

REFERENCE USE ONLY

REPORT NO. DOT-TSC-OST-72-12

# TECHNICAL EVALUATION OF METAL DETECTORS FOR CONCEALED WEAPONS (SUPPLEMENT I)

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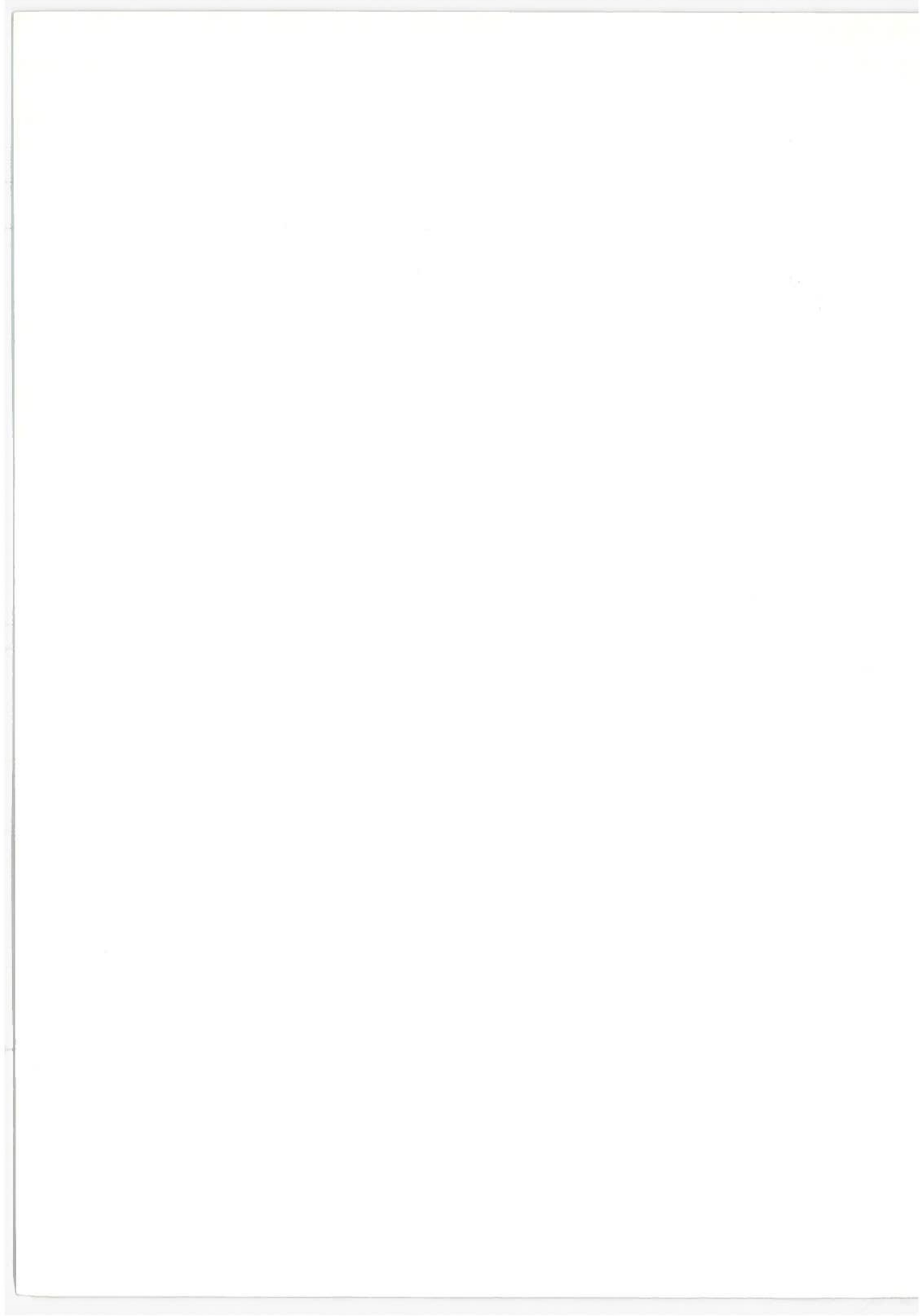
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TECHNICAL MEMORANDUM

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16. Abstract This document augments the classification and technical evaluation of Commercial Metal Detectors presented in Report NO. DOT-TSC-OST-71-15, June 1971. Data based on extensive laboratory tests are presented on two hand-held models and two walk-through installations. The results confirm the validity of previous limited field tests of three models and indicate that a fourth model not previously available for testing ranks highest in performance and capital cost effectiveness in the category of walk-through installations for all metals (without location discrimination).			
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## 1.0 INTRODUCTION

In June 1971, a report "Technical Evaluation of Metal Detectors" (DOT-TSC-OST-71-15) was published (referred to as the "June Report" in the subsequent discussion) with data on eighteen commercial models. The present document contains important supplementary information. Three detectors evaluated in the June Report from limited field tests underwent further extensive laboratory tests at TSC. A fourth, not available previously, also underwent identical extensive laboratory tests. The laboratory tests of the three detectors already evaluated essentially confirmed the findings of the June Report. However, the evaluation of the fourth materially changes the ranking of an important category of walk-through installations in that report.

## 2.0 LABORATORY EVALUATIONS

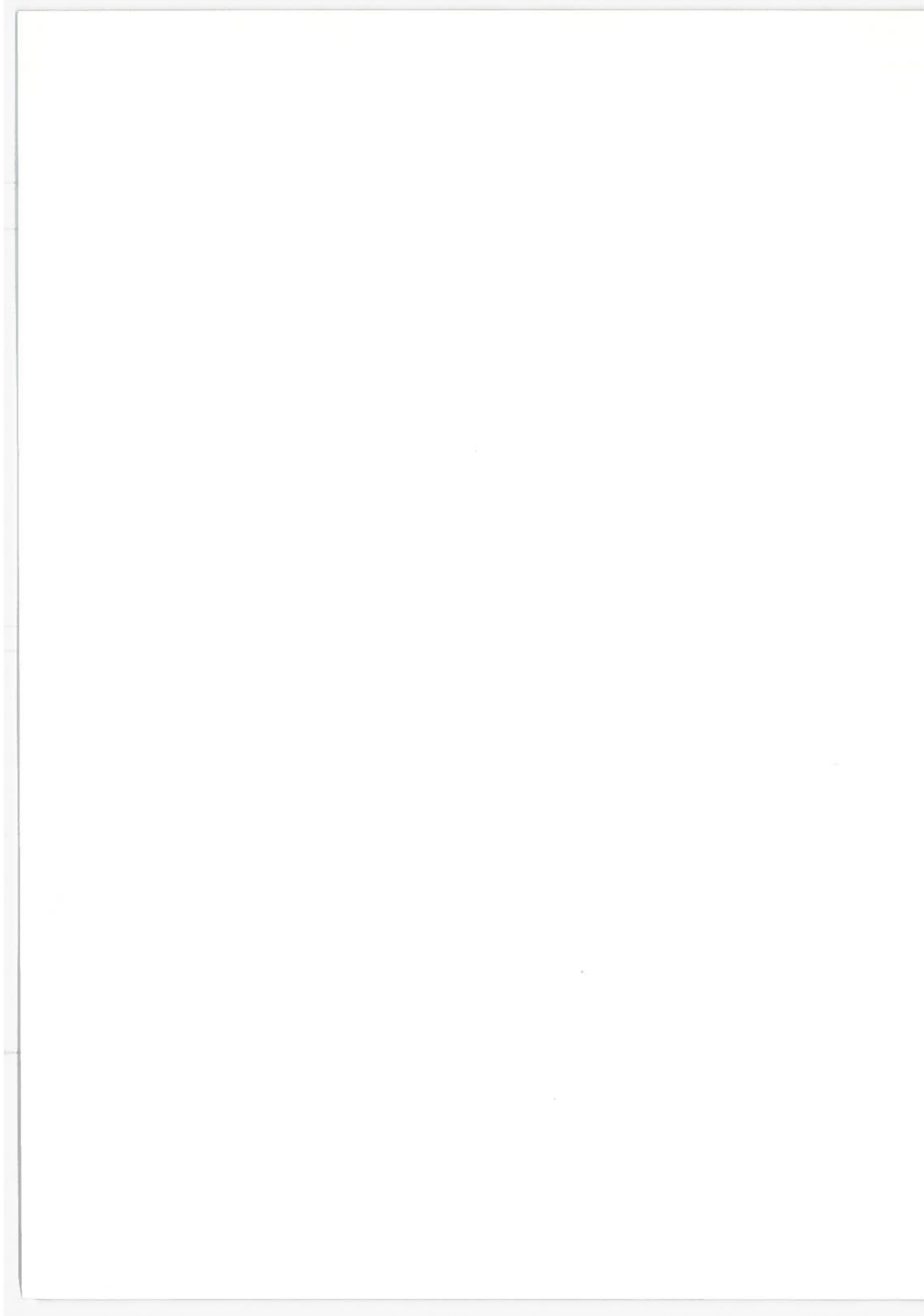
1. Detectors previously ranked from limited field test data.

Transfrisker 6010 (Federal Laboratories, Inc.)

Metal Detector MD-12 (Riwosa S. A.)

Walk-through Station Type 3 (Infinitics, Inc.)

The three detectors listed above underwent extensive laboratory tests, according to procedures outlined in the June Report. No significant changes in performance were observed and the ranking in columns 2 and 5 in Figures 3 through 6 of the June Report (pages 10, 11, 13 and 17) remains unchanged.



2. Sperry Rand Weapons Detector SMD-1000  
(for details see Page 4)

Extensive laboratory tests of this model established it as superior on all counts of performance and capital cost effectiveness in category 4 of the classification of metal detectors (walk-through installations without location discrimination).

The following test results and scores were obtained:

1. Cost Ranking

This model is quoted at \$1,950. With reference to Figure 2 (page 4) of the June Report, this model would rank fourth in column 4.

2. Numerical high-risk performance score (see June Report, Table II Page 8, column 4)

<u>Response Factor</u>	<u>False Alarm Factor</u>	<u>Disturbance Factor</u>	<u>Convenience Factor</u>	<u>High-Risk Score</u>
90	0.9	0.9	0.9	66

With reference to Figure 3 (page 10) of the June Report, this model would rank first (red) in column 4.

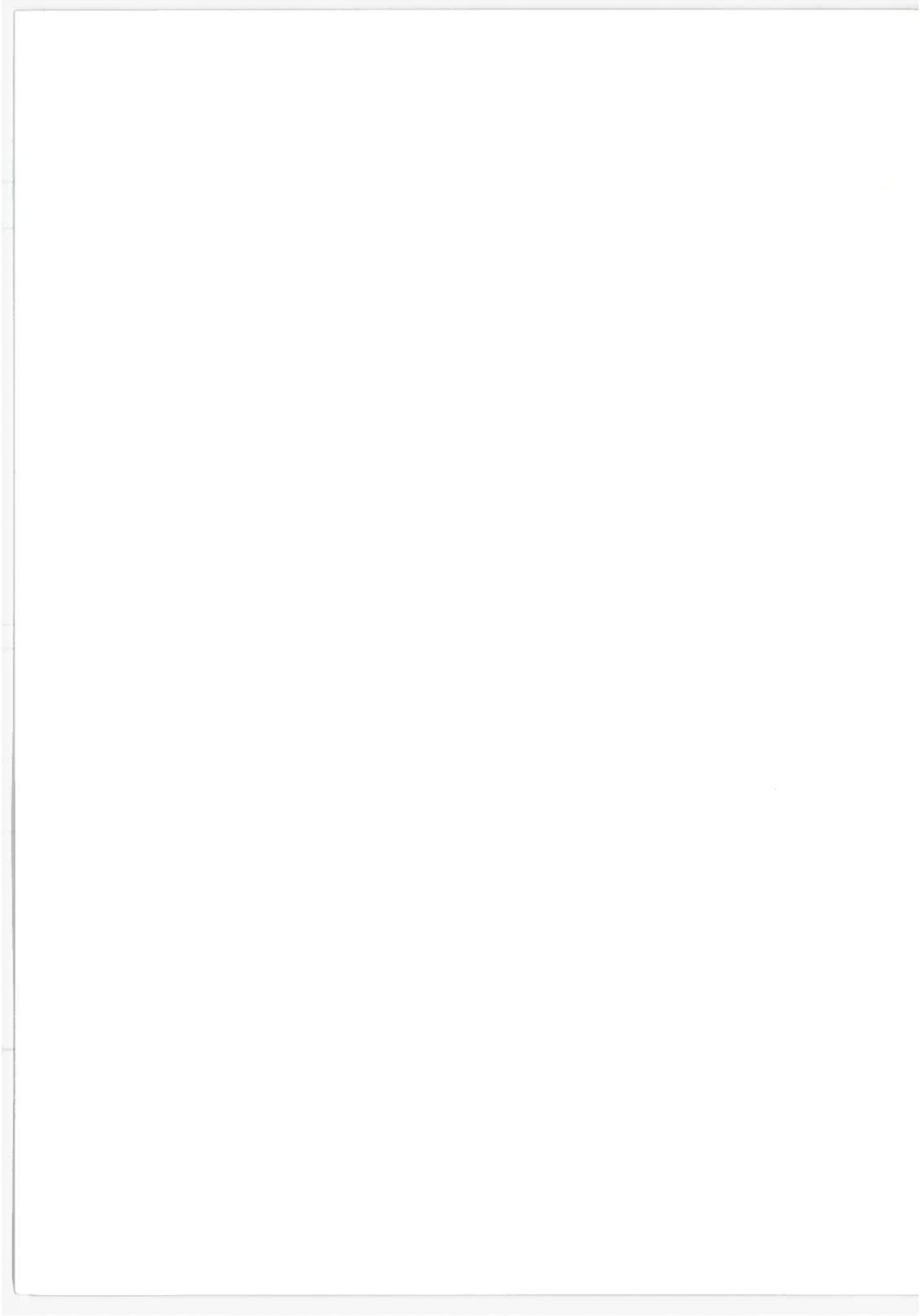
3. Numerical low-risk performance score (see June Report Table III, page 9)

<u>High-Risk Score from (a) above</u>	<u>False Alarm Factor</u>	<u>Low Risk Score</u>
66	0.9	60

With reference to Figure 4 (page 11) of the June Report, this model would rank first (red) in column 4.

4. High-risk capital cost effectiveness

Using the scoring described on page 7 of the June Report, the model scored 76. With reference to Figure 5 (page 13) of the June Report, this model would rank first in column 4 (red).



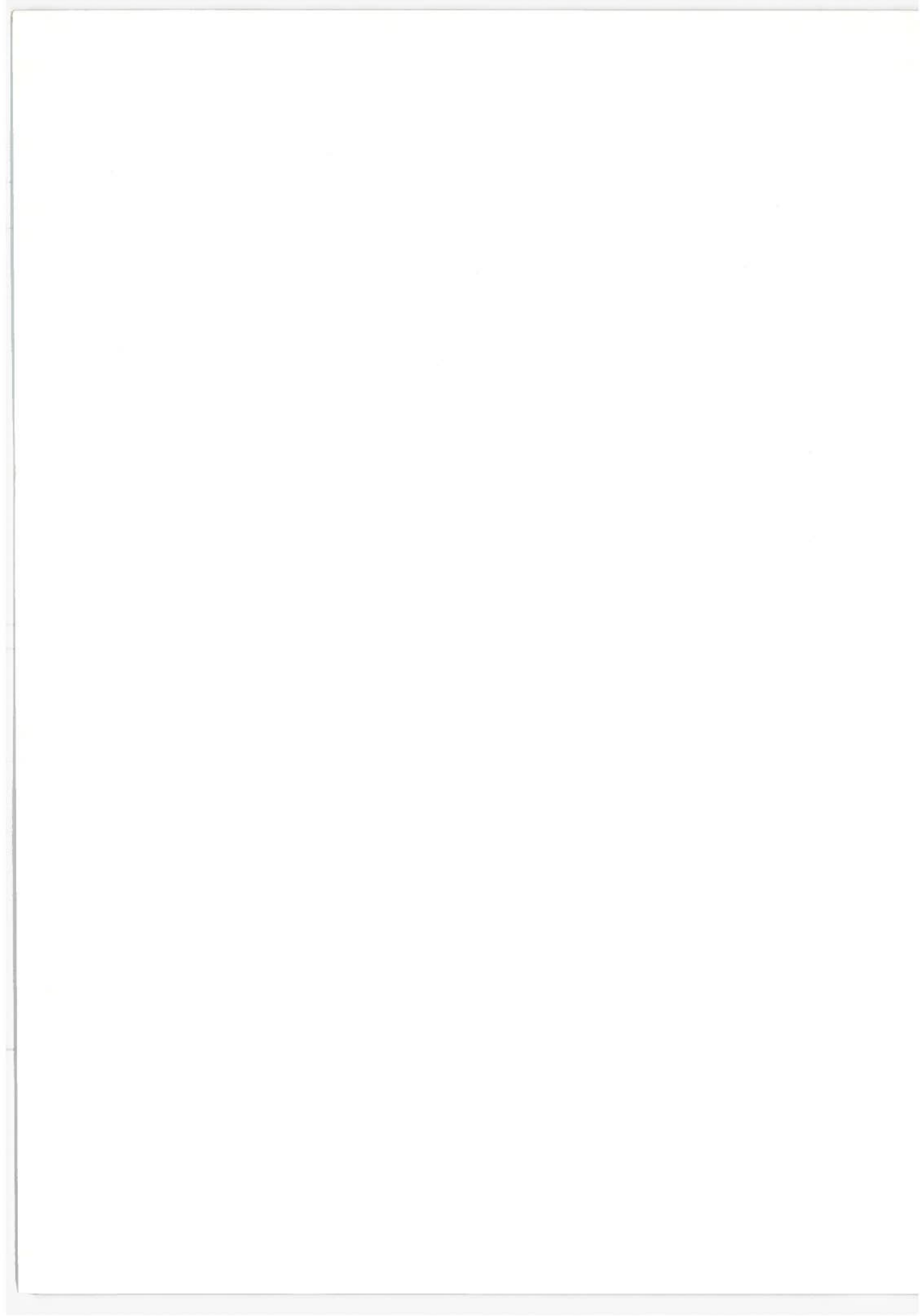


#### 5. Low-risk capital cost effectiveness

Using the scoring described on page 8 of the June Report, the model scored 75. With reference to Figure 6 (page 13) of the June Report, this model would rank first in column 4 (red).

### III. CONCLUSIONS

The results of the foregoing evaluation indicate the following: 1. The evaluation of hand-held models and of walk-through installations (for magnetic metals only) given in the June Report is valid in all respects; 2. The Sperry Model SMD-1000 ranks highest in regard to performance and capital cost effectiveness in the category of walk-through installations for all metal (without location discrimination).



DETECTOR-ALL METALS

Manufacturer: Sperry Rand Sensor Group  
Gainesville, FL 32601

Type and Model No.: Weapons Detector, Model SMD-1000

Mode of Application: Walk-through gate

Physical Description: Light weight, attractive fiber-glass frame. Dimensions: 7 ft. x 3 ft. x 3 ft.

Cost: \$1,950, with a possible 5% discount for orders between 50 and 99 units.

Delivery: About 60 days (may be reduced in future).

Operating Principle: Presence of metallic object produces electrical signal.

Technical Evaluation: (Based on extensive laboratory testing at TSC, use at Boston Superior Court at maximum security trial, and at TWA terminal at Logan Airport.)

Space Required: 10 ft. in all directions from unit.

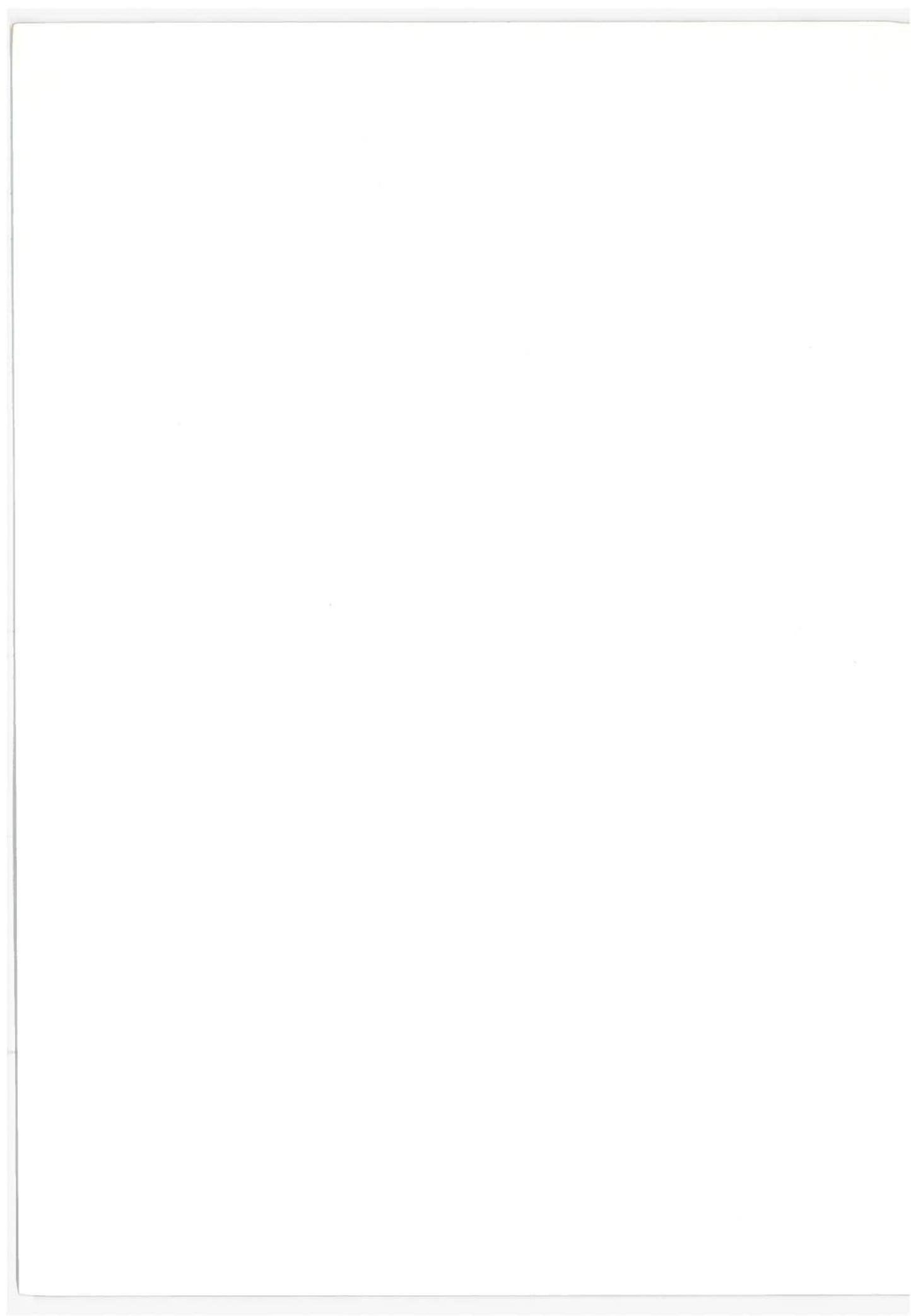
Response to extraneous metal objects and electrical disturbances: Low

Likelihood of False Alarms: Extremely low, even from metal support in men's shoes.

Operator's Skill Required: Low to medium.

Need for Adjustments: Rare, if properly set up initially.

Sensitivity: Will detect all metal objects, usually even small knives and guns--different threshold adjustments useful for all applications.



Performance Rating: Excellent

Cost Effectiveness: Excellent

