

## CONTENTS

<b>I. EXECUTIVE SUMMARY</b>	<b>1</b>
Project Description and Organization of Report	1
Significance of Advance Ceramics and MSD Fabrication Technologies	2
Study Highlights	3
<b>II. TASK 1: TECHNOLOGY APPLICATIONS IN COMMERCIAL INDUSTRY</b>	<b>11</b>
Potential Industrial Products	11
Commercial Industry Interfaces	11
Commercial Technology Transfer Activities	14
SHS Industrial Consortium	17
<b>III. TASK 2: TECHNOLOGY APPLICATIONS WITHIN THE DEFENSE COMMUNITY</b>	<b>19</b>
Potential Applications in Processing Advanced Ceramics	19
Dynamic Compaction of Advanced Ceramics and Composites	25
Defense Program Interfaces for DCT	43
Potential SHS Applications and Government Program Interfaces	44
Potential Applications of DARPA Materials Processing Technologies in Space Programs	62
<b>IV. TASK 3: RELEVANT SOVIET MATERIALS TECHNOLOGY</b>	<b>65</b>
Bibliographies on Soviet Technologies	65
Key Soviet Participants and Literature Sources	66
SPC Translations	67
National Soviet SHS Program	69
Soviet PCT and DCT Development	70
Approaches to Increasing Service Performance of Refractory Materials	71
<b>V. TASK 4: COMMERCIAL POTENTIAL OF TECHNOLOGY</b>	<b>75</b>
Background	75
Base Cost and Price Estimates for Dynamic Compaction of Ceramic Disks	77
Base Cost and Price Estimates for SHS and Densification of Ceramic Tiles	86
Pricing Comparisons for Titanium Diboride Shapes Manufactured by DCT and SHS Technology	94
Use of Experience Curves in Predicting Price Behavior	95
Experience Curves Applied to Production of Ceramic Shapes by DCT and SHS Technology	100
<b>REFERENCES</b>	<b>105</b>