Final Technical Status Report

For

DOTC 10-01-INIT-017

Development of Prototype Reactive Armor Tile

Reporting Period: 13 May 2015

Ordnance Technology Initiative Team

CLogic Defense - Lead

Metalcrafters, ES Metals

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Report Documentation Page

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1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
13 MAY 2015	**Final**	

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Final Report: Development of Prototype Reactive Armor Tile	**OTA # W15QKN-09-9-1001**
	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER **N/A**
6. AUTHOR(S) **Herbst /Diana-Lynn**	5d. PROJECT NUMBER **DOTC-11-01-INIT017**
	5e. TASK NUMBER **N/A**
	5f. WORK UNIT NUMBER **N/A**
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **CLogic, Defense 26 Sky View Drive Avon, CT 06001**	8. PERFORMING ORGANIZATION REPORT NUMBER **DOTC-11-01-INIT017-F**
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12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release, distribution unlimited.

13. SUPPLEMENTARY NOTES

14. ABSTRACT
Prototyping efforts performed for Development of Prototype Reactive Armor Tile

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**	**UU**	**7**	

1. Comments on Technical/Cost/Schedule Performance

Technical: All milestones were completed

Cost: Completed

Schedule: Completed

2. Initiative Quad Chart

Goals & Objectives	Initiative Information
Develop and fabricate next generation designs using advanced materials and processes. This will include but is not limited to, component fabrication; process integration, configuration management, materials development, coatings technology, packaging technology and overall systems engineering. Prototype and integrated system components shall be produced for developmental test units, production test units and integration units.	**Initiative Lead**: CLogic LLC **Team Members**: Metalcrafters Inc.; ES Metals **Period of Performance**: 36 months
Milestones & Technical Achievements	**Implementation & Payoff**
All milestones have been completed	**Schedule**: Sep 2015 **Status**: 100% complete
	Technology will reduce the weight and complexity of current armor systems by identifying more weight efficient, blast efficient, corrosion resistant, and cost-effective armor materials that provide thermal signature reduction and enhanced soldier protection
Current Status: Technical = Green Schedule = Green Cost = Green	

3. Supplemental Information

In order to improve the usefulness of the quad charts and provide DOTC with sufficient initiative information, the Quarterly Report must be supplemented with data described below.

3.1 Technical Achievements

Milestone Status:

No.	Deliverable or Milestone	Due Date	Cumulative Percent Complete
1	Quarterly Technical and Business Status Report	20-Mar-12	100%
2	TASK 1A: Identify candidate materials	30-Mar-12	100%
3	TASK 2A: Prepare prototypes	30-Mar-12	100%
4	TASK 3A: Design and prototype multi-functional armor in various sizes and shapes	30-Apr-12	100%
5	TASK 4A: Characterize the properties	30-Apr-12	100%
6	TASK 5A: produce prototype multifunctional, lightweight layered material tiles that perform two or more primary functions	30-May-12	100%
7	Quarterly Technical and Business Status Report	20-Jun-12	100%
8	TASK 6A: Produce Prototypes for Government Testing	30-Jun-12	100%
9	TASK 7A: compare test performance against currently fielded materials	30-Jun-12	100%
10	TASK 1B: Identify candidate materials	30-Jul-12	100%
11	TASK 2B: Prepare prototypes	30-Jul-12	100%
12	TASK 3B: Design and prototype multi-functional armor in various sizes and shapes	30-Aug-12	100%
13	TASK 4B: Characterize the properties	30-Aug-12	100%
14	Quarterly Technical and Business Status Report	20-Sep-12	100%
15	TASK 5B: produce prototype multifunctional, lightweight layered material tiles that perform two or more primary functions	30-Sep-12	100%
16	TASK 6B: Produce Prototypes for Government Testing	30-Oct-12	100%
17	TASK 7B: compare test performance against currently fielded materials	30-Oct-12	100%
18	TASK 1C: Identify candidate materials	30-Nov-12	100%
19	TASK 2C: Prepare prototypes	30-Nov-12	100%
20	Quarterly Technical and Business Status Report	20-Dec-12	100%
21	TASK 3C: Design and prototype multi-functional armor in various sizes and shapes	30-Dec-12	100%
22	TASK 4C: Characterize the properties	30-Dec-12	100%
23	TASK 5C: produce prototype multifunctional, lightweight layered material tiles that perform two or more primary functions	30-Jan-13	100%
24	Annual Technical Report	15-Feb-13	100%
25	TASK 6C: Produce Prototypes for Government Testing	28-Feb-13	100%
26	TASK 7C: compare test performance against currently fielded materials	28-Feb-13	100%

27	Quarterly Technical and Business Status Report	20-Mar-13	100%
28	TASK 1D: Identify candidate materials	30-Mar-13	100%
29	TASK 2D: Prepare prototypes	30-Mar-13	100%
30	TASK 3D: Design and prototype multi-functional armor in various sizes and shapes	30-Apr-13	100%
31	TASK 4D: Characterize the properties	30-Apr-13	100%
32	TASK 5D: produce prototype multifunctional, lightweight layered material tiles that perform two or more primary functions	30-May-13	100%
33	Quarterly Technical and Business Status Report	20-Jun-13	100%
34	TASK 5H: produce prototype multifunctional, lightweight layered material tiles that perform two or more primary functions	30-Jun-13	100%
35	TASK 6D: Produce Prototypes for Government Testing	30-Jun-13	100%
36	TASK 7D: compare test performance against currently fielded materials	30-Jun-13	100%
37	TASK 1E: Identify candidate materials	30-Jul-13	100%
38	TASK 2E: Prepare prototypes	30-Jul-13	100%
39	TASK 6H: Produce Prototypes for Government Testing	30-Jul-13	100%
40	TASK 3E: Design and prototype multi-functional armor in various sizes and shapes	30-Aug-13	100%
41	TASK 4E: Characterize the properties	30-Aug-13	100%
42	TASK 7H: compare test performance against currently fielded materials	30-Aug-13	100%
43	Quarterly Technical and Business Status Report	20-Sep-13	100%
44	TASK 5E: produce prototype multifunctional, lightweight layered material tiles that perform two or more primary functions	30-Sep-13	100%
45	TASK 5I: produce prototype multifunctional, lightweight layered material tiles that perform two or more primary functions	30-Sep-13	100%
46	TASK 6E: Produce Prototypes for Government Testing	30-Oct-13	100%
47	TASK 6I: Produce Prototypes for Government Testing	30-Oct-13	100%
48	TASK 7E: compare test performance against currently fielded materials	30-Oct-13	100%
49	TASK 1F: Identify candidate materials	30-Nov-13	100%
50	TASK 2F: Prepare prototypes	30-Nov-13	100%
51	TASK 7I: compare test performance against currently fielded materials	30-Nov-13	100%
52	Quarterly Technical and Business Status Report	20-Dec-13	100%
53	TASK 3F: Design and prototype multi-functional armor in various sizes and shapes	30-Dec-13	100%
54	TASK 4F: Characterize the properties	30-Jan-14	100%
55	TASK 5J: produce prototype multifunctional, lightweight layered material tiles that perform two or more primary functions	30-Jan-14	100%
56	Annual Technical Report	15-Feb-14	100%
57	TASK 5F: produce prototype multifunctional, lightweight layered material tiles that perform two or more primary functions	28-Feb-14	100%
58	TASK 6J: Produce Prototypes for Government Testing	28-Feb-14	100%
59	Quarterly Technical and Business Status Report	20-Mar-14	100%
60	TASK 6F: Produce Prototypes for Government Testing	30-Mar-14	100%

61	TASK 7F: compare test performance against currently fielded materials	30-Mar-14	100%
62	TASK 7J: compare test performance against currently fielded materials	30-Mar-14	100%
63	TASK 1G: Identify candidate materials	30-Apr-14	100%
64	TASK 2G: Prepare prototypes	30-Apr-14	100%
65	TASK 5K: produce prototype multifunctional, lightweight layered material tiles that perform two or more primary functions	30-Apr-14	100%
66	TASK 3G: Design and prototype multi-functional armor in various sizes and shapes	30-May-14	100%
67	TASK 4G: Characterize the properties	30-May-14	100%
68	Quarterly Technical and Business Status Report	20-Jun-14	
69	TASK 5G: produce prototype multifunctional, lightweight layered material tiles that perform two or more primary functions	30-Jun-14	100%
70	TASK 6G: Produce Prototypes for Government Testing	30-Jul-14	100%
71	TASK 6K: Produce Prototypes for Government Testing	30-Jul-14	100%
72	TASK 7G: compare test performance against currently fielded materials	30-Jul-14	100%
73	TASK 8A: Technology transfer plan	30-Aug-14	100%
74	TASK 7K: compare test performance against currently fielded materials	30-Aug-14	100%
75	Quarterly Technical and Business Status Report	20-Sep-14	100%
76	TASK 8B: Technology transfer plan	30-Sep-14	100%
77	TASK 10A: Manufacturability Report	30-Oct-14	100%
78	TASK 10B: Manufacturability Report	30-Nov-14	100%
79	Quarterly Technical and Business Status Report	20-Dec-14	100%
80	TASK 11: Final Technical and Business Status Report	30-Mar-15	100%

3.2Technical Readiness Level Status and Technology Transfer Information:

Please indicate the current Technology Readiness Level (TRL) and technology transfer information for the prototype development effort based on the information requested and definitions in the chart (Insert chart number) below.

Technology Transition Information

1. Technology or technologies being worked on: Improvements to the Objective Gunner Protection Kit: Neptune Ammunition Handling System. The Neptune Ammunition Storage System was prototyped to safely increase the ammunition storage capacity within the OGPK. The Neptune system provides the gunner with immediate access to ammunition while safely storing it during the mission. The baseline OGPK has no engineered ammunition storage capability. Neptune allows for the capability to safely carry and store: 12.7 mm (M2); 40 mm (MK19); 7.62 mm (MK240B); 5.56 mm (M240 SAW).
2.
3. Is this technology an extension of a previous DOTC agreement or contract: No
4. System to which technology can transition: Objective Gunner Protection Kit (OGPK)
5. Commercial applications if applicable: N/A
6. Government organizations or DoD Armed Force Services interested in technology other than AOR's organization: The Objective Gunner Protection Kit is used on Army and Marine Corps Tactical Vehicles and the Neptune will transition to all DoD tactical vehicles with a Gunner Protection Kit
7. DoD Armed force services or organizations that could benefit from technology (not mentioned above): not applicable. The organizations that have tactical vehicles with OGPK vehicles are currently retrofitting those vehicles with this technology
8. Initial Technology Readiness Level (TRL) of technology at the start of agreement: 5
9. Current Technology Readiness Level (TRL) of technology: 8
10. Final Technology Readiness Level (TRL) of technology expected at end of agreement: 8
11. Next step in technology transition process: The items are fielded and ARDEC has recently license the intellectual property for the Neptune to CLogic Defense. CLogic Defense intends to produce the Neptune commercially for foreign military sale

3.3 Problems Encountered and Action Taken

- None

3.3 Non-Traditional Defense Contractor Participation

Name of Nontraditional*	Planned Start Date	Actual Start Date	Reason for Deviation from Plan
CLogic Defense	1/19/12	1/19/12	
Metalcrafters Inc	2/24/12	2/24/12	
ES Metals	2/24/12	2/24/12	

3.5 Plans for Next Quarter: Deliver the following to the Government:

Work is complete