

DD/A Registry
79-1100

ODP 9-493
27 March 1979

*Orig reference
to DDIP-2130*

[Redacted] 3/28

MEMORANDUM FOR: Associate Deputy Director ~~for~~ Administration, DDA

THROUGH : Deputy Director for Processing, ODP *9/1*

FROM : [Redacted]
Chief Engineer, Engineering Division, ODP

SUBJECT : Comparison of CIA and NSA CRT Terminals

1. The specifications which controlled the procurement of our CRT terminal were prepared to meet the requirements documented in ODP Report, "User Requirements for an Agency Soft Copy Computer Terminal", dated 26 October 1979. The terminal which could satisfy these requirements needed to be quite sophisticated and used state-of-the-art technology. The contract which was recently signed will provide the Agency with just such a high quality terminal, which because of its flexibility, will be able to meet many Agency requirements in the next five years.

2. There have been some questions raised concerning the terminal which NSA procured last year and why we couldn't use it. It is the intent of this memorandum to answer these questions. The Purchase Description for CRT Terminals, [Redacted] dated 4 November 1976 from NSA is the basis for the following comparison.

3. There are some misconceptions about the NSA terminal which should be cleared up before making the comparison:

- a. The NSA terminal does not meet full NACSEM 5100 when it is in the normal configuration.
- b. The optional disk drives were not required to be TEMPEST approved.
- c. The cost of the NSA terminal is \$3,800, however, in the normal configuration it is used with a cluster controller which is a separately priced item.

- d. The price for the terminal was established about two years ago and does not contain a corresponding inflation factor. Delta Data said they are loosing money on the NSA terminals and would not sell them at that price in the future.
- e. CIA is reaping the benefits of the TEMPEST development work which was part of the NSA contract. Without this previous effort our terminals would be more expensive and the delivery schedule significantly extended. The funds which we have allocated to TEMPEST are primarily for two items:
 - 1) Testing of the terminal for NACSEM 5100 compliance (there are sufficient differences between the two terminals to require re-testing).
 - 2) Development of TEMPEST floppy disk drives.

4. It should be noted that the CIA terminal could not be developed by any contractor for the price which has been negotiated (the competitive procurement was sent to 117 potential vendors). As a yardstick for comparison, the only known TEMPEST terminal which even comes close to our requirements (about 60%) is a modified Hewlett-Packard for \$7000.

STAT



Att: a/s

cc: Acting D/ODP

ATTACHMENT I
 TERMINAL COMPARISON

Feature in CIA Terminal

NSA Terminal

| ----- | ----- |
|---|--|
| F.2.1 (M) Standalone Terminal | <u>Optional, normally clustered</u> |
| F.2.2 (M) Configuration Variations | <u>Less than CIA</u> |
| F.2.2.1 (M) Functional Configuration | <u>Less than CIA</u> |
| F.2.3 (M) Local Peripheral Devices | <u>No light pen, mouse, joystick</u> |
| F.2.3.1 (M) Local Printer Characteristics | <u>Not as many variations</u> |
| F.2.3.2 (M) Simultaneous Operation | <u>Yes, but concatenation not req.</u> |
| F.2.3.3 (MO) Large Floppy Disk Drives | <u>Yes, but not Tempest</u> |
| F.2.3.4 (MO) Smaller Floppy Disk Drives | <u>No</u> |
| F.2.4 (M) Local Capability | <u>No, but possible.</u> |
| F.2.4.1 (M) Local Editing | <u>Yes, but not as comprehensive</u> |
| F.2.4.2 (M) Local Data Validation | <u>No</u> |
| F.2.5 (M) Size | <u>Equivalent</u> |
| F.2.6 (M) Resident Monitor | <u>No</u> |
| F.2.7 (M) Programmability | <u>Yes</u> |
| F.2.7.1 (M) Changeable Firmware | <u>Yes</u> |
| F.2.7.2 (M) Changeable Firmware Image | <u>Not dynamically</u> |
| F.2.7.3 (MO) User Programmability | <u>Limited, assembly lang. only</u> |

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|--|---------------------------------------|
| F.2.7.4 (M) BASIC Language | <u>No</u> |
| F.2.7.5 (MO) Floppy Disk Operating | <u>No FDOS, utility programs only</u> |
| F.2.7.6 (DO) Word Processing Software | <u>No</u> |
| F.2.8.1 (M) Assembly Language | <u>Yes</u> |
| F.2.8.2 (M) Debugger | <u>Yes</u> |
| F.2.9 (M) Software Source Files and Listing | <u>No</u> |
| F.3.1 (M) Display Area and Format | <u>Equivalent</u> |
| F.3.2 (DO) More Lines | <u>No, 24 lines or less</u> |
| F.3.3.1 (M) Screen Characteristics | <u>Equivalent</u> |
| F.3.3.2 (M) Cursor | <u>Equivalent</u> |
| F.3.3.3 (M) Tabbing | <u>Equivalent</u> |
| F.3.3.4 (M) Scrolling and Paging | <u>Not req., probably in terminal</u> |
| F.3.3.5 (M) Selective Highlighting | <u>Equivalent</u> |
| F.3.3.6 (M) Displayable Storage | <u>Less</u> |
| F.3.3.7 (M) Field Blanking | <u>No</u> |
| F.3.3.8 (M) Field Protect | <u>Yes</u> |
| F.3.3.9 (M) Format Mode | <u>Yes</u> |
| F.3.3.10 (M) Screen Segmentation | <u>Yes</u> |
| F.3.3.11 (MO) Simple Graphics | <u>No</u> |
| F.3.3.12 (MO) Larger Displayable Memory | <u>No</u> |
| F.3.3.13 (M) Password Suppression | <u>No</u> |
| F.3.4 (M) Character Sets | <u>Equivalent sets</u> |

| | |
|-------------------------------------|-------------------------------------|
| F.3.4.1 (M) ASCII | <u>Yes</u> |
| F.3.4.2 (MO) APL | <u>No</u> |
| F.3.4.3 (MO) Other Character Sets | <u>Yes</u> |
| F.4.1.1 (M) Rollover | <u>No</u> |
| F.4.1.2 (M) Detachable Keyboard | <u>Yes, but not also attachable</u> |
| F.4.1.3 (M) Layout (Keyboard) | <u>Different</u> |
| F.4.1.4 (M) Repeat Function | <u>Yes</u> |
| F.4.1.5 (M) Function Keys | <u>Fewer</u> |
| F.4.1.6 (M) Shift Lock | <u>Yes</u> |
| F.4.1.7 (M) Color Coding (Keyboard) | <u>Yes</u> |
| F.4.1.8 (M) Key Caps | <u>Yes</u> |
| F.4.1.9 (M) Numeric Pad | <u>No</u> |
| F.4.1.10 (M) Keyboard Disable | <u>Yes</u> |
| F.4.1.11 (M) Acoustic Feedback | <u>No</u> |
| F.4.1.12 (M) Programmed Terminators | <u>No</u> |
| F.4.2.1 (MO) Light Pen | <u>No</u> |
| F.4.2.2 (MO) Joystick | <u>No</u> |
| F.4.2.3 (MO) Mouse | <u>No</u> |
| F.4.3.1 (M) Audible Alarm | <u>Yes</u> |
| F.4.3.2 (M) On/Off Switch | <u>Yes</u> |
| F.4.3.3 (M) Status Lights | <u>Yes</u> |
| F.4.3.4 (M) Brightness Control | <u>Yes</u> |
| F.5.1 (M) Transmission Speed | <u>Nearly equivalent</u> |

| | |
|---|------------------------|
| F.5.1.1 (MO) Higher Speed | <u>No</u> |
| F.5.2.1M) Synchronous and Asynchronous Operation | <u>Yes</u> |
| F.5.2.2 (DO) Combined Capability (Comm Mode) | <u>No</u> |
| F.5.2.3 (M) Transmission Mode | <u>Similar</u> |
| F.5.2.4 (M) CR/X-OFF Selection | <u>No</u> |
| F.5.2.5 (M) Character and Block Transmission | <u>No buffered TTY</u> |
| F.5.2.6 (MO) Polling | <u>Yes</u> |
| F.5.3.1 (M) RS-423 | <u>Yes</u> |
| F.5.3.2 (M) RS-422 ✓ ? | <u>No</u> |
| F.5.4 (M) Line Wrap Around | <u>No</u> |
| F.5.5.1 (M) Asynchronous Protocol (TTY) | <u>Yes</u> |
| F.5.5.2 (M) Asynchronous Protocol (Block) | <u>Yes</u> |
| F.5.5.3 (M) Synchronous Protocol | <u>Yes</u> |
| F.5.6 (M) Error Control | <u>Yes</u> |
| F.5.7 (MO) Direct Memory Access | <u>No</u> |
| F.6.1 (M) Tempest | <u>Terminal only</u> |
| F.7.1 (MO) DD 5260 Emulation | <u>No</u> |
| F.7.2 (MO) DD 5600 Emulation | <u>No</u> |
| F.7.3 (DO) Beehive 400 Emulation | <u>No</u> |
| F.8.1 (M) CAM Software | <u>No</u> |

| | |
|-----------------------------------|-----------------------------------|
| F.8.2 (M) Elapse | <u>No</u> |
| F.8.3 (M) Read Field | <u>No</u> |
| F.8.4 (M) Page Command | <u>No</u> |
| F.8.5 (M) Write to Field | <u>No</u> |
| F.8.6 (M) Clear n Characters | <u>No</u> |
| F.8.7 (M) Timed Read | <u>No</u> |
| F.8.8 (M) Read Tabs | <u>No</u> |
| F.8.9 (M) Move Cursor | <u>Yes</u> |
| F.9.1 (M) Design Considerations | <u>Equivalent</u> |
| F.9.2 (M) Quiet Operation | <u>Yes</u> |
| F.9.3 (MO) Tilting | <u>No</u> |
| F.9.4 (M) Color | <u>Not specified</u> |
| F.10.1 (M) Memory | <u>Less</u> |
| F.10.2 (M) Hardware Compatibility | <u>Yes</u> |
| F.10.3 (M) External Connectors | <u>Not Specified</u> |
| F.10.4 (M) Power Backup | <u>No, but 33 ms power glitch</u> |
| F.10.5 (M) Jump Start | <u>No, but probably exists</u> |
| F.10.6 (M) Expansion Space | <u>No</u> |
| F.10.7 (M) Reset | <u>Yes</u> |
| F.11.1 (M) Power | <u>Equivalent</u> |
| F.11.2 (M) Temperature | <u>Equivalent</u> |
| F.11.3 (M) Humidity | <u>Equivalent</u> |
| F.11.4 (M) Power Cable | <u>Equivalent</u> |

| | |
|---|-------------------|
| F.12.1 (M) Design Considerations (Maintenance) | <u>Equivalent</u> |
| F.12.2 (M) Access | <u>Equivalent</u> |
| F.12.3 (M) Adjustments | <u>Equivalent</u> |
| F.12.4 (M) Changeable Components | <u>Equivalent</u> |
| F.12.5 (M) Cables | <u>Equivalent</u> |
| F.12.6 (M) Self Test | <u>Yes</u> |
| F.12.7 (M) Diagnostics | <u>Yes</u> |
| F.12.7.1 (M) Diagnostic Operations | <u>Yes</u> |

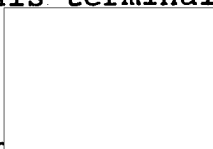
| | |
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| F.12.1 (M) Design Considerations (Maintenance) | <u>Equivalent</u> |
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| F.12.5 (M) Cables | <u>Equivalent</u> |
| F.12.6 (M) Self Test | <u>Yes</u> |
| F.12.7 (M) Diagnostics | <u>Yes</u> |
| F.12.7.1 (M) Diagnostic Operations | <u>Yes</u> |

MEMORANDUM FOR: Danny

I believe this is what you want. DIA was given a copy of our RFP some time ago. We are still talking to them.

NSA is looking at the suitability of our terminal. Delta Data told Hal that NSA had indicated some concern over those CIA terminals obsoleting theirs. We will continue our dialog with everybody on this terminal.

ODP

Return to  Good report Ed. Thanks to Harold. There are more differences than I expected. I would encourage any movement that would result in greater Community. Date 28 March 1979

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DD/P

26 March 1979

MEMORANDUM FOR: Director Office of Data Processing

THROUGH : Deputy Director for Processing, ODP

STAT FROM :
Chief Engineer, Engineering Division, ODP

SUBJECT : Comparison of CIA & NSA CRT Terminals

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3. There are some misconceptions about the NSA terminal which should be cleared up before making the comparison:

- a. The NSA terminal does not meet full MACSEM 5100 when it is in the normal configuration.
- b. The optional disk drives were not required to be Tempest approved.

c. The cost of the NSA terminal is 93,800, however, in the normal configuration it is used with a cluster controller which is a separately priced item.

d. The price for the terminal was established about two years ago and does not contain a corresponding inflation factor. Delta Data said they are losing money on the NSA terminals and would not sell them at that price in the future.

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- 1) Testing of the terminal for EACSPH 5100 compliance (there are sufficient differences between the two terminals to require re-testing).
- 2) Development of Tempest floppy disk drives.

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Att: a/n



ATTACHMENT I
 TERMINAL COMPARISON

Feature in CIA Terminal

NSA Terminal

| ----- | ----- |
|---|--|
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| F.2.2 (M) Configuration Variations | <u>Less than CIA</u> |
| F.2.2.1 (M) Functional Configuration | <u>Less than CIA</u> |
| F.2.3 (M) Local Peripheral Devices | <u>No light pen, mouse, joystick</u> |
| F.2.3.1 (M) Local Printer Characteristics | <u>Not as many variations</u> |
| F.2.3.2 (M) Simultaneous Operation | <u>Yes, but concatenation not req.</u> |
| F.2.3.3 (MO) Large Floppy Disk Drives | <u>Yes, but not Tempest</u> |
| F.2.3.4 (MO) Smaller Floppy Disk Drives | <u>No</u> |
| F.2.4 (M) Local Capability | <u>No, but possible.</u> |
| F.2.4.1 (M) Local Editing | <u>Yes, but not as comprehensive</u> |
| F.2.4.2 (M) Local Data Validation | <u>No</u> |
| F.2.5 (M) Size | <u>Equivalent</u> |
| F.2.6 (M) Resident Monitor | <u>No</u> |
| F.2.7 (M) Programmability | <u>Yes</u> |
| F.2.7.1 (M) Changeable Firmware | <u>Yes</u> |
| F.2.7.2 (M) Changeable Firmware Image | <u>Not dynamically</u> |
| F.2.7.3 (MO) User Programmability | <u>Limited, assembly lang. only</u> |

| | |
|--|---------------------------------------|
| F.2.7.4 (M) BASIC Language | <u>No</u> |
| F.2.7.5 (MO) Floppy Disk Operating | <u>No FDS, utility programs only</u> |
| F.2.7.6 (DO) Word Processing Software | <u>No</u> |
| F.2.8.1 (M) Assembly Language | <u>Yes</u> |
| F.2.8.2 (M) Debugger | <u>Yes</u> |
| F.2.9 (M) Software Source Files and Listing | <u>No</u> |
| F.3.1 (M) Display Area and Format | <u>Equivalent</u> |
| F.3.2 (DO) More Lines | <u>No, 24 lines or less</u> |
| F.3.3.1 (M) Screen Characteristics | <u>Equivalent</u> |
| F.3.3.2 (M) Cursor | <u>Equivalent</u> |
| F.3.3.3 (M) Tabbing | <u>Equivalent</u> |
| F.3.3.4 (M) Scrolling and Paging | <u>Not req., probably in terminal</u> |
| F.3.3.5 (M) Selective Highlighting | <u>Equivalent</u> |
| F.3.3.6 (M) Displayable Storage | <u>Less</u> |
| F.3.3.7 (M) Field Blanking | <u>No</u> |
| F.3.3.8 (M) Field Protect | <u>Yes</u> |
| F.3.3.9 (M) Format Mode | <u>Yes</u> |
| F.3.3.10 (M) Screen Segmentation | <u>Yes</u> |
| F.3.3.11 (MO) Simple Graphics | <u>No</u> |
| F.3.3.12 (MO) Larger Displayable Memory | <u>No</u> |
| F.3.3.13 (M) Password Suppression | <u>No</u> |
| F.3.4 (M) Character Sets | <u>Equivalent sets</u> |

| | |
|-------------------------------------|-------------------------------------|
| F.3.4.1 (M) ASCII | <u>Yes</u> |
| F.3.4.2 (MO) APL | <u>No</u> |
| F.3.4.3 (MO) Other Character Sets | <u>Yes</u> |
| F.4.1.1 (M) Plover | <u>No</u> |
| F.4.1.2 (H) Detachable Keyboard | <u>Yes, but not also attachable</u> |
| F.4.1.3 (M) Layout (Keyboard) | <u>Different</u> |
| F.4.1.4 (H) Repeat Function | <u>Yes</u> |
| F.4.1.5 (H) Function Keys | <u>Fewer</u> |
| F.4.1.6 (H) Shift Lock | <u>Yes</u> |
| F.4.1.7 (H) Color Coding (Keyboard) | <u>Yes</u> |
| F.4.1.8 (M) Key Caps | <u>Yes</u> |
| F.4.1.9 (M) Numeric Pad | <u>No</u> |
| F.4.1.10 (L) Keyboard Disable | <u>Yes</u> |
| F.4.1.11 (H) Acoustic Feedback | <u>No</u> |
| F.4.1.12 (H) Programmed Terminators | <u>No</u> |
| F.4.2.1 (MO) Light Pen | <u>No</u> |
| F.4.2.2 (MO) Joystick | <u>No</u> |
| F.4.2.3 (MO) Mouse | <u>No</u> |
| F.4.3.1 (M) Audible Alarm | <u>Yes</u> |
| F.4.3.2 (M) On/Off Switch | <u>Yes</u> |
| F.4.3.3 (M) Status Lights | <u>Yes</u> |
| F.4.3.4 (H) Brightness Control | <u>Yes</u> |
| F.5.1 (M) Transmission Speed | <u>Nearly equivalent</u> |

| | |
|---|------------------------|
| F.5.1.1 (MO) Higher Speed | <u>No</u> |
| F.5.2.1 (M) Synchronous and Asynchronous Operation | <u>Yes</u> |
| F.5.2.2 (DO) Combined Capability (Comm Mode) | <u>No</u> |
| F.5.2.3 (M) Transmission Mode | <u>Similar</u> |
| F.5.2.4 (M) CR/X-OFF Selection | <u>No</u> |
| F.5.2.5 (M) Character and Block Transmission | <u>No buffered TTY</u> |
| F.5.2.6 (MO) Polling | <u>Yes</u> |
| F.5.3.1 (M) RS-423 | <u>Yes</u> |
| F.5.3.2 (M) RS-422 | <u>No</u> |
| F.5.4 (M) Line Wrap Around | <u>No</u> |
| F.5.5.1 (M) Asynchronous Protocol (TTY) | <u>Yes</u> |
| F.5.5.2 (M) Asynchronous Protocol (Block) | <u>Yes</u> |
| F.5.5.3 (M) Synchronous Protocol | <u>Yes</u> |
| F.5.6 (M) Error Control | <u>Yes</u> |
| F.5.7 (MO) Direct Memory Access | <u>No</u> |
| F.6.1 (M) Terpest | <u>Terminal only</u> |
| F.7.1 (MO) DD 5260 Emulation | <u>No</u> |
| F.7.2 (MO) DD 5600 Emulation | <u>No</u> |
| F.7.3 (DO) Beehive 400 Emulation | <u>No</u> |
| F.8.1 (H) CAM Software | <u>No</u> |

| | |
|-----------------------------------|-----------------------------------|
| F.8.2 (M) Elapse | <u>No</u> |
| F.8.3 (M) Read Field | <u>No</u> |
| F.8.4 (M) Page Command | <u>No</u> |
| F.8.5 (M) Write to Field | <u>No</u> |
| F.8.6 (M) Clear n Characters | <u>No</u> |
| F.8.7 (M) Timed Read | <u>No</u> |
| F.8.8 (M) Read Tabs | <u>No</u> |
| F.8.9 (M) Move Cursor | <u>Yes</u> |
| F.9.1 (M) Design Considerations | <u>Equivalent</u> |
| F.9.2 (M) Quiet Operation | <u>Yes</u> |
| F.9.3 (MO) Tilting | <u>No</u> |
| F.9.4 (M) Color | <u>Not specified</u> |
| F.10.1 (M) Memory | <u>Less</u> |
| F.10.2 (M) Hardware Compatibility | <u>Yes</u> |
| F.10.3 (M) External Connectors | <u>Not Specified</u> |
| F.10.4 (M) Power Backup | <u>No, but 33 ms power glitch</u> |
| F.10.5 (M) Jump Start | <u>No, but probably exists</u> |
| F.10.6 (M) Expansion Space | <u>No</u> |
| F.10.7 (M) Reset | <u>Yes</u> |
| F.11.1 (M) Power | <u>Equivalent</u> |
| F.11.2 (M) Temperature | <u>Equivalent</u> |
| F.11.3 (M) Humidity | <u>Equivalent</u> |
| F.11.4 (M) Power Cable | <u>Equivalent</u> |

| | |
|---|-------------------|
| F.12.1 (M) Design Considerations (Maintenance) | <u>Equivalent</u> |
| F.12.2 (M) Access | <u>Equivalent</u> |
| F.12.3 (M) Adjustments | <u>Equivalent</u> |
| F.12.4 (M) Changeable Components | <u>Equivalent</u> |
| F.12.5 (M) Cables | <u>Equivalent</u> |
| F.12.6 (M) Self Test | <u>Yes</u> |
| F.12.7 (M) Diagnostics | <u>Yes</u> |
| F.12.7.1 (M) Diagnostic Operations | <u>Yes</u> |