UNITED STATES MARINE CORPS
FLEET MARINE FORCE, ATLANTIC
U.S. MARINE CORPS FORCES COMMAND
1775 FORRESTAL DRIVE
NORFOLK, VIRGINIA 23551-2400

IN REPLY REFER TO
1650
FADJ
FEB 10 2020

SECOND ENDORSEMENT on CO, II MIG ltr 1650 of 16 Jan 20

From: Commander
To: Deputy Commandant for Information, 3000 Marine Corps Pentagon, Washington, DC 20350-3000

Subj: NOMINATION OF II MARINE EXPEDITIONARY FORCE INFORMATION GROUP ACCELERATOR TEAM FOR THE MARINE CORPS INFORMATION ENVIRONMENT ENTERPRISE INNOVATION AWARD

1. Forwarded, recommended with enthusiasm.

2. Point of contact is Major Stephen Reamy at (757)836-1524 or stephen.reamy@usmc.mil.

R. F. HEDELUND

Copy to:
CG, II MEF

UNITED STATES MARINE CORPS
COMMAND ELEMENT
II MARINE EXPEDITIONARY FORCE
PSC BOX 20080
CAMP LEJEUNE, NC 28542-0080

1650
Adj
FEB 03 2020

FIRST ENDORSEMENT on CO, II MIG 1650 CO of 16 Jan 20

From: Commanding General, II Marine Expeditionary Force
To: Deputy Commandant for Information, 3000 Marine Corps Pentagon, Washington, DC 20350-3000
Via: Commander, U.S. Marine Corps Forces Command

Subj: NOMINATION OF II MARINE EXPEDITIONARY FORCE INFORMATION GROUP ACCELERATOR TEAM FOR THE MARINE INFORMATION ENVIORNMENT INNOVATION AWARD

1. Forwarded, recommended with enthusiasm.

2. Point of contact at this command is Master Gunnery Sergeant Mickelson at (910) 451-9931 or rachel.mickelson@usmc.mil.

R. S. MORGAN
Chief of Staff

UNITED STATES MARINE CORPS
INFORMATION GROUP
II MARINE EXPEDITIONARY FORCE
PSC BOX 20085
CAMP LEJEUNE, NC 28542

IN REPLY REFER TO
1650
CO
16 Jan 20

From: Commanding Officer, Information Group
To: Deputy Commandant for Information, 3000 Marine Corps Pentagon, Washington, DC 20350-3000
Via: (1) Commanding General, II Marine Expeditionary Force
(2) Commanding General, Marine Forces Command

Subj: NOMINATION FOR THE MARINE CORPS INFORMATION ENVIRONMENT INNOVATION AWARD IN THE CASE OF II MARINE EXPEDITIONARY FORCE INFORMATION GROUP (II MIG) ACCELERATOR TEAM

Ref: (a) DCIO 1650.2

Encl: (1) Summary of Unit Performance and Accomplishments
(2) Letter of Recommendation
(3) Deputy Commandant for Information (DC I) Hardware Accelerator After Action Report 11 - 5 March 2019
(4) Deputy Commandant for Information (DC I) Accelerator Class 11 Week 12 After Action Report (AAR) 29 April - 03 May 2019
(5) Accelerator Team Roster

1. II Marine Expeditionary Force Information Group (II MIG) Accelerator Team is nominated for The Marine Corps Information Environment Innovation Award for their initiative and discoveries during Deputy Commandant for Information sponsored rapid hardware and software development prototypes events to improve the Marine Air Ground Task Force's ability to conduct operations in the information environment.

2. The point of contact at this command is Lieutenant Colonel Jacob Jones at jacob.m.jones@usmc.mil, or (910) 450-2363. II MIG can be reached via mail at II MIG, PSC Box 20085, Camp Lejeune, NC 28542-0003.

J. D. WALZER

Summary of Unit Performance and Accomplishments

The II Marine Expeditionary Force (II MEF) Information Group (II MIG) Accelerator Team is enthusiastically recommended for the Marine Corps Information Environment Innovation Award for their outstanding innovative efforts from February 2019 through October 2019. The II MIG Accelerator Team contributed to the rapid development of hardware and software prototypes to enhance II MIG, Marine Corps Information Environment Enterprise (MCIEE), and the Marine Air Ground Task Force's (MAGTF) ability to conduct operations in the information environment (OIE). Their many accomplishments are listed in the following summary:

Immediately following II MEF's participation in Exercise TRIDENT JUNCTURE 2018 (TRJE-18), NATO's largest military exercise since the end of the Cold War, the II MIG Commander observed II MEF's challenges while conducting signature management (SIGMAN) and operational security (OPSEC) in Norway. Russia's aggressive influence operations against NATO member and partner nations was a constant cause for concern. The II MIG Commander assembled a team of Marines to collaborate with the Deputy Commandant for Information's (DCI) Chief Technology Officer (CTO) to identify OIE-related capabilities gaps and inform requirements to satisfy those gaps.

The first DCI-sponsored Hardware Accelerator developed four OIE-related concepts, with two presented to the greater MCIEE. From March 11 – 15, 2019, II MIG Accelerator Team collaborate with engineers at Naval Support Activity – Crane (NSA – Crane) in Crane, Indiana. Marines from II MIG and 10th Marine Regiment integrated with DCI personnel and NSA-Crane engineers to build prototypes using tactical communications assets, government and commercial materials, and three-dimensional printing technology. Three prototypes and one concept was presented to the II MIG Commander and other Marine Corps and NSA-Crane senior leaders to demonstrate the team's ability to develop minimum viable products at low costs.

Based on these discoveries, II MIG coordinated with II MEF's Office of Naval Research (ONR), Marine Corps Warfighting Lab's (MCWL) liaisons, and NSA-Crane engineers to demonstrate two of the four concepts – nicknamed LIAR and ORION'S BELT - during the Fight Naval Force Forward Advanced Technical Exercise – East (FNFF ANTX-East) aboard Camp Lejeune from 9-19 July 2019. Additionally, the LIAR prototype was deployed with 2nd Marine Division during Marine Air Ground Task Force Warfighting Exercise (MWX), a multi-day, division level, force-on-force exercise, in October 2019. II MIG's Accelerator Team was instrumental in developing tactical level OIE material solutions to enhance II MEF, the MCIEE, and the Marine Corps' ability to fight in a dynamic information environment.

The II MIG Accelerator Team's efforts also resulted in the rapid creation of software solutions to enhance the MCIEE's ability to plan and operate in the information environment. Post TRJE-18, II MIG recognized the difficulty tactical level units experienced when conducting SIGMAN and OPSEC planning. Planners at lower echelons could not easily access and incorporate sensitive information about friendly

ENCLOSURE (1)

and threat spaced based collections and communications capabilities without assistance from intelligence and communications professionals. This reliance on higher echelon subject matter experts inhibits tactical planning in a fast paced information environment.

Seeing this challenge as another opportunity to address a gap, the II MIG Commander assembled an Accelerator Team to assist in the developing a software application that helps tactical level planners to conduct SIGMAN and OPSEC planning using information from friendly and threat space based capabilities. From 29 April – 3 May 2019, Marines from II MIG ICC, and II MEF and II MIG major subordinate commands (MSCs) collaborated with engineers and developers to create a prototype software application - nicknamed HOUDINI – to provide tactical level planners access to friendly and threat space capabilities to support SIGMAN and OPSEC planning. This concept resulted in an 11-week planning sprint to rapidly produce a low-bandwidth, web-based application that was demonstrated to the II MIG Commander, II MIG ICC, and MSC commanders. The II MIG Accelerator team's ingenuity and imagination generated a tangible solution that could be further refined, enhancing the MAGTF and MCIEE's operations in the information environment.

The II MIG Accelerator Team experimented with ideas and concepts associated with the physical aspects of SIGMAN. From 11-16 September 2019, II MIG ICC and geospatial analysts with 2nd Intelligence Battalion conducted a Red Team against space based collections capabilities to determine how physical obstacles and materials could complicate geospatial intelligence analysis. The II MIG Accelerator Team's outputs and coordination with the DC I resulted in the fabrication of low-cost stationary and rotating corner reflectors, nicknamed Project VICEROY. The team strategically placed the corner reflectors and camouflage netting at various locations aboard Marine Corps Auxiliary Landing Field at Bogue, North Carolina and collected various images requested from multi-spectral space based collections capabilities. Data collected during Project VICEROY resulted in the drafting of corner reflector blueprints and tactics, techniques, and procedures that commanders can employ as part of their SIGMAN and OPSEC strategy. The II MIG Accelerator Team's efforts were vital in providing recommendations to commanders for managing their physical signatures, increasing their unit's survivability, and protecting critical assets and capabilities.

During this period, the II MIG Accelerator Team demonstrated noteworthy initiative and commitment to advancing II MIG, the MCIEE, and the Marine Corps' ability to conduct OIE. The team collaborated fluidly with Marines and civilians from various command echelons and supporting establishments to demonstrate technical innovation and discovery for the MCIEE and the Marine Corps' benefit. Therefore, the II MIG Accelerator Team is enthusiastically recommended to receive The Marine Corps Information Environment Innovation Award.

ENCLOS (1)

UNITED STATES MARINE CORPS
INFORMATION GROUP
II MARINE EXPEDITIONARY FORCE
PSC BOX 20085
CAMP LEJEUNE, NC 28542

IN REPLY REFER TO:
1000
ICC
16 Jan 20

From: Commanding Officer, Information Group
To: Deputy Commandant for Information, 3000 Marine Corps Pentagon, Washington, DC 20350-3000

Subj: LETTER OF RECOMMENDATION FOR THE MARINE CORPS INFORMATION ENVIRONMENT INNOVATION AWARD

Ref: (a) DCIO 1650.2

1. I am extremely pleased to recommend the II Marine Expeditionary Force (MEF) Information Group (II MIG), Accelerator Team for The Marine Corps Information Environment Innovation Award for their outstanding contributions to II MIG, the Marine Corps Information Environment Enterprise, and the service. This talented team of innovators proved that many of the solutions needed to prepare the Marine Corps for the joint fight in a highly contested, complicated information age come from the tactical level. Our Marines partnered with engineers and developers to transform ideas and concepts into tangible, technical solutions that posture commanders to effectively operate in the information environment.

2. In less than one year, this team contributed to the rapid production of seven prototypes that helped identify capability gaps and expedite our formal requirements processes. These Marines set the standard for collaboration and innovation to ensure we stay ahead of our adversaries. I am extremely proud of their accomplishments. They have my highest recommendation to receive The Marine Corps Information Environment Innovation Award.

3. The point of contact is Colonel Jordan D. Walzer, II MIG Commanding Officer at (910) 449-9299 or jordan.walzer@usmc.mil.

J. D. WALZER

ENCLOSURE (2)

NAVSEA
WARFARE CENTERS
CRANE

NAVAL SURFACE WARFARE CENTER CRANE
SPECIAL WARFARE AND EXPEDITIONARY SYSTEMS DEPARTMENT
CRANE, INDIANA 47522-5001

Deputy Commandant for Information (DC I) Hardware Accelerator
After Action Report
11-15 March 2019

Harnessing the Power of Technology for the Warfighter

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Date: 03/25/2019

BLUF

The United States Marine Corps (USMC) Deputy Commandant for Information (DC I) and II Marine Expeditionary Force (MEF) Information Group (II MIG) in partnership with the Naval Surface Warfare Center (NSWC) Crane Division conducted the execution of the DC I Hardware (HW) Accelerator event at NSWC Crane from 11-15 March 2019. The event was DC I's first ever HW Accelerator event that leveraged the proven NSWC Crane Warfighter Driven Challenge (WDC) rapid prototyping processes and practices. The DC I Hardware Accelerator event provided an agile, innovative, and affordable approach to address II MIG's critical operations and capability gaps in support of tactical level Signature Management (SIGMAN), Operational Security (OPSEC), or targeting. The DC I War Room in conjunction with II MIG are principal components to the identification of Warfighter statements chosen as candidates for undertaking rapid prototyping event. The DC I War Room is an established task-organized group of experienced operators, technical Subject Matter Experts (SMEs), and government engineers/scientists that applies operational, functional, and technical expertise to identify/analyze mission challenges and conceptualize solutions fit to be used by warfighters. The participation of the warfighters throughout the DC I HW Accelerator process promotes, Low Risk and Affordability. The II MIG under the direction of DC I had requested a WDC event with NSWC Crane technical SMEs to produce innovative concepts in support of the following two challenges within Operations in the Information Environment: (i) Emitter (ii) RADAR. Solutions to the Emitter problem statement and the RADAR problem statement were achieved. The success of the DC I HW Accelerator event producing Technical Readiness Level (TRL) 4 prototypes for these solutions demonstrated an increase in USMC ability to fight in the Information Environment. The customized products of the event have potential to be proposed and aligned to additional funding opportunities.

WARFIGHTER PROBLEM STATEMENT

II MIG, Chief Warrant Officer 5 (CWO5) Smith, provided an overview of the problem statements based on lessons learned from the Trident Juncture exercise in 2018.

1) II MIG does not possess tactical level assets capable of producing electromagnetic signatures that can be employed to modify a unit's Command and Control (C2) emissions in support of Signature Management (SIGMAN) and Operation Security.

2) II MIG will assist commanders with Information Operations (IO) planning considerations and identify capabilities that can support tactical level SIGMAN, OPSEC, or targeting, when authorized.

a. Support maneuver C2 and IO planning in training environments

b. Rapid research and development of prototype capabilities will be offered to commanders to validate capabilities gaps and generate lessons learned that can be translated to validated requirements.

3) II MIG CONOP Scenario: Since mid-December 2018, II MIG Information Command Center (ICC) has been participating in 2d Marine Division (2d Mar Div) G-3 FOPS' Command and Control in a Degraded/Declined Environment (C2D2E) Operation Planning Team (OPT).

a. 2d Mar Div C2 Mission Statement: 2d Marine Division must maintain Command and Control in all potential current and future operating environments, while safeguarding our units at all levels IOT maintain a competitive edge against our opponents across all domains.

b. 2d Div Future State: A resilient, survivable, rapid scalable MAGTF, is trained and ready to execute decentralized MCO in D2 environments against a Peer/Near Peer Adversary across all warfighting domains in a time competitive environment.

4) II MIG will support 2d Mar Div IO planning efforts and acquisition of emitters capabilities to support C2D2E collective training events during any or all of the following 2d Mar Div FY 19 training events, as required:

a. Exercise ROLLING THUNDER 19: Feb 11-15 '19 (CPX), Mar 15-18 '19 (LIVEX)

b. Exercise SPARTAN FURY 19: Apr 19-27 '19

c. 2d Mar Div Large Scale Exercise Oct '19

ATTENDEES

See Appendix A, Table 1

PROCESS STEPS

The Warfighter Driven Challenge process provides a foundation that creates a collaborative environment for the operational warfighters, government engineers/scientists, stakeholders, and decision makers to have access to rapid prototyping solutions. The WDC process used during the DC I Hardware Accelerator event are outlined as follows:

1) Discover – Develop problem statement(s) involving the DC I and Navy-Marine Corps operational community as the arbiters in defining known problems, capture tacit knowledge, identify needs, and develop associated CONOPs and desired capabilities.

a. **Process Overview** - DC I, Ms. Jennifer Edgin, provided opening remarks/guidance throughout the event week in executing the DC I HW Accelerator. NSWC Crane (Mr. Dan Cabel and Mr. Andy Brough) provided an overview of NSWC Crane's Technical Capabilities and an overview of the DC I HW Accelerator event and process.

b. **Warfighter Problem Statement** - As noted above, II MIG (CWO5 Smith) then followed with the Warfighter Problem Statement.

c. **DC I HW Accelerator Team structure** - The DC I HW Accelerator team members include technical SMEs, engineers, scientists, fabricators, and operators from II MIG. Two groups were formed, designated Team#1 and Team#2, to address each specific problem statement focused on Emitter and RADAR. Team members and Marines were assigned to their respective group to address problem scoping/deception story, ideation, concept development, technical approach and prototyping of solution sets. Each team is comprised of a facilitator, scribe, technical SMEs, Marines, and prototyping support. A scribe or recorder was resourced to each team to capture and document event Intellectual Property (IP), lessons learned, and best practices throughout the event.

d. **Interview Session by Challenge Team** - The participants of the event, including the six Marines from II MIG, engineers/scientists, scribes, facilitators, and prototyping support, were instructed to break out into six separate interview stations to facilitate the participants' question and answer session of each Marine in an unconstrained environment; law of physics, gravity and no concern to funding or time. The Marines were allotted 15-minute sessions for each interview station to answer questions issued by the participants. The interview session provides an opportunity for the event participants to gain a better understanding of the operational aspect of the associated Emitter and RADAR problem statements. The interview session is a precursor to the ideation process of scoping the problem statements and generating ideas and solutions. All participants reconvened to address results from the interview session as a group. The results from the interview session determined that it was very helpful, especially for the engineers/scientists, providing clarity to the mission need/capability gaps.

e. **Ideation** – Engagement between the Marines, stakeholders, scientists, and engineers to generate ideas and solutions through sessions to include brainstorming, sketching, and other ideation techniques. The DC I HW Accelerator members and Marines separated into their respective teams in scoping their assigned problem statements (Who, What, Where, When, Why and How Capabilities). The team breakout, roles, and technical backgrounds are illustrated in Table 1. Team#1 was assigned to conduct the formation of ideas and concepts focusing on the Emitter problem statement and Team#2 was assigned with the RADAR problem statement.

2) **Concept Development** - Continuous engagement between the Marines, stakeholders, scientists, and engineers to define desired needs and wants for design, testing, and analysis.

a. **Prototype** – The teams spent two days developing prototype designs for the Emitter and for RADAR. The focus was to design and develop functional prototypes or customized product as a proof-of-concept and demonstration of conceptualized solution set(s) that are fit to be used by Marines.

NEXT STEPS AND ACTIONS

Lessons Learned

Refinement of Prototypes and Project Plans. The DC I HW Accelerator team will continue to pursue the refinement of the LIAR, Big Fat LIAR, Orion's Belt, and Ion Curtain through an incremental development approach. Each project team will continue its engagement with the Marine Corps to include II MIG, MCIOC, IWID, and DoD community to ensure the art of possible fit to be used by the warfighters.

LIAR Quad Charts and Proposal.

Big Fat LIAR Quad Charts and Proposal.

Orion's Belt Quad Charts and Proposal.

Ion Curtain Quad Charts and Proposal.

**NISE 219 Projects – Pursue development of other Conceptualized emitter RADAR Solutions.*

T&E Evaluation / Demonstration.

a. Exercise SPARTAN FURY 19: Apr 19-27 '19
b. 2d Mar Div Large Scale Exercise: Oct '19
c. Advanced Naval Technology Exercise (ANTX): Jul '19
d. Exercise ROLLING THUNDER (CPX) & (LIVEX): TBD '20

Partnership/Collaboration.

Deputy Commandant for Information (War Room) – Continue collaboration effort

MCIOC Johns Hopkins – Establish partnership with Development of emitter and RADAR capabilities.

II MIG – Continue collaboration

DC CD&I IWID – Requirements Development

RRTO – Proposals for funding support of refining prototypes and fund future HW Accelerator events

NIWC LANT – Establish partnership with RF Signature Characterization effort

NOTE: *The Deception, Military General Security Classification Guide (SCG), OMB No. 0704-0188 provided the guidelines for safeguarding and management of information for the DC I HW Accelerator event.*

APPENDIX A, Table 1 DC I HW Accelerator ATTENDEES ROSTER

TEAM	RANK	FNAME MI. LNAME	ROLE	ORG	OFFICIAL EMAIL ADDRESS	CONTACT NUMBER
WDC Lead	CIV	Aaron Cole	EO/IR Tech SME - Design Integration	Crane	aaron.b.cole1@navy.mil	812-854-8819
Team#1 Emitter	CIV	Abbi Harbstreit	Scribe	Crane	abbi.harbstreit@navy.mil	812-854-xxxx
Team#1 Emitter	CIV	Amy Fellers	WDC Facilitator	Crane	amy.fellers@navy.mil	812-854-4288
Team#1 Emitter	CIV	Amy Poe	Observer	Crane	amy.poe@navy.mil	812-854-4119
Team#1 Emitter	CIV	Andrew Martin	Tech SME - EW/RF/Antenna Engineer	Crane	andrew.g.martin1@navy.mil	812-854-5980
Team#1 Emitter	CIV	Andrew Payne	Tech SME - SW/SDR Integration	Crane	andrew.payne1@navy.mil	812-854-6969
Team#1 Emitter	CIV	Andy Brough	WDC Lead	Crane	andrew.brough@navy.mil	812-854-6435
Team#1 Emitter	CIV	Austin Fatt	Tech SME - SW/SDR Integration	Crane	austin.d.fatt@navy.mil	812-854-6969
Team#1 Emitter	CIV	Brent Reynolds	Observer	Crane	michael.reynolds@navy.mil	812-854-2678
Team#1 Emitter	CIV	Chris Parker	Cyber Security	Crane	christopher.a.parke2@navy.mil	812-854-4340
Team#1 Emitter	CIV	Dan Cabel	SOF Liaison Officer	Crane	daniel.j.cabel@navy.mil	812-854-8450
Team#1 Emitter	CIV	Daniel Henke	Tech SME - RF Signal Characterization	Crane	daniel.henke1@navy.mil	812-854-3219
Team#1 Emitter	CIV	Daniel Spoor	EO/IR Tech SME - Design Integration	Crane	daniel.spoor@navy.mil	812-854-8819
Team#1 Emitter	CIV	David Crowe	Scribe	Crane	david.crowe1@navy.mil	812-854-2157
Team#1 Emitter	CIV	David Dicharry	Tech SME - DSP/SDR	Crane	david.dicharry@navy.mil	812-854-6774

ENCLOSURE (3)

Deputy Commandant of Information (DC I) Hardware Accelerator After Action Report, 11-15 March, 2019

TEAM	RANK	FNAME MI. LNAME	ROLE	ORG	OFFICIAL EMAIL ADDRESS	CONTACT NUMBER
Team#2 Radar	CIV	Edward Bareng	Tech SME - Electrical Engineer	Crane	edward.bareng@navy.mil	812-854-5131
Team#2 Radar	CIV	Eric Mohr	Tech SME - SW/SDR Integration	Crane	eric.j.mohr@navy.mil	812-854-8359
Team#2 Radar	CIV	John Williams	Tech SME - FPGA Designer	Crane	john.e.williams@navy.mil	812-854-6304
Team#2 Radar	CIV	Josh Borneman	J Dept Chief Scientist	Crane	joshua.borneman@navy.mil	812-854-3625
Team#2 Radar	CIV	Matthew Colchin	Tech SME - Machinist/3D Printing	Crane	matthew.colchin@navy.mil	812-854-1046
Team#2 Radar	CIV	Maurice Johns	Observer	Crane	maurice.johns@navy.mil	812-854-1877
Team#2 Radar	CIV	Nathan Thomas	Tech SME - EW/Antenna/RF Engineer	Crane	nathan.l.thomas@navy.mil	812-854-2694
Team#2 Radar	CIV	Nick Amadio	Tech SME - EW/Antenna/RF Engineer	Crane	nicholas.amadio@navy.mil	812-854-8025
Team#2 Radar	CIV	Olivia Pavlic	EO/IR Tech SME - Design Integration	Crane	olivia.pavlic@navy.mil	812-854-8480
Team#2 Radar	CIV	Patrick Stultz	Tech SME - Antenna/Cable/connectors fabrication	Crane	patrick.stultz1@navy.mil	812-854-2811
Team#2 Radar	CIV	Sam Nelson	Tech SME - Communication SME/Radio Operator	Crane	samuel.nelson1@navy.mil	812-854-xxxx
Team#2 Radar	CIV	Scot Hawkins	Tech SME - Communication SME/Radio Operator	Crane	scot.hawkins@navy.mil	812-854-3238
Team#2 Radar	CIV	Sondra Laughlin	Operations Analyst	Crane	sondra.laughlin@navy.mil	812-854-4266
Team#2 Radar	CIV	Steve Seghi	Tech SME - EW/RF/Antenna Engineer	Crane	steven.seghi@navy.mil	812-854-4998
Team#2 Radar	CIV	Tracy Pride	WDC Facilitator	Crane	tracy.pride@navy.mil	812-854-4504

ENCLOSURE (3)

Deputy Commandant of Information (DC I) Hardware Accelerator After Action Report, 11-15 March, 2019

TEAM	RANK	FNAME ML LNAME	ROLE	ORG	OFFICIAL EMAIL ADDRESS	CONTACT NUMBER
DC I HW Accelerator Lead	SES	Jennifer Edgin	DC I HW Accelerator Lead	USMC DC I	jennifer.edgin@usmc.mil	703-693-9979
Adhoc	MGySgt	Jonathan Stancel	USMC Operator	USMC DC I	jonathan.stancel@usmc.mil	703-889-3566
Adhoc	Maj	John Fout	USMC Operator/Requirements	USMC IWID	john.fout@usmc.mil	703-784-0657
Team#1 Emitter	Maj	James M Holt	USMC Operator	USMC II MIG	james.m.holt@usmc.mil	910-4515379
Team#1 Emitter	Capt	Ben Rinklin	USMC Operator	USMC II MIG	benjamin.rinklin@usmc.mil	910-451-5303
Team#1 Emitter	Sgt	Kelly Swanson	USMC Operator	USMC II MIG	kelly.swanson@usmc.mil	910-451-5423
Team#2 Radar	Capt	Roy Miller	USMC Operator	10th Mar Regt	roy.f.miller@usmc.mil	850-228-5200
Team#2 Radar	CWO5	David Smith	USMC Operator	USMC II MIG	david.l.smith8@usmc.mil	910-451-1534
Team#2 Radar	CWO2	Alexander Vinson	USMC Operator	USMC II MIG	alexander.m.vinson@usmc.mil	619-248-6157

ENCLOSURE (3)

Deputy Commandant for Information (DC I) Accelerator
Class 11 Week 12 After Action Report (AAR)
29 April – 03 May 2019
II Marine Expeditionary Force (MEF) Information Group (MIG),
Camp Lejeune, North Carolina

EXECUTIVE SUMMARY

The DC I Accelerator is where Marines, designers, developers, administrators, and key stakeholders collaborate as a Cohort to design and validate the DC I Blueprint components. The Accelerator's environment fosters rapid design and development of Minimum Viable Products (MVP), services, and capabilities. It creates a critical mass for innovation that shortens the lifecycle for defining problem-solution fit and gets capabilities into the hands of users. Mentors representing key stakeholders from across the Information Environment and supporting organizations support the Cohort by removing barriers to transition; working with key partners to capture and update requirements, doctrine, and policy; and providing key resources to the Cohort to help them stay on track with product development.

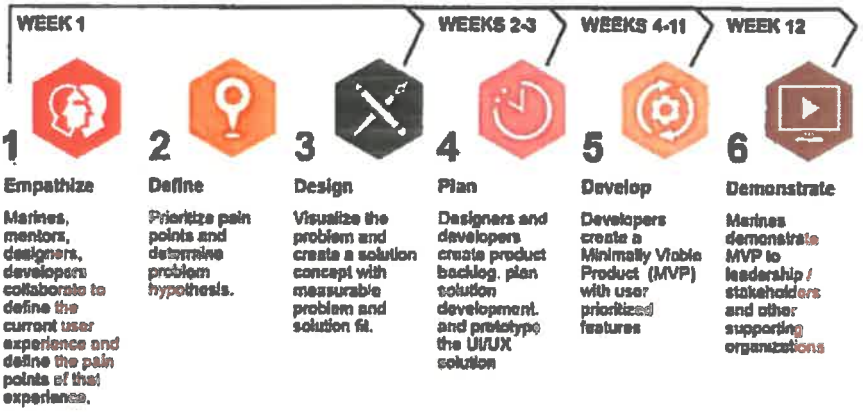

Figure 1. Accelerator 12-Week Cycle

The DC I Accelerator executes in a 12-week cycle and culminates in a final week of product testing, refinement, and pitch preparation for Demo Day (See Figure 1). The purpose of Demo Day is to bring together stakeholders from across the DC I and supporting organizations from within and outside of the Marine Corps, demonstrate the MVP, and get a go/no go decision from stakeholder leadership for releasing the MVP for further evaluation and development.

The MVP for DC I Accelerator Class 11 is called Houdini (*Now You See Me… Now You Don't*). Houdini is a map-based Common Operating Picture (COP) MVP that allows users from across the MIG to document, visualize, and monitor friendly and adversary technical signatures in support of mission planning. The Houdini application alerts users to potential collection types and timeframes from overhead satellite assets based on information imported from authoritative Department of Defense (DoD) sources. Houdini is equipped with multiple user-friendly features: Military Standard (MIL-STD) 2525D Military Symbology generator; meteorological forecast function; Forward Operating Base (FOB); Area of

ENCLOSURE (4)

Responsibility (AOR); and Route planning tools. Houdini provides the ability to define location-based range rings, giving users a well-rounded understanding of signature visibility and collection capabilities in the Area of Operations (AO). The Houdini Dashboard view provides Commanders with a summarized awareness of satellite visibility needed to plan covert or deceptive operations.

From Houdini, users can:

- Generate MIL-STD 2525D Military Symbology icons on the map view
- Define FOBs, AOR, and mission route polygons
- Be alerted to potential overhead satellite collections
- Be informed of future weather conditions that may affect signatures
- Copy polygon data points for input into satellite source platforms
- Customize the map background and basemap views
- Turn feature layers on or off for a customized information view
- Define asset range rings based on collection and emission capabilities
- Access the Commander's Dashboard for detailed overhead satellite collection information

Upon arrival for Demo Week at Camp Lejeune, NC, the Cohort worked with the development team to validate the final MVP features, recommend changes and/or enhancements, and become familiar with the finished product. They reviewed pitch techniques, drafted a demonstration storyboard, refined the scenario, and finalized the pitch brief. The Cohort conducted a dry run of the pitch for Mentors and the Accelerator team and made adjustments to the pitch based on feedback and suggestions.

On Demo Day, the Cohort presented the finalized pitch to a group of leaders from across II MIG and supporting organizations, to include Ms. Edgin (DC I Chief Technology Officer), Col Walzer (II MIG Commander), Col McDonough (10th Marines), LtCol Jones (II MIG), LtCol Anderlonis (2nd LE Bn), LtCol Welborn (2d ANGLICO), LtCol Heller (8th Comm Bn), Mr. Hoff (II MEF Science Advisor), Mr. Lee (II MIG), Maj Daniel Ballard (2nd Radio Bn), Maj Bormann (II MIG COMMSTRAT), Maj Balawender (II MSB), Maj Robinson (II MIG Ops O), Maj Kulisz (II MIG ICC), CWO4 Lang (2nd Intel Bn), SgtMaj Victore (8th Comm Bn), and Mr. Sokolowski (MCWL).

After the live demonstration, the Cohort discussed areas where Houdini could grow, such as:

- Direct integration with DoD sources for satellite orbit and collection information
- Direct integration with DoD sources for weather data that could potentially affect signature collection and visibility
- The inclusion of non-satellite overhead collection assets and timeline visualization

The Cohort requested that the Houdini MVP be given the opportunity for follow on testing and demonstration during the Integrated Training Exercise (ITX) in late fiscal year 2019.

The following were the participants of DC I Accelerator Class 11 Demo Week:

Name	Organization	Email	Role
Edgin, Jennifer	DC I	jennifer.edgin@usmc.mil	Sponsor
Col Walzer, Jourdan	II MIG	Jourdan.walzer@usmc.mil	Sponsor
Col McDonough, J.P.	10th Marines	james.mcdonough@usmc.mil	Attendee
LtCol Jones, Jacob	II MIG	jacob.m.jones@usmc.mil	Sponsor
LtCol Welborn, Scott	2nd ANGLICO	scott.welborn@usmc.mil	Attendee
LtCol Heller, Tom	8th Comm Bn	tomas.heller@usmc.mil	Attendee

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Name	Organization	Email	Role
LtCol Anderlonis, Timothy	2nd LE Bn	timothy.anderlonis@usmc.mil	Attendee
Maj Ballard, Daniel	2nd Radio Bn	daniel.ballard@usmc.mil	Attendee
Maj Bormann, Andrew	II MIG COMMSTRAT	andrew.bormann@usmc.mil	Attendee
Maj Balawender, Peter	II MSB	peter.balawender@usmc.mil	Attendee
Maj Robinson, Joshua	II MIG Ops O	joshua.j.robinson@usmc.mil	Attendee
Maj Kulisz, Thomas	II MIG ICC	thomas.kulisz@usmc.mil	Attendee
Capt Parker, Jon	II MIG COMMSTRAT	jon.d.parker1@usmc.mil	Attendee
Capt Ramsey, Anthony	10th Marines	anthony.a.ramsey@usmc.mil	Attendee
2nd Lt Colyer, William	II MIG COMMSTRAT	No military email established	Attendee
1st Lt Plymale, Nikki	II MIG COMMSTRAT	nicole.plymale@usmc.mil	Attendee
1st Lt Buckon, Zachary	II MIG COMMSTRAT	zackary.buckon@usmc.mil	Attendee
1st Lt Tello, Ian	2nd MLG G-2	ian.p.tello@usmc.mil	Attendee
Ware, Jarrett	8th Comm Bn	jarrett.ware@usmc.mil	Attendee
CIV Lee, Jeffery	II MIG	jeffrey.lee1.ctr@usmc.mil	Attendee
CIV Hoff, Jeremy	II MEF Science Advisor	jeremy.hoff@usmc.mil	Attendee
CWO5 Smith, David	II MIG	david.l.smith8@usmc.mil	Mentor
CWO4 Lang, Tevis	2nd Intel Bn	tevis.lang@usmc.mil	Attendee
SgtMaj Victore, Joyuanki	8th Comm Bn	joyuanki.victore@usmc.mil	Attendee
MGySgt Matt, Christopher	II MIG COMMSTRAT	christopher.matt@usmc.mil	Attendee
MGySgt Stancel, Jon	DC I	jonathan.stancel@usmc.mil	Sponsor
MSgt Brooks, Adaecus	II MIG COMMSTRAT	adaecus.brooks@usmc.mil	Attendee
MSgt Lindholm, Thane	2nd Intel Bn	thane.lindholm@usmc.mil	Attendee
SSgt OQuin, Chris	II MIG COMMSTRAT	christopher.oquin@usmc.mil	Attendee
SSgt Aragon, Ila	II MIG COMMSTRAT	ila.aragon@usmc.mil	Attendee
Sgt Ferris, Luke	2nd Radio Bn	Luke.Ferris@usmc.mil	Cohort
Sgt Fenty, Tyler	II MIG ICC	tyler.fenty@usmc.mil	Cohort
Sgt McManaman, Chase	2nd Mar Div	Chase.a.mcmanaman@usmc.mil	Cohort
Sgt Morgan, Michael	8th Comm Bn	michael.p.morgan@usmc.mil	Cohort
Sgt Anthony, Grayson	2nd MLG G-2	grayson.anthony@usmc.mil	Cohort
Cpl Toledo, Justin	II MIG COMMSTRAT	justin.toledo@usmc.mil	Attendee
Cpl Delgado, Adrian	II MIG COMMSTRAT	adrian.delgado@usmc.mil	Attendee
LCpl Miele, Nello	II MIG COMMSTRAT	nello.miele@usmc.mil	Attendee
LCpl Wells, Shayla	II MIG COMMSTRAT	shayla.wells@usmc.mil	Attendee
LCpl Fierstos, Kaila	II MIG COMMSTRAT	kaila.fierstos@usmc.mil	Attendee
LCpl Hodges, Jonathan	II MIG COMMSTRAT	jonathan.m.hodges@usmc.mil	Attendee
LCpl Fillo, Peter	II MIG COMMSTRAT	peter.fillo@usmc.mil	Cohort
LCpl Glover, Chandler	II MIG S-2	chandler.glover@usmc.mil	Cohort
CTR Sokolowski, B.G	MCWL LNO	robert.sokoloski.ctr@usmc.mil	Attendee
CTR Plevell, Rob	ManTech	robert.plevell.ctr@usmc.mil	II MIG LNO
CTR Rawlings, Bill	ManTech	bill.rawlings@mantech.com	Dev Team
CTR Kifle, Frezer	ManTech	Frezer.Kifle@mantech.com	Dev Team
CTR Lofgren, Dave	ManTech	David.Lofgren@mantech.com	Dev Team
CTR Silone, Ben	ManTech	Benjamin.Silone@mantech.com	Dev Team

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SUMMARY OF DAILY EVENTS

Sunday, 28 April 2019

The Accelerator team departed personal residences and travelled to Jacksonville, NC, without incident. Upon arrival they met at the Camp Lejeune Game Warden's Office on Camp Lejeune to set up the Houdini external server, test the application, and stage the room for Demo Week.

Monday, 29 April 2019

The facilitation team arrived at the Camp Lejeune Game Warden's Office at 0700 to verify the Houdini MVP operations. After the Cohort arrived at 0800, the facilitators reviewed the schedule for Week 12 and gave a high-level overview of the developed features for Houdini and the Commander's Dashboard. Next, the facilitators provided direction on the aspects of making a pitch and how it differs from delivering a briefing or making a sale, emphasizing how to make an effective elevator pitch, capture the attention of the audience, and convey the Cohort's message and its importance in a clear and concise manner.

The facilitators reviewed the Houdini MVP and the features that leverage ESRI's ArcGIS Portal v10.6.1 software used as a platform framework for Houdini. The Cohort interacted with the MVP to familiarize themselves with the satellite overhead collections warning system, MIL-STD 2525D military symbology generator, the various basemaps and feature layer controls, creation of range rings, weather forecast information, search functions, time slider, Commander's dashboard indicators, and the swath lookup widget. During their review, the Cohort identified enhancements for existing features as well as new features for future development. The development team began working with Cohort member LCpl Peter Fillo to make updates to the MVP color scheme in alignment with the changes requested by the rest of the Cohort.

The Cohort discussed how they wanted to approach the MVP pitch and demonstration. The Cohort spent the next hour collaborating with Mentors on the scenario they wanted to address as an example of the type of event in which Houdini would bring value to the mission planning process. The group spent the remainder of the day creating storyboards of their pitch plan and began identifying the type of AO features they would need to populate within Houdini as examples to provide context to the mission scenario.

The Cohort's scenario centered around the preparation and defense of the area near Finmark where Russian military was actively occupying coastal regions on the northern and eastern shores. USA and Coalition forces were staged to surveil and deter further advancement by the Russians, as well as monitor their own signature to increase the effectiveness of convoys and missions for advancement and deceptive operations in the region.

The Cohort collaborated on a strategy to divide into four-person teams that would each use a Houdini terminal to simultaneously populate the map view with scenario-relevant unit and equipment icons, associated range rings, routes, FOBs, and AORs. Facilitators held hourly standups to check progress and address any technical questions that came up.

The facilitators concluded the day with a summary of the day's events and instructed the Cohort to return at 0900 in the morning. The day concluded at 1615.

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Tuesday, 30 April 2019

The Cohort arrived at 0830 and began refining their draft storyboards and determining who from the Cohort would participate in the final demonstration. The Cohort decided that they would use members of the group that were not part of the original pitch during Class 11 Week 1. The Cohort decided that LCpl Peter Fillo would provide the opening comments, Sgt Chase McManaman would provide the narrative for the live demonstration while LCpl Fillo operated Houdini, and LCpl Chandler Glover would deliver the closing comments. Capt Sebastian Ewald led the team through the planning process. The Cohort decided to build a "Set the Stage" introduction video to Houdini with narration by Capt Ewald.

The presenting Cohort members began developing their scripts and reviewing them with other Cohort members for comments and feedback. The rest of the Cohort spent the afternoon working with the development team and facilitators to finalize Houdini content creation and modifications based on the evolving demo pitch scenario. The facilitators held hourly standups to assess progress and address any technical questions the Cohort may have.

The facilitators concluded the day with a summary of the day's events and instructed the Cohort to return at 0900 in the morning to begin rehearsals. The day concluded at 1630.

Wednesday, 01 May 2019

The Cohort arrived at 0830 and began running a series of rehearsals. After each rehearsal, the Cohort, Mentors, and facilitators would provide guidance and feedback to the presenters. LCpl Fillo presented the "Set the Stage" video he had developed the previous night, and Capt Ewald drafted a script to align with the video message. Between rehearsals, the Cohort collaborated with LCpl Fillo and Capt Ewald to adjust the video script and timing. Capt Ewald read the narration content as part of the rehearsal process to help flush out questions in the overall pitch content. Between rehearsals, Capt Ewald and LCpl Fillo recorded the video narrative and began finalizing the video production for use in future rehearsals and eventually the final Demo. The presenting members of the Cohort were given time between rehearsals to incorporate feedback and adjust their scripts before the next attempt.

Final rehearsal for the day began at 1545, and the day concluded after Cohort feedback at 1615.

Thursday, 02 May 2019

The Cohort arrived at 0830 and began a series of full demo pitch rehearsals. The Cohort and Mentors provided feedback to polish the content and presentation. Ms. Edgin, DC I CTO, arrived at the Camp Lejeune Game Warden's Office at 1100 to guide and support the demo week efforts. LCpl Fillo and Capt Ewald made minor updates to the opening video and recorded a new narration to finalize the message. Cohort members Sgt Luke Ferris and Sgt Grayson Anthony also rehearsed each of the speaking parts in the event there was a need to fill in for one of the planned demo speakers.

Col Walzer made a visit to check on the Cohort's progress and meet with Ms. Edgin to coordinate final arrangements while the Cohort continued to rehearse their demo pitch. After lunch, LtCol Jones came by to check on progress and attended a rehearsal practice session. In the afternoon, the Cohort ran several more rehearsals with Ms. Edgin providing feedback and recommendations to the group. The Cohort completed the day by planning for potential questions from demo attendees and outlining how they could give attendees the opportunity to have guided hands-on time with the Houdini MVP after the pitch.

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The day concluded at 1615 with the Cohort deciding the dress for Demo Day would be business casual.

Friday, 03 May 2019

The Cohort began the day by staging the room for the final demo and completing two additional rehearsals to verify the system was ready and fully operational. The Cohort and Mentors completed an Accelerator survey to provide feedback to the process and structure of the 12 weeks of the Accelerator. The demo was scheduled to begin at 1330, and attendees began arriving at 1245.

Opening comments were offered by Col Walzer, who emphasized the enormous problem that the Cohort was asked to tackle when addressing signature management. He expressed that the collection capabilities of peer and near peer adversaries from overhead assets can ultimately cost lives. Col Walzer explained to the group that Houdini is not intended to be a final product but a launching point, where additional features (ex. weather considerations) can be added to yield a more well-rounded future capability. He went on to explain that the concept was an idea proposed by II MEF based on lessons learned during Trident Juncture. The MVP was envisioned to take available satellite tracking data and present it in a more user friendly form. Col Walzer followed up by mentioning the aligned efforts by the Hardware Accelerator in the area of decoy planning.

Ms. Edgin followed Col Walzer's opening remarks by first thanking the II MIG and supporting organizations for partnering with DC I on the Class 11 MVP efforts. She proceeded to provide a brief description of the Accelerator process as a tool for innovation within DC I. Ms. Edgin described how Marines identify a problem area, and the Accelerator pairs those Marines with designers, developers, system administrators, and engineers to break the problem down and then design their ideal solution during Accelerator Week 1. She explained the development team then builds the MVP containing the top priority core capabilities over the following 10 weeks. This development process takes the desired solution from ideas on flip charts to working functionality, culminating in the demonstration that the attendees would see next.

The Cohort opened the Houdini presentation by welcoming the attendees and stating that the scenario and data represented in the demo was solely for demonstration purposes. They began playing the "Set the Stage" video they had prepared about the importance of signature management in the current peer and near peer environments. The video explained that the ability to understand your adversary's collection capabilities as well as your own friendly signature emissions is vital to operations of concealment and deception.

Sgt McManaman demonstrated and explained how LCpl Fillo was portraying an Information Analyst supporting the Finmark region and assigned to monitor signatures in the Commander's AOR. The Cohort demonstrated features of Houdini and aligned each capability to the stated challenge areas, specifically:

- The ability to have a user-friendly method of accounting for future overhead satellite collection capabilities when performing mission planning.
- The ability to account for friendly signature emissions based on adversary ground-based collection assets.
- The ability to factor in predicted weather conditions during mission planning.
- The ability to represent signature management information in a COP with the ability to customize the information represented on a user's view.

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- The ability to visually represent the estimated range of collection and emissions capabilities in relation to other assets in an AOR.

The demonstration concluded with a request from the Cohort to further test and evaluate Houdini during an upcoming ITX.

The following topics were discussed by the attendees during the question and answer portion of the demonstration:

- An attendee asked if Houdini had the ability to include commercial as well and military satellite information and the ability to filter based on country of origin and type. Sgt McManaman responded that Houdini has the ability to handle various types of satellite data and can be filtered to focus on specific categories.
- An attendee asked how the view angle and visibility of each satellite is calculated. The facilitation team explained that the information contained within Houdini is exported from an authoritative source and the technical details of the how that source conducts calculations could be discussed in another environment. The intent is not to recalculate information, rather take already available data about collections and present it in an easy to understand alert view, designed to notify Commanders and assist in planning in their AOR.
- An attendee asked about Houdini's accreditation to operate on MCEN networks. Ms. Edgin explained that Houdini is an MVP (proof of concept) and therefore doesn't currently have an approved Authority to Operate (ATO) on MCEN. Ms. Edgin further elaborated that all MVPs are developed in a hardened environment that has been independently verified and validated (IV&V). Houdini was specifically developed with add-on technologies that have proven in the past to expedite the ability to receive an Interim Authority To Test (IATT) more quickly than the standard multi-year ATO process.
- An attendee asked about the ability to include fly-over collection capabilities. Sgt Michael Morgan responded, stating that the Cohort did consider the need for such capability, but trying to predict fly-over collections exceeded the scope of a MVP. The facilitation team added that the Cohort did define some valuable requirements for fly-over collections, but there was not enough time to build that capability within the 12-week development cycle. Col Walzer also added that the Cohort had been instructed to focus on the elements centering on overhead satellite collections, as the data was already available and predictable, and additional features like fly-over could be incorporated in future iterations.

Demo Day concluded at 1500.

The video of the demonstration will be published to Intelink once fully processed.

The facilitation team packed up materials and returned to their personal residences without incident.

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MSA Crane Hardware Accelerator Team (II MIG)

Rank	LName	FName	MOS	Role	Unit
Maj	Holt	James	0530	Civil Affairs Officer	II MIG ICC
Capt	Rinklin	Benjamin	0802	Field Artillery Officer	2nd ANGLICO, II MIG
Capt	Miller	Roy	0802	Field Artillery Officer	10th Marine Regt
CWO5	Smith	David	0205	Intelligence Fusion and Operations Warrant Officer	II MIG ICC
CWO2	Vinson	Alexander	2602	Signals Intelligence/Electronic Warfare Officer	II MIG ICC
Sgt	Swanson	Kelly	2651	Intelligence Surveillance Reconnaissance (ISR) Systems Engineer	II MIG ICC

DCJ Software Accelerator Class 11 Cohort - Houdini (II MIG)

Rank	LName	FName	MOS	Role	Unit
Maj	Ryu	Jessica	0202	MAGTF Intelligence Officer	II MIG
Capt	Ewald	Sebastian	1702	Cyberspace Officer	II MIG
CWO5	Smith	David	0205	Intelligence Fusion and Operations Warrant Officer	II MIG, ICC
Sgt	Fenty	Tyler	0521	Military Information Support Operations NCO	II MIG, ICC
Sgt	Ferris	Luke	2621	Signals Intelligence and Electronic Warfare Operator/Analyst	2nd Radio Bn, II MIG
Sgt	Anthony	Grayson	0231	Intelligence Specialist	G-2, 2nd MLG
Sgt	DeGadillo	David	4571	Combat Videographer	COMSTRAT OPS CO, II MIG
Sgt	Swanson	Kelley	2651	Intelligence Surveillance Reconnaissance (ISR) Systems Engineer	II MIG ICC
Sgt	McManaman	Chase	0231	Intelligence Specialist	G-2, 2nd Mar Div
Sgt	Morgan	Michael	1782	Cyberspace Defensive Operator	8th Comm Bn, II MIG
Cpl	Filla	Peter	4512	Combat Camera Production Specialist	COMSTRAT OPS CO, II MIG
Cpl	Glover	Chandler	0231	Intelligence Specialist	S-2, II MIG
Cpl	Tate	Logan	0231	Intelligence Specialist	S-2, II MIG

Project VICEROY (II MIG)

Rank	LName	FName	MOS	Role	Unit
Sgt	Knight	Travis	0241	Imagery Analysis Specialist	2nd Intelligence Bn, II MIG
Sgt	Lack	William	0241	Imagery Analysis Specialist	2nd Intelligence Bn, II MIG
Sgt	Alexander	Jeffrey	0241	Imagery Analysis Specialist	2nd Intelligence Bn, II MIG

ENCLOSURE (5)