the Middle mouse button. Normally, you can fire the smoke projectiles only twice. Remember that the clouds switch must be toggled on for the smoke clouds to be visible on the screen. Regardless of whether the clouds option is on or not, the effects will be modeled.





ADMIN Menu Changes

Once the simulation starts, this menu changes. Pick ADMIN with the Right mouse button at this time to examine these changes (Figure 5.2).

Plan Save (PS) and New Scenario Save (NS)

The "Plan Save" and "New Scenario Save" features do not appear during scenario execution as they do in initial scenario planning. These functions were used to write changes to your scenario during planning or copy a scenario to a different scenario number.

Branchpoint Save (BS)

This added function can be used after a scenario has started. It allows you to stop in the middle of a run, record the scenario at that point and then later, if desired, start the scenario from that point.

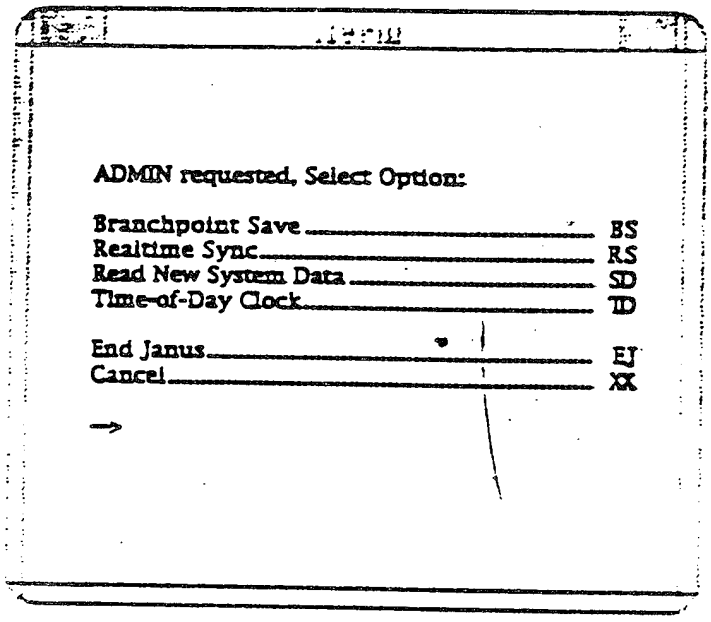


Figure 5.2. ADMIN Menu Changes

PARTIAL EXERCISE

Students should now be tasked to bring up a scenario they are going to use, from the beginning, including log in.

CHAPTER VI
USING THE EXPORTABLE TRAINING PACKAGE

INSTRUCTOR'S NOTES

1. This lesson plan requires that students have direct access to the workstations. The instructor will introduce the students to the various Janus screens and menu items, explaining their function and operation. After discussing each item, the students will then practice each function. All files needed by students should be loaded into their user areas by the instructor/system manager prior to start of the class.

2. In order to use this lesson plan you must create a scenario suitable to the unit being trained, company/battalion/brigade etc. The scenario should have the maneuver forces normally allocated at the level being trained and the support forces that would be supporting the size force being trained. For example, if training a Brigade staff, a heavy/light brigade of two armor, one mech, one light; an engineer battalion; DS, reinforcing, and GS artillery; an ADA slice; an aviation battalion; some CAS sorties; a GSR section; a smoke section; possibly some decoys, if doing a defense; and some resupply vehicles. In addition to the blue forces you must merge in an opposing force of appropriate size and composition. If doing a blue brigade-size defense, you would need a red division-size attack force. For an appropriate road-to-war situation, basic operations order and command and control (CAC) overlay that supports the OPORD also would be necessary.

3. The initial screen display to use with this lesson plan should be set up as follows:

   a. Align all forces along the bottom of the screen in appropriate unit formations: Tank Co / Bn, Lt Inf. Co / Bn, Arty Btry / Bn, Engr Co / Bn, GSRs, ADA Btry, etc.

   b. Place a tank icon at the top center of the screen with a programmed movement route, beginning with a *TIME* node, then two GO nodes, next a *STOP* node and ending with a GO node.

   c. Position a Bradley icon approximately two inches below the tank icon, without a movement route.

d. Vertically along the left side of the screen position an A-10, an Apache, and a howitzer. Give the A-10 a movement route using FLIGHT MODE 1.

e. In the center of the screen position a tank company or platoon in a wedge formation and give the lead tank a movement route.

f. Towards the bottom center of the screen position a Bradley company or platoon in a wedge formation and give the lead icon a movement route. Position the infantry dismounts that go on the vehicles next to their appropriate carriers.

4. After the initial run through of the lesson, this same scenario can be used to build and fight a practice battle. Just have the students place the icons (that are positioned on the screen in accordance with lesson guidance) back into their original formations at the bottom of the screen, task organize according to the lesson plan, and build a battle plan. As a first time scenario, a blue defense is recommended. This defense takes longer to build, but it is easier to execute.

DEMONSTRATION NOTES

This lesson plan calls for a demonstration of the system capabilities to be given to the students early in the training process. For this purpose you will need to create a merged scenario with opposing forces in close proximity, so that contact takes place immediately on start up. If you wish to demonstrate the day/night vision capabilities, you may create a day scenario, a dark/dusk scenario and a night scenario. If you wish to demonstrate the FRIENDS capability, you will have to have some blue forces assigned to a different workstation screen. You will need a minimum of one instructor and one workstation to give the demo. If you want to fight the demo scenario interactively it will require at least one red and one blue interactor and two workstations.

Recommended Formal (Thirty minutes total)

Bring up the scenario and cover the following(approximately twenty minutes):

Screen Overview

Discuss terrain, CAC, GRID, and the scenario. Use a full screen view. (Drop CAC and GRID before continuing.)

Show Symbols

ZOOM in (8 or less) on various symbols to emphasize symbol file capability.

Discuss Aggregation

Use FORM to address aggregation and show size of units. Emphasize the importance of alignment/form of the artillery units as it affects alignment of impacts.

Discuss VIEW/LOS

ZOOM down to level 4. Discuss the radials, limits of view, and weapon range limits. You may want to switch between day and night parameters.

Show Mount and DISMOUNT

Use the Bradley unit and ZOOM level 8.

Discuss Resupply/UPLOAD

You cannot demonstrate this function until the simulation runs.

Discuss Survivability

Cover defilade status (DEFL), prepared positions (PREPOS), and NBC.

Movement

Discuss and demonstrate planning a movement route. Cover EXTEND, ALTER, DELETE, and CANCEL. Use ZOOM level 8.

Artillery

ZOOM out to level 2. Plan a mission. Discuss ammunition types volleys, sheaves, etc.

Obstacles

Discuss obstacle planning and ZOOM in on mine fields, level 8.

Run the Demo (Approximately 10 min):

- Demonstrate the INTEL feature.
- Discuss direct fire radials, casualty symbols, and suppression symbols.
- Discuss artillery impacts casualty, and suppression symbols.
- Plan artillery missions.
- Plan aircraft missions.
- Demonstrate FRIENDS.

APPENDIX A
QUICK REFERENCE

ADMINISTRATIVE PLANNING SECTION

JANUS(A) GROUP 1

This area indicates the GROUP number that your workstation is assigned. This workstation is GROUP 1.

TASK 1 2 3 4 5

This function identifies the task force to which a unit is assigned. TASK controls which units are referenced for the following menu items:

MANEUVER PLAN - SHOW, STOP, GO

STATUS/REPORTS - HF, NBC, BRE, SPR, DEFL, TF

MINE DENSITY L M H

This function is used in conjunction with DEPLOY to set the mine density of minefields.

L - Low Density (40 mines).

M- Medium Density (80 mines).

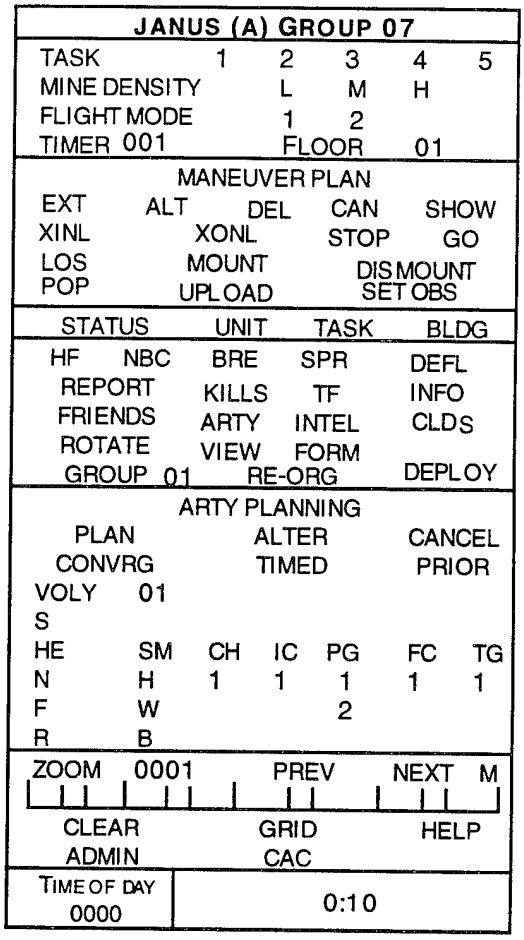
H - High Density (160 mines).

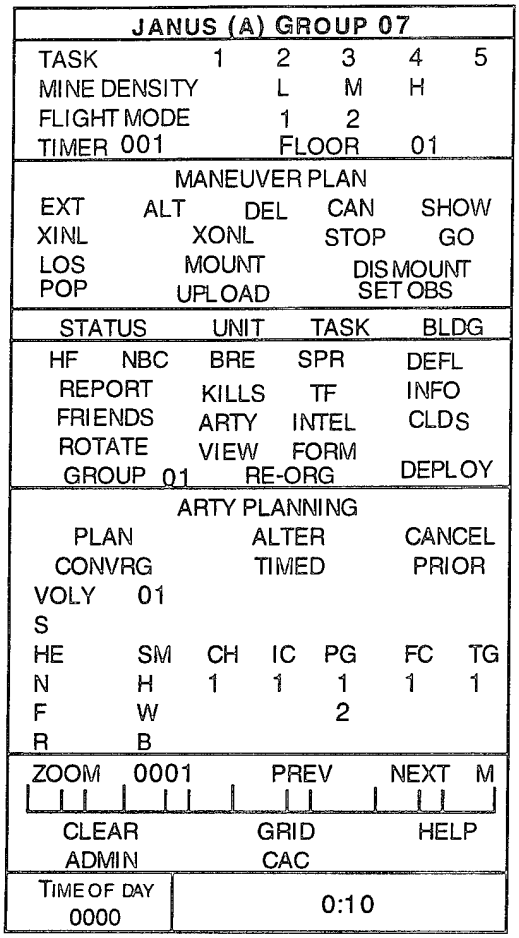
FLIGHT MODE 1 2

This area is used to determine the flight altitude and speed of aircraft.

FLIGHT MODE l indicates lower altitude or slower speed; FLIGHT MODE 2 indicates higher altitude or faster speed. The fight level and speeds will differ from system to system.

FLIGHT MODE is used in conjunction with Extend (EXT) and Alter (ALT) in the MANEUVER PLAN section.





TIMER 001

The time unit is set in GAME CLOCK minutes. It is used in conjunction with extend (EXT) and alter (ALT) in maneuver planning and in artillery mission planning. Use the Left mouse button to increase the time and the Right mouse button to decrease the time.

ADMINISTRATIVE SCREEN CONTROL

ZOOM

There are thirteen levels of magnification available on the scale in the Administrative Screen Control box. These magnifications are 1, 2, 4, 8, 16, 32, 64, 128, 256, 500, 1000, 2000, and 4000. Level 2 allows you to magnify a one-half section of the screen area. Level 4 magnifies 1/4 of the area, and so forth. You select a ZOOM level by picking with the Left mouse button on the scale. The numeric ZOOM level will appear next to the word "Zoom." The M above and to the right of the scale corresponds to the standard military map scale 1:50,000. Whatever portion of the battlefield you magnify will appear at that scale.

PREV (PREVIOUS)

Remembers the past five screen displays. Pick PREV to display the previous view.

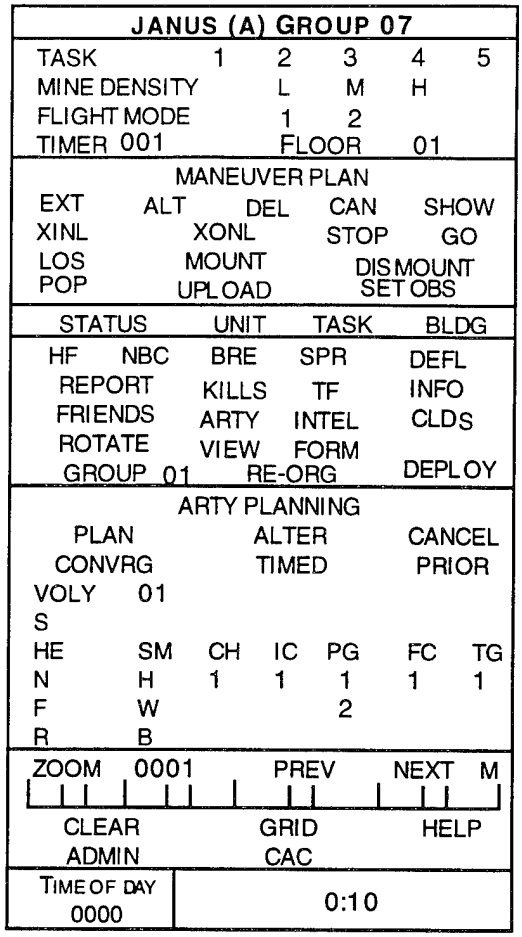
NEXT

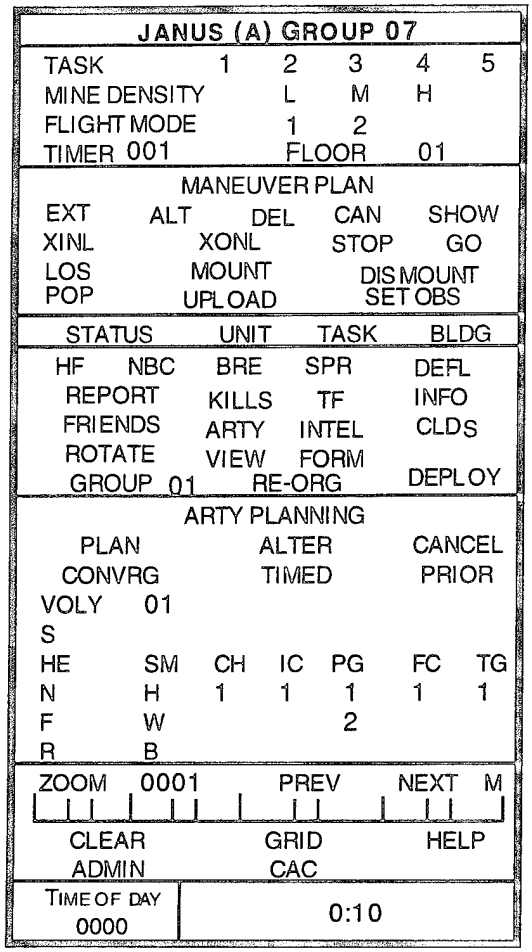
Remembers up to five screens selected in advance. It is used to back out of the screens selected using PREV.

CLEAR

Erases temporary graphics and text from the screen.

YELLOW-	left
GREEN -	shift plus any mouse button
BLUE -	right
WHITE-	middle





GRID

Displays the UTM Grid lines.

HELP

Displays instructions on how to use the function you selected.

CAC

Use the Left mouse button on the mouse to enter the Command and Control Graphics function. Use the Shift plus any mouse button to toggle the image off and on the screen.

START

Used to start the simulation. All workstations must pick START.

ADMIN

Halts the game, awaiting instructions from the control screen. ADMIN must be picked with the Right mouse button.

PS (Plan Save) -

Allows you to save the planning you have done to the current scenario number.

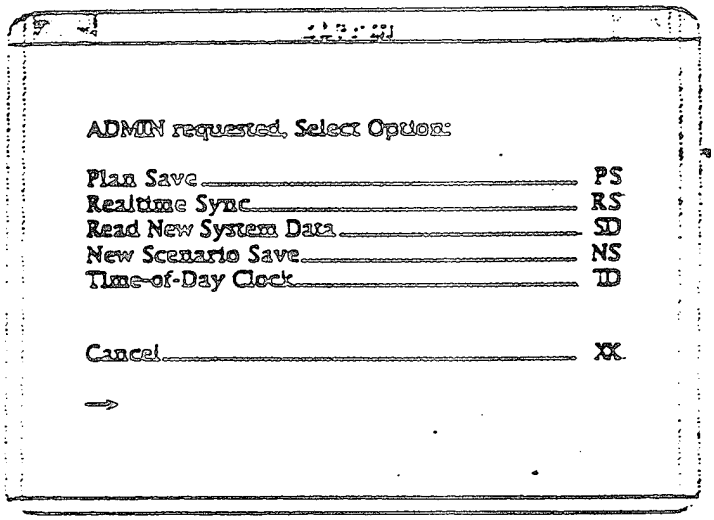


Figure A.1. Initial Planning ADMIN Menu

BS (Branchpoint Save) -

Only available during execution. Allows you to save the scenario as it exists at the current time so that you can start from that point and continue the game at a later time.

RS (Real-time Sync)

Allows you to change the run speed of that game from 1:1 to as fast as the simulation will run.

NS (New Scenario Save) -

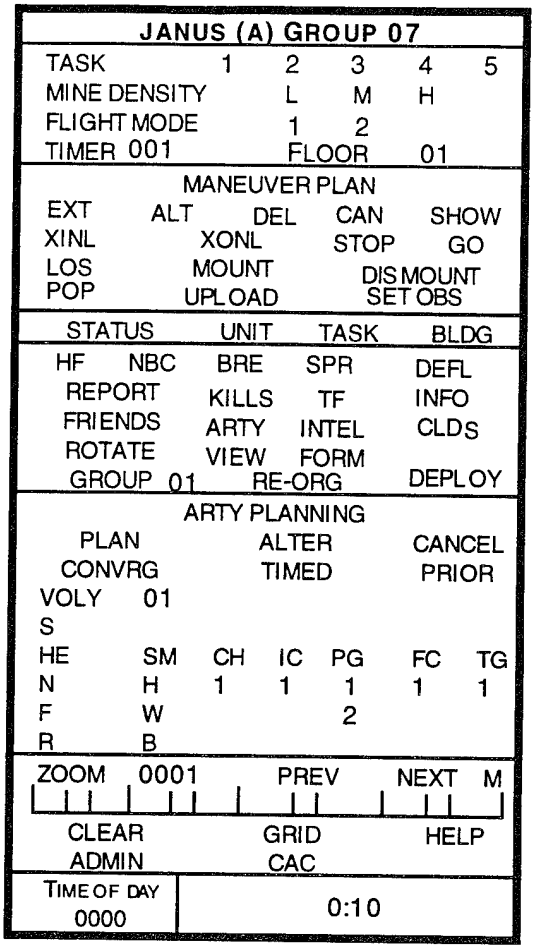
Allows you to save the current scenario to a new number.

SD (Read New System Data) -

Permits you to read the system database information from another scenario in your user area. Usually used to switch from day to night parameters.

XX(Cancel)

Returns you to the game or planning phase.



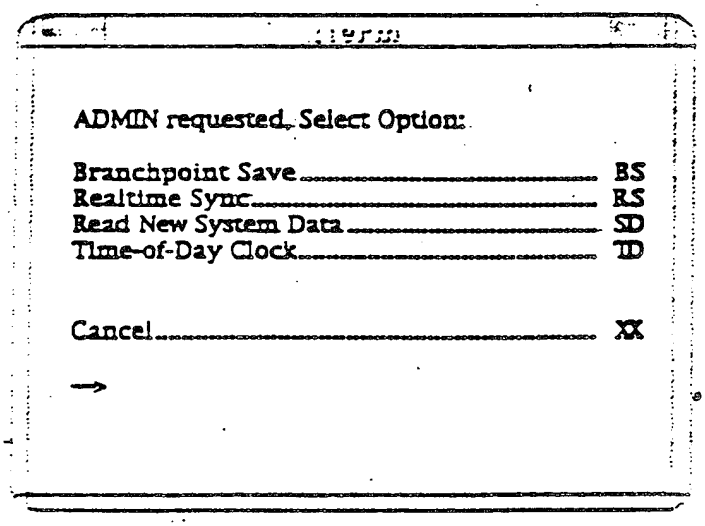
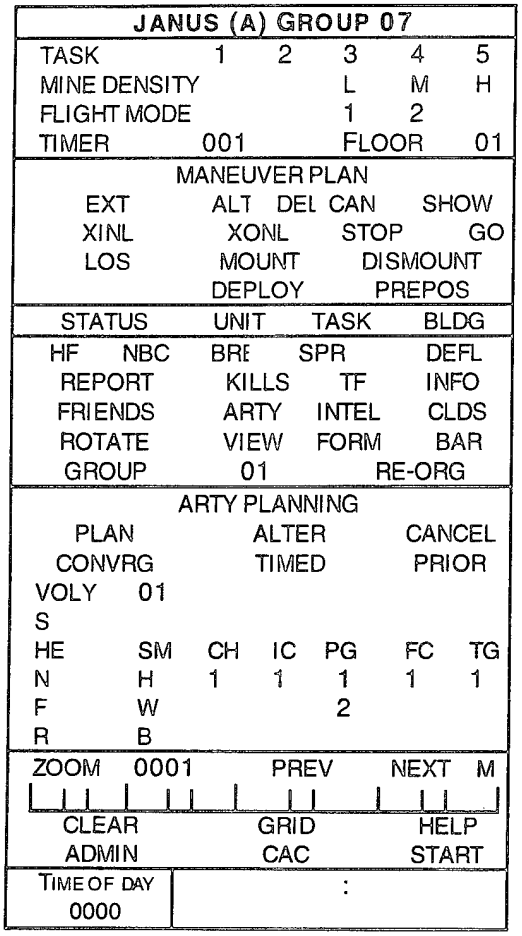


Figure A.2. Execution ADMIN Menu



MANEUVER PLAN MENU
EXT (Extend)

EXT is used to establish a unit's initial movement route or add to a route that has already been planned. Routes go from node to node. The type of node is determined by the color of the button used to "drop" it.

YELLOW- left
GREEN- shift plus any mouse button
WHITE- middle
BLUE- right

> NOTE: For a *TIME* node, it is necessary to have first set the time function in the Administrative Planning section. The time set is in GAME CLOCK time.

ALT

Change the location or mode of any node of a route. Mouse buttons do the following:

YELLOW- left
WHITE- middle
BLUE- right
GREEN - shift plus any mouse button

DEL

Deletes any node of a route except the current node.

CAN

Cancels all or part of a unit's movement route.

SHOW

Displays movement routes for the selected task force.

XINL

Transfers routes "inline". Copies a unit's route to another unit. The second unit will go the nearest movement node in the

first unit's route, then follow the same route.

XONL

Transfers routes "online" (parallel). Copy a unit's route so that the second unit's route is parallel to that of the first.

STOP

Task Force STOP. This allows you to stop all units in a given task force at one time. If you wish to stop only one unit, use ALT and the Right mouse button.

Go

Task Force GO. This allows you to start all units in a given task force at one time.

LOS

Line-of-sight will show you the field of vision for the selected unit.

- The purple line shows the maximum effective range of the weapon system.
- The orange lines indicate the areas to which the unit has line-of-sight.
- Aircraft LOS is determined using the mouse buttons:

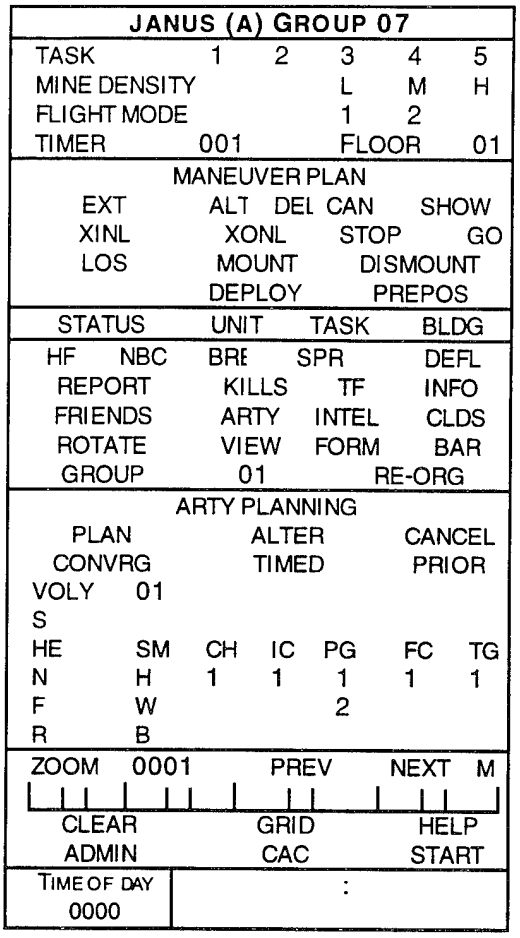
YELLOW - left

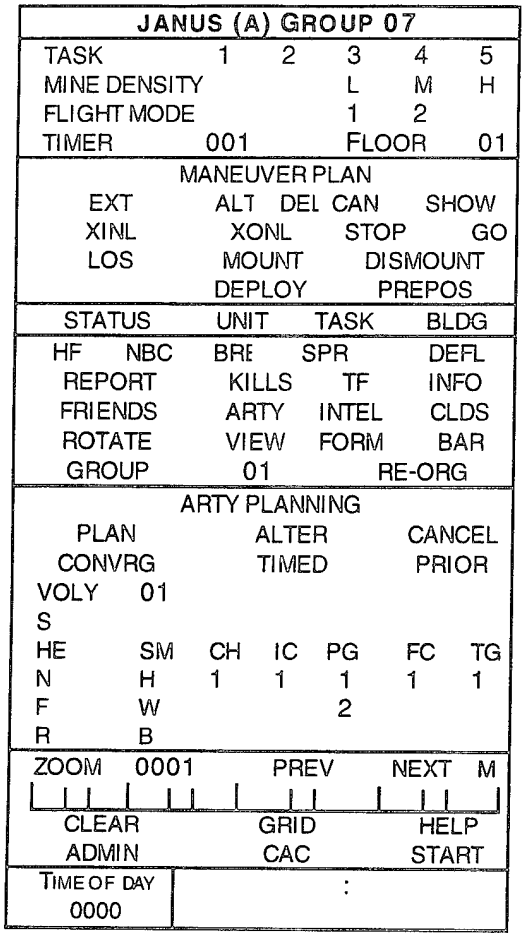
WHITE - middle

BLUE - right

MOUNT

Uploads systems onto a carrier. Use any button to select the system to be mounted. Move the system over the carrier symbol and release the icon. A message appears at the bottom of the screen indicating the unit mounted and the carrier.





DISMOUNT

Removes systems from a carrier. Pick DISMOUNT with the Left mouse button. To dismount all carried systems, pick the carrier with the Left mouse button. To select systems for dismount, pick each with Shift plus any mouse button. Use the Left mouse button to select the last. The remaining passengers will be remounted.

DEPLOY

Positions units or obstacles. Establish initial positions for units and place obstacles according to the engineer plan. When deploying minefields, be sure to first select the correct minefield density. This menu item exists only on the Initial Planning Menu.

PREPOS

Places prepared fighting positions on the map. This menu item exists only on the Initial Planning Menu.

POP (pop-up)

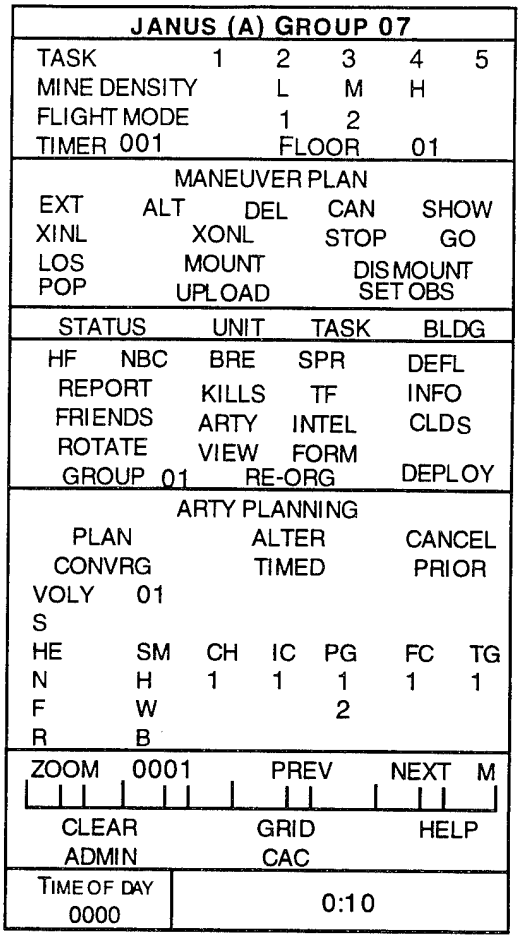
Causes an aircraft to automatically rise up to see an area previously masked by terrain. The aircraft must be at a *STOP* node, with at least one future node, in order to be placed in POP. If the aircraft can already observe that location: or if the elevation exceeds fifty meters above the aircraft's current elevation, nothing will occur. If the aircraft can perform POP, then a red ring will appear around the aircraft while it is in pop-up. The aircraft remains at this node cycling between pop and hover until it acquires and shoots at an enemy. This menu item exists only on the scenario Execution Menu.

UPLOAD

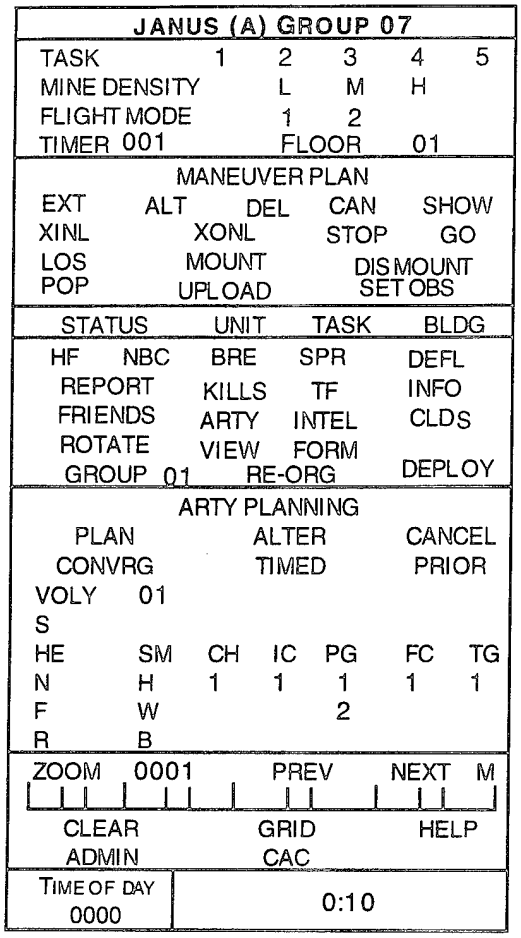
Replenishes a unit's ammunition or fuel and repairs damaged vehicles. Use the Left mouse button to select the supply vehicle; the vehicle to be resupplied or repaired and must be in the white circle drawn around the supply vehicle. This menu item exists only on the scenario Execution Menu.

SETOBS

Activates craters, abatis, smoke pots, on-board vehicle smoke or vehicular dispensed mines. Craters and abatis turn from white to red. Smoke pots disappear and are replaced by the smoke cloud. Vehicle on-board smoke starts to appear behind the vehicle when picked with Yellow. The Middle mouse button activates smoke grenades to the front of the vehicle. Aircraft dispensed minefields will be centered on the aircraft. Ground vehicle dispensed minefields will be dispensed in the direction opposite the vehicle's direction of movement. This menu item exists only on the scenario Execution Menu.



Scenario Execution Menu



STATUS/REPORT

TASK/UNIT

Select either individual units (UNIT) or whole task force (TASK) when establishing whether or not the selected organization will be in HF (holdfire), NBC (MOPP status 4), BRE (breach), SPR (sprint) or DEFL (defilade).

HF

Toggles between shoot and no-shoot status. In "shoot," a direct fire weapon will automatically engage enemy units. In no-shoot they will not.

NBC

Toggles MOPP status on and off. Due to system limitations you will either be in MOPP "0" or MOPP "4".

BRE

Toggles on or off the breaching capability of systems which have that capability defined in the database.

SPR

The unit will move at the maximum speed possible. If TASK is selected, all units in that task force will move at their individual maximum speeds.

DEFL

Toggles full defilade status on and off. Units in full defilade will not shoot.

REPORT: KILLS

Displays reports on the systems killed on the screen. If the report is asked for by a task force, the kills will be displayed by killer (direct fire, artillery, mines, chemicals) and total kills will be displayed. Use the Middle mouse button to see kills for all *task* forces on a workstation. Use the Right mouse button to see kills for all workstations on a side.

REPORT: TF

This is a situation/status report on the selected task force by system.

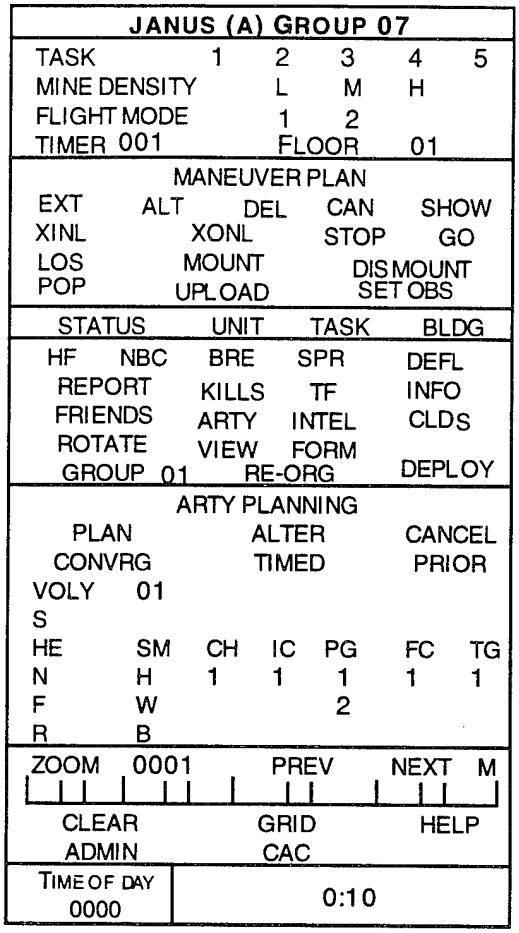
UNIT - The unit bumper number.
TF - The task force's global number.
SYSTEM - The system type; example: M1A1.
I/R - The number of initial systems and the number remaining.
HOST - The number displayed represents the number of units mounted on that system, or in the case of the mounted unit, the unit number of the host system.
DEF - Whether the unit is in partial or full defilade.
FUEL - Percentage of total fuel remaining on the system.
VELO- Current unit speed in km/hr.
DELAY - The delay status of the selected unit.
HLD - The holdfire/shoot status.
SUPR - Whether or not the unit is suppressed.
BRE - The breaching note of the system.
CHEM - Whether or not chemicals are affecting the unit.

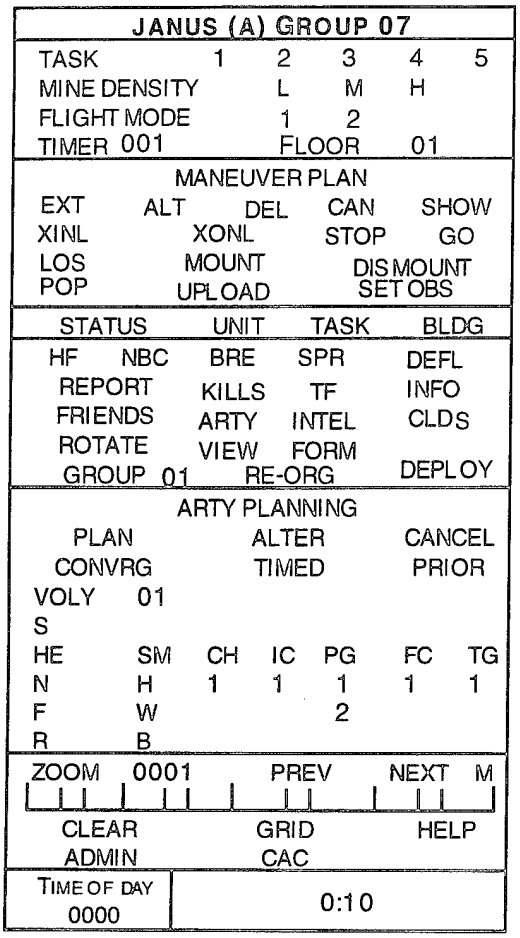
REPORT : INFO

The situation report for the unit selected. The basic report is the same as for the task forces with the following exceptions:

- Shift plus any mouse button displays ammunition status, or the number of rounds remaining.
- The Middle mouse button displays the friendly units' coordinates and height plus an enlarged version of its icon.
- The Right mouse button displays the friendly units' route.

Pick a place on the map with the Left mouse button to find the coordinates and elevation of that spot. Pick an enemy unit with the Left mouse button to find out how many elements the icon represents, along with its grid coordinates.





REPORT: FRIENDS

Displays friendly forces located on other workstations that can be seen by your forces.

Displays all the artillery missions currently in progress for all indirect fire systems.

UNIT-	Unit number.
SYSTEM -	Type of artillery system.
PRJ-	Projectile type.
NO -	Number of firing units.
FTIME -	Game time of next mission.
AIMPOINT-	The grid coordinates of the mission.
SPR -	The units suppression status.
TOF -	Time of flight, in seconds.
RLD -	Time between volleys, in seconds.
PLN -	Time between request and firing in seconds.
VTG -	Volleys to go.

REPORT: CLDS

Toggles cloud display on and off.

ROTATE: VIEW

Adjusts the unit's line-of-sight (LOS). The Left mouse button changes the direction of the LOS fan. The Shift plus any mouse button changes the size of the fan.

ROTATE: FORM

Adjusts the alignment/formation of the systems in an aggregated symbol.

ROTATE: BAR

Aligns obstacles.

RE-ORG (Reorganization)

Used to transfer units from one TF to another on your workstation; or to transfer units/TFs to another work station

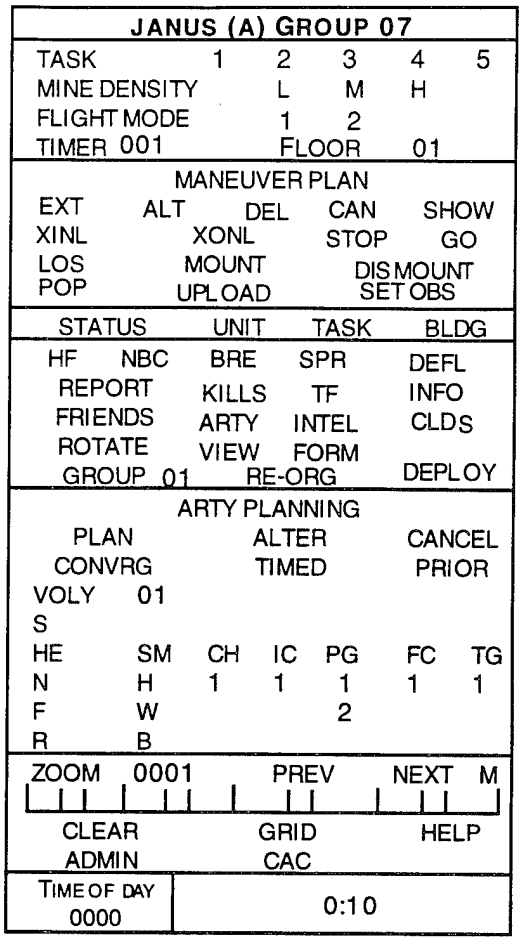
To change task organization on your work station:

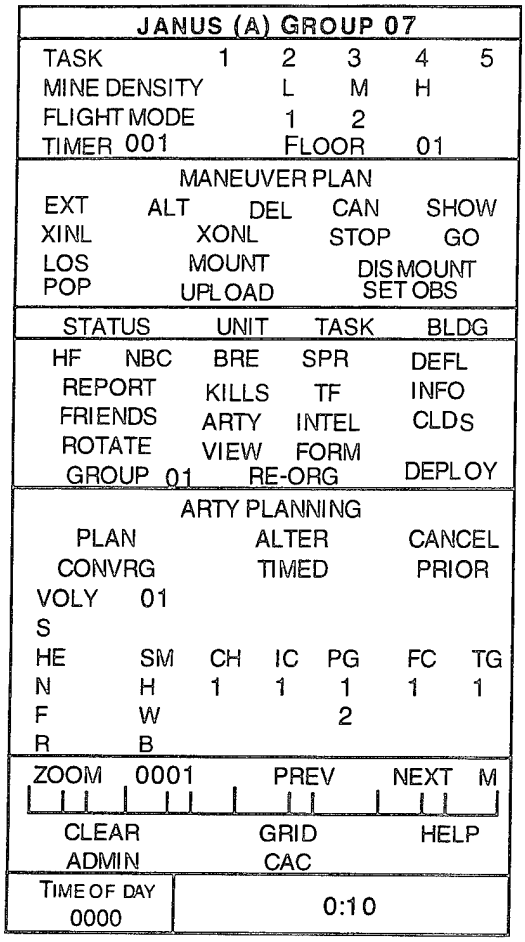
- Pick the RE-ORG number that corresponds to your GROUP number;
- Pick the TASK number to which you desire to move units;
- Pick the unit you want to transfer:
- The message at the bottom of the screen confirms the transfer.

To transfer a unit or task force to another work station, first select the GROUP number that corresponds to the work station to which you want to transfer the units. Pick RE-ORG. Then, pick the task force number you want to transfer (under TASK). Finally, using UNIT or TASK, pick the units you want to move to the other work station.

DEPLOY (Controller Work Station Only)

The DEPLOY function is used to position units on the screen and to modify the number of elements and their fuel status. It is only available from controller workstations after the simulation time has started.





ARTY PLANNING MENU

PLAN

Plans an artillery mission. Use the Left mouse button to place the mission and Shift plus any mouse button to abort

ALTER

Changes a mission already planned. Use Shift plus any mouse button to display data about missions already planned.

PLAN and ALTER are used in conjunction with CONVRG, TIMED, PRIOR, VOLYS, and the type of munition (HE, SM, CH, IC, PA, FC, TA)

CANCEL

Aborts a mission. Shift plus any mouse button displays planned missions as text. Remember FASCAM missions cannot be canceled once planned.

CONVRG

Toggles between converge sheaf (all tubes will be fired at the same aim point) and parallel sheaf.

TIMED

Missions planned while TIMED is highlighted will be fired at the game time indicated.

PRIOR

Missions planned with PRIOR (priority) highlighted will begin firing immediately after the planning time has elapsed. Priority missions abort any mission currently being fired (including other priority missions). Precision guided munition (PGM) can only be fired as priority mission but they will not abort the current mission.

VOLYS

Sets the number of volleys the mission is to fire. Use the Left mouse button to increase the number of volleys and the Right mouse button to decrease them.

Select Munition Type (HE, SM, CH, IC, PA, FC TA)

Default on start up is HE. PA, and FO can only be input after simulation start up.

PG (Precision Guided Munitions)

Precision guided munitions require both a laser designator and a firing unit. Type 1 is artillery delivered; type 2 is non-artillery delivered. PA missions must be PRIOR (priority) missions.

- Pick the firing unit.
- Pick the laser designator: note the orange circle.
- Pick an observed enemy unit. One of the following messages will appear:

All Requirements Satisfied

Mission will be fired. Impact will be scheduled on all Janus hosts on the wide area network.

Geometry Not Satisfied

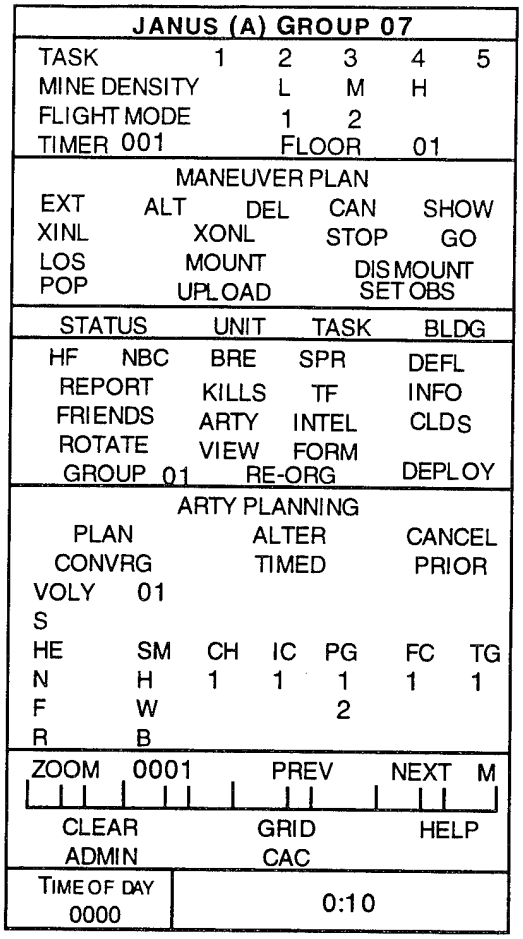
Mission will not fire.

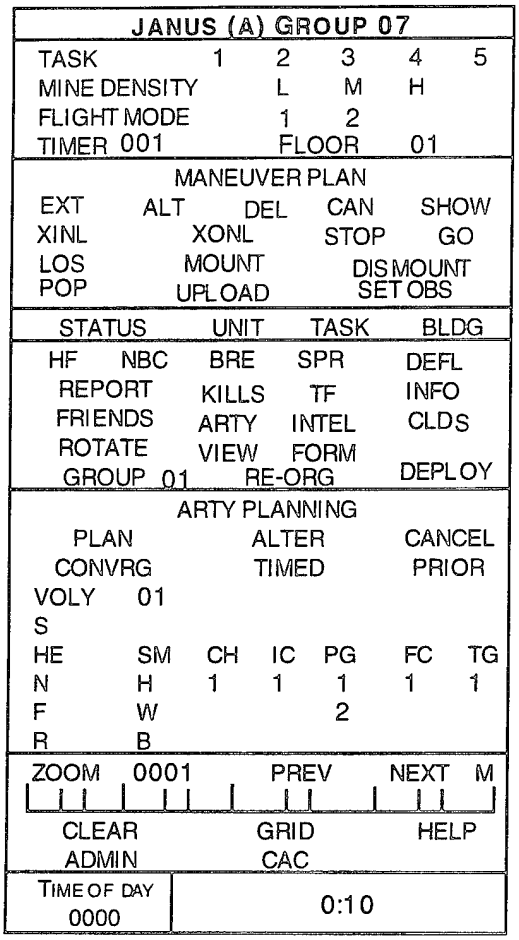
Target Not Acquired By FO

Mission will not fire.

No LOS At Predicted The Location

Mission will not fire.





Insufficient SSKP At FO/T Range

Mission will not fire.

Fc (FASCAM)

- Select PRIOR.
- Pick the firing unit
- After placing the mission, move the cursor in the direction you desire the box to be oriented. Release.

MENU INDEX

APPENDIX B
JANUS CHEAT SHEETS

MOVEMENT

BUTTON	EXT	ALT/DEL/CAN
Left Mouse	*GO* NODE	*GO* NODE
Shift + Any Mouse	LOS	*TIME* NODE
Right Mouse	*STOP* NODE	CHANGE NODE
Middle Mouse	FINAL NODE	*GO* NODE

TIMER

BUTTON	FUNCTION
Left Mouse	Add
Right Mouse	Subtract

ARTILLERY

BUTTON	PLAN	ALTER	VOLLEYS
Left Mouse	Pick Unit/TGT	Change Impact PT	Up
Shift + Any Mouse	Abort Planning And Abort Precision Munition Sequence	Change Volleys/Munition	
Right Mouse			Down

CLEAR

BUTTON	EFFECT
Left Mouse	Clears Everything
Shift + Any Mouse	Clears All Text
Right Mouse	Clears RPT Text Only
Middle Mouse	Clears Graphics Only

ROTATE VIEW

BUTTON	FUNCTION
Middle Mouse	Direction of View
Right Mouse	Size of Fan

DISMOUNT

BUTTON	FUNCTION
Left Mouse	All Units Dismounted
Shift + Any Mouse	Selected Units Dismounted

LOS

BUTTON	VIEW
Left Mouse	LOS From Ground Level
Right Mouse	LOS From 50 Meters
Middle Mouse	LOS From Hover

STATUS

FUNCTION	IN	NOT IN
HF	V	____
NBC	V	____
BRE	V	____
SPR	V	____
DEFL	V	____

AIRCRAFT MOVEMENT

FLIGHT MODE	STATUS
1	Low/Slow
2	High/Fast

INTEL

BUTTON	FUNCTION
Left Mouse	Displays Target Acquisition of All Targets Detected
Right Mouse	Displays Unit Aggegation
Middle Mouse	Previous Sightings/Counterbattery Targets
Shift + Any Mouse	Displays Target Acquisition of All Targets Identified

UNIT STATUS SYMBOLS

A	Unit Killed by Indirect Fire
C	Unit Killed by Direct Fire
S	Unit Suppressed
M (White)	Unit Killed by Mine
M (Orange)	Unit Detected A Mine

ZOOM

M	Map (Military) Scale
1	Overview
2-4-8...4000	Varying Degrees of Magnification

DEFAULT STATUS

FUNCTION	STATUS	CHANGE
Clouds	Off	Pick W/Yellow
Grid	Off	Pick W/Yellow

CAC

BUTTON	FUNCTION
Left Mouse	Enter CAC Menu
Shift + Any Mouse	Toggle CAC On/Off

ENGINEERING OBSTACLES

A (Red)	Activated Abatis
A (White)	Unactivated Abatis
C (Red)	Activated Crater
C (White)	Unactivated Crater
D	Ditch
N	Natural Obstacle
P	Unactivated Smokepot
	Minefield
	Minefield

SETOBS

BUTTON	FUNCTION
Left Mouse	Activates Abatis, Craters, Smoke Pots Vehicle Engine Smoke. Dispenses Vehicle Laid Minefields
Middle Mouse	Fires Vehicle Smoke Gernades

KILLS REPORT

BUTTON	REPORT
Left Mouse	Kills by Task Force
Right Mouse	Kills by Side
Middle Mouse	Kills by Group

INFO REPORT

BUTTON	FRIENDLY UNIT	ENEMY UNIT	OTHERS
Left Mouse	Detailed Report	Num. Units & Coordinates	Coordinates & Elevation For Any Spot on Terrain. Friendly Mine Data
Middle Mouse	Coordinates and Icon Picture		
Shift + Any Mouse	Ammunition Status		
Right Mouse	Movement Route		

APPENDIX C

One of the key enhancements that was to be made to Janus by the Simitar effort was of the representation of CSS. Distribution of POL and ammunition by type from logistic train vehicles to FARPs, then to combat re-supply vehicles, and then to combat vehicles, was provided in earlier versions of Distributed Janus.

The next set of CSS functions to be addressed was repair parts delivery and maintenance of combat vehicles. Discussions with CASCOM and TRAC-Lee personnel suggested that vehicle repair can be divided into 7 courses of actions (listed in priority order):

1. Make a permanent replacement of a damaged part; for example, using an M88 crane, pull and replace a damaged power pack with a new one in 30 minutes.
2. Repair the damage in the field so that the vehicle can return to combat.
3. Repair the damage in the field so that the vehicle can get itself back to an M88.
4. Tow the damaged vehicle to a repair site.
5. Abandon the vehicle.
6. Scavenge parts from the vehicle.
7. Destroy the vehicle.

There were insufficient resources to implement all of these alternatives. Therefore, actions 1 and 3 were not implemented and it is assumed that action 6 is imbedded in the data where necessary (that is, sufficiently many repair parts are available to adequately represent scavenged inventory).

The existing Janus vehicle kill algorithm was modified so that vehicle kills, rather than being only catastropic, are evaluated by a random process in which 50% of the hits destroy vehicles while the remainder are assumed to be repairable, A second random draw is made to determine which of four main components need repair (engine, transmission, sprocket/wheel, electronics). This random distribution is designed to give all four an equal probability of occurring.

When a replacement is needed for a damaged part, Janus identifies the vehicle type, part needed[1] and damaged vehicle location on the work screen that was controlling the icon for the damaged vehicle. Janus also sends an Email message to a pre-specified workstation, if desired. This message contains the number of WIAs and potential POWs that were created by the hit. The message also suggests that if action is not taken (such as sending an evacuation vehicle to the location) within 30 minutes, the controller may want to consider that these personnel have been lost. There is no further action taken by Janus about WIA/POWs.

Janus still puts the casualty "C" on the screen where a vehicle was hit. Each time another vehicle is hit, a summary of all vehicles hit is printed on the screen. This report may be removed with the clear button. It is assumed that recovery of the vehicle will be initiated by an interactor giving a recovery vehicle a Janus path to the location of the damaged vehicle. Recovery vehicles are those whose type number in the combat systems editor is greater than 240. When this vehicle gets to the damage location (actually within 2.5 KM of it), the interactor at the workstation can initiate recovery by selecting the UPLOAD menu button, selecting the recovery vehicle, and then selecting an area in the vicinity of the damaged vehicle where no undamaged vehicle is located. The recovery vehicle will start a search for a damaged vehicle within its range and will select the first one found that needs repair and that has not been previously addressed. If the recovery vehicle has the needed part, repair will start and a message is put on the workstation to indicate the time the damage will be complete and the recovery vehicle released and available for further assignments (NOTE: the player can move the repair vehicle during this time, but should not in order to be realistic).

When a repair vehicle finds it does not have the part needed, it will attach the damaged vehicle for tow and request a path be created for it. The player should give a path that takes the repair vehicle to a maintenance location. When the repair vehicle arrives at this location, the player should select UPLOAD, and then the repair vehicle twice, and the damaged vehicle will be dismounted. The maintenance icon, also a type greater than 240, should be selected and repair will be initiated.

When repair has been completed, Distributed Janus will automatically notify a CONTROLLER workstation, one with DEPLOY capabilities, while the clock is running.

---

[1] In this prototype implementation, no distinction is made among parts for different vehicles--these generic parts fit all.

The CONTROLLER may add the repaired vehicle to any icon of the same type. Note that when the last vehicle in an icon is hit, that icon will cease to exist so that the repaired vehicle will have to be added to a different icon.

When a Janus run is completed, a summary report is printed on the X window display.

Implementation Notes

Due to limited resources and time, this part and repair feature is a prototype version.

1. Designation of repair vehicles is done in the SYSTEM editor selecting types greater than 240. Type 241 will carry 1 each of the four types of parts, 245 will hold 5 each, etc. It is assumed that a maintenance depot will be type 248 or 249. Delivery of parts from one repair vehicle to another only brings the receiving vehicle up to, at most, the number of parts it can hold according to the above scheme.
2. Repair vehicles may be limited in availability, so it may be necessary to have one reassigned to a workstation when the need arises.
3. A repair unit will not repair itself.
4. Towing can be done for all four types of damaged parts. The difficulties in towing a vehicle with a damaged sprocket are ignored.
5. The Janus UPLOAD button is active at all times.
6. Repair and maintenance works only on the blue side.
7. The 50% damage rate is fixed in code.
8. The WIA rate of 60% and KIA rate of 30% is fixed in code. The time in which evacuation must take place is 30 minutes.
9. The maximum number of damaged vehicles that can be accumulated is 300.
10. A vehicle must have a maximum speed greater than 20 KPH to receive repairs (e.g., no foot soldiers).
11. The time to fix the four part types comes from the Janus FIXTIMES array. This array is currently not being used and its four elements have different definitions from the part types.
12. The transfer of parts from one parts vehicle to another prints out the status of the receiving vehicle only. There is no other way to get repair part status.

Part VII

CONVERTING JANUS 3.XX SCENARIOS TO JANUS 42.XXX SCENARIOS

CONTENTS

CONVERTING JANUS 3.XX SCENARIOS TO JANUS 42.XXX SCENARIOS

Occasionally, a user may desire to convert a scenario developed under Janus 3.xx for use by Distributed Janus 42.xxx. Modifications of terrain, deploy, and CAC files are necessary. Utilities have been provided by TRAC-WSMR to accomplish this and the procedures to do so are given below. These procedures are modifications of the procedures provided by TRAC-WSMR to accommodate Distributed Janus's different directory structure.

1. DATA FILE UPGRADE PROGRAMS

There are three upgrade programs provided with the Distributed Janus 4.2 installation. These routines are intended to convert the CAC, deploy, and terrain files used under Janus 3.17 to the correct format for Distributed Janus 4.2. The three routines provided are:

trnredo_nov93.exe
dployredo_nov93.exe
cacredo_nov93.exe.

1.1 TERRAIN FILE UPGRADES

To upgrade the v317 terrain files, identify a terrain file that you want converted to be used under v42. Next copy this file to the tes directory. For example, suppose you wish to use terrain file TERRAINxxx.DAT with v42. Copy this file to the tes directory with the following commands:

(where xxx is the desired terrain number)

cd/home/nguard/ngedit/tes
cp ../data/trn/TERRAINxxx.DAT TERRAINxxx.OLD

Next run the terrain redo program as:
trnredo_nov93.exe

and respond with
xxx

Copy the output of the redo program to the v42 directory by:
cp TERAINxxx.DAT ../data/trn/TERRAINxxx.DAT

The terrain file, TERRAINxxx.DAT is now ready to be used by preted.exe under v42. The process is repeated for each terrain file that is to be upgraded.

1.2 PRETED PROCESSING FOR OLD TERRAIN FILES

In v317 and earlier versions, areas of vegitation and urban building areas were defined by setting certain bits in the terrain grid cell words. In v42, they are represented as polygons. The conversion from grid cell data to polygonal data is NOT automatic! This must be done manually using the program preted.

To run preted for terrain file xxx proceed as follows: (assuming you are still in/home/nguard/ngedit/tes)

menu
TT (Selecting Terrain, Maps, and Symbols)
PT (Selecting PreTed)

Fill in the requested information, in this case set the Terrain File Number to xxx and the Map File Number to blank. Press Enter to continue.

Answer the necessary information for the X and Y screen coordinates and the width and height of the screen map, as well as the desired contour interval.

At the prompt
Draw "old" Trees/Cities? (Answer Y/N)

You can decide to have the "old" trees/cities drawn on the screen using the old method for representing tree/city areas. Normally, answer the prompt with "Y".

Once the display is set up, you can use the pre-editor to draw in the polygon tree and city areas using the old data as a guide.

When you are done, exit preted and save both the terrain and screen files.

You MUST now run the terrain editor (ted) on each terrain file that is upgraded and save it and the screen file before the upgraded terrain file can be used by Janus.

Note: Saving these files means copying them into ../data/trn.

2. SCENARIO DATA FILES

The Distributed Janus file system has scenario files under:
/home/nguard/ngedit/archive.

Each directory in archive contains DEPLOY, FORCE, JSCRN, SYSTEM and CAC files in a subdirectory named Initial. These instructions are intended to upgrade these files.

Any files in the archive/run subdirectories should be created from the new initial data set using distributed Janus 4.2.

2.1 DATA FILE DIRECTORY PREPARATION

The existing archive directory with version 3.17 data is renamed to redo:

mv archive redo

This directory is backed up onto tape for recovery purposes:

tar redo

A new archive directory is created:

mkdir archive

The upgrade programs will be run in the tes directory and their results moved to the new archive directory.

2.2 DEPLOY FILE UPGRADES

One of the files every scenario has is called the Deploy file. It contains information onroutes, artillery missions, force locations, etc. This file must be modified before attempting to execute a v317 scenario with v42 software.

Identify a Deploy file that you want converted to v42 e.g. DPLOY626.DAT. Copy this file to the tes directory.

cp ../redo/626.ftknox.local/initial/DPLOY626.DAT .DPLOY626.OLD

Then copy the associated Screen file:

cp ../redo/626.ftknox.local/initial/JSCRN626.DAT

and the associated Terrain file

cp ../data/trn/TERRAINxxx.DAT.

Note: the Terrain file may already be there from the step above. Run the Deploy Redo program:

dployredo_nov93.exe
626

Then copy the output of the Redo program to the v42 archive:

cp DPLOY626.DAT ../archive/626.ftknox.local/initial/.

You must also copy the FORCE file, the SYSTEM file, and the JSCRN file for this scenario by:

cp../redo/626.ftknox.local/initial/FORCE626.DAT ../archive/626.ftknox.local/initial/
cp../redo/626.ftknox.local/initial/SYSTEM626.DAT../archive/626.ftknox.local/initial/
cp../redo/626.ftknox.local/initial/JSCRN626.DAT../archive/626.ftknox.local/initial/

This process is repeated for each scenario that is to be upgraded.

3. CAC FILE UPGRADE

In order to use the CAC Redo program cacredo_nov93.exe, the CAC v317 files must be copied into the tes directory under a new naming convention. Under v317, CAC files look like: CACFILEns.DAT where n is a digit form 1 to 5 and s is 1 or 2 (for Blue or Red). This is done by:

```
cp ../redo/626.ftknox.local/initial/CACF*.
rename_cac.com
```

Then the cac redo program can be run:

```
cacredo_nov93.exe
501
1
XX
```

The above sequence of inputs to CAC Redo tells the program to convert the file CACB501.OLD to CACB501.DAT. The XX terminates the program.

You must copy the output to the v42 archive directory as follows:

```
cp CACB501.DAT ../archive/626.ftknox.local/initial/.
```

Repeat the above process for each CAC file to be upgraded.

4. UPGRADE CLEANUP

Once you have finished redoing all necessary files, the "old" files can be removed from tes and the redo directory deleted.

Part VIII

AAR SLIDESHOW CAPABILITY

AAR SLIDESHOW CAPABILITY

IDA designed a capability to do a distributed slideshow (this can be run locally as well by providing no machine names to the slideshow script). Generally it assumes that there is a list of "tif" format files in ngedit's slideshow directory. The tif files will be displayed one after another in the order in which they print when you do an ls (ascii sorted).

For a distributed AAR, the slideshow would most likely be driven from brigade headquarters, although anyone with an HP logged in as ngedit can run a slideshow. The slides that are in ngedit's directory whereever the slideshow is run will be the ones that are displayed everywhere. (It doesn't matter what slides are in ngedit's directory at other locations, in other words.) And furthermore, those slides will not be overwritten.

Slides can be developed with a product sold by HP called the Whiteboard. You can import screen dumps (that have been written to disk) from Janus into the whiteboard and draw on and annotate the screen dumps. You should refer to the user documentation provided with this product to learn more about how to do this.

After your slides have been prepared using the HP Whiteboard product (which produces "tif" files), you run the slideshow by doing the following steps:

1. cd into directory/home/nguard/ngedit/slideshow
2. run the slideshow script at the command line with the list of machine names (they must be HP machines; Suns are not supported for this AAR capability and their screens are too small anyway) on which you want the slideshow to be displayed. For example, to run the slideshow from brigade headquarters at the 116, and to show the slides at the 148fs and the 2-116-armor, enter the following:

   slideshow h-148 h-2-116

   This will display the slides at the h-116 (because that is where it is running from, the h-148 and the h-2-116).

It initially takes a long time for the first slide to come up because all the "tif" files in your slideshow directory are copies to the other machines listed in the slideshow command. These tif files tend to be rather large and the network connection which is currently implemented with 14.4 modems is quite slow. You can expect times of approximately 20 minutes for each slide in your slideshow directory. This time is not generally affected by

how many machines you send it to when you are at brigade headquarters because there is a separate modem connection to each bn and those connections can be used in parallel. However, if you tried to run a distributed slideshow from a battalion where there is only one modem, you can estimate 20 minutes times the number of slides and times the number of machines listed on the slideshow command. Generally, it is highly recommended that DISTRIBUTED slideshows only be run from brigade headquarters.

Once the first slide is up, you can go from slide to slide very quickly (because everything has already been copied over). The window where you typed in the slideshow command will prompt you to display the next slide at each step. You usually will have to keep bringing up this window out from behind the window that displays the slide to go to the next slide. It is NOT possible to back up in the slideshow with this version of the program. When you enter "y" to display the next slide, it is only a matter of seconds before it is displayed at every machine in the list. Using this tool and a speaker phone, it is possible to conduct an AAR from brigade headquarters with every battalion without anyone having to leave their respective armory.

Warning: don't keep any "extra" slides in your slideshow directory because you will have to wait for these unnecessary slides to be copied to every machine.

Warning: don't run slideshow on other machines except from brigade headquarters.

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Distributed Janus is a computerized training system for National Guard brigade and battalion battle staffs developed by the Institute for Defense Analyses under the sponsorship of the Advanced Research Projects Agency. A key feature of the system is that it can link together brigade and subordinate battalion armories over conventional telephone lines to support a distributed battle staff CPX, eliminating the requirement to assemble the staffs at a single location. This document contains a system administrator's manual, an operator's manual, a user's manual, and a modified version of the Janus exportable training document and other installation and user information.

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