

J.1.0 APPENDIX J - ELECTRONIC WARFARE MISSION AREAS, DESCRIPTION OF CURRENT SYSTEM/SITUATION

Electronic Warfare (EW) is a subset of Information Warfare (IW). The EW Mission Elements addressed in this appendix include Electronic Attack (EA), Electronic Protect (EP), and Electronic Surveillance (ES).

The following sections discuss the current mission planning process, deficiencies and limitations, and concepts for a new or modified approach for these mission elements.

J.1.1 ELECTRONIC ATTACK

Electronic attack can be divided into active and passive categories. Passive EA is the use of bulk chaff (ALE-43), radar reflectors, etc. Active EA involves emitting electromagnetic energy and is considered a non-lethal form of Suppression of Enemy Air Defenses (SEAD). EA is performed strictly by the EA-6B, which also performs other IW missions. Another form of SEAD, known as Lethal SEAD, is generally regarded as the use of the High Speed Anti-Radiation Missile (HARM). This mission can be performed by several type/model/series of aircraft and should not be confused with EA. The aircraft involved in EA can be carrier based or shore based, and mission planning varies slightly depending on the type of mission (i.e. EA, EP, ES) and type of strike aircraft involved.

J.1.1.1 Non-Lethal Suppression (EA)

The basic planning flow described below is based on a combat scenario.

- a. Tasking is received via flight schedule (training) or Air Tasking Order (ATO) (combat).
- b. EA-6B aircrew are assigned to the mission by squadron operations.
- c. Strike lead orders strike planning team meeting to discuss overall mission, assign tasks and organize assets. The nature of the material discussed requires a secure area.
- d. EA-6B aircrews are normally assigned to the SEAD team to analyze the Order of Battle (OOB) based on the strike route and Protected Entity (PE). EA-6B aircrew mission planners will usually access the EA-6B Tactical Information and Report Management System (ETIRMS) at this stage to continue studying target emitters. Through ETIRMS, the emitter database is accessed and ambiguities are determined for a given set of threats or theater. Additionally, various other threat emitter performance parameters are determined (via ETIRMS) and a Prowler Tactics Guide window can be displayed for planning optimum soft kill electronic attack and/or information warfare tactics against one or more threats.
- e. Strike Lead gathers information from each of the planning teams and puts together a preliminary plan.
- f. After the strike lead brief has been approved, the EA-6B aircrew prepares a more detailed plan. The following information is required for planning:

- 1.) Contact meteorology to collect detailed weather briefing along the route of flight to include current weather and predictions on cloud cover, humidity, precipitation, temperature, contrail levels, wind speed and direction, and ducting levels.
- 2.) Contact squadron intelligence (INTEL) for delivery of charts, any current imagery available for planning / target study, Rules of Engagement (ROE), enemy surface and air orders of battle. Other environmental factors to take into consideration in the EW planning process include: radar horizon & terrain masking (via Navy Portable Flight Planning System (N-PFPS) or Tactical EA-6B Mission Planning System (TEAMS).
- 3.) From the personal computer (PC) based ETIRMS station, the EW mission planner then moves to the UNIX based TEAMS for detailed EA-6B flight route planning and continued EW related planning. Waypoints, flight plans, and fuel predictions will be plotted, the EW library database, HARM and Global Positioning System (GPS) planning will be constructed, and the data will be downloaded onto a data storage unit (DSU) for later data upload/recall in the aircraft. Additionally, kneeboard cards and strip charts will be prepared and printed. Currently, ETIRMS databases and TEAMS mission planning are stand alone units available only to EA-6B squadrons.
- 4.) After the detailed plan is complete, it is submitted back to the strike lead to ensure route deconfliction.
- 5.) Load plans are constructed (pencil-to-paper) and submitted.
- 6.) The aircrew will then prepare a brief, usually presented using a white board (dry erase board), overhead transparencies, and/or electronic media.
- 7.) After the brief, launch, execution, and recovery, the flight crew will usually debrief the intelligence officers on what was seen during the flight and conduct post flight analysis on recorded data using the TEAMS mission planner.
- 8.) A strike debrief will usually be convened by the strike lead, who will use a white board and overhead projector to draw diagrams and assess the level of success of the planned mission.

EA-6B flight crews use TEAMS for mission planning and data transfer device loading. Once the electronic attack plan is finalized, EA-6B aircrew will prepare aircraft data-loads and kneeboard cards and also have the option to conduct rudimentary mission rehearsals on TEAMS. The Strike Leader will be busy at this time creating the overall strike briefing. After the overall briefing, subsequent element briefs will be given. Following these briefings, the aircrew launches, executes the mission, and recovers. Upon return, the aircrew will debrief mission details to the INTEL department.

J.1.1.2 Lethal SEAD Mission Planning

The basic combat mission planning flow is identical to that described in the previous section with the following exceptions. Additionally, all aspects of the training planning process are contained within the combat mission planning scenario.

F/A-18A/B/C/D aircrew parallel the mission planning process with the exception that TEAMS is not used to mission plan or create data loads. Conversely, Hornet aircrew use Tactical Automated Mission Planning System (TAMPS) exclusively for HARM Mission Planning. A detailed defensive/offensive tactics plan is developed using such publications as the F/A-18 Tactical Manuals (TACMANs), the Top Gun Tactics Manual, MCM 3-1, Naval Air Training and Operating Procedures Standardization (NATOPS) Unclassified Manual and Classified Supplements, and HARM TACMAN. Fighter crews will generally plan fighter timelines, ingress, egress, etc.

EA-6B aircrew use ETIRMS, TEAMS, EA-6B TACMAN, and HARM TACMAN for HARM mission planning and TEAMS for data transfer device loading.

J.1.2 ELECTRONIC PROTECT (EP)

EP includes all measures taken to counter the enemy's use of the electromagnetic spectrum. Some of these measures include the use of the ALE-39, ALQ-126B, ALR-67, Radar Warning Receiver (RWR). All Navy and Marine Corps carrier and land based aviation assets carry some form of self-protection. Mission planning is somewhat similar and dependent on the type of self-protect system used by the aircraft in the given mission. Currently, TAMPS has a limited capability to reprogram the libraries resident in some of these systems.

J.1.3 ELECTRONIC SURVEILLANCE (ES)

J.1.3.1 EA-6B ES Planning

EA-6B aircrew use ETIRMS and TEAMS for mission planning and data transfer device loading. Once the electronic surveillance plan is finalized, EA-6B aircrew will prepare aircraft data-loads and kneeboard cards. The Strike Leader will be busy at this time creating the overall strike briefing. After the overall briefing, subsequent element briefs will be given. Following these briefings, the aircrew launch, execute the mission, and recover. Upon return, aircrew debrief mission details the intelligence department.

J.1.3.2 EP-3 ES Planning

EP-3 flight crews generally have a similar combat mission planning process as previously described with four major exceptions:

- a. They commonly are isolated from the rest of the strike planning members, forcing a lot of independent study and extensive duplication of effort. In general, their planning process is based largely on assumption. They are usually given the basic strike route(s) and plans, but are unsure of the prescribed tactics the rest of the strike group will adopt based on the threat because of their isolation in mission planning.
- b. EP-3 crew members have no dedicated automated mission planning software and are very unlikely to gain constant access to a TAMPS terminal.
- c. Because of their electronic surveillance intelligence gathering techniques, they are frequently required to launch an hour or more before the rest of the strike crew walks. This results in the flight crew not being able to attend the strike brief, and inevitably it will

lead to them being unaware of updates, target reassignments and last minute changes adopted by the rest of the strike package.

- d. Training flights are extremely rare in an EP-3 squadron, and the training that does occur, usually only involves practice instrument approaches, night qualifications, NATOPS training, etc.

J.1.3.2.1 Differences in EP-3 Planning Process

- e. Tasking is received via ATO or RECON 3 Schedule message that is sent from WESPAC, NAVCENT, etc.
- f. EP-3 aircrew are assigned to mission plan the ES mission from squadron operations.
- g. Initial EP-3 route planning is often times accomplished via basic pen-to-paper chart planning. On very rare occasion, a TAMPS terminal will be available for use.
- h. Strike Lead gathers preliminary plan from each of the planning teams and puts together a “laptop” brief to give the Carrier Airwing Commander (CAG).
- i. After strike lead brief has been approved, the EW team goes off to prepare a much more detailed plan. The planners will be required to collect and determine the following:
 - 1.) Contact meteorology to collect detailed weather briefing along the route of flight to include current weather and predictions on cloud cover, humidity, precipitation, temperature, contrail levels, wind speed and direction, and ducting levels.
 - 2.) Contact squadron intel for delivery of charts, any current imagery available for planning / target study, ROE, enemy surface and air orders of battle. Other environmental factors to take into consideration in the EW planning process include: radar horizon & terrain masking (via N-PFPS or TEAMS). Additionally, due to the lack automation, EW crews seldom put in requests to task airborne long duration Unmanned Aerial Vehicles (UAVs) for the most up to date target imagery.
 - 3.) Electronic Warfare Aircraft Commander (EWAC), Senior Evaluator (SEVAL), Electronic Evaluator (EVAL), Special Evaluator (SPECEVAL), Laboratory Operator (LABOP) and Special Signals Operator (SSO) develop a sensor system exploitation plan based on target nation order of battle (Naval, Air, Missile, and Electronic). They also optimize the probability of Signals Intelligence (SIGINT) emitter interception based on aircraft flight profile and emitter performance characteristics (radio frequency (RF), pulse repetition frequency (PRF), PW, Scan type, power, function, antennae height, etc.). Aircrew plans the complete mission with respect to collection objectives (i.e. Signals Research And Target Development (SRTD), baseline SIGINT collection, Direct Threat Warning (DTW), Pony Express). Specific areas of detailed planning include:
 - Emitter Propagation Prediction – A modeling system which will take into account the effects of the following:
 - Emitter characteristics
 - Emitter location
 - Terrain
 - Weather

- Effective range of emitter (useable return as a function of target cross-section)
 - Sensor Performance Prediction – A modeling system which will take into account the effects of the following:
 - Receiver characteristic and sensitivity
 - Aircraft altitude and aspect with regard to emitter location
 - Emitter location
 - Emitter characteristics
 - Terrain
 - weather
- 4.) After the refined EW plan is complete, the navigator / EWAC usually continue flight planning including detailed chart preparation, route of flight and fuel planning. All this is done pencil-to-paper.
- a. Once complete, the plan is, on rare occasion, submitted back to the strike lead to assure route deconfliction. Completed routes may or may not be input back into Tactical Strike Coordination Manager (TSCM) by the strike lead for overall strike rehearsal and deconfliction verification.
 - b. A designated aircrew will prepare an aircrew brief. This is usually accomplished utilizing a white board (dry erase board) and / or overhead transparencies.
 - c. After the brief, launch, execution, and recovery, the flight crew will usually take a quick visit to base intel center to drop off data tapes, cameras, and debrief the intelligence officers on what data was gathered during the flight.
 - d. All mission aircrew participate and contribute in the post mission analysis. The following reports / messages (if required) are generated:
 - Operational Intelligence Report (OPINTREP)
 - Mission Report (MISREP)/Operational Summary (OPSUM)
 - Tactical Electronic Intelligence Report (TACELINT)
 - Daily SIGINT Summary (DSS)
 - SIGINT Technical Report (STRUM)
 - Proforma Activity Report

J.2.0 JUSTIFICATION FOR AND NATURE OF CHANGES

J.2.1 JUSTIFICATION FOR CHANGE

Current unitary detailed mission planning software (TAMPS) has no ability to link directly to a force level mission planning and coordination program (TSCM). Weather information download is not readily available directly from current mission planning terminals. Currently, mission planning software has no capability of linking directly to a UAV operator authority or the CAG for transmittal of airborne UAV tasking requests. Current mission planning software has no direct access to tactical manuals and NATOPS publications for any given aircraft. There is no airwing load plan request/order functionality in the current force level mission planning and coordination program. There is no current capability to link, transmit or download a mission plan

directly to a mission rehearsal station. There is currently no ability to use current mission planning software as a briefing tool.

TAMPS has no extensive electronic warfare threat emitter data base capability in current mission planning software.

J.2.1.1 Electronic Attack

Currently, TAMPS does not support electronic attack mission planning, mission rehearsal, or mission post-flight analysis for the EA-6B. The limited F/A-18 planning subroutine in TAMPS 6.1 needs to be improved upon and added into Joint Mission Planning System (JMPS). There is no JSF / EA-6B HARM mission planning routines in TAMPS.

J.2.1.2 Electronic Protect

Currently TAMPS does not support electronic protect mission planning for EA-6B. TAMPS currently does not provide the planner with an indication of the effectiveness or suitability of the EW suite's User Data Files (UDFs) against the expected threat weapon systems to be encountered during the mission. There is no provision for planning the effectiveness of such protective equipment as:

- IDECM
- RWR Gear
- APR-39 (Helo)
- APR-44 (Helo)
- ALR-67 V(2), V(3), V(4)
- Self Protection Jammers
- ALQ-126B
- ALQ-144 (Helo IR Jammer)
- ALQ-164
- ALQ-165
- ALQ-167
- Dispensers
- ALE-39
- ALE-47
- ALE-50
- ALE-41
- ALE-43
- Miscellaneous
- AVR-2 Laser Warning Receivers
- AAR-47 Missile Approach Warning
- ALQ-144 IR Mirror Active Jammer

There needs to be an EW Suite effectiveness planning module developed and implemented into JMPS. TAMPS does not have the tools required to generate an optimized mission data file required by integrated EW suites such as IDECM. TAMPS currently does not have the capability of receiving or constructing missionized theater-specific EW UDFs for download into the other EW equipment listed above.

J.2.1.3 Electronic Surveillance

The current mission planning system does not support electronic surveillance mission planning for any aircraft.

The current mission planning system does not support emitter propagation prediction or sensor performance prediction (i.e. reverse RTM).

The current mission planning system does not provide the ability to conduct post-flight analysis on data recorded during the mission.

The current mission planning system does not allow for the production and transmission of reports or messages (i.e. OPINTREP, MISREP/OPSUM, TACELINT, DSS, STRUM, or the Proforma Activity Report).

J.2.2 DESCRIPTION OF NEEDED CHANGES

Table J-1. Essential (Highest Priority) Improvements.

Provide unitary mission planning with two-way link directly to force level strike mission planning and coordination program.
Near Real-Time Digital Imagery Transfer from digital reconnaissance platform directly into JMPS Local Area Network (LAN).
Real-Time airborne UAV tasking requests to Airwing commanders and replies from UAV operators.
Develop electronic surveillance and jamming terrain coverage prediction routines (reverse RTM) incorporating Digital Terrain Elevation Data (DTED) data, emitter effectiveness, and associated platform reception / transmission effectiveness.
Direct link to mission rehearsal station.
Load plan assignments. Provide the capability for the strike lead to provide ordnance and maintenance departments with load plans and ordnance requirements.
Provide the capability to prepare and transmit reports / messages such as:
OPINTREP
MISREP/OPSUM
TACELINT
DSS
STRUM
Proforma Activity Report
Provide the capability to access tactical manuals, threat data bases, and NATOPS publications for any given aircraft.
Retrieve weather. Provide electronic access to Meteorologic and Oceanographic Office (METOC) data elements, products and related tools to Strike Leaders, Unit Planners, and Element Planners (including Tomahawk). Display METOC data as

part of providing situational awareness to the users.
Briefing tools. Provide the capability for the strike lead and/or element lead to prepare an aircrew brief directly from the terminal that he/she mission planned and export it directly to a presentation software program (i.e. PowerPoint)
Display reconnaissance image data near real time.
Provide electronic warfare mission planning into JMPS to include tactics, jammer techniques, post-flight analysis, and all other required functionality to support EA-6B mission planning.
Develop JSF / EA-6B HARM mission planning functionality.
Provide electronic protect mission planning into JMPS including tactics and defensive jamming techniques.
Develop TACAIR EW Suite electronic protect effectiveness planning/situational awareness tools/susceptibility analysis for F-14A/B/D, F/A-18A/B/C/D, JSF, AV-8B, H-60, AH-1 & UH-1.
Develop the tools required to generate an optimized mission data file required by integrated reactive (EP) EW suites such as IDECM.
Provide the capability of receiving or constructing missionized theater-specific EW user data files for download into any EW equipment.
Provide organic capability to modify or create missionized UDFs to allow threat packet selection (or de-selection) and/or simple parametric existing threat packet modifications.
Provide a threat emitter tactical information (data base) and report management system to be accessible directly from the mission planning workstation. The mission planner should be able to access any EW information from any known emitter and identify ambiguities and jamming techniques based on military theater / location / personal threat area tailoring.
Provide an interface to a single threat and target database, which incorporates organic and non-organic sources, provides for fusion and quality control, and disseminate to users with measures of confidence to include geolocation accuracy and time latency. The selected database will provide tools to the tactical analyst to recognize and resolve ambiguities between data sources.
Provide electronic surveillance mission planning into JMPS including tactics and detection/location/identification techniques.
Post Flight (download, analyze, and archive) EW Data information from the Mission. Provide the capability to electronically archive mission results information (Electronic Support Measure (ESM) products, National imagery, aircraft digital data recordings, Air Intelligence (AI) debrief notes, and cockpit video) for transmission via LAN, Secret Internet Protocol Routing Network (SIPRNET), etc....

J.3.0 CONCEPT FOR A NEW OR MODIFIED SYSTEM

This section describes the EW planning process with the candidate changes from Section 4 implemented, as well as some potential follow-on efforts beyond JMPS baseline.

The following subsections describe many specific enhancements that the JMPS Software configuration will bring to particular aspects of the EW planning process. In addition to these specific enhancements, there are several improvements that will apply to most or all aspects of the process. These general capabilities are considered essential backbone data management functions, which the planning phase specific requirements depend upon for efficient and protected

communications. These necessary data management functions are briefly described here and appear throughout the subsections that follow.

- a. When logged on the user will have access to the support databases available within the physical space of the mission planning facility. This capability provides resource scheduling flexibility and strike planning surge capacity to meet short duration maximum efforts.
- b. A multilevel security system will ensure compartmentalization between systems. This will preclude access to information for which the system is not authorized. This capability will also resolve security issues associated with remote access to planning databases and systems.
- c. Distributive planning tools will be available through the JMPS network. These tools will allow a user to share his unit, element, or strike level plan with other users for review, approval, and monitoring.
- d. Collaborative tools will be available to support planning and communications between Strike Leaders, Element Leaders, and Unit Planners. These tools utilize technologies such as electronic white board, e-mail, and video teleconferencing technologies via the network and the SIPRNET. Information access will be expanded and made quicker due to this capability. This capability will allow face-to-face communication without incurring the cost of "travel time."
- e. One added component, not currently deployed is the TSCM. A majority of the Strike Leader's tools referenced in Section 3 will be performed on this component.

J.3.1 RECEIVE TASKING AND COLLECT MISSION SUPPORT DATA

The following subsections describe JMPS improvements in the area of EW. Overall vision: to be able to sit down at a JMPS terminal, receive tasking, collect data, coordinate with other planners at other terminals / sites, plan an approved reconnaissance mission, prepare a data load, rehearse the mission, and put together a brief without ever having to leave from the computer terminal. All to be accomplished, from start to stop, in 1.5 to 3 hours.

J.3.1.1 Tasking

Strike tasking will ordinarily reach the mission planner in the form of an ATO. The ATO will be received via ship's radio communications message traffic circuits and disseminated automatically via entry into Global Command and Control System-Maritime (GCCS-M). Force level mission planning and coordination management software will electronically parse and input the ATO or non ATO tasking which will be made available to mission planners via the JMPS LAN.

Reconnaissance planners will access strike coordination straight line routes and times on target(s) via the JMPS interface. The strike planning and coordination module will enable users to access ATO information and to view tasking in either a textual or visual format. The textual format will allow planners to verify final planning factors (e.g., number and type of aircraft and/or weapons, target, time-on-target, etc.) which were evolved collaboratively with ATO planners during ATO development. Planners will invoke visual display of the ATO by simply selecting desired elements of the tasking data. The visual display of tasking data will be comprised of simple straight "stick routes" superimposed on a chart to notionally represent the tasked mission. For

example, a stick route might show the mission as comprised of four legs; (1) launch direct to tanker, (2) tanker direct to EW target, (3) target direct to tanker, (4) tanker direct to recovery, as defined by the ATO. After visually examining the selected tasking, the planner will see other operations scheduled to occur in the same vicinity, both in time and space. The user will be provided the capability to place those missions not contained in the ATO into the tasking database for visual or textual display. The planner will define the area and time interval of interest and the force level mission planning and coordination manager will display stick routes of other tasked ATO activity as a function of time. This will provide the planner the information he/she needs to avoid potential conflicts in the development of the mission plan.

J.3.1.2 Research

The following information will be available via LAN directly from the JMPS terminal.

J.3.1.2.1 Rules of Engagement

ROE information will be electronically available to planners.

J.3.1.2.2 Meteorology

Mission planners will have electronic access to current and projected weather data, displays, and climatology databases. Planners will also have connectivity with meteorology personnel to submit requests for information, to obtain clarification, and to receive responses where appropriate.

J.3.1.2.3 Asset Availability

Mission planners will have access to available shore based/carrier battle group asset management and availability databases. The interface will also provide planners with access to relevant off-board resource management and availability tools (e.g., National Reconnaissance Assets) otherwise unavailable to Nuclear Aircraft Carrier (CV(N)), Carrier Air Wing (CVW), and Carrier Battle Group (CVBG) personnel.

J.3.1.2.4 Target Study

Mission planners will have electronic access to a target list developed and stored within the Joint Services Imagery Processing System – Navy (JSIPS-N) architecture. The information will contain materials relevant to the specific target including source data (e.g., imagery products and intelligence) and derived data and information (e.g., jamming effectiveness, power required, detectability). Planners will have access to a single threat and target database, as well as a repository of tasking and ROE information. Planners will also have electronic connectivity with other mission planners for the exchange of, and requests for information. Should a nearby long endurance reconnaissance UAV be airborne, the mission planner will have the ability to send requests (directly to the UAV controller) for tasking and receive approval/disapproval replies and/or digital photographic results expeditiously.

J.3.1.2.5 Target Analysis Tools/Sources

An Electronic Target Folder (ETF) will be available for EW planners early in the planning process. Intelligence personnel, data base administrators, and operators using capabilities resident in the JSIPS-N architecture will develop the ETFs. As previously mentioned, the ETF will contain available data and information (including that received from or generated by non-organic

sources such as the Joint Warfare Analysis Center (JWAC) and the Naval Strike and Air Warfare Center (NSAWC)) relevant to the target of interest. Target folders will also include feedback from prior missions.

In those cases where it is necessary to generate an ETF in parallel with the strike planning process, or to revise or tailor an existing ETF to meet specific strike objectives, strike planners will have electronic access to data, information, and software tools necessary to complete the target development and EW planning process.

J.3.1.2.6 Friendly Situation/Disposition

The JMPS/LAN interface will enable planners to rapidly and easily access the best available sources of planning quality data.

Current and intended disposition of friendly, allied, and coalition naval, air, and ground units will be presented on the appropriate map, chart, and geodetic backgrounds (National Imagery and Mapping Agency (NIMA) products). Additional detail concerning any displayed unit will be electronically accessible via connectivity with appropriate component systems.

J.3.1.2.7 Enemy Order of Battle/Threat/Situation

Mission planners will have electronic access to the best available sources of planning data and the ability to filter displayed data to meet their informational needs. This capability will extend to the display of current and predicted enemy dispositions. In addition, strike planners will have the ability to focus on areas of high interest (e.g., target areas) and to access available national, theater, and tactical threat data. Planners will also have the ability to submit tailored queries to the threat databases to retrieve specific data elements of interest. Additionally, training requirements dictate that mission planners will have the ability to add, edit, or delete OOB information. Connectivity between threat database administrators will provide for the rapid exchange of requests for information.

J.3.2 CREATE CONCEPT PLAN

Concept plan development depends on the ability of the mission planning team to create missions in support of tasking. Element Leaders will be able to work in a distributed manner, each creating concept routes to pass electronically to the Strike Leader to aggregate into an overall strike plan.

J.3.2.1 Concept Plan Development Process

The development of a concept plan involves making sense of a tremendous amount of data in a short period of time. JMPS will streamline this process by providing the capability for the electronic warfare planner to collaboratively plan in a distributed manner. This will enable planners to see the plan as it is being laid out. As a result the Strike Leader will be provided ready access to the best available sources of planning quality data.

J.3.2.1.1 Preparation

The Strike Leader may display the operational picture on JMPS. This picture will include the tactical area of interest (including enemy, friendly, and neutral orders of battle), DTED and desired maps (e.g., Arc Digitized Raster Graphics (ADRGs), World Vector Shoreline (WVS)),

etc.), own forces data, fused intelligence broadcast data, and threat and target data extracted from the Modernized Integrated Data Base (MIDB). The strike planning team initially establishes waypoints or locations that are significant to the plan. This may include tanker orbits, ingress points, target egress locations, disposition, status and intent, and special interest areas such as population centers, special operations force activity areas, international boundaries, and exclusion zones proximate to the target area and international boundaries. These points can be used in the conceptual routing process.

J.3.2.1.2 Receipt of Tasking

Tasking which initiates the strike planning process will be received in the form of either an ATO or Contingency directive. In either case, tasking will be electronically accessible within the Joint Maritime Command Information System (JMCIS)/LAN architecture. Upon receipt of tasking, a Strike Leader will be selected and assigned. He receives the tasking, background data and materials, Commander's Guidance, and relevant information. The Strike Leader, via a JMPS terminal, will review his tasking and assemble his strike planning team to perform the required mission planning. The Strike Leader reviews the tasking with the team, assigns planning responsibilities, establishes a timeline with milestones for developing the required Concept Plan, and releases the team members to proceed. JMPS will allow the Strike Leader to electronically task individual element missions.

J.3.2.1.3 Electronic Warfare Package Development

EW mission planners in each of the individual mission areas (e.g., EA, ES, EP) will begin the conceptual planning process in parallel using a set of distributed collaborative planning tools, accessible from the JMPS terminal that allow data sharing. As each element leader completes their detailed plan, the plan will be stored for electronic retrieval by the Strike Leader. He or she will be able to merge all EW plans together with other missions/mission areas.

J.3.2.1.3.1 Electronic Attack Missions

The EA mission planner extracts missions from the ATO or Contingency directive. The planner may choose to further define the route (associated with the extracted mission), relying on such enhancement techniques as Emitter Propagation Prediction or Sensor Performance Prediction. With additional definition of the electronic attack plan the general picture of the route begins to take shape. Additionally, the planner will be able to determine the flight profiles which will optimize the jamming effectiveness while minimizing the platform's vulnerability to the surface or airborne threat. Similarly, for HARM weapons employment the planner will be able to assess optimum launch points/profiles and probability of destruction (Pd). In either case, end products will include strip charts, knee board cards, and data transfer device (DTD) loads.

J.3.2.1.3.2 Electronic Surveillance Missions

Any ES mission planner will be able to extract missions from the ATO or Contingency directive. The planner may choose to further define the route (associated with the extracted mission), relying on such enhancement techniques as Emitter Propagation Prediction or Sensor Performance Prediction. With additional definition of the electronic attack plan the general picture of, the route begins to take shape. Additionally, the planner will be able to determine the

flight profiles which will optimize the ES effectiveness while minimizing the platform's vulnerability to the surface or airborne threat.

J.3.2.1.3.3 Electronic Protect Missions

Electronic protect (formerly called Defense Electronic Countermeasure (DECM)) is generally considered a sub-mission, but mission planners still require the ability to determine the effectiveness of their EW suite to a planned route of flight. Any EP mission planner will be able to extract missions from the ATO or Contingency Directive. The planner may choose to further define the route (associated with the extracted mission), relying on such enhancement techniques as Emitter Propagation Prediction or Sensor Performance Prediction. With additional definition of the electronic protect plan the general picture of, the route begins to take shape. Additionally, the planner will be able to determine the flight profiles which will optimize the EP effectiveness while minimizing the platform's vulnerability to the surface or airborne threat. The proposed TACAIR EP MPM shall provide tools to support EW mission planning, survivability analysis, missionization of EW UDFs, and post flight analysis. The EP MPM shall also provide connectivity with the Electronic Warfare Software Support Activity (EWSSA), via JMCIS, in order to obtain pre-engineered UDFs and threat packets. Additionally, the TACAIR EP MPM shall be capable of writing UDF binary load modules out to media compatible with various aircraft mission data loaders as well as reading recorded EW flight data back in. The Electronic Protect planning module shall support mission planning for EW suites installed on all operational versions of the F-14, F/A-18, JSF, AV-8B, AH-1, and UH-1. This EP Mission Planning Module (MPM) shall support the following EW systems:

- IDECM
- RWR Gear
- APR-39 (Helo)
- APR-44 (Helo)
- ALR-67 V(2), V(3), V(4)
- Self Protection Jammers
- ALQ-126B
- ALQ-144 (Helo IR Jammer)
- ALQ-164
- ALQ-165
- ALQ-167
- Dispensers
- ALE-39
- ALE-41
- ALE-43
- ALE-47
- ALE-50
- Miscellaneous

- AVR-2 Laser Warning Receivers
- AAR-47 Missile Approach Warning

J.3.2.1.3.4 Strike Coordination and Deconfliction

The Strike Leader will identify when and where conflicts, fratricide, and collisions may occur. When conflicts are identified, the Strike Leader will perform deconfliction within his strike plan and notify Element Leaders of the modifications using a distributed collaborative planning capability. Information and displays constructed in the development of the strike concept will be of great use to the planning team in performing the final review.

J.3.2.1.3.5 Evaluation and Assessment

The Strike Leader can evaluate the strike plan using tools embedded within JMPS. The tools available will include a graphic preview of missions in the plan, an assessment of SEAD performance, expected reconnaissance success, a tanker summary, and a compilation of the number of assets (aircraft and weapons) used to conduct the strike.

J.3.3 CREATE AIRCRAFT DATA LOADS

The production of aircraft data loads will be a by-product of the EW planning process. Once the strike plan is approved, appropriate data can be electronically transferred to the data loaders for the appropriate platform.

J.3.4 MISSION REHEARSAL

Toward the end of element planning and before the overall strike briefing, mission rehearsal will be an important aspect of building mission familiarization and situational awareness. Following the determination of element route profiles, the mission rehearsal module will simulate a mission “fly-through” to provide a cockpit view of the terrain and the threat to be encountered during strike execution. Aircrew will be able to rehearse element execution and build visual familiarization with the flight profile, threat, terrain, target approach, and weapons release point.

Using the mission rehearsal module, aircrew will be capable of electronically receiving mission route, threat, and target data. Route data will consist of both position and timing data. Threat and target data will contain threat envelopes, terrain, and troop positions. The mission rehearsal module will overlay these data on its imagery database in a manner that allows 3-dimensional views and fly-throughs of the ingress, egress, and target areas. Aircrew will be able to select the cockpit view profiles for each element of a strike. As rehearsal time may be short, the imagery database of the mission rehearsal module will permit multiple, simultaneous rehearsals to better accommodate the periodically high demand for this capability.

In addition, an onboard capability will be provided to update the imagery database of the mission rehearsal module while deployed utilizing recently gathered photo reconnaissance imagery. This will consist of the appropriate connectivity between the imagery processing systems and the mission rehearsal module including tools for splicing imagery updates into the database. Assessments of quality will also be conducted prior to including imagery into the database. These assessments will consider such things as cloud cover, resolution [(National Imagery Interpretability Rating Scale (NIIRS)], and image angle (low oblique views may distort the

database). The imagery database will be kept current via an ongoing process of splicing high quality imagery additions and updates.

J.3.5 DEBRIEF, ASSESS, AND NOMINATE FOLLOW-ON TASKING

As part of the strike planning folder format, the results of the strike will become a part of the electronic folder to capture the specifics of the execution.

These provisions will create a repository of information detailing both the planning and the execution and results for analysis and review, as well as building a database of strike tactics and employment details on which future plans can be built. By accessing previous strike planning folders, this historical database can be used at the outset of strike planning for a review of lessons learned and previous strikes with similar factors (decreasing the requirement to “reinvent the wheel”). Additionally, this database will be searchable using date, mission type, target type, aircraft type, location, key word, etc... As a debrief tool for use in reviewing strike execution post mission, the above data elements that are added to the strike planning folder will be available for viewing on the Large Screen Display.