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Project 4: Materials Improvement in Firearms Suppressor Design BATON ROUGI SHERIFF'S OFFICE Grant Carrier, Eric Ferrell, Matthew Morgan, Stephanie Wasmuth Objective Prototype Design Manufacturing Testing Instrumentation Results Sound meter(Larson Davis LxT) Examine and determine suitability of • Thermal FLIR(General IRT 207) alternative materials in the construction Baffles with Strain Gauges(LY47-6/350) of firearms suppressors with the goal of spacers Gun Stand reducing gas energy and heat. Camera(Canon Vixia) Background Front e Rear end Safety Considerations cap cap Lack of innovation in suppressor Tube Material Failure design Above: Control configuration of suppressor Baffle Strikes Possibility of a federal deregulation Standard Firearm Safety Possible materials choices are rapidly Eye and Ear Protection innovating Suppressors High Temperatures Military interest has greatly increased High Pressures with calls for full integration Above: Cut view of elastomer Above: Cut view of metal **Budget Allocations Functional Requirements** Application (shown in red) foam application (shown in tan) **Testing & Results** Sound Must be below 140dB to be Matorials Location: EBR Sheriff Department Range considered hearing safe \$1484.00 • Test Standard: MIL-STD 1474D Commercial Variant Safe Must not fail in such a way as to endanger the shooter **Audio Results** 165.0 Machining Durable Must be able to sustain 응 165.0 원 160.0 158.4 \$3063.98) 155.0 continuous firing **Elastomer Tubes** 150.0 146.9 Modular Must have high modularity so 145.0 Testing Equipment 138.1 138.3 <u>ل</u>ا 240.0 as to facilitate testing 135.2 \$474.80 134.8 133.3 132.8 134.2 133.0 135.0 130.0 Engineering Analysis 125.0 120.0 This project included a heavy focus on 115.0 material selection with properties such as ŏ yield strength, thermal conductivity, and specific heat playing a major factor in material choice for both the management and dissipation of firearm gases. Metal Foam in spacer Elastomer expansion September February March Apri October November Decembei Januar\ Prototype Design Finalized Research and Concept Generation Concept Selection Prototype Material Ordering Manufacturing Process Starting Manufacturing Finishes Finalizing Design Adjustments Testing Starts Prototype Designs Suggested Testing Procedure Finalized Manufacturing Adjustments Made Testing Site Determined •Test Results Evaluated Complete Testing Material Selection Finalized Final Prototype Finalized

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