EVENT APPENDIX 2002-002 A

Single Integrated Air Picture (SIAP)
JCIET 02 Event Appendix

APRIL 2002

SINGLE INTEGRATED AIR PICTURE (SIAP)
System Engineering
Task Force (SE TF)

1931 Jefferson Davis Highway
Crystal Mall 3, Suite 1142
Arlington, VA 22203

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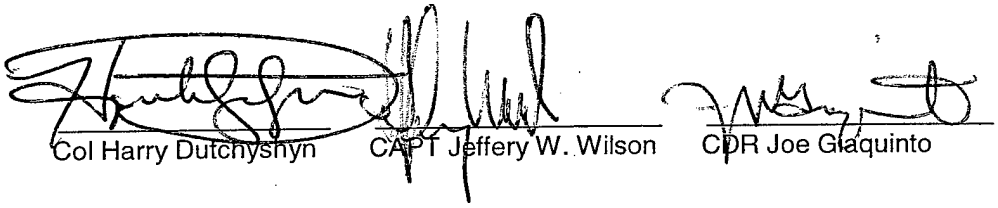

Col Harry Dutchyshyn CAPT Jeffery W. Wilson CDR Joe Glaquinto

Single Integrated Air Picture (SIAP)
JCIET 02 Event Appendix

Approval signatures provided below verify the technical appropriateness and feasibility of the processes and plans provided in this document. The funding associated with the conduct and completion of this effort is addressed in a separate SIAP Statement of Work (SOW).

Approved by:

for

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EXECUTIVE SUMMARY

ISSUE

Integrated Air Defense System (IADS) performance must be assessed to determine what programs need improvements. Exercises such as those conducted at the Joint Combat Identification Evaluation Team (JCIET) event are invaluable for determining current capabilities and projecting future capabilities.

BACKGROUND

The JCIET program is well established and serves many needs of the Services. JCIET's primary mission is to evaluate, investigate, and assess Joint integration and interoperability of systems, concepts, capabilities, TTP, and doctrine directly affecting Combat Identification (CID) within the present and future Joint battlespace. The JCIET 02 event offers the Single Integrated Air Picture System Engineering Task Force (SIAP SE TF) the opportunity to gather empirical data to support analysis efforts such as, calibration of modeling/simulation and Hardware-In-the-Loop (HWIL) tools, and perturbation analysis studies.

APPROACH

This document is an appendix to the Standard SIAP Data Management and Analysis Plan (DMAP). This event –specific appendix includes a high-level description of the JCIET 02 event, roles and responsibilities of on-site teams and an overall approach as to how the analysis process will be conducted for this event.

SCOPE

This Appendix is intended to be an end-to-end document for the JCIET 02 event for the SIAP SE TF that ranges from planning, through analysis and result reporting, to data storage and lessons learned.

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1. INTRODUCTION

The purpose of this appendix is to provide guidance for the collection of data during the JCIET 02 event and the analysis of that data in support of SIAP SE TF efforts. The SIAP Analysis Team (SAT) is responsible for the planning and execution of this plan. The goal of this document is to convey the following:

1. Provide a description of the applicable experiments to evaluate SIAP systems that will be conducted during JCIET 02

2. Explain how the SAT will use the data collected at events to assess Joint Integrated Air Defense Systems (IADS) performance

3. Provide a list of the data required to support the analysis efforts described in 2, above

4. Provide a schedule and outline roles and responsibilities of participants (SAT, Services, test staff, etc) before, during, and after the event

1.1 Background

JCIET is a US Joint Forces Command organization chartered to discover and investigate Combat Identification shortfalls and recommend solutions. The purpose of JCIET 02 is to employ current and leading-edge service systems, capabilities and concepts in an operationally realistic joint/combined combat scenario to assess tactics, techniques and procedures (TTP), systems and architectural advances. During its 10-year history, the JCIET evaluations have been the catalyst for fixing many joint/combined TTP and system interoperability issues affecting the services, across mission areas (surface-to-surface, air-to-surface, surface-to-air, and air-to-air). The JCIET 02 event offers the Single Integrated Air Picture System Engineering Task Force (SIAP SE TF) the opportunity to gather empirical data to support analysis efforts such as, calibration of modeling/simulation and Hardware-In-the-Loop (HWIL) tools, and perturbation analysis studies.

1.2 Overview of SAT Analysis Efforts

This section provides a brief overview of SAT Core Working Group members, goals and objectives, expected products, and a schedule for JCIET 02-related analysis efforts.

1.2.1 SIAP Analysis Team (SAT)

The SAT Core Working Group, listed in Table 1, will be responsible for the overall planning and execution of SIAP SE JCIET 02 analysis efforts. The SAT Core Working Group for JCIET 02 will be comprised of subject matter experts representing the systems that participated in the event, and functional area subject matter experts that provide expertise in a specific technical area.

Table 1. SAT Core Working Group (JCIET 02)

Member	Function	Phone	e-mail
Darrell Schultz	Project Officer/Lead Systems Engineer	(703) 602-6441	Schultzdp@navsea.navy.mil
ARMY			
Patrick Duggan	Lower Tier Program Office	(256) 955-3867	Patrick.duggan@lowertier.redstone.army.mil
Danny Ellenburg	PATRIOTSystem and Functional SME	(256) 895-2481	Dgellenb@ingr.com
John Jordan	PATRIOT System and Functional SME	(256) 895-7684	John.jordan@cas-inc.com
NAVY			
Mary Rock	E-2C System and functional SME	(301) 757-1576	rockmf@navair.navy.mil
Erik Van Fleet	AEGIS System and Functional SME	(909) 273-4155	Vanfleetet@corona.navy.mil
MARINE CORPS			
Jim Green	TAOC System SME	(540) 659 -3505	Jim.green@rnbtechnologies.com
AIR FORCE			
Felix Noboa	AWACS System SME	(781) 377- 7155	Fnoboa@mitre.org
Diane Griffin	AWACS System SME	(405) 734- 2734	Diane.griffin@tinker.af.mil
Bert Pryor	AWACS System SME	(405) 734-3073	Bertram.pryor@tinker.af.mil
Others			
Wayne Altrichter	Functional Area SME/Analyst	(973) 305-2120	Altrichter@baesystems.com

Ted Rice	Functional Area SME	(315) 456-3377	Theodore.r.rice@lmco.com
Paul Symborski	Functional Area SME/Analyst	(703) 824-2424	Symborsp@cna.org
Dr. Larry Lewis Bruce Behrens	Functional Area SME/Analyst	(850) 882-6700	Lawrence.lewis@eglin.af.mil Bruce.behrens@eglin.af.mil

1.3 Goals

The SAT goals for JCIET 02 are:

1. Evaluate IADS performance against Theater Air and Missile Defense (TAMD) and CID Capstone Requirements Documents (CRDs) within the architecture present, and identify shortfalls
2. Identify root cause of these shortfalls
3. Evaluate candidate solutions for improving IADS performance
4. Support verification and validation of proposed solutions
5. Provide recommendations for improving test venues to better support IADS performance assessment efforts.

1.4 Objectives

The specific objectives for this JCIET 02 event are defined by critical experiments that are described in detail in Chapter 3 of the Standard DMAP.

1.5 Products

The expected products of the SAT efforts for JCIET 02 are the following:

1. Evaluation of SIAP performance based on SIAP attributes and implementation methodologies
2. Identification, documentation, and resolution of issues and deficiencies related to the event
3. Data for model/tool verification and validation
4. Identification and documentation of capabilities, limitations, and lessons learned for tactical operations
5. Refinement of standardized processes, tools, and collaborative analysis methods

1.6 Schedule

Figure 1 provides a schedule of SAT activities for the JCIET 02 event.

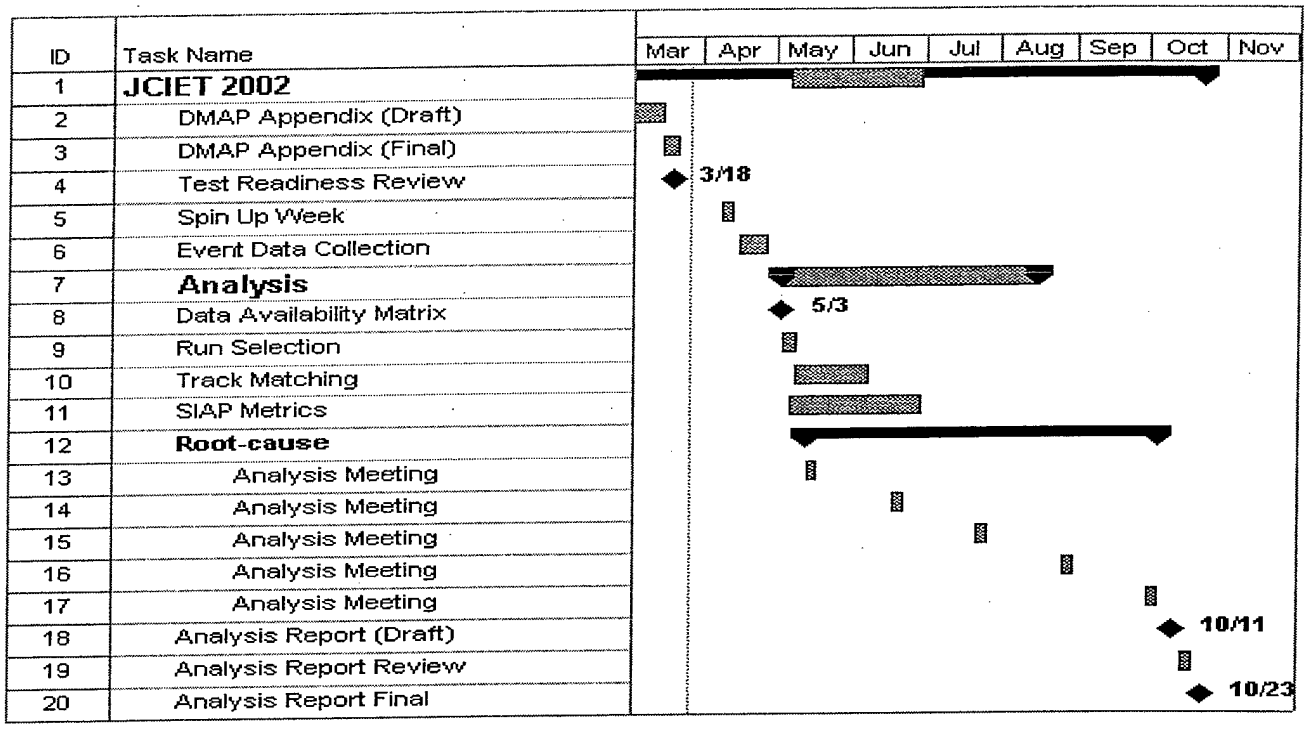


Figure 1. JCIET 02 activity schedule

1.6.1 Daily Schedule

Figure 2 provides the schedule for daily JCIET activities.

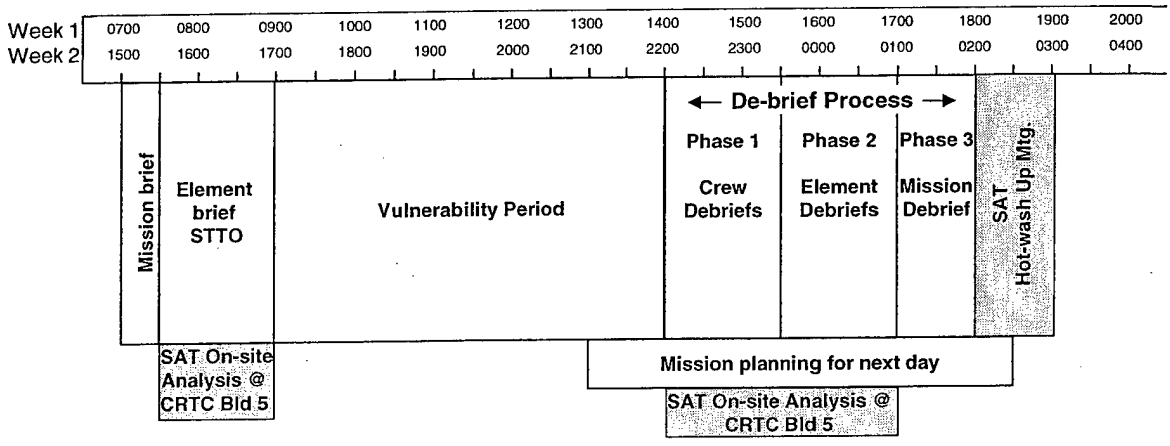


Figure 2. Daily schedule of JCIET activities, 15-25 April 02.

1.7 Event Planning

Table 2 provides an event planning worksheet for the JCIET 02 event.

Table 2. JCIET 02 Event Planning Worksheet

Name of Event:	Date(s):	Location:	Type (HWIL, Live):
JCIET 2002	15-26 Apr 2002	Gulfport, MS Camp Shelby, MS	Live

Systems participating:

QTY	System Name/Service	Software Version (if applicable)	Data collection type (Automated, manual, both)
1	PATRIOT/ARMY		
2	AEGIS/NAVY		
	E2-C/NAVY		
	TAOC/USMC		
	E-3 AWACS/USAF		
	RC-135S Rivet Joint/USAF		

List critical experiments to be conducted (using standard DMAP Chapter 3 designations). Include any discrepancies between how experiment will be conducted and the experiment description:

Critical experiments 1-7, 9, 10

Data Extraction: Provide description of discrepancies between data extraction nodes to be used and those described in Section 4.2.1.

Model/Tool Description for processing and analyzing data (i.e. MSI, built-in analysis tools):
JCIET processes and conducts its own analysis of the JCIET event.

2. PROCESS FOR IADS PERFORMANCE ASSESSMENT

2.1 Critical Experiments

It is anticipated that the participants and activities planned to occur during JCIET will satisfy the SIAP critical experiments listed below. Following the JCIET event the SAT will determine which vignettes provided sufficient participation and data to support a specific critical experiment.

1. Time Synchronization - System synchronization and latency deficiencies are endemic to failure to a achieve SIAP and result in warfighting capability shortfalls.

2. Sensor Tracking/Reporting Accuracy - Poor tracking performance, compounded by inaccurate TQ reporting and other MIL-STD-6016A-related deficiencies contribute to warfighting capability shortfalls.

3. Data Registration - Uncompensated data registration errors have a significant adverse impact on the SIAP. Systems must implement standardized sensor registration, aligning sensors, and inertial navigation systems to a common geodetic reference.

4. Automatic Local-to-Remote Track Correlation/Decorrelation - Not all systems implement automatic correlation/decorrelation processing, and differences in the methods employed degrade warfighting capability.

5. Identification Processing - Mis-identification is frequently caused by erroneous IFF/SIF-to-track association. Additionally, differences in the way automated identification and data fusion systems behave adds to failure to achieve commonality.

6. Formation Tracking and Assessment - Can systems automatically assign the identification of a track that has been declared to have a strength greater than one to the tracks within the prescribed formation "window", How often will this processing provide the correct identification? The incorrect capability?

7. Model and Simulation/Stimulation Fidelity - Combination of modeling/simulation, HWIL and open-air events provide sufficient fidelity to reflect operational system performance to support assessment and engineering efforts to predict warfighting improvements of implementing ICPs.

8. PPLI Accuracy - PPLIs are believed to be very accurate; however, due to data link latencies and the fact that some navigation systems are not integrated with the data link, inaccuracies may be present. These inaccuracies will, if present, degrade the network navigation solution and data registration performance.

9. Multi-Link Translation/Forwarding – There is a need to reliably translate and forward information from one tactical data link to another tactical data link in ways that support the SIAP.

2.2 Operational Context

Since JCIET is a live-fly exercise the participant forces operate in a manner similar to that of a real conflict. As such, the scenarios and flight profiles are dynamic, unscripted events. In order to relate JCIET 02 events to the SIAP Common Reference Scenario (CRS) the SAT will have to review selected vignettes and determine the commonality to the CRS.

2.3 IADS Performance Assessment

The assessment of the IADS performance will be conducted by calculating the SIAP metrics, (attributes and associated Measures of Performance (MOPs)), performing root-cause analysis and perturbation analysis studies. The majority of the performance assessment analysis will be conducted post-event, however significant root-cause analysis will be conducted on-site.

2.3.1 SIAP Metrics

The SIAP metrics analysis will be conducted in accordance with Sections 3.3 and 3.4 of the Standard DMAP. This analysis will take place post-event.

2.3.2 Root-Cause Analysis

Root-cause analysis in support of the IADS performance assessment will be conducted both on-site during JCIET 02 and post-event. During JCIET 02 the SAT will be located in Building 5 of the Air National Guard Combat Readiness Training Center (ANG CRTC) located in Gulfport , MS. The layout of the SAT in Building 5 is provided in Figure 3. Each day of the JCIET 02 event the SAT will select specific Events Of Interest (EOI) discussed during the JCIET-run Air Defense mass debrief for further analysis. These events are normally associated with the loss of Blue Force assets either through fratricide or a leaker situation. The SAT will reconstruct these selected EOIs using the Warfare Assessment Model (WAM) and system-level analysis tools to determine the root-cause of the event in sufficient detail so as to recommend changes to system set-up or operator actions for the remainder of the event.

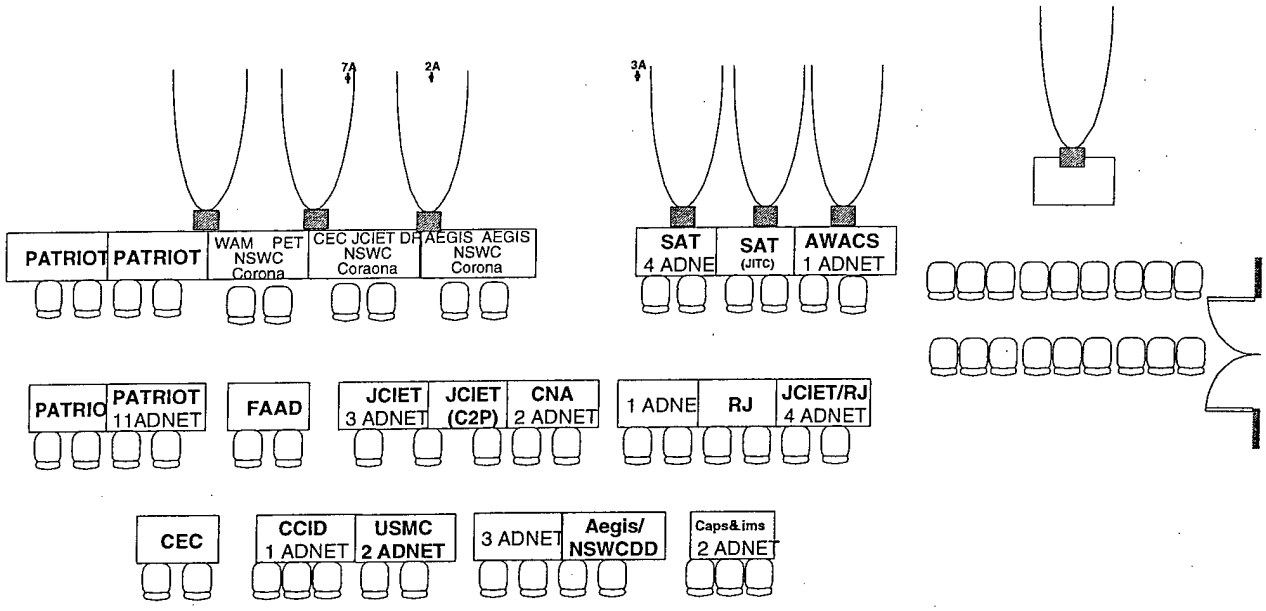


Figure 3. Building 5 Layout

2.3.3 Test Observation Reports

During the SAT's review of the EOIs, or during the daily vulnerability periods, SAT members may generate Test Observation Reports (TORs). These TORs document a perceived anomaly, point of interest, incident or situation that requires further analysis. The SAT will collect, review and attempt to resolve any TORs during the on-site analysis effort. Any TOR that is unresolved at the end of the on-site analysis effort will be considered for further analysis during the post-event analysis effort.

2.4 Perturbation Analysis

The SAT will conduct perturbation analysis using JCIET 02 data. The ODDSCAPE tool used by the SAT and discussed in the standard DMAP is designed to support perturbation analysis for the JCIET 02 event.

2.5 Post-Event Analysis Efforts

Following JCIET 02 the SAT will meet in conjunction with the JCIET analysts at the JCIET headquarters, Eglin AFB, on a periodic basis to complete the IADS performance assessment analysis (SIAP Metrics and root-cause). Based on previous post-ASCIET/JCIET analysis efforts it is planned that the SAT would hold five, week long, analysis meetings. The first of these would be the week of 13 May and occur every 5 weeks until 30 Sep 02, as indicated in Figure 1.

3. EVENT EXECUTION AND DATA REQUIREMENTS

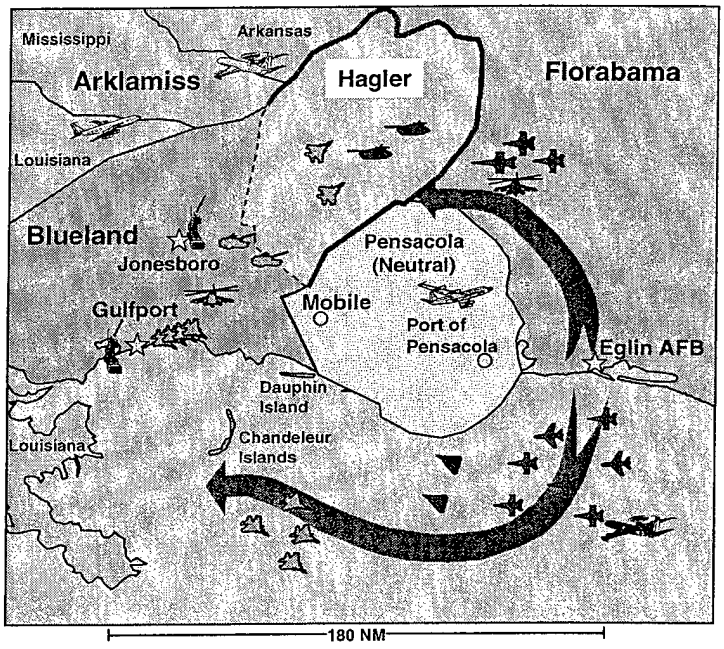
3.1 Test Plan and Supporting Documents

JCIET has developed and will be providing the overall test plan for this event. Section 3.1.1 gives an overview of the JCIET event.

3.1.1 JCIET Scenario and Participating Systems

Figure 4 shows a map of the JCIET scenario for the 2002 event. The mission areas and Services participating are indicated to the left.

- **Air defense/ air-to-surface mission areas**
- **Supports objectives**
  - **USAF** ☑
  - **USN** ☑
  - **USA** ☑
  - **USMC** ☑
  - **SIAP SE** ☑
  - **JCMD** ☑
  - **JC2ISR** ☑
  - **U.K.** ☑



CP-01-05 (from Map01-08)

Figure 4. JCIET 02 scenario

3.1.1.1 Participating Systems: Army

Table 3 shows the participating Systems for the U.S. Army.

Table 3. Army participating Systems

BLUFOR		OPFOR	
Platform	Org.	Platform	Org.
Patriot	1-1 ADA	--	--
FAAD Avenger	4-200 ADA BN		
FAAD sensor/C2 platoon	1/3 ADA		
ABMOC			
GRCS-2	15 MI BN		
Hunter UAV	Tact. UAV Office		
SOF	ODA 774		

3.1.1.2 Participating Systems: Navy

Table 4 shows the participating Systems for the U.S. Navy.

Table 4. U.S. Navy participating Systems

BLUFOR		OPFOR	
Platform	Org.	Platform	Org.
Aegis cruisers (2)	USS *Cape St. George*	F/A-18	NAWC
	USS *Anzio*	F-14D	VX-9
JMAST (TFCC)	CINCLANTFLT	EA-6B	VAQ-131
E-2C	Naval Air Warfare Center	P-3	NAS Jacksonville
NP-3			
CFMCC	CCDG-8		

3.1.1.3 Participating Systems: USMC

Table 5 shows the participating Systems for the U.S. Marine Corps.

Table 5. USMC participating Systems

BLUFOR		OPFOR	
Platform	Org.	Platform	Org.
UH-1N	HMLA-773 DCTA	EW/C	MACS 2
AH-1W		Tank Co. (-)	C Co., 8th Tank BN
AV-8B	VMA 542	INF PLT (-)	8th Comm BN
AO/TACP	3d ANGLICO		
TAOC (-)	MACS 24		
Avenger	4 LAAD BN		
Tank Co. (-)	1st Tank BN		
INF PLT	3d BN, 23d Marines		

3.1.1.4 Participating Systems: Air Force

Table 6 shows the participating Systems for the U.S. Air Force.

Table 6. U.S. Air Force participating Systems

BLUFOR		OPFOR	
Platform	Org.	Platform	Org.
CRC	255 ACS	B-1B (3)	28 OSS
EC-130E ABCCC	42 ACCS	QF-4 (2)	82 ATRS
F-15C	3 WG/90 FS	CRE	SEADS
RC-135S Rivet Joint	55 WG/97 IS	E-3 AWACS	3 WG/962 AACS
E-3 AWACS	964 AACS		
E-8C JSTARS	93 ACW		
F-15E	422 TES		
	40 FTS		
TBMCS	C2TIG		

3.2 Test Item Description and Configuration

During the spin-up portion (a week prior to the JCIET event), it is imperative that each system representative ensures that the data extraction points listed in the data

collection matrices are working and providing the data expected for conducting the critical experiments (e.g., at the appropriate data rates, are recording properly).

3.2.1 Data Extraction Diagrams

Participants will follow the data extraction diagrams provided in the standard DMAP.

3.2.2 Data Collection Requirements

Each system representative is responsible for collecting data that will be read into the PET tool. The variables and formats needed are provided in the standard DMAP.

3.3 Data Management and Storage

For purposes of supporting root-cause analysis efforts, the participants are required to maintain a record of their data for a period of five (5) years. Participants are requested to provide the SAT with contact information for accessibility of data as shown in Table 7.

Table 7. Data Management and Storage Worksheet

Name of Person/Organization providing information Rudy Alaniz/ NSWC Corona	System Identification (incl. s/w version) USS CAPE ST GEORGE (CG 71)
Description of data collected and available, including POC and accessibility information CEC data, AEGIS data including SPY, C&D, WCS, SGS WAM file, and WCS shot log. POC, Erik Van Fleet	
Name of Person/Organization providing information Rudy Alaniz/ NSWC Corona	System Identification (incl. s/w version) USS ANZIO (CG 68)
Description of data collected and available, including POC and accessibility information CEC data, AEGIS data including SPY, C&D, WCS, SGS WAM file, and WCS shot log. POC, Erik Van Fleet	
Name of Person/Organization providing information Tom Potochny/NSWC Corona	System Identification (incl. s/w version) CEC
Description of data collected and available, including POC and accessibility information Receive CEC data from Applied Physics Lab personnel from the TPS-59 and E-2C (2000).	

3.4 Limitations

There are no limitations imposed on the participants for the JCIET 02 event.

4. DATA ANALYSIS PROCESS

The SAT is responsible for all data analysis and reporting efforts associated with the JCIET 02 event. The SAT will perform an IADS performance assessment, prepare individual-performance reports for respective participants' systems, and prepare group-performance assessments for Government-only use.

4.1 Data Availability Matrix

The SAT members will be responsible for reviewing the data recorded by their systems and report on what data is available. The SAT will collect all of the systems' reports and identify the time sets to be analyzed.

4.1.1 Critical Experiments

The SAT will review the data availability matrix that is developed and identify events where sufficient data to support the critical experiments exists. The tables in this section provide a cross-reference of the critical experiments to the system level data collection capability/points.

Table 8. Time Synchronization

	Time Synchronization and Navigation	PATRIOT	AEGIS	E-2C	TAOM V4	AWACS
1	Time tagged platform navigation data (see Note 1) from platforms that have their system time slaved to GPS. It is necessary to have systems that provide measurements at the same time the (GPS) truth pods supply their measurements. In this way, it is possible to determine what measurements were taken at a given instant of time by comparison of their values, i.e., comparison of truth pod GPS position data* @ 1 Hz with host navigation GPS position* @ 1 Hz. Then the two times can be compared to determine accuracy (i.e., measurements are used to correlate the time). (see Note 2)	ECS EDR provides GPS position with time tags (3)	C&D War Diary, EPN 43,92,195,198. C2P batch sets, SGS		TPS-59 SGF Files	Yes, at the terminal on the NCS bus

2	Time and WGS-84 position data* from GPS truth pods mounted on these platforms. Most of the platforms that fall in this category are not slated, at this time, to be equipped with truth pods - AEGIS ships, E3 (AWACS), F-15, E2-C, etc...?	N/A	N/A		N/A	Same as above
	Note 1: Navigation data consists of the typical inertial navigation state vector data, i.e., WGS-84 position, velocity, attitude, and attitude rate. This data should be recorded at a minimum rate of 8 Hz.					
	Note 2: Stationary ground units are not expected to have recorded navigation state vector data as described in Note 1. However, a GPS surveyed location of the platform sensor and Link 16 transmit antenna should be provided.					
	* GPS Position and WGS-84 Position is with respect to Mean-Sea-Level (MSL) Altitude.					

Table 9. Sensor Track-Report Accuracy

	Sensor-Track Report Accuracy	PATRIOT	AEGIS	E-2C	TAOM V4	AWACS
1	Time tagged estimates (state vector and covariance matrix) from the sensor's track stores. Should be in the local East-North-Up (ENU) reference frame (center at PRP) of the sensor.	ECS EDR Note, covariance data not available	SPY EPN 32,33,34 (This will not be recrded during normal JCIET missions			Yes, at the terminal on the NCS bus
2	Navigational data	N/A	SPY EPN 108		N/A	Same as above
	WGS-84 position of Platform Reference Point (PRP).		SPY EPN 108		Yes in TPS-59 SGF files, ADCP - Pass 100, Internal ADCP ddb	Same as above
	Rate of change of position of PRP	N/A	SPY EPN 108		N/A	Same as above
	Navigational data (a subset of the data listed below)					

	Orientation of PRP (only if state vector and covariance matrix are not in the local ENU reference frame of sensor).	ECS EDR note (3)	Matrices are in ENU		TPS-59 SGF files	Same as above
	Rate of change of orientation of PRP (only if state vector and covariance matrix are not in the local ENU reference frame of sensor).	N/A	Matrices are in ENU		TPS-59 SGF files	Same as above
3	Time tagged positional data from the ground truth aircraft	N/A	N/A		SGF files	Same as above
4	Uncertainty in accuracy of positional data form the ground truth aircraft	N/A	N/A		SGF files	Same as above

Table 10. Data Registration

	Data Registration	**PATRIOT**	**AEGIS**	**E-2C**	**TAOM V4**	**AWACS**
1	Time tagged positional data from the ground truth aircraft	N/A	N/A		N/A	N/A
2	Uncertainty in accuracy of positional data form the ground truth aircraft	N/A	N/A		N/A	N/A
3	Time tagged measurement data on the position of the ground truth aircraft from sensor	EDR, sina,sinb, range and xyz	SPY War Diary		AN/TPS-59 SGF files	Yes, AOCP
4	Uncertainty of sensor measurement (if available)	N/A	N/A		SGF bias?	Yes,RSIP
5	Navigational data of the Platform Reference Point (PRP) see note 1					Yes, at the terminal on the NCS bus
	WGS-84 position* of Platform Reference Point (PRP).	EDR, Lat,Long, Alt from GPS on Antenna (3)	C&D War Diary, EPN 43,92,195 ,198. C2P batch sets, SGS		TPS-59, TAOM, ADCP	Same as above
	WGS-84 velocity of PRP, i.e.local level ENU velocity vector	N/A	SPY EPN 108		N/A	Same as above
	Attitude vector of PRP orientation relative to (ENU) local level, i.e. roll , pitch, and heading data	EDR,RPY computed by NFS system (3)	SPY EPN 108		N/A	Same as above
	Rate of change of attitude vector of PRP, i.e. roll rate, pitch rate, and heading rate	N/A	SPY EPN 108		N/A	Same as above
	Lever arms from PRP to center of sensor aperture and leverarm between navigation system and PRP (if non-zero)	N/A			?	N/A

	Surveyed orientation of sensor frame with respect to local level body coordinates of the platform reference frame of PRP	N/A	N/A		?	??? is this the same as #3
	*WGS-84 Altitude is with respect to Mean-Sea-Level (MSL)					
	Note 1: The PRP may be coincident with the origin of the primary navigation system, where the primary navigation system is defined as the one used for track generation. If a platform has dual navigation systems, then data should be recorded for both, along with an indication of which one is being used for track determination					
	(3) Data collection must be toggled off/on to collect this information					

Table 11. Correlation/Decorrelation

	Automatic Local-to-Remote Correlation/Decorrelation	**PATRIOT**	**AEGIS**	**E-2C**	**TAOM V4**	**AWACS**
1	All tracks from Link 16 – tracks held by sensors: there should be only one copy for each target, which should be the sensor with R2. For each track, we will need to determine if there are two or more tracks that are actually the same by comparing tracks that are in the vicinity of each other (duals).	Yes, ICC EDR and CEES link buffers	C&D War Diary, C2P Batch sets, SGS		TADIL-J Messages (TAOM ddb format). All Link 16 messages into and out of the ADCP are being recorded. TAOM ddb format, Global Track File (TAOM ddb format). ADCP Internal ddb, Pass 100, JITs	Yes AOCP
2	Time tagged WGS-84 positional data* from the ground truth aircraft provide the best source for these track comparisons.	N/A	N/A		N/A	??? N/A
	* WGS-84 altitude is with respect to Mean-Sea-Level.					

Table 12. ID Processing

	ID Processing	PATRIOT	AEGIS	E-2C	TAOM V4	AWACS
1	IFF/SIF interrogation requests from combat system	ECS EDR	C&D War Diary EPN 75,76, Link 57,100,101, 248,265,568 ,569 (IFF) 35, 53 (Operator alerts and actions)C2P Batch sets,SGS			Yes AOCP
2	IFF/SIF interrogation response from transponder (should include all candidates)	ECS EDR	Same as above			Same as above
3	Central track stores IFF/SIF data	ICC EDR	Same as above			Same as above

Table 13. Formation Track Assessment

	Formation Track Assessment	PATRIOT	AEGIS	E-2C	TAOM V4	AWACS
1	Central Track Stores Track Information	ICC EDR			Yes.In the TAOM - JITS.trd, Pass 100, Internal TAOM ddb	Yes AOCP
2	Data Link Input/Output Buffers	CEES			Yes in ADCP. JITS.trd files, PASS 100, Internal ADCP ddb	
3	Truth Track information on all possible A/C	N/A				
4	PATRIOT Formation Association and Assessment Decision Aid (FAADA) *	TACO recording				
	*only applicable to PATRIOT					

Table 14. Model and Simulation/Stimulation Fidelity

	Model and Simulation/Stimulation Fidelity	PATRIOT	AEGIS	E-2C	TAOM V4	AWACS
1	Sensor configuration (detection/tracking sectors, sector blanking, Track Production Areas)	ECS EDR				
2	Automatic ID processor configuration (IID and/or IFF/SIFdoctrine areas, types etc...)					
3	Data link configuration (transmit/receive filters, Dial-a-TQ settings, etc...)					

Table 15. PPLI Accuracy

	PPLI Accuracy	PATRIOT	AEGIS	E-2C	TAOM V4	AWACS	FIGHTERS
1	Time tagged ***ground truth*** WGS-84 positional data ***for platform PPLI*** (see note 1)	N/A	N/A			No	
2	Uncertainty in accuracy of ***ground truth*** WGS-84positional data * for platform PPLI (if available)	N/A	N/A			No	
3	PPLIs from the platforms of interest from Link 16 received messages, ***and/or Link 16 navigation Terminal Input Messages (TIMs) and Terminal Output Messages (TOMs).*** (See note 2)	CEES (3)	C2P Batch sets			Yes TOM	
4	Uncertainty in the accuracy of the PPLIs from Link 16 received messages, and/or Link 16 navigation TIMS and TOMs.	N/A	C2P J2.2i message			Yes TOM	
	*WGS-84 altitude is with respect to Mean-Sea-Level (MSL)						
	Note 1: Stationary Link 16 Ground Terminals must supply surveyed WGS-84 position of the Link 16 transmit antenna. A new survey must be made for any change in antenna location. Also, the cable length, or cable delay between the Link 16 Terminal and the transmit antenna must be provided						
	Note 2: PPLIs for the platform being evaluated may be recorded by any Terminal within line-of-sight connectivity of the platform. The platform Terminal TIMS and TOMS must be recorded at the platform via MUX tape recording or Terminal Support Port Tape Recording						

	(3) CEES is the only available data collection						

Table 16. Multi-Link Translation Forwarding

	Multi-Link Translation Forwarding	PATRIOT	AEGIS	E-2C	TAOM V4	AWACS
1	Data link input/output buffers	CEES	C&D War Diary, C2P Batch Sets		Yes. JITS.trd files (TAOM and ADCP), PASS 100, Internal ADCP ddb	N/A
2	Central Track Stores Information	ICC EDR			Yes.In the TAOM - JITS.trd, Pass 100, Internal TAOM ddb	

4.1.2 SIAP Metrics

The SAT will examine the available data and compute the SIAP attributes using the PET tool. After reviewing the results, root-cause analysis will begin for diagnosing the problems that occurred during the event.

4.1.3 Root-Cause Analysis

To properly address root-cause analysis issues, data in addition to the participants' PET-output file will be required. Participants are to provide the SAT with contact information for individuals who can contribute to the root-cause analysis effort as shown in Table 17.

Table 17. Root-Cause Analysis Participant Points-of-Contact Worksheet

Name of Person/Organization providing analysis Erik Van Fleet/ NSWC Corona	System Identification (incl. s/w version) SIAP SE Analysis
System issues analysis (including TTPs)	
Name of Person/Organization providing analysis Phil Baker/ NSWC Corona	System Identification (incl. s/w version) Data Link Analysis/WAM operator
System issues analysis (including TTPs)	
Name of Person/Organization providing analysis Tony Pham/ NSWC Corona	System Identification (incl. s/w version) AEGIS C&D analysis
System issues analysis (including TTPs)	
Name of Person/Organization providing analysis Tom Potochny/ NSWC Corona	System Identification (incl. s/w version) CEP Analysis
System issues analysis (including TTPs)	
Name of Person/Organization providing analysis Greg Hemmila/ NSWC Corona Patty Pfouts/ NSWC Corona Ronald Mejia/ NSWC Corona	System Identification (incl. s/w version) PET Trackmatching JCIET Data base/TORs SIAP SE IT assistance
System issues analysis (including TTPs)	

4.1.3.1 Events of Interest

Events of Interest (EOIs) such as a leaker or a fratricide will be identified on-site at the event as well as during the root-cause phase of the analysis after the event.

4.1.3.2 Test Observable Reports

The SAT will generate, collect and attempt to resolve Test Observation Reports (TORs) during the on-site analysis effort. Any TOR that is unresolved at the end of the on-site analysis effort will be considered for further analysis during the post-event analysis effort.

4.1.4 Perturbation Analysis

The SAT will conduct perturbation analysis for the JCIET 02 event in accordance with the Standard DMAP.

5. REPORTING

5.1 Quick-Look Report

A quick-look report will be generated by the SAT to summarize the initial results of the JCIET 02 event. The report will include preliminary PET-output results.

5.2 Technical Report

The SAT will generate and provide a final Technical Report (TR) for the JCIET 02 event. The report will include a summary of the IADS performance as measured by the SIAP attributes and associated root-cause analysis. The test report will follow the formatting recommended in the standard DMAP.

5.3 Lessons Learned

Lessons learned from the JCIET'02 event, including issues with the location, logistics, planning, execution, and analysis will be generated by the SAT with inputs from the participants.

5.4 Unresolved Issues

Any unresolved issues will be documented and included in the appropriate reports.

6. REFERENCES

Theater Air and Missile Defense Capstone Requirements Document (TAMD CRD). (2001, March). U.S. Joint Forces Command.

Combat Identification Capstone Requirements Document (CID CRD). (2001) U.S. Joint Forces Command.

SIAP SE TF Technical Report 2001-001: Single Integrated Air Picture (SIAP) Attributes. (2001, June). Arlington, VA: SIAP SE TF.

SIAP SE TF Technical Report 2001-003: Single Integrated Air Picture (SIAP) Metrics Implementation. (2001, October). Arlington, VA: SIAP SE TF.