# SEMI-ANNUAL PROGRESS REPORT

# TRAP TARGET PRODUCT DEVELOPMENT

By

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## Trap Target Product Development

## Semi-Annual Progress and Financial Report for Minnesota Technology, Inc.

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**Reporting Period:** July 1, 1994 - December 31, 1994

**Objective:** To evaluate the trap target industry and identify potential Minnesota materials that could be used in the manufacture of commercial trap targets.

**Background:** Five hundred to seven hundred million trap targets are used yearly in the United States by sporting and recreation enthusiasts. The majority of trap targets are presently manufactured from a mixture of calcium carbonate and petroleum pitch, with others being manufactured from mixtures of clay, gypsum, and sand. To manufacture a target, pitch and calcium carbonate are melted and injected into a mold. As the mixture cools, the target solidifies and is ejected from the mold.

The present targets do not decompose over time, leading to a material buildup in areas, especially trap target shooting ranges. The pitch used in the targets is also toxic to some animals that may try to eat the target residues. Throwing the targets out over water bodies is also common, either from shore or the back of boats. The broken targets then fall into the water creating pollution.

A Minnesota Technology, Incorporated (MTI) Idea Evaluation project was used to determine the feasibility of manufacturing trap targets from locally available materials. Based on positive evaluations, the project was continued as a full MTI project for the 1994/95 fiscal year.

**Summary of Progress:** The work plan for this project was designed to accomplish the following objectives: to evaluate the current trap target industry, to identify local materials that could be used to manufacture trap targets, to manufacture prototype targets for performance testing, to specify a manufacturing process, to assess the market and to perform economic analyses of manufacturing trap targets. The following sections summarize the progress made during the first phase of this project.

### TRAP TARGET INDUSTRY

Most of the current trap target manufacturers (Remington, Federal, Winchester) are large sporting goods companies. Each of these companies report up to $4,000,000 of sales annually. Several small manufacturers in the United States report sales of up to $1,000,000. The total estimated market in the United States is $15,000,000. A box of 135 Remington Targets retails for approximately $5 to $7.

## RAW MATERIALS AND PROTOTYPE MANUFACTURING

The commercial manufacturers of trap targets use petroleum pitch and calcium carbonate as the primary raw materials. Several additional materials are used to varying extent and include clay, gypsum, and sand. The raw materials have been selected and manufacturing process established to create targets that have sufficient strength to withstand the forces of being thrown from a commercial trap launcher and to be frangible when hit by shotgun ammunition.

The materials and processes used in the trap target industry are generally proprietary. For that reason, specific information regarding the selection of Minnesota raw materials and processing will not be discussed in this report.

A variety of materials have been obtained and screened for use in making trap targets. A mold was fabricated and samples were manufactured for performance testing. The preliminary results have been promising.

## FUTURE WORK PLAN

Additional samples will be manufactured and provided to area trap ranges for testing and evaluation. Based on this information, a manufacturing facility will be designed. A complete economic analysis will also be completed.