

MEGA-CD
USER INTERFACE

SEGA ENTERPRISES, LTD.

Sega Ozisoft



SEGA OF AMERICA, INC.
Consumer Products Division

TO: All Sega-CD Software Developers
FROM: Jim Huether *J.H.*
SUBJ: Sega-CD BIOS for the U.S.
DATE: 4/17/92

Attached is a preliminary description of the U.S. version of the User Interface for the Sega-CD system. This documentation is for informational purposes and is subject to change.

We should have a working version of the BIOS sometime before SCES, and any of you who will be showing working product at SCES may want to use this version instead of the Japanese version. Changes required of your code will be very minimal.

Please note that the official name of what was called "Mega CD" has recently been changed to "Sega-CD".

Sega Ozisoft

Mega CD Interface

Overview

The Sega Mega CD Player is capable of handling three types of compact disks: CD-ROM, Audio CD (Redbook), and CD+G. This document addresses the interface mechanics for each of the three compact disk mediums.

1. BIOS Standards

- The RESET button on the Genesis unit would act as an Eject button for the CD tray. At Power-up, if the drive is open, then it closes automatically. If it is closed, it stays closed. Upon RESET, if the drive is open, it closes, then re-opens (this is due to the firmware of the SONY drive). If it is closed, then it opens.
- When the disk finishes, it should stop automatically, and have the CD control panel appear on the screen, with the cursor over the default selection.
- A trap for system errors or hangups would enable the user to retrieve the disk without it getting stuck in the Mega Drive. If a system error occurs, the screen would display, "An error has occurred. Please turn the Genesis off and try again."
- During Power-up, once the media detect is complete, any button (A, B, C or START) will cause the BIOS to display the control panel.

2. Interface Requirements

The following mechanics are consistent throughout the interface:

- The hardware has the ability to distinguish between the three storage mediums (CD Audio, CD+G, CD-ROM).
- We understand that for CD audio and CD+G disks there is already a standard such that pressing START and C will toggle between Play and Pause, START and B will stop, START and A will eject, and START and D-pad left or right will act as AMS when a CD is playing. Any of these button press combinations will be reflected by the appropriate state change to the control panel.
- The interface for each medium is consistent.
- The Genesis controller is used as the primary input device.
- Cursor control is discrete.
- The cursor is placed on the default action when any control panel is initially displayed.

- A selected item will highlight the text/graphic for the button and the cursor will remain over the selected item (sticky cursor), except for cases identified below.
- The D button on the controller is used to navigate the cursor on the screen.
- All buttons and other interface elements are designed to resemble actual audio equipment.
- All buttons are clearly labeled with an English translation of their function.
- The START button on the controller will always perform the default action for the screen. For example: With an audio CD, pressing the START button would begin playing the CD.
- The A, B and C buttons on the controller all perform selection (the pressing of a button).
- Choices or functions that are not available to the user are not displayed on the screen.
- When the control panel for an audio or CD+G disk is initially displayed, panels cover advanced functionality. Advanced functionality is included in the Program Mode button. The user may enact the covered functions by selecting the Program Mode button. The hidden functions will expand onto the screen with the cursor over the default action.
- Amber/blue color combinations are used in place of red/green color combinations.

3. Flow of Control

(Please see the attached diagram entitled, "Sega Mega CD Flow of Control")

- (1) Power-On (no cartridge inserted) - the logo sequence is automatically executed upon powering on the unit.
- (2) Media Detection - The Mega CD would automatically detect the type of the inserted CD and branch off to one of six possible outcomes. The last frame of the logo sequence would remain on the screen for approximately eight seconds.

The sum of the power-on and media detection sequences should be less than fifteen (15) seconds. Once media detection is done, the user can bypass the rest of the power-on sequence by pressing A, B, C or START.

- (3) CD-ROM Game - the game is loaded and executed. (See Diagram 1 which shows how to get to the CD interface graphic - Figure 0.)
- (4) Audio CD - the CD control panel is displayed on the screen and the cursor is over the PLAY button (Figure 1).
- (5) CD+G - the control panel is displayed on the screen and the cursor is over the PLAY button (Figure 1).

Title: Sega Mega CD Flow of Control

Mega CD Interface
3/5/92

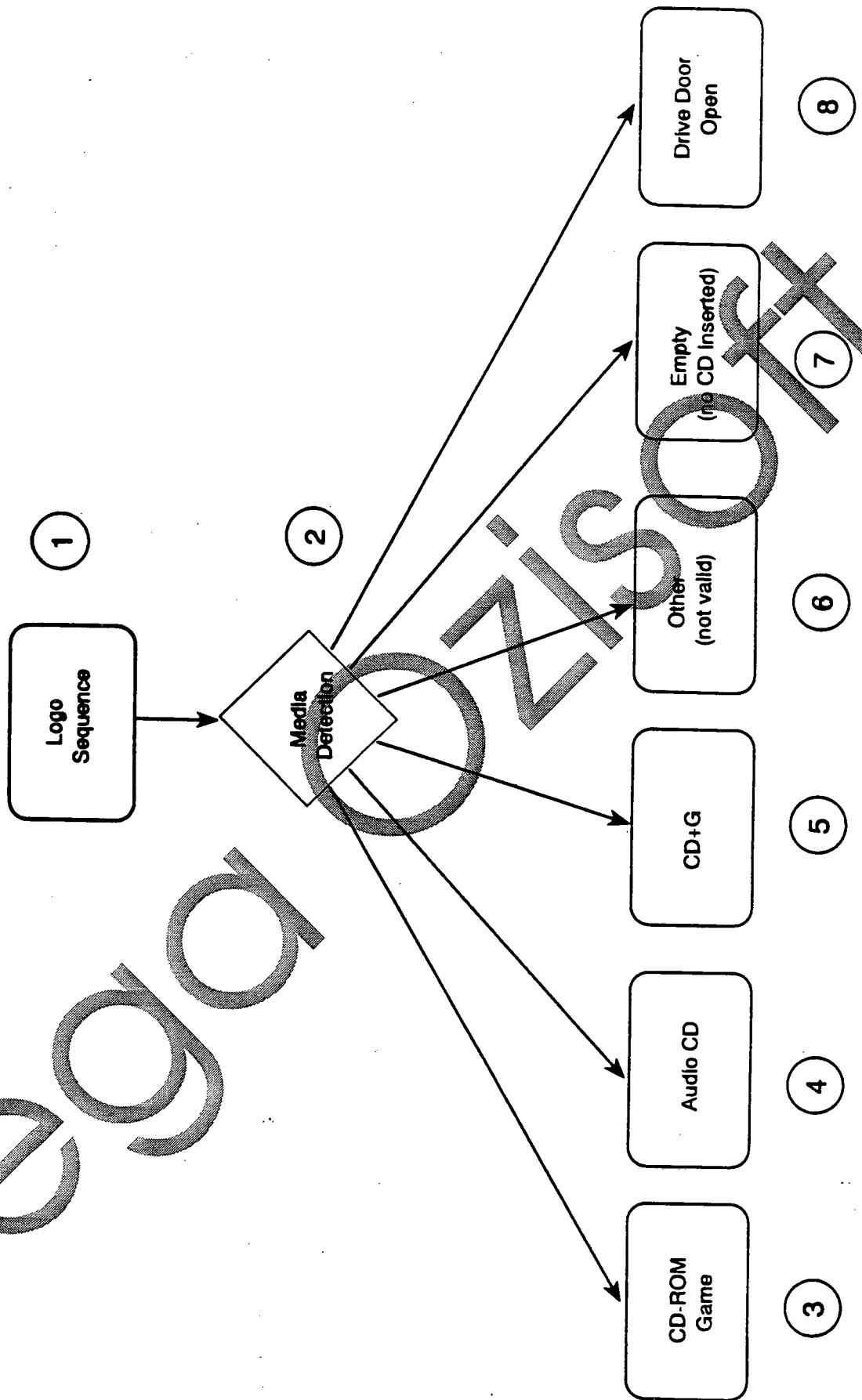
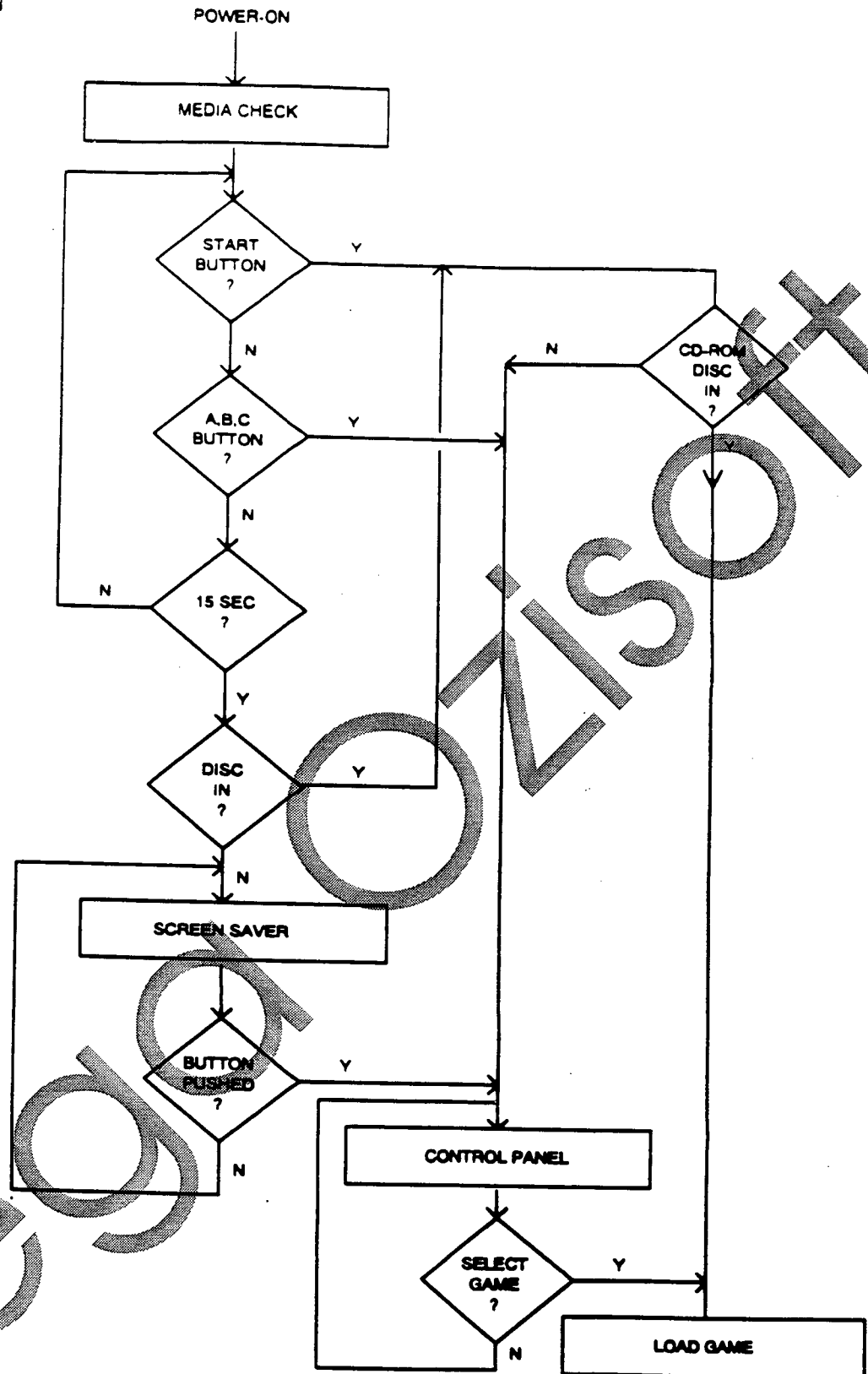


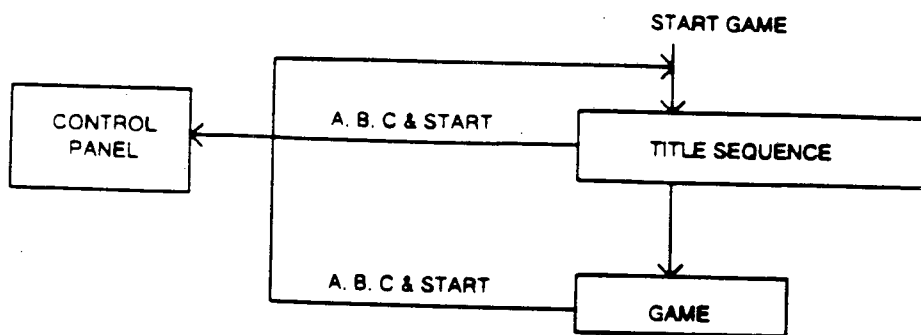
DIAGRAM 1

A. POWER-ON



(CONTINUED)

B. DURING GAME



- (6) Other (not valid) - a message is displayed on the screen which should read: "This CD is unreadable. Please press any button to open the CD tray".
- (7) Empty (no CD inserted) - the demonstration screen saver is immediately executed.
- (8) Drive Door Open - a message is displayed on the screen which might read: "Please insert a CD, then press any button to close the CD tray".

4. Screen Saver

The screen saver is automatically executed when there is no CD present during power-up media detection. While the screen saver is executing, if the drive door is closed, a message is displayed at the bottom of the screen which should read: "Press RESET to open the CD tray". If the door is open, the message should read: "Please insert a CD, then press START to close the CD tray". Upon closing the drive door, media detection is executed again.

5. LCD Display

The following are descriptions of what options are available on the LCD display:

NORMAL Operation (Figure 1)

- The top two lines display track information (Music List).
- The third line displays volume information.
- The fourth line is used for messages.
- The fifth line displays the current or total number of tracks, the current TIME mode display, etc.
- Note: Special messages can also overwrite line 5.

6. Audio CD (see Figure 1)

The visual interface (control panel) is made to resemble an actual compact disk player. The look and feel of the interface has been tailored to closely match a real compact disk player.

Interface Elements - The interface is composed of the following areas: the CD Control Button, the Program Mode Button, the LCD Information Display, the CD+G Button, the CD-ROM Button, and the Option Button. Each of the groups are explained below.

A. CD Control Buttons

The CD Control Buttons are the buttons that are found on many home compact disk players. Each button has its conventional icon and text label associated with it. There are five buttons that compose the CD Control Buttons: Eject/Close, Play/Pause, Stop, Search, and Automatic Search. The function of each CD control button is explained below.

1. **Eject/Close** - This button is used to load or eject a compact disk. It is a toggle button meaning that if a disk is loaded, it will eject it; if the tray is open, it will close it.

2. **Play/Pause** - This is the default button for an audio CD. When the START button is pressed, the compact disk will begin to play. Once the Play button is pressed, the text and graph on the button change to that of the PAUSE function.
3. **Stop** - This button will stop a playing disk. If the user has preprogrammed the play order using the Track Selection buttons, the programming is retained.
4. **Search** - The single Search button performs two functions: While the left side of the button is pressed, the current track is scanned backwards. While the right side of the button is pressed, the current track is scanned forwards. When the CD+G Play button is pressed, this button becomes the Channel Selection button for CD+G disks. (See Figure 2)
5. **Auto Search** - This button performs two functions: While the left side of the button is pressed, the previous tracks are skipped. While the right side of the button is pressed, the next tracks are skipped.

B. Program Mode Buttons

The Program Mode buttons are used for randomly accessing and programming tracks, as well as other functions.

All the Program Mode buttons are hidden by a single panel when the audio CD interface is first displayed. The panel is labeled "Program Mode". Clicking on "Program Mode" will expand the panel (Figures 3,4).

1. **Repeat** - This button repeats a whole disk. When selected, it highlights to amber.
2. **A-B Repeat** - Selecting this button sets a beginning repeat point. The text of the button will turn blue. Selecting the button again will set the end point. The button will turn amber, and the disk will repeat from A to B points.
3. **Clear** - Selecting this button will clear all of the following settings - Repeat, A-B Repeat, Shuffle, Intro and Space; and allows normal playing from the current place on the disk.
4. **Shuffle** - (Same as old Random A). This button will allow playing of the entire disk or a programmed selection in random order.
5. **Intro** - This button allows setting a time in seconds which allows playing the beginning "N" seconds of a track or tracks. Pressing this button will display a number of seconds on the LCD Display which can be increased or decreased by pressing the D-pad up or down.
6. **Space** - This button is similar to the Intro button, except that it determines a time length for dead space between playing of tracks.

7. **Play Program** - This button allows playing of a previously selected Program (see Set Program below).
8. **Set Program** - Selecting this button causes expansion of a sub-menu (see Figure 4A). The functions of the sub-menu buttons are explained below:
 - a. **Track Select Window** - Move the cursor via the D-pad left and right to select one of the displayed numbers. Clicking on the number will enter it into the current SELECT box in the LCD display. Clicking on the up arrow (▲) will show the next set of ten numbers (i.e., 11 through 20), and clicking on the down arrow (▼) will get the previous set of ten numbers.
 - b. **LCD CTRL** - Clicking on the left or right arrows will move the highlight box in the LCD Display. When the box is at either end and the user tries to make it go "off the end", the TRACK row will show the next ten tracks in either direction along with their corresponding SELECT entries (if any) and the highlight will move to the opposite end of the line (i.e., if it is at 10 and the user selects ►, the TRACK line will now show 11 through 20 and the highlight box will be at TRACK 11).

To insert a track into the Program, move the highlight box to the desired position, select the INSERT button (it will turn amber), and then select the desired number from the TRACK SELECT area by clicking on it. The chosen number will go into the current SELECT position in the LCD display and all other SELECT entries will shift right by one track. The INSERT button text will then turn back to its normal color.

To delete, move the highlight box to the desired SELECT position. Select DELETE. The entry in the current SELECT box will go away and all other entries beyond it will shift left by one track. The DELETE key text will then turn back to its normal color.

When the user is satisfied with his/her program choices, he/she must select the DONE button. This will cause the expanded menu from Figure 4A to go away and will show the expanded menu from Figure 4. The user may then select PLAY PROG. to play the program.

9. **Time** - This button allows changing of the time mode displayed. Clicking on this button changes between Elapsed, T-Elapsed, Remaining, and T-Remaining. The appropriate mode will be indicated on the LCD Display in line 5.
10. **Done** - Selecting this button completes the Program Mode expansion and causes the expanded menu to shrink back to the Program Mode button.

C. LCD Display (See Figure 1)

1. **Line 1 & 2** - Will display redbook track numbers from a disk or programmed or shuffled track numbers. Also in SET PROGRAM mode, these lines will display track numbers on line 1 and selected tracks on line 2 (see Figure 4A). When playing a disk, the current track playing should be highlighted.
2. **Line 3** - VU Meters: Indicates sound levels for left and right channels.
3. **Line 4** - Information Line: Will show title of CD-ROM disk if a CD-ROM is inserted. Will also show messages.
4. **Line 5** - Will normally show TRACK and TIME info. May also be used for a second line of a message, and may be used to show the INTRO or SPACE time setting when these buttons are active. Also will show CD+G channel number when appropriate.

7. CD+G (See Figure 2)

When pressed, the CD+G Play button will tell the Mega CD that a CD+G CD is loaded.

The interface for CD+G disks is exactly the same as for the Redbook disks interface with one addition: the Search button becomes the CD+G Channel Selection button. This button is found on the CD+G interface only. When the left side of the channel button is pressed, the previous channel number is displayed in the LCD Information Display. When the right side of the button is pressed, the next channel number is displayed in the LCD Information Display. When the CD+G Play button is selected it becomes highlighted and the PLAY button turns into a PAUSE button.

The START button is used to toggle the display of the CD+G interface. This is necessary because the interface may obscure parts of the graphics displayed. Once the CD+G disk begins playing, the following message should appear for about 10 seconds or until the START button is pressed: "Press the START button to remove the control panel".

When the interface is hidden, a text line would be placed at the bottom of the screen, informing the user how to return to the CD+G interface. The line would read something like, "To return to the CD+G control panel, press START", and would remain on the screen for five to ten seconds (we would request that any button pressed would perform this same function).

8. CD-ROM

This interface is only entered as described in Diagram 1.

Interface Elements - When a CD-ROM disk is used, the interface structure will remain the same; however, there will be no CD+G Play button, and CD-ROM and OPTION buttons will be added.

- A. CD-ROM Button - This is the default button for the CD-ROM interface. When this button is pressed (or the START button is pressed), the game will begin loading.
- B. OPTION - This button will reveal the OPTIONS menu.

9. Required Application Software Standards

The following are software application standards that should be enforced for applications in order to ensure a consistent interface to the user:

- A software restart standard would exist for all CD-ROM games. By pressing the A, B, C and START buttons simultaneously and at any time, the current game would restart to its title and opening sequences. From there, pressing A, B, C and START would bring up the CD-ROM control panel.
- A software PAUSE button standard would exist for all CD-ROM games. Pressing the START button on the Genesis controller would display a particular game's options. For every game, two additional options would be displayed. The first option is labeled "Control Panel" and would return to the control panel. The second option is labeled "Restart" and would perform the same functionality as the software restart standard.
- A software standard would exist for the opening option screen. The screen would present a menu for saving and restoring previously saved games.

TRACK

17

18

"Game Title"

12:34

PROGRAM

OPTION

CD-ROM

CD+G

FIG.# 0 "From CD-ROM" 3-9-92

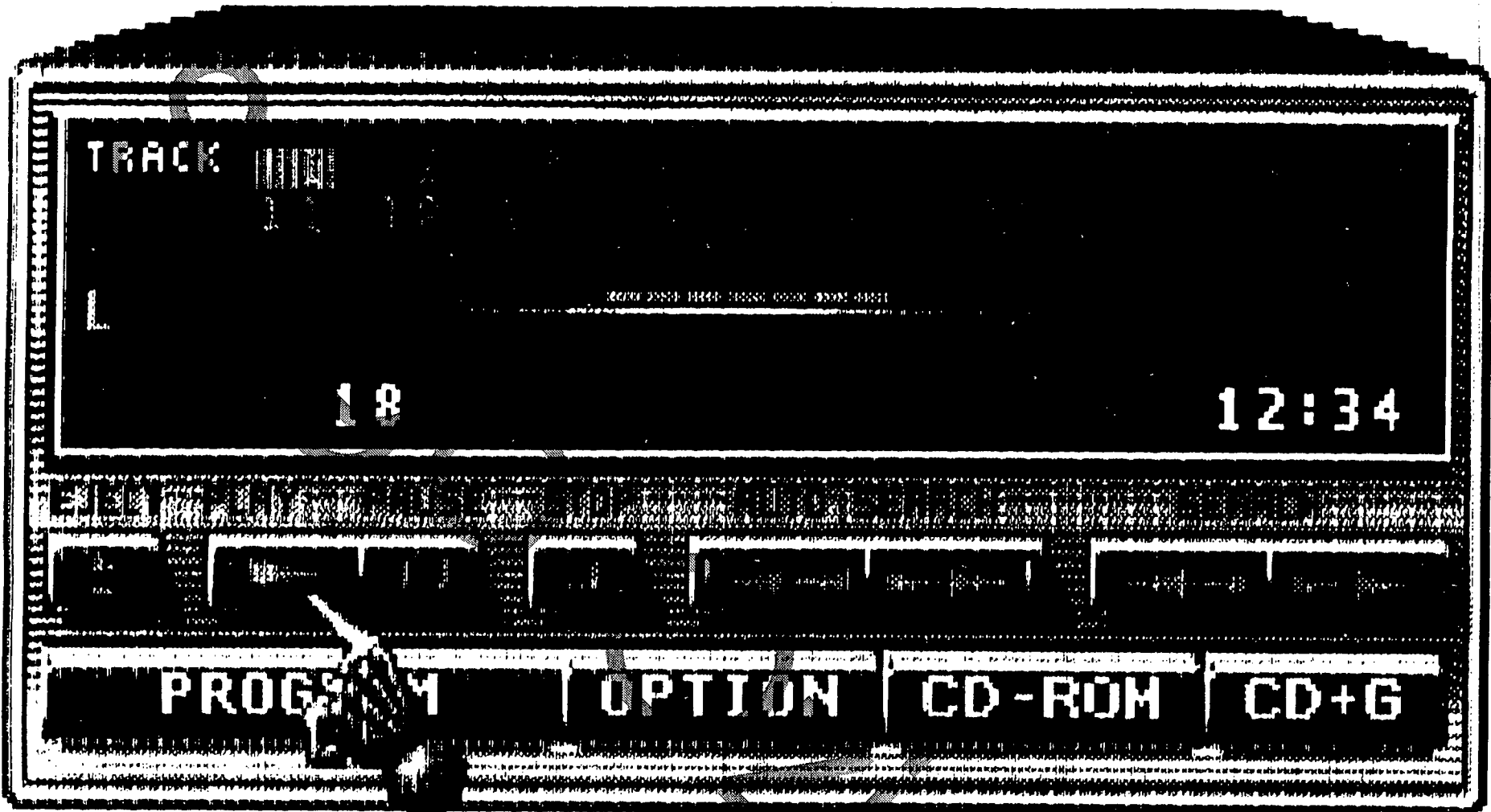


FIG.# 1 "CD-Audio" 3-9-92

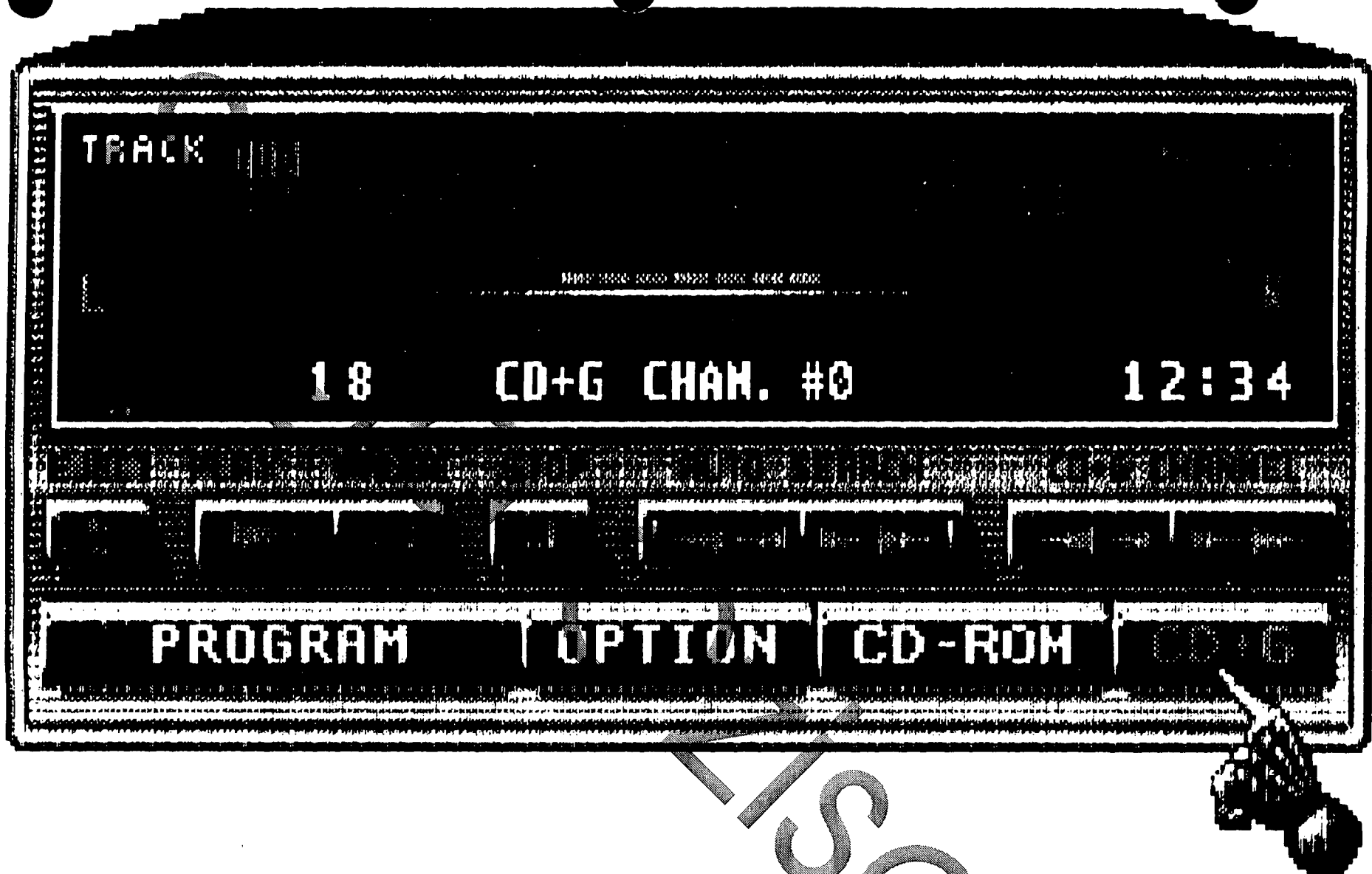
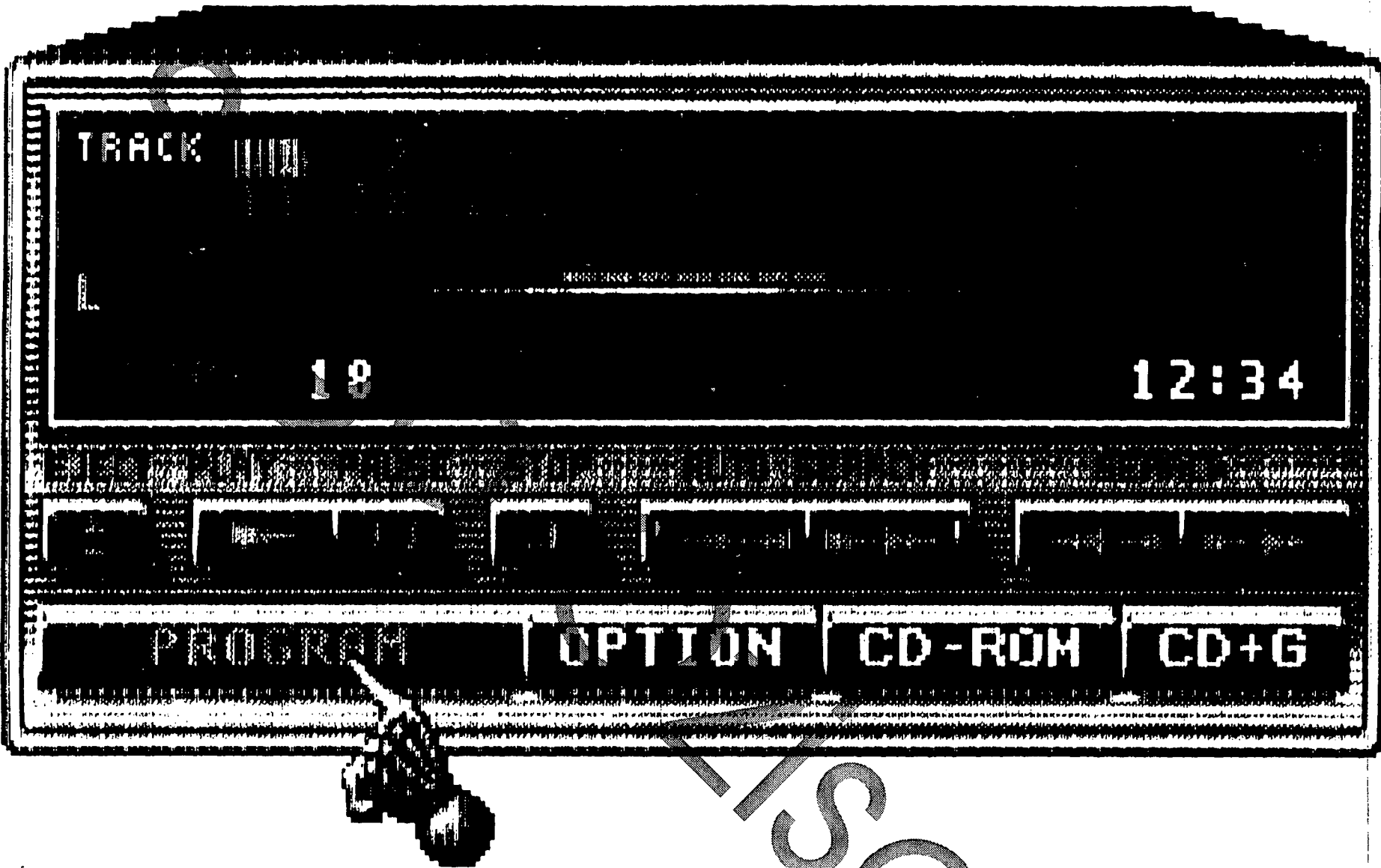


FIG.# 2

" CD+G MODE "

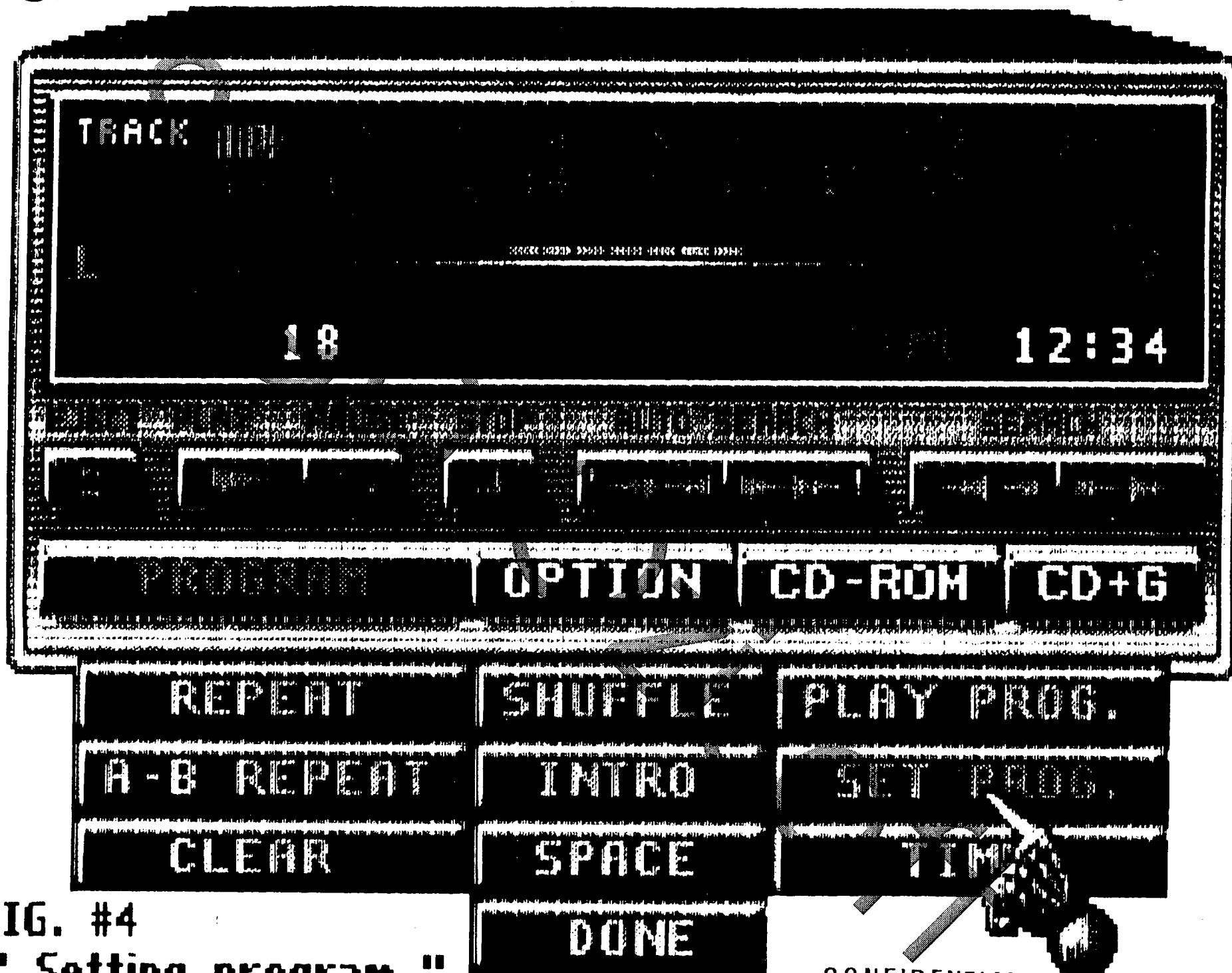
3-9-92.

CONFIDENTIAL



CONFIDENTIAL

FIG.# 3 " Selecting Program Mode " 3-9-92



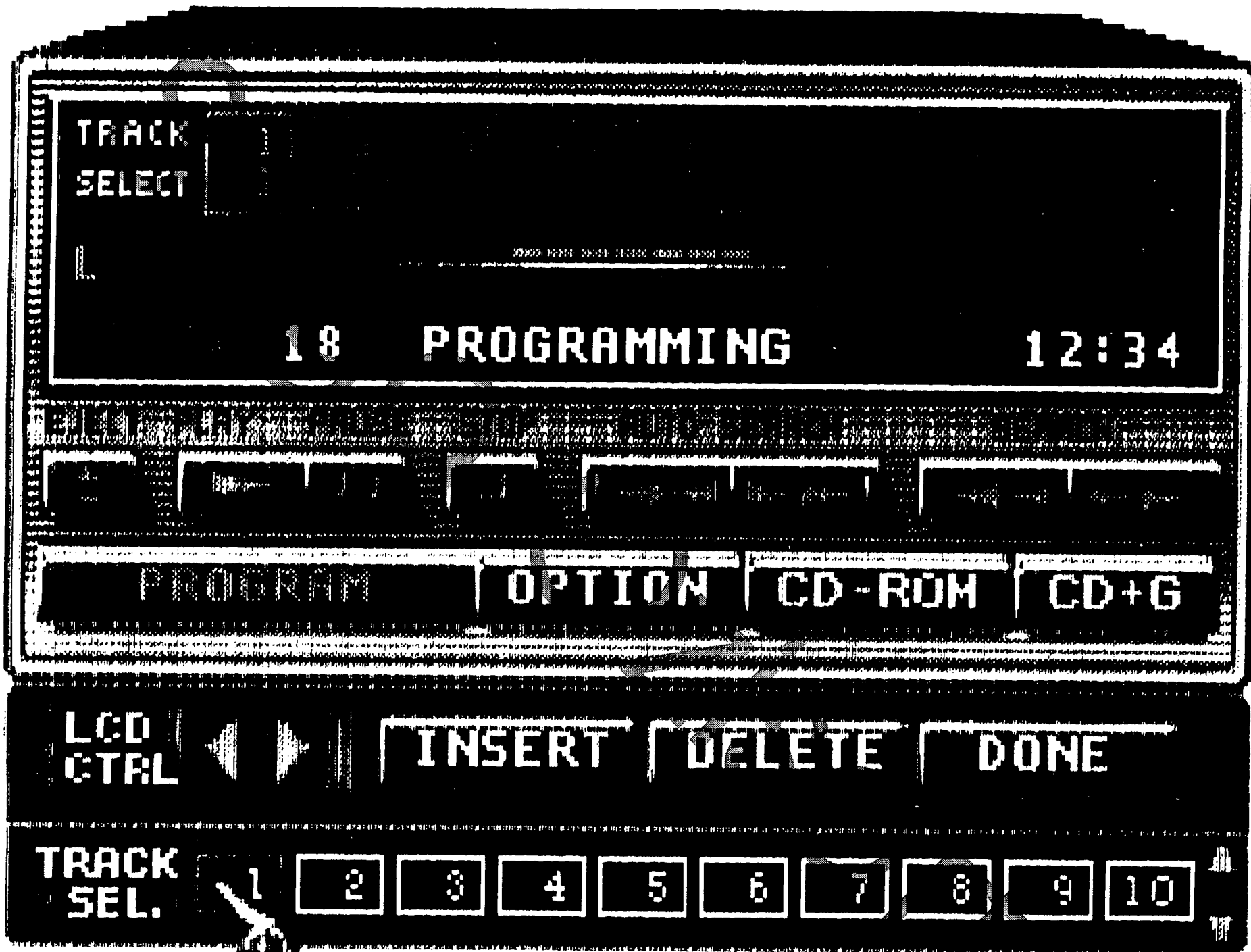


FIG. 4a

3-9-92

CONFIDENTIAL

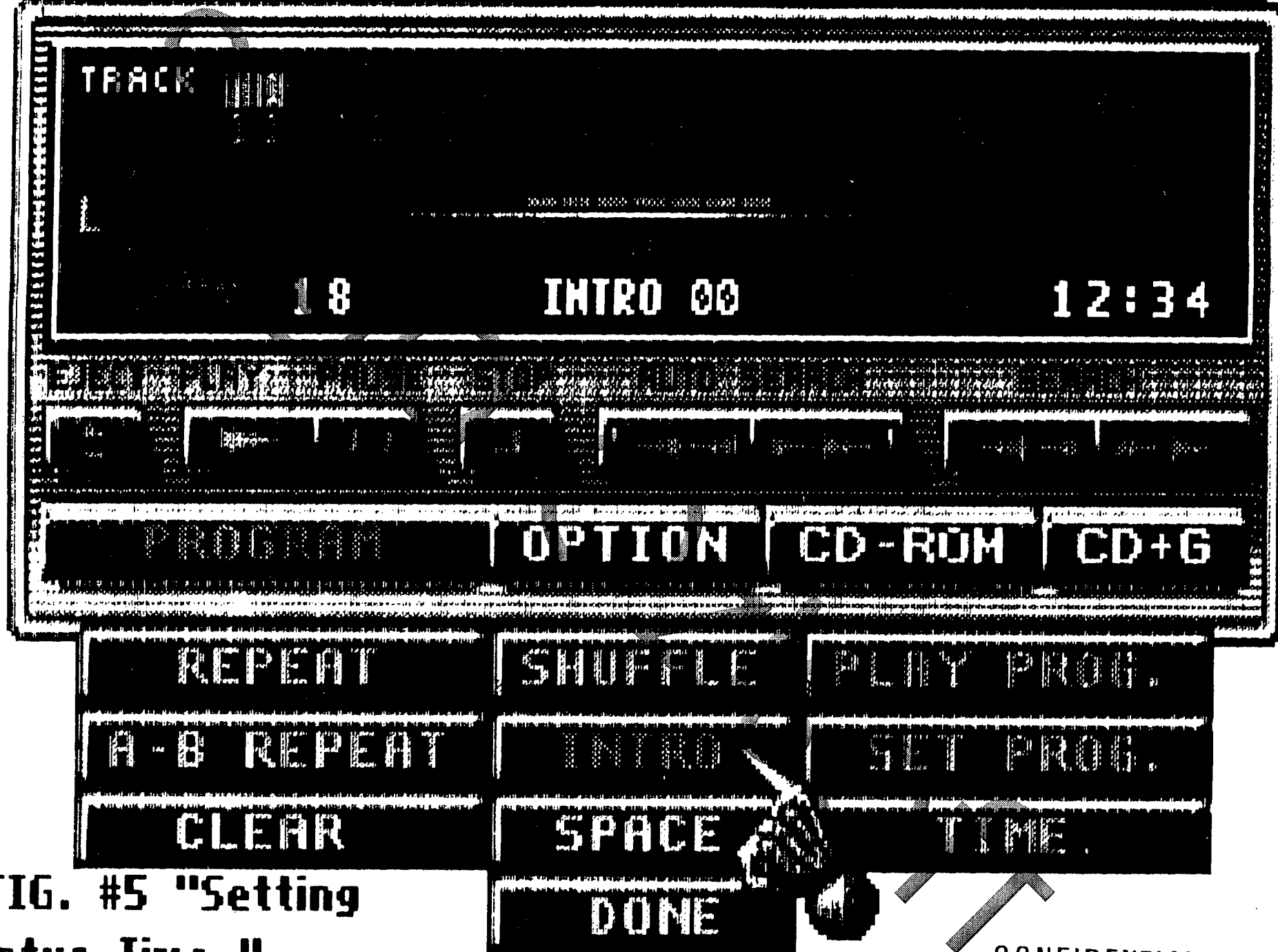


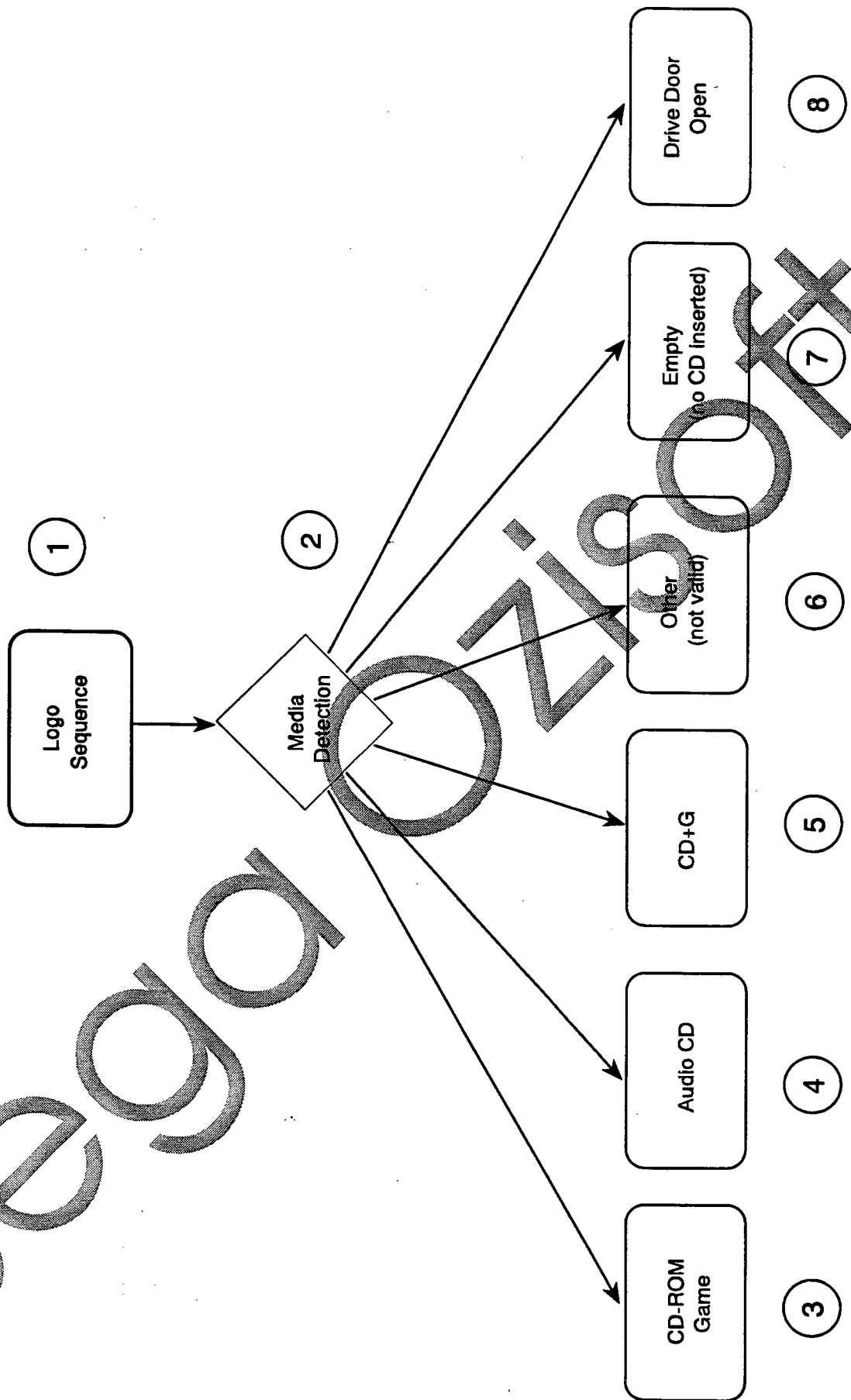
FIG. #5 "Setting
Intro Time "

5-9-97

CONFIDENTIAL

Sega Ozisoft

Titler Sega Mega CD Flow of Control



Sega Ozisoft



SEGA OF AMERICA, INC.
Consumer Products Division

TO: All Sega Mega CD Developers

FROM: Jim Huether *J.H.*

SUBJ: Software Standards

DATE: 4/8/92

cc: Ken Balthaser
Clyde Grossman
Tom Reuterdaahl
Scot Bayless
Producers
Jon Correll

As we proceed towards Summer CES and ultimately towards product launch, it is important that all developers understand Sega's software requirements and user interface requirements. In the next few weeks you will be receiving information on Software Standards as well as information on the U.S. BIOS and Mega CD User Interface, but for now, there are a few important pieces of information I would like to impart.

1. Please do not use sectors 0 and 1 of Track 0 on the disk. Leave these 2 sectors open. If you need space for IP and SP functions, use sectors 2 through 15.
2. Follow the rules in the Mega CD manuals for when you must use the BIOS for accessing the drive or memory. Failure to comply will cause rejection of your software for release.
3. We may be changing the name of the Mega CD, so if you use this name in your code, you may need to change it. We should have a decision on this very soon.
4. A Beta version of the U.S. BIOS and User Interface should be available in early May. Sega of Japan informs me that there will be few if any changes required of your application software in order to make it work. We would like to have any CES software running with the U.S. BIOS if at all possible, so be prepared for this minor conversion sometime in May.

Sega Ozisoft

TO: T. Asai

FROM: Jim Huether

SUBJ: Mega CD BIOS

DATE: 3/4/92

cc: SOJ: T. Kobayashi, K. Asai, H. Kaneko

SOA: S. Toyoda, K. Balthaser, K. Russell, M. Yoshii

Today we are sending you our final documentation and artwork for the U.S. Mega CD User Interface, and the Security Check Sequence. You will receive the documentation by FAX and the art files by modem (see Henry Giesen). We will also send out hardcopy by DHL either today or tomorrow.

Regarding the documentation, I have a few overall comments and questions I would like to communicate to you.

1. We see no need for the Random B function, so we removed it. Is this OK?
2. We renamed the Random A function to become the Shuffle function.
3. We moved the Option button away from the rest of the buttons, because we feel it only makes sense for CDROM and is not similar to the other buttons, such as Repeat, Shuffle, Program, etc. Is this OK? Is there any reason to allow the Option button to function for CD Audio or CD+G disks? Also, I assume the Option menu functions will stay the same for the U.S. version, only with English text. As usual, we will need to see this text before it is implemented in order to proofread it and make changes if necessary.
4. We changed the names of the Set, Program, and Reset buttons also, and added a Done button where necessary to fit with our concept of "expanded" menus.
5. It seems that the Repeat button repeats a whole disk. To repeat just one track over and over, I assume that the user must program just one track, set the Repeat function, and then select Play. Is this correct? Is there any other way to repeat just one song?
6. It appears that the Reset button (our Clear button), will reset all Shuffle, Repeat, Intro and Space functions, and then allow normal playing from the current track selected. Is this correct?
7. It appears that your Clear button clears the Programming selections only. Is this correct?
8. For CD+G, what does the Channel Up/Down button do? I did not notice any effect.

9. I noticed that if I play a CD+G disk, and then play a regular audio CD in CD+G mode, the last graphic from the previous CD+G disk will still show on the screen. This seems like a bug. It should clear the background between each disk being played. Is it possible to use our "Earth and Moon" screen for the background when playing a Audio CD in CD+G mode? If so, we would like this instead of the initial blank background.

10. As stated in the User Interface document, the user can use special controller commands in certain situations to perform specific functions (such as START and C to toggle between Play and Pause). The effects of these commands should be reflected on the control panel, showing state changes, etc.

11. When the sub-menus expand onto the screen, is it possible for you to provide either some intermediate expanding animation state, or use the scale function to make the sub-menu scale onto the screen?

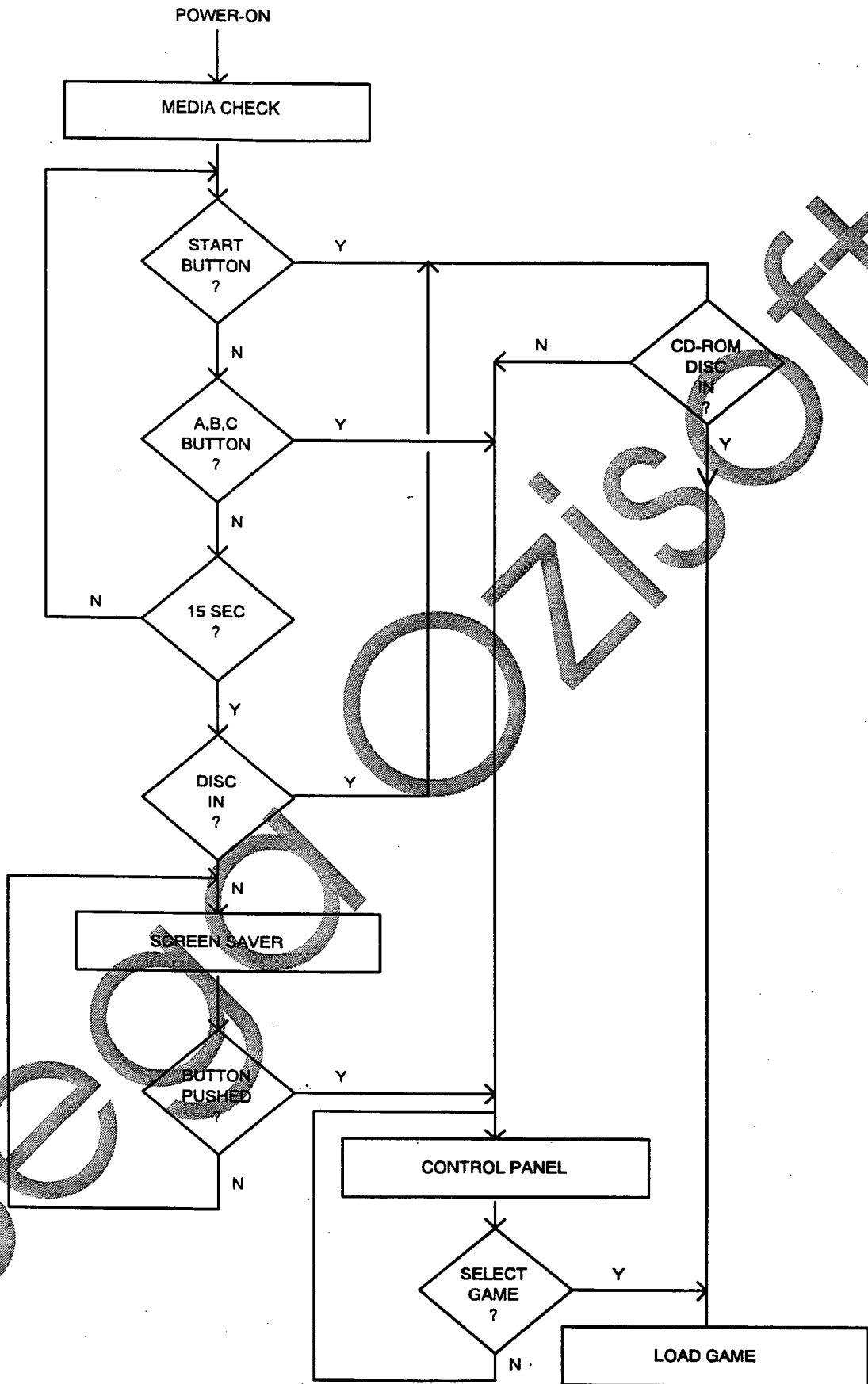
12. Finally, is it possible to allow the Screen Saver animations to play without sound, while a CD Audio disc is playing (not in CD+G mode)? If so, maybe once a CD Audio disc is playing, we could present a special button, "SCREEN SAVER", which would allow the user to show the Screen Saver animations instead of the control panel. Then any button press would return to the control panel graphics. This idea is not a requirement, but it would be nice to have if it could be done.

Sincerely,

Jim Huether
Jim Huether

DIAGRAM 1

A. POWER-ON



(CONTINUED)

B. DURING GAME

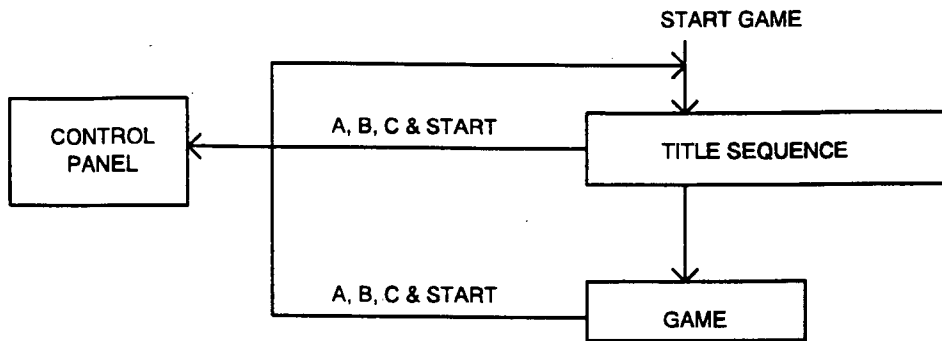
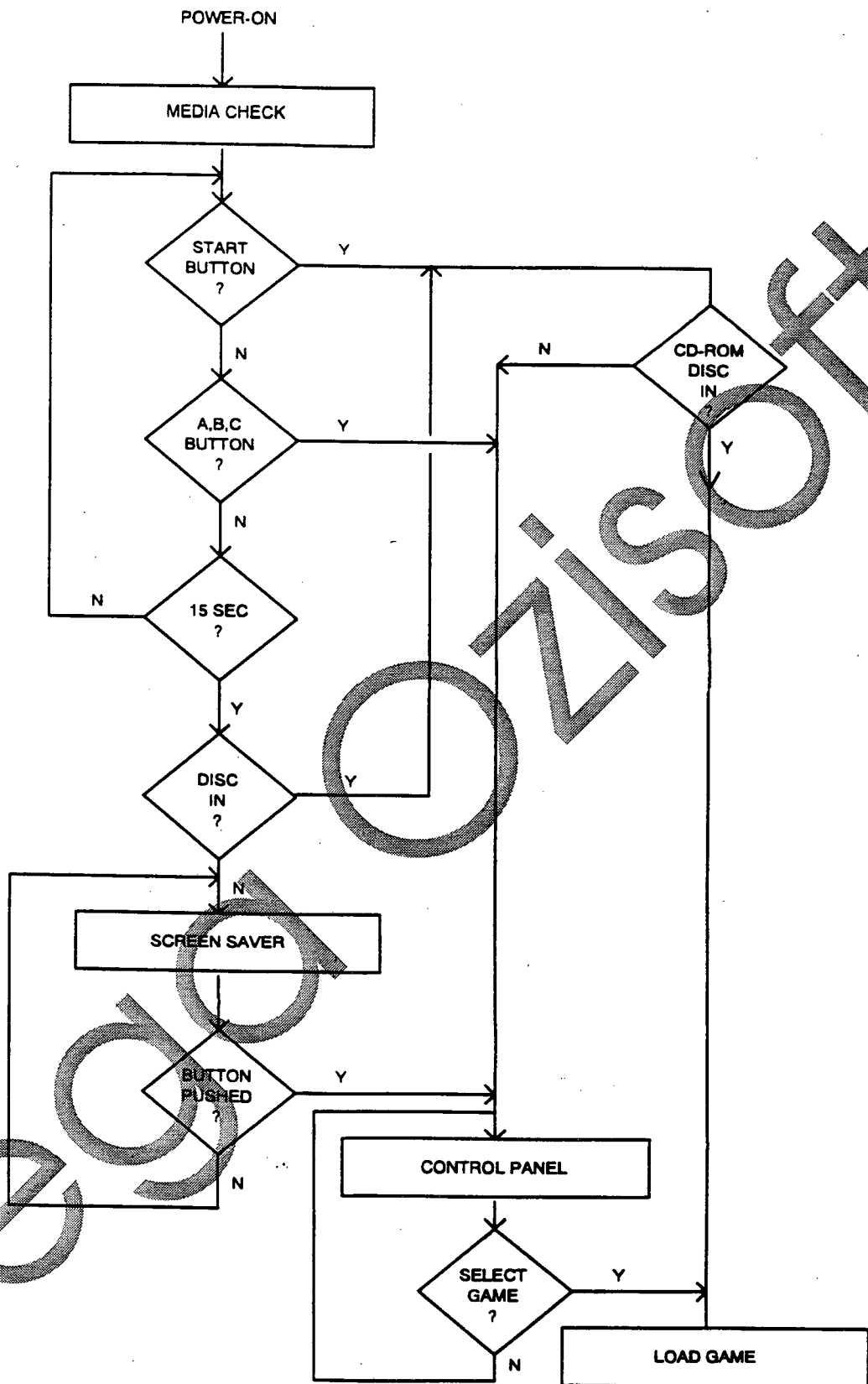


DIAGRAM 1

A. POWER-ON



(CONTINUED)

B. DURING GAME

