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IN ACCORDANCE WITH CLIN 0002, CDRL A002
OF NAVTRASYSCEN CONTRACT N61339-92-C-0014

Final Report for period 11/1/91 to 3/25/93

HIGH DEFINITION TV PROJECTION
VIA SINGLE CRYSTAL FACEPLATE TECHNOLOGY

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19 ABSTRACT (Continue on reverse if necessary and identify by block number) Single crystal phosphor faceplates are epitaxial phosphors grown on crystalline substrates with the advantages of high light output, resolution and extended operational life. Single crystal phosphor faceplate industrial technology in the United States is capable of providing faceplates appropriate to the projection industry up to four (4) inches in diameter. Projection systems incorporating cathode ray tubes utilizing single crystal phosphor faceplates will produce 1500 lumens of white light with 1000 lines of resolution, non-interlaced. This 1500 lumen projection system will meet all of the currently specified luminance and resolution requirements of Visual Display systems for flight simulators. Significant logistic advantages accrue from the introduction of single crystal phosphor faceplate CRTs. Specifically, the full performance life of a CRT is expected to increase by a factor of five (5); ie, from 2000 to 10,000 hours of operation. There will be attendant reductions in maintenance time, spare CRT requirements, system down time, etc. The increased brightness of the projection system will allow use of lower gain, lower cost simulator screen material. Further, picture performance characteristics will be more balanced across the full simulator. Pending satisfactory completion of in process evaluation testing of 3" SCPF CRTs, it is recommended that a 4" SCPF CRT T2080 R/C projector head assembly be built and evaluated in an operational simulator (UH1N).			
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Figure 1. Red, Green & Blue 4" Single Crystal Faceplate CRT Assembly

Figure 2. Head Assembly 0 T1080 R/C (Production)

Figure 3. CRT Assembly, Single Crystal Faceplate

Figure 4. SCFP based CRT

Figure 5. SCFP CRT Assembly Liquid Cooled

Figure 6. Head Assembly -- T1080 R/C Compatible 3" and 4" Single Crystal Faceplate Based CRTs

Figure 7. Head Assembly -- T1080 R/C Compatible 4" Single Crystal Faceplate Based CRTs

Figure 8. Head Assembly -- T1080 R/C Compatible 5" Single Crystal Faceplate Based CRTs

Figure 9. Head Assembly 4" (top view)

Figure 10. Head Assembly 4" (side view)

Figure 11. Head Assembly 4" (bottom view)

Enclosures: (1) Single Crystal Phosphor Faceplates for High Resolution, High Intensity Cathode Ray Tubes, dated February 1992.

(2) Study and Evaluation of Single Crystal Faceplate CRT Projection Display Systems for Flight and Weapon Systems Trainers, Revision A, dated 6 May 1992.

(3) Study of the Performance of a YAG Faceplate.

(4) Product Performance Specification for the
Trident Model T2080 R/C Dual Mode Video Projector,
Specification Number 002106, dated April 5, 1991.

(5) Silicon Field Emitter Arrays for
Cathodoluminescent Flat Panel Displays

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