Sunday, 9 February 2020		
1200 - 1700	NFCS Golf Tournament	
1630 - 2000	Registration	
1700 - 1830	Welcome Reception	
Monday, 10 February 2020		
0700 - 0745	Speaker Breakfast for Monday's Presenters	
0700 - 0830	Attendee Continental Breakfast	
0700 - 1715	Registration Open	
	Track One	Track Two
	Special Topics	Special Topics
0800 - 0805	Welcome & Announcements	Welcome & Announcements
0805 - 0850	Hypersonic and Ballistic Tracking Space Sensor (HBTSS)	Advanced Framework for Simulation, Integration, and Modeling (AFSIM) Overview and Applications Modeling the Performance of Modern Sensor Systems in AFSIM
0850 - 0935	Blackjack	2020 Global Threat Assessment
0935 - 1015	Mid-Morning Break	
	Track One	Track Two
	Application of Autonomy in Fire Control Systems	Hypersonics/Conventional Prompt Strike & Hypersonic Threat Defense
1015 - 1020	Session Introduction	Session Introduction
1020 - 1040	Autonomous Information Exploitation, Real-Time Target Detection, Classification, and Tracking Using High Performance Embedded Computing and Machine Learning	Interceptor Energy Management for Counter-Hypersonic Fire Control
1040 - 1100	*Advanced Prediction and Guidance against Hypersonic Threats	Dynamic Impact Point Prediction Using Artificial Intelligence
1100 - 1120	Demonstration of Post-Intercept Assessment Capability for the Missile Defense Agency During the FTG-11 Flight Test	*Guidance-Loop Design and Analysis of Defensive Interceptors Against Highly-Maneuvering Threats
1120 - 1140	AI Based Decision Aids for M-SHORAD Distributed Battle Management	*Salvo Midcourse Strategy Against Highly Maneuverable Threats
1140 - 1200	Total Threat Awareness (TTA) A/A Decision Aid	HyDRA
1200 - 1315	Attendee Networking Lunch Sponsored by Lockheed Martin Corporation Guests of Attendees may purchase tickets for $15.00 at the NFCS Desk.	
	Track One	Track Two
	Application of Autonomy in Fire Control Systems, cont.	Sensor Resource Management/Sensor & Data Fusion
1315 - 1320	Announcements	Session Introduction
1320 - 1340	The Future of Artificial Intelligence-Enabled Indirect Fire Systems	*A Qualitative Approach to Understanding Fire Control
1340 - 1400	*Autonomous Remote Engagement System (ARES) – Fire Control Automation for Direct Fire Weapons	*Cluster-Based Approach to Multi-Platform Sensor Resource Management
1400 - 1420	*Passive Projectile Tracking for Automatic Aim-Point Correction in Small-Caliber Fire Control for C-UAS Missions	*Utilizing Machine Learning for Autonomous Radar Resource Management in the Presence of TBM Intercept Debris
1420 - 1440	Artificial Intelligence (AI)-Based Theater Engagement Coordinator (ATEC)	*Overview of Dual-Function System Design for Radar and Communications
1440 - 1500	*Mine Countermeasures Sensor Fusion and Data Exploitation to Enable Autonomous Mission Execution	Multi-INT ATR for Geospatial Intelligence Capabilities (MAGIC)
1500 - 1530	Afternoon Break	
	Track One	Track Two

	Unmanned & Autonomous Systems (Sensors, Weapons & Platforms, including Counter UAS)	Networked & Distributed Warfare
1530 - 1535	**Session Introduction**	**Session Introduction**
1535 - 1555	***Joint Force Lethality Study - Spaced-Based and High-Altitude ISR Support to Targeting**	**Integrated Combat System Architecture: Enabling Mosaic Warfare**
1555 - 1615	**Live Fire Test Results for the Ballistic Low Altitude Drone Engagement (BLADE) System**	**CID Streamlined Database Initiative**
1615 - 1635	***Changing the Game: Autonomous High Altitude Airships and Their Unprecedented Persistent Surveillance Capabilities**	**Fusion of Passive Sensors to Enable Kill Chains**
1635 - 1655	***Scalable Algorithms for Real-Time Tasking of Autonomous Systems**	***Cognitive Radar Modeling and Simulation (M&S) for Distributed Network Decision Support in Spectrum Management**
1655 - 1715	**Autonomous ISR In Support of Fires**	**Techniques for Electronic Warfare Maneuver Operations (EMO)**

Tuesday, 11 February 2020

0700 - 0830	**Attendee Continental Breakfast**
0700 - 1830	**Registration Open**
1700 - 1830	**Networking Reception**
	Plenary Session
0800 - 0815	**Opening Remarks by Air Force Research Laboratory** **Posting of the Colors:** Celebration High School Air Force Junior ROTC Color Guard **Plenary Session Moderator: Col Tracy Hunter** Acting Director, Sensors Directorate, Air Force Research Laboratory
0815 - 0855	**Keynote: Lt. Gen. Duke Richardson** Military Deputy, Office of the Assistant Secretary of the Air Force for Acquisition, Technology, and Logistics
0855 - 0930	**Navy: RADM Eugene Black** *(Invited)* Director, Surface Warfare Division, N96 Office of the Chief of Naval Operations
0930 - 1005	**Missile Defense Agency: Mr. Dennis Mays, SES** Director for Engineering (Acting)
1005 - 1035	**Mid-Morning Break**
1035 - 1110	**Army: Mr. Robert Strider, SES** Deputy Director, Army Rapid Capabilities and Critical Technologies Office
1110 - 1145	**Laboratory: Dr. Justin Brooke** Assistant Director, MIT Lincoln Laboratory
1145 - 1200	**Awards Ceremony**
1200 - 1315	**Attendee Networking Lunch** Sponsored by Northrop Grumman Corporation Guests of Attendees may purchase tickets for $15.00 at the NFCS Desk.
	Operator's Panel
1315 - 1500	**Joint Operator's Perspective on Integrated Fire Control** *This panel session will provide an update on Virtual Warfare Center capabilities and operational lessons learned in IFC events. Uniformed representatives will provide a guided discussion of joint IFC campaigns, operational lessons learned, and perspectives on employment considerations for IFC technologies (both in-service and developmental). This session will feature an Operator Question and Answer period for attendees to interact with panel members and gain insight on challenges in bringing IFC capabilities to the warfighter.*
1500 - 1530	**Afternoon Break**
	Poster Session & Exhibit Showcase & Reception
1530 - 1700	**All posters will be co-located in the technical session rooms.**
1700 - 1830	**Networking Reception** Sponsored by Raytheon Company

Wednesday, 12 February 2020

0700 - 0745	**Speaker Breakfast for Wednesday's Presenters**
0700 - 0830	**Attendee Continental Breakfast**

0700 - 1715	Registration Open	
	Track One	Track Two
	Combat ID	Live, Virtual, & Constructive Modeling & Simulation, Training & Wargaming
0800 - 0805	Session Introduction	Session Introduction
0805 - 0825	Current Non-Cooperative Combat Identification Efforts in AFRL Sensors Directorate	*Network and Sensor Model Design for Deployed Live, Virtual, Constructive Training
0825 - 0845	Combat ID Using Polarimetric LiDAR Active Imaging	Modeling and Simulation with Big Data Visualization for Multi-Function Fire Control Radars
0845 - 0905	A Hybrid Template / Deep Learning Approach to SAR ATR	Serious Games for Human Machine Collaboration
0905 - 0925	*Using Tactical Software In-The-Loop with Digital Simulation to Enable Deep Machine Learning	*Mission Visualization to Support Cross Platform Knowledge
0925 - 0945	Real-Time, Hybrid Machine Learning and Model-Based ATR for Detection and Identification of Critical Mobile Targets	Navy Antiship Missile Threat Modeling and Simulation Requirements to Support LVC, Training and Wargaming
0945 - 1015	Mid-Morning Break	
	Track One	Track Two
	Combat ID, cont.	Weapons, Munitions, & Engagement Alternatives
1015 - 1020	Announcements	Session Introduction
1020 - 1040	Development of Custom Metrics and Methods for Optimizing Binary Classifier Neural Networks that Operate in Imbalanced Target Environments	Advanced Data Collection for Non-Traditional Munitions
1040 - 1100	*Verifying Machine Learning Classifiers Using Explainable AI Techniques	Real Time Battle Management for Small Zone Defense
1100 - 1120	Improving Robustness of AI Against Small Perturbations	RAM Block 2A – Autonomous Anti-Raid Point Defense
1120 - 1140	Simplifying Visualizations of Data Manifolds for Predictive Performance Estimates	*GPS Denied Navigation Accuracy Tool
1140 - 1200	Improving Kill Chain Timelines Using Integrated CID Techniques	Hypervelocity Gun Weapon System Surveillance and Fire Control Live-Fire Results
1200 - 1315	Attendee Networking Lunch Sponsored by Northrop Grumman Corporation Guests of Attendees may purchase tickets for $15.00 at the NFCS Desk.	
	Track One	Track Two
	Combat ID, cont.	Joint Integrated Air & Missile Defense
1315 - 1320	Announcements	Session Introduction
1320 - 1340	Flight Test Results of a LADAR Vibrometer for Combat Identification	A Roadmap Addressing Joint Multi-Mission Integrated Air and Missile Defense (IAMD) Collaborative Planning Requirement: An IAMD Technical Authority Perspective
1340 - 1400	*Hierarchical Laser Doppler Vibrometry (LDV) Vehicle Classification	2020 State of Navy Integrated Air and Missile Defense
1400 - 1420	USAF Advanced Object Classification Technology for the UEWR Radars	*Using Remote Sensor Data for Engagement Initiation and Defense against Tactical Ballistic Missiles
1420 - 1440	Time-Series Pattern Recognition for Object Identification	Implementing Containment-Based Advanced Fire Control: An MBSE Approach
1440 - 1500	*Post-Intercept Assessment and Classification via Sensor Fusion and Machine Learning	*C2 and Engagement Coordination of Integrated Fires
1500 - 1530	Afternoon Break	
	Track One	Track Two
	Space Systems as a Force Enhancer	Mission Planning & Battle Management for Integrated Fire Control
1530 - 1535	Session Introduction	Session Introduction

1535 - 1555	*Autonomous Global Search to Detect and Monitor Missile Sites	Warfare Decision Aide Reference Architecture
1555 - 1615	Ionospheric Plasma Density Irregularities and HF Wave Propagation	*PARK: Prioritized, Actionable, Real-Time Kill-Chains
1615 - 1635	*Detecting Advanced Threats Against Earth Clutter Using Deep Learning	An Information Theoretic Approach to Flight Path Planning
1635 - 1655	*Neutral Particle Beam Feasibility Study Overview	*Enhanced Mission Planning Through Accelerated Threat Model Availability
1655 - 1715	Cyber Compliance to Cyber Resiliency	*Battle Management: Evolution of a requirement

Thursday, 13 February 2020

0700 - 0745	Speaker Breakfast for Thursday's Presenters	
0700 - 0830	Attendee Continental Breakfast	
0700 - 1730	Registration Open	
	Track One	**Track Two**
	Electronic Warfare	**Enabling Joint Fire Control: Warfighter Challenges & Operational Lessons Learned**
0800 - 0805	Session Introduction	Session Introduction
0805 - 0825	Integrating the Coalition through Collaborative R&D	2nd Generation Cooperative Weapon Employment
0825 - 0845	Threat Intent Estimation	ADVANCE – A Digital Integration Testbed to Expedite Fire Control Development
0845 - 0905	*R-LOWS, A Multi-Ship Hardkill-Softkill Coordination Algorithm	*Weapon Survivability vs Ground-Based Air Defenses
0905 - 0925	*Anti-Surface Warfare Application of Multifunction Polyphase-Coded Frequency Modulated Waveforms	Tactical Radars as Data Collection Assets on Targets of Opportunity
0925 - 0945	*Army Air Launched Effects	Deep Fusion: Machine Learning for Persistent Multi-Sensor Data Fusion at Scale
0945 - 1015	Mid-Morning Break	
	Rapid Transition of New Technology to the Warfighter	**Advanced Technologies**
1015 - 1020	Session Introduction	Session Introduction
1020 - 1040	Rapid Integration and Test of Cruise Missile Defense System	*Midnight Sun: An AFRL/RY Integrated Capability Demonstration
1040 - 1100	Virtualization of a Mission Critical Shipboard Weapon System	*Demonstrating Next Generation Digital Arrays with Arrays at Commercial Timescales (ACT) Technology
1100 - 1120	Characterization Results for the Army's Long Range Radar – Enhanced (LRR-E)	Countering Advanced Missile Threats with Object Based GEOINT
1120 - 1140	*Leveraging Cloud Native Architecture for Flexible Weapon System Integration	Real-Time Lidar for Undersea Warfare Applications
1140 - 1200	Enabling Rapid Technology Adoption for System of Systems Architectures	Fire Control Applications of Bio-Mechanical Brain Coupling
1200 - 1315	Attendee Networking Lunch Guests of Attendees may purchase tickets for $15.00 at the NFCS Desk.	
	Track One	**Track Two**
	Fire Control Platform Capabilities	**Advanced Technologies, cont.**
1315 - 1320	Announcements	Announcements
1320 - 1340	Multifunctional Fire Control Radar Sensor and Impact Prediction Models Deliver Precision and Lethality to Long-Range Targets	Triple Raven Developments
1340 - 1400	Precise Sensor Emplacement and Alignment without GPS	*Blind Multispectral Deconvolution of Imaging Interferometer Data
1400 - 1420	*U.S. Army CCDC Armaments Center Direct Fire Ballistic Kernels for Fire Control Systems	Recent Over-the-Horizon Radar Measurements in the Arctic Region
1420 - 1440	*Large Baseline Interferometric Fire Control Radar	*Dual-Function Arctic Over-the-Horizon Radar and Communications - Initial Results

1440 - 1500	**Improving Fire Control Performance Using a Human-Centered Design Approach**	***Autonomous Air Combat Operations**
1500 - 1530	**Afternoon Break**	
	Track One	**Track Two**
	Multi-Domain Command & Control & Intelligence, Surveillance & Reconnaissance	**Directed Energy**
1530 - 1535	**Session Introduction**	**Session Introduction**
1535 - 1555	**Data Implications for Defeating High Pay-Off Targets in Multi-Domain Operations**	***Directed Energy Wargaming Insights**
1555 - 1615	**Multi-Sensor/Multi-Phenomenology Fusion in the Target Reference Frame**	***Sensing Architectures for Mobile Directed Energy Applications**
1615 - 1635	**ATHENA Algorithm Performance for MDA Discrimination**	**Surface Navy Laser Weapon Systems**
1635 - 1655	**Passive HF Radar**	**Lessons Learned from Initial Fleet Integration of Directed Energy Weapons**
1655 - 1715	**Multi-Sensor Fusion within a Unified Bayesian Likelihood Framework**	**Fielding Cyber Resilient Naval Weapon Systems**
1715 - 1730	**2020 Early Career and Poster Award Winners Announced & Grand Prize Give-Away**	
1730	**Adjourn**	

* Indicates presentation is being given by a candidate for the Early Career Award. This award recognizes an "early career" presenter/author for making meaningful contributions to the Fire Control Community. Those new to the field in the last 7 years delivering and authoring an oral presentation are eligible for consideration of this award.