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TECHNICAL REPORT

For The

Cargo Movement Operations System (CMOS)

Shipping Label Analysis

31 October 1990

Prepared under

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Prepared for

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SECTION I.

INTRODUCTION.

The purpose of this Technical Report is to provide an assessment of various shipping labels for use by CMOS. Attachment 1 of this report is a detailed specification for a military shipping label which is compatible with the Kyocera Printer, Model F-2010.

SUMMARY. Not Used.

CONCLUSION. Not Used.

RESULTS:

**Tasking Background:** This tasking was discussed in detail with the Government representative on 15 September 1990. General label specifications were thoroughly examined. They included:

- (1) Label must be compatible with the Kyocera Laser Printer, Model 2010. This requires the label carrier to be 8 1/2" wide.
- (2) Label must be white, blank stock.
- (3) Label must be capable of withstanding normal environmental conditions of the transportation pipeline.

**Source Analysis:** A number of commercial vendors and one government activity (AFLC) were identified as potential sources. AFLC was ruled out as a viable source because they use a different type printer (heat transfer) and paper. Preliminary specifications were then provided to four vendors, and samples were requested from each one of these potential sources. In addition, comments were solicited on the preliminary specifications.

Samples and comments were received from the following vendors:

- (1) INTERMEC Corporation, Cincinnati, Ohio
- (2) MAC/TAC, Stow, Ohio
- (3) American Label Company, Lakeside, California
- (4) NCR Corporation, Birmingham, Alabama

**Test Analysis:** Samples were put through limited tests at Maxwell AFB, Alabama, with the following results:

- (1) INTERMEC Corporation Label: Provided sample of matte, smudge resistant white paper stock. Print quality was acceptable. Adhesion to sample shipping containers was adequate.

- (2) MAC/TAC Label: Provided sample of latex impregnated litho stock. Print quality was acceptable. Adhesion to sample shipping containers was adequate.
- (3) American Label Company Label: Provided sample of white vinyl water proof stock. Print quality was unsatisfactory (ink flaked off). Adhesion to sample containers was adequate.
- (4) NCR Corporation Label: Provided sample of matte, smudge resistant white paper stock. Print quality was acceptable. Adhesion to sample shipping containers was adequate.

**Price Quotations:**

Each vendor was asked to provide price for 1000 labels with quotes for additional quantities welcomed. However, quantities quoted varied as listed below:

- (1) INTERMEC Corporation - 1 to 50,000 sheets - \$.16 per sheet.
- (2) MAC/TAC - 30,000 sheets (minimum) - \$.135 per sheet; 100,000+ sheets - \$.125 per sheet.
- (3) American Label Company - 1000 sheets (minimum) - \$.34 per sheet; 2000 sheets - \$.30 per sheet, plus a one-time \$50 die fee.
- (4) NCR Corporation - 30,000 sheets (minimum) - \$.116 per sheet

**Recommendations:**

1. Three of the four samples met the minimum requirements for availability, suitability, and printer compatibility. With the exception of the American Label Company vinyl sample, all samples were essentially identical. Based on our findings and study, recommend purchase of 1000 labels from INTERMEC at a unit price of \$.16. These labels should be used during the CMOS development process, as well as the early implementation phases, to validate label acceptability.

2. To reduce waste and to potentially reduce cost, we recommend that 8 1/2" X 5" labels be purchased. Initially, label cost will be comparable, but indications are that vendors will reduce their quotes for supplying a smaller label in large quantities.

3. To accommodate the smaller label, the paper feed tray should conform to the 8 1/2" X 5" label and carrier. With that recommendation in mind, we contacted UNISYS Corporation and requested that they query their Phase IV subcontractor, Kyocera Corporation, regarding the availability of this tray. Preliminary information from a UNISYS representative indicates that this requirement could be met by Kyocera. The cost of these trays, as well as their availability from the Phase IV Contract, is still being worked. The results of these efforts will be provided in a follow-on report. In addition, we would suggest an appropriate level of testing once a sample of this tray is made available to us from UNISYS. This testing will help us to ensure the suitability of both the tray and the smaller label. With your concurrence, we will pursue those actions, and as indicated above, we will furnish you with a subsequent report that details our findings and final recommendations.

**SPECIFICATION FOR DD FORM 1387,  
MILITARY SHIPMENT LABEL (MSL)**

**DESCRIPTION:** Single part blank label, die cut to 6" wide X 6" high from an 8 1/2" wide X 11" high carrier (height dimension can be as small as necessary to accommodate the 6" high label); pressure sensitive adhesive coated in a smooth, evenly distributed layer on the back of the label.

**PAPER:** Good quality with a basis weight of 40 - 60 pounds matte, smudge resistant blank white paper. Shall accept bar-code label, typewriter, laser, and permanent pen and marker inks.

**INK:** Form emulation of the label will be accomplished with carbon black based ink.

**ADHESIVE:** Pressure sensitive, acrylic type adhesive requiring no moisture, heat or other preparation before or after application to a clean, dry surface. Resistant to heat produced by a Kyocera printer, Model 2010, during label printing (i.e., adhesive will not flow inside printer causing printer damage). The adhesive shall be no less than one mil thick, providing sufficient strength for label adhesion without any indication of bubbling or releasing at the corners when applied to various military shipment containers. The adhesive will adhere to wood, plywood, painted metal, weather-resistant fiberboard, plastics, rubber, composites, and wrapping papers. Surface may be rough or smooth.

**CARRIER:** Shall be a maximum of 50 pound weight and thickness shall not exceed 0.004 inches. The carrier shall release the label easily, but not so easily as to release when rolled or bent. Before or after die cut, no part of the carrier shall be exposed.

SHELF LIFE: Service life of the label shall consist of maintaining the performance requirements for a maximum of one year, provided stock is kept at 70 degrees + or - 5 degrees Fahrenheit, or humidity of 50%, + or - 5%.

PRINT: The label material shall be printed and bar-coded using a Kyocera Printer, Model 2010, and scanned by a hand held non-contacting INTERMEC Visual Light Diode Scanner/1545.