Afloat Spectrum Management News

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Frequency Plans in Five Easy Steps

Software should make your job easier, and AESOP was designed with that in mind. Using AESOP, you can create and analyze frequency plans in five easy steps.

Step 1. Establish AESOP Workspace

During this step, the AESOP software is updated, and information found on the Collaboration at Sea (CAS) website and in the Letter of Instruction (LOI) and/or deployment briefings is used to set up the AESOP workspace. Spectrum Planners should always check the AESOP Secret Internet Protocol Router Network (SIPRNET) website at http://cnl.phdnswc.navy.smil.mil/aesop for any available downloads, which provide current frequency restrictions, as well as software updates.

AESOP uses phases and net plans to store spectrum plan data. Radar Planners should create a phase to handle each region/subregion in which the deployment is operating; Communications Planners should create a new phase and new net plan for each numbered fleet's area of responsibility (AOR). Because Participants will be inchopping/outchopping, they should be included in the various phases. In cases where the Strike Group (SG) is operating in the same area, but Participants differ, a new phase may be created.

Steps 2 To 4. Spectrum Planning Process:
Request Information; Receive Information; and Create Frequency Plan

Once the workspace has been established, planners are prepared to implement the spectrum planning process outlined in Tactical Memorandum (TACMEMO) 3-13.2-04, Afloat Electromagnetic Spectrum Planning and Management, which is automated in AESOP via the following three steps:
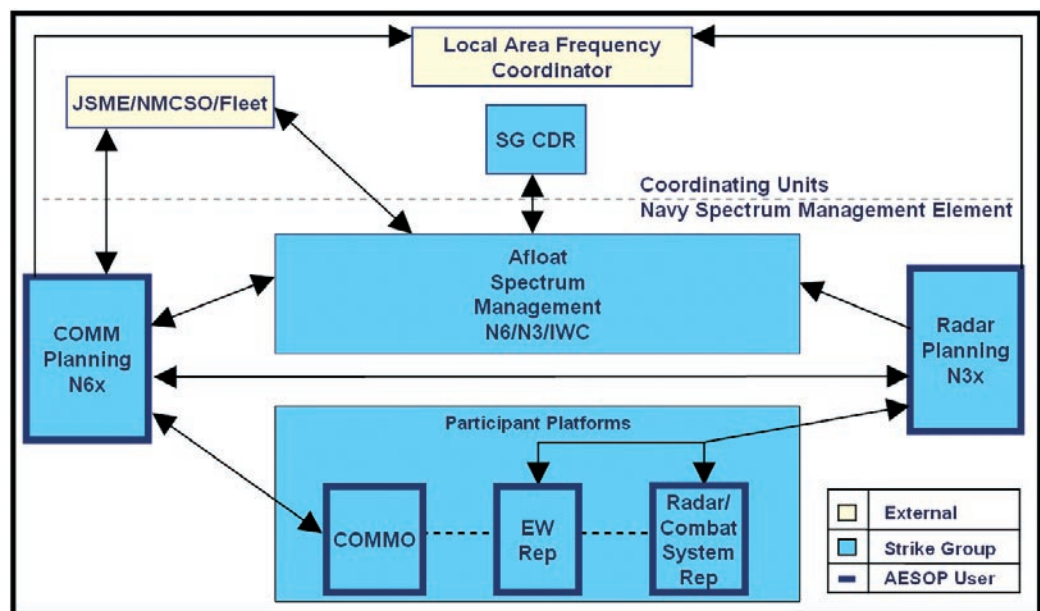
Core Navy Spectrum Management Element
Spectrum Planning Communication Flow

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Report Documentation Page	

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Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std Z39-18

Request information; receive information; and create the frequency plan. The information flow for these steps can be seen in the figure on the previous page.

Step 2. Request Information

Aside from information collected while establishing the workspace, Spectrum Planners will need additional information from the SG Participants, numbered fleet, Navy-Marine Corps Spectrum Office (NMCSO), and/or Joint Spectrum Management Element (JSME). To ensure frequency assignments are provided for each system and Participants aren't oversubscribed with guard requirements, equipment inventories must be verified by each SG Participant. In addition, the Communications Planner must request use of a standing Operational Tasking Communications (OPTASK COMM) Plan from the numbered fleet in which the SG will be operating. A standing OPTASK COMM must be requested from each fleet when operating in multiple fleets, because frequencies will differ. Frequencies must be requested from the JSME, in joint operations, or the NMCSO, in Navy operations, for each net in the OPTASK COMM that does not have preapproved frequencies.

Step 3. Receive Information

The use of requested information is automated by the import functionality of AESOP. Participants should send a Reply Message in the eXtensible Markup Language (XML) format created by the Participant component of AESOP. This XML file can be imported by the Spectrum Planner into each phase in which the platform appears. Importing the XML file is not only fast, it also avoids any errors that are easily made when entering large amounts of data manually. Each fleet's standing plans are installed with AESOP and are available for import. Additional net frequency assignments, when required, are sent to the Spectrum Planner by the local assignment authority in Standard Frequency Action Format (SFAF), which can

be imported into the workspace. Radar Planners should import a copy of the SG's OPTASK COMM, preferably in XML format.

Step 4. Create Frequency Plan

Once all the information has been entered in the AESOP workspace, Spectrum Planners may create the frequency plan. After entering guard requirements and keying material (KEYMAT) for each net, Communications Planners will generate the OPTASK COMM, which contains all net frequencies, as well as related guidance. Radar Planners use the assignment generator to determine optimal radar assignments that consider frequencies used in the OPTASK COMM, by navigation aids (NAVAIDs), and by electronic warfare (EW) systems, as well as shore-based frequencies that appear in the workspace. The Assignment Message contains radar/combat system, NAVAID, and EW frequency assignments.

Step 5. Analyze EMI/Connectivity

Analysis capabilities in AESOP allow Spectrum Planners to determine possible electromagnetic interference (EMI) issues prior to implementation, or troubleshoot issues that arise during deployment. During deployment, as contingencies arise, such as changes in the distance between platforms, inchop/outchop of Participants, frequency restrictions, or kicking to secondary, tertiary, or spare nets, AESOP may be used to provide EMI and net connectivity predictions.

Further Details

Detailed instructions for coordinated spectrum planning may be found in the AESOP Spectrum Planning Guide. Contact the AESOP Office (see "Editor's Corner" below) to request hands-on technical assistance customized for a specific SG deployment.

Editor's Corner

Afloat Spectrum Management News includes information about the current/next fleet distribution of spectrum planning software, plus current events. Basically, we'll try to keep you updated on special happenings in the frequency management world. *Afloat Spectrum Management News* is written, edited, and published by the AESOP Team. Opinions expressed by the publishers are their own and are not to be considered an official expression of the U.S. Government or the Department of the Navy. We welcome your comments, contributions, and recommendations. Address all correspondence to the AESOP Team at the address listed below.

ATTN Q54 AESOP
COMMANDER, DAHLGREN DIVISION
NAVAL SURFACE WARFARE CENTER
5493 MARPLE ROAD, SUITE 156
DAHLGREN VA 22448-5153

DSN: 249-8021
Commercial: (540) 653-8021
Fax: (540) 653-2214
E-mail: aesop@navy.mil, aesop@sentel.com
SIPRNET Email: aesop@navy.smil.mil
Web: http://cnl.phdnswc.navy.smil.mil/aesop

Four Roles of Spectrum Planning

Afloat Spectrum Planner: Comprehensive spectrum planning for Strike Groups (SGs) is generally performed at the staff level, so that overall spectrum usage, including communications frequency planning and radar frequency planning, may be closely correlated. This requires the coordination and input of members of the Communications Planning (N6x) staff, Radar Planning (N3x) staff, intelligence (INTEL) community, and Information Warfare Commander (IWC). The Navy-Marine Corps Spectrum Office (NMCSO) should be contacted for assignment of a standing Operational Tasking Communications (OPTASK COMM) Plan to the SG. The NMCSO, Joint Spectrum Management Element (JSME), or numbered fleet should be contacted to gather additional communications frequencies as needed. For equipment inventory and/or frequency data, all participating platforms, including those of coalition forces, should also be contacted via the AESOP Request Message. Inputs are then assembled to produce the OPTASK COMM Plan and Radar Assignment Plan.

Radar Planner: For smaller SGs, depending on how they're set up, the Radar Planner may be a member of the staff or ship's company. Radar planning requires the coordination of all Participants, including ships, submarines, aircraft, embarked staff, and coalition forces. Each should be contacted for equipment inventory and/or frequency data. Sent via the AESOP Reply Message, received platform data, including Tactical Air Navigation (TACAN) and electronic warfare (EW) assignments, can be imported into AESOP for use in predicting and avoiding electromagnetic interference (EMI) and generating the Radar Assignment Plan. To avoid EMI between radar and communications systems, coordination with the Communications Planner is also strongly recommended. Automated import of the OPTASK COMM Plan is available in AESOP to assist with this. If traveling independently of an SG, a ship must still have a Radar Assignment Plan to prevent use of restricted frequencies and avoid onboard EMI.

Communications Planner: Communications planning, even for smaller SGs, or independent steamers, is usually performed by a staff member. To determine the assigned standing OPTASK COMM Plan, which comes pre-populated with nets and approved frequencies and can be automatically imported into AESOP, initial efforts require contact with the JSME, NMCSO, or numbered fleet. Participating units, including ships, aircraft, submarines, and embarked staff, should then be added to AESOP, and Participant abbreviations, Secret Internet Protocol Router Network (SIPRNET) addresses, and inventory data should be updated. Inventory data can be collected via the Communications Equipment Population Summary (CEPS) or AESOP Reply Message. Guard requirements, priorities, and keying material (KEYMAT) data will be added to nets, as needed. To ensure rapid and reliable communications, once the OPTASK COMM is completed, it should be distributed through appropriate channels to all participating units, while INFO-copying the local NMCSO.

Participant: SG Participants receiving a Request Message from the Spectrum Planner, Radar Planner, or Communications Planner should use the Participant component of AESOP to create a Reply Message. The Reply Message contains current information about shipboard frequencies and equipment. An updated equipment inventory list, including the variants and quantities of radar, navigation aid (NAVAID), EW, and communications equipment, should be compiled by using the current Operational Status Unit (OPSTAT UNIT) Message or by communicating with equipment operators. For radar planning, equipment operators should also be asked to determine the frequencies currently assigned. An eXtensible Markup Language (XML)-formatted Reply Message containing this data will then be created with AESOP and sent to the planner via the SIPRNET. This XML format of the Reply Message will allow the planner to quickly and accurately parse the data into the AESOP software for use in creating the Radar Assignment and OPTASK COMM Plans.

Frequency Resources

AESOP Version 2.1 includes a new feature designed to assist the Spectrum Planner with the deconfliction of frequency-hopping communication nets, such as the Single-Channel Ground and Airborne Radio System (SINCGARS), and other spectrum users, including Counter Remote-Controlled Improvised Explosive Device Electronic Warfare (CREW) systems. This new capability includes an automated interface to the Joint Automated Communications-Electronic Operating Instructions (CEOI) System (JACS), which is the accredited Department of Defense (DoD) system for managing Combat Net Radio (CNR) hopsets.

To use this functionality, the AESOP user can either import a frequency resource (i.e., frequency hopset) directly from JACS or create an original one in AESOP. The frequency resource is then assigned to one or more nets in lieu of a fixed frequency.

AESOP calculates the overall link status for a frequency-hopping net, including the negative effects of electromagnetic interference (EMI) on the link. The results of this analysis can be seen by invoking the Net Connectivity dialog (shown below) for a pair of links between platforms.

For these links, the dialog also shows the amount of EMI on each of the hopset frequencies. This assists the AESOP user in determining which frequencies could be eliminated from the hopset to improve connectivity. By reducing EMI through the removal of one or more frequencies from the hopset, users can then immediately determine the effect on link connectivity quality. This is accomplished by using the Active/Inactive button to toggle individual hopset frequencies as active or inactive.

Once the user is satisfied with the modified hopset, by pressing the Update Resource button, the frequency resource can be updated, removing the frequencies that were made inactive. The updated frequency resource can then be exported from AESOP back to JACS. Once the new hopset has been imported into JACS, it can be used to reload the CNRs so they can operate on the reduced hopset, which will improve link connection quality.

This technique should be particularly useful when operating CNRs where CREW or other electronic warfare (EW) systems are present. This is because removing a select number of frequencies from the hopset that are on or near EW system transmitter spectrum "peaks" can increase the percentage of hopset frequencies over which data can be passed successfully. Doing so allows improved blue-force communications, while preserving the advantages of a frequency-agile system.

In addition, as part of this new capability, users can now import the measured spectrum of an EMI source directly from a Microsoft® Excel spreadsheet into AESOP. This feature is a particularly useful way to import CREW loadset spectra, which are often composed of hundreds of data points.
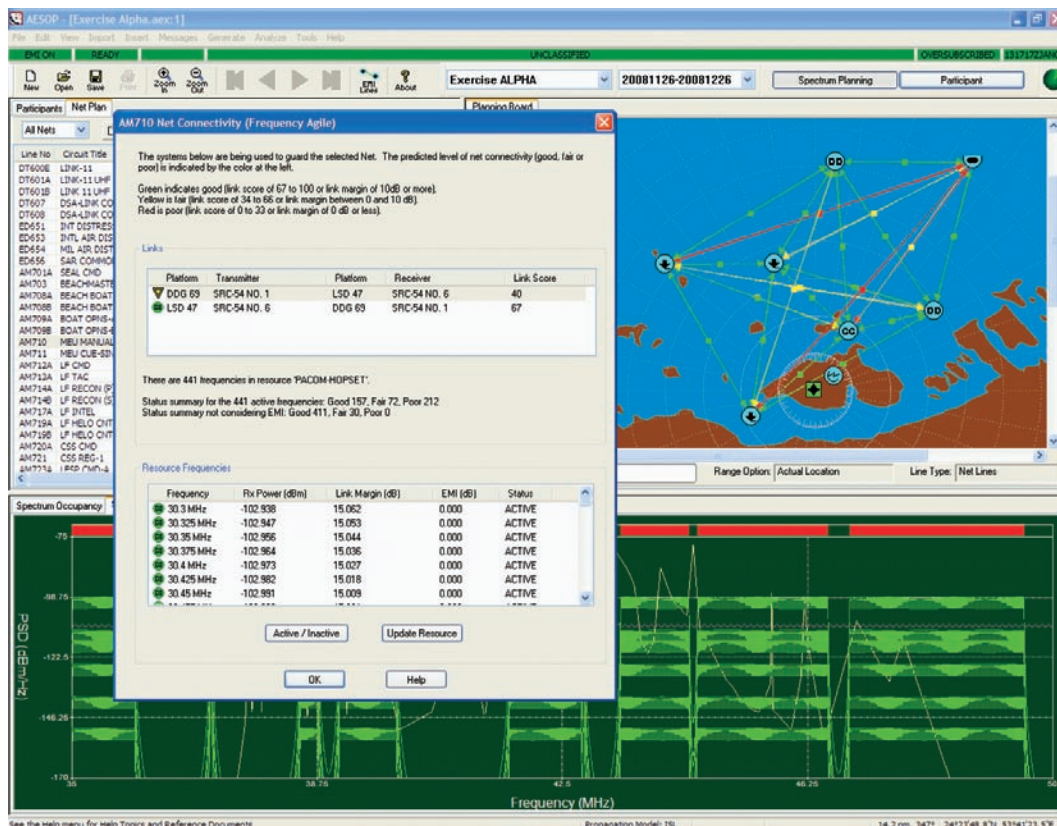
AESOP 2.1 Net Connectivity Dialog

What's a DD-1494?

Have you ever had access to a new communications device or navigation aid (NAVAID), but were told you couldn't turn it on because it didn't have the proper approvals, such as a "DD-1494" or a "J/F-12" number? Several steps are involved in getting permission to use devices that emit energy in the radio frequency (RF) spectrum.

The first step, completing Department of Defense Form 1494 (DD-1494), Application for Equipment Frequency Allocation, is the responsibility of the equipment's acquisition office. With few exceptions, a DD-1494 is required for all RF devices produced for the military, as well as for commercial off-the-shelf (COTS) ones purchased for its use.

As its title implies, a DD-1494 is merely an application for allocation of a frequency, not approval for use. The acquisition office submits the DD-1494 for authorization to radiate, and a Joint Format (J/F)-12 number is assigned to the equipment. In AESOP's database, an emitter's J/F-12 number is tracked to support data exchange with other spectrum management tools and other government agencies.

Both a DD-1494 and J/F-12 number are required prior to using an RF emitter. Although deployed Sailors aren't responsible for completing the DD-1494 or obtaining a J/F-12 number, both are critical to the warfighting success of your system. However, another step is required before you can turn on your new system: You must have permission to radiate the system in your selected location or area. AESOP simplifies this last step through the use of standing Operational Tasking Communications (OPTASK COMM) Plans and the automatic inclusion of local radiation restrictions in its calculation of radar frequency assignments.

Word Search

F	G	I	H	N	S	C	U	L	L	E	R	Y
P	A	R	R	O	T	Z	O	P	W	I	L	E
O	N	T	S	V	A	N	M	H	I	X	B	L
Z	G	F	A	I	R	E	D	A	L	E	K	L
A	W	M	E	U	B	X	B	C	I	M	Y	O
D	A	P	S	P	O	O	K	-	F	B	O	W
G	Y	P	O	L	A	N	N	A	M	E	K	G
B	L	M	P	I	R	M	E	F	K	R	O	E
A	S	D	V	H	D	O	E	R	W	M	L	A
S	W	A	B	J	I	P	-	W	A	Y	O	R
B	E	S	O	T	I	F	K	K	R	L	U	M
I	A	&	S	T	E	R	N	H	D	E	C	K
H	T	I	S	F	D	O	O	Y	R	N	M	N
M	&	M	A	V	G	Q	C	H	O	P	W	U
F	L	A	G	D	E	C	K	J	O	Z	O	C
S	H	S	I	F	D	M	E	C	M	O	C	K
A	S	T	V	E	U	I	R	M	N	H	I	L
M	U	S	T	A	N	G	C	F	I	D	L	E
S	R	K	A	L	K	I	N	W	V	A	C	B
R	E	I	C	N	A	C	X	R	&	R	I	O
B	U	L	K	H	E	A	D	B	V	K	S	X

Onboard Ship

AESOP	Mustang
Airedale	NAM
Boss	Oh Dark
Bow	P-Way
Bulkhead	Parrot
Chop	R&R
Deck	Scullery
ECMO	Spook
Flag Deck	Starboard
Gangway	Stern
Gedunk	Swab
HAC	Sweat
Idle	Tack
Knee-Knocker	Wardroom
Knuckle Box	Yellow Gear
Masts	

When to Use AESOP

With the release of AESOP Version 2.1 to the fleet, it again becomes important to understand those situations in which AESOP is useful and necessary.

The primary use of AESOP – indeed, perhaps its most important function – is for planning the deployment of a Carrier Strike Group (SG) or Expeditionary Strike Group (ESG). Generally, the SG staff will manage this situation, with individual ships only needing to provide information about their equipment. But this isn't the only, nor perhaps the most frequent, use of AESOP.

Obviously, AESOP contains the necessary spectrum information for ships in the U.S. Navy. But it also contains information on ships from nearly every navy in the world. So, when allied ships are attached to your SG, AESOP can assist in including their data in your spectrum plan. Not only is this useful when performing pre-deployment planning, but also during deployment. When additional platforms are attached to your SG, AESOP makes it easy to see what impact they'll have on the spectrum. AESOP's ability to see what's happening in the spectrum at any given moment is perhaps an under-used feature. Although AESOP was developed as a planning tool, it can assist in monitoring the spectrum during deployment. AESOP is the tool that can provide your Information Warfare Commander (IWC) with the common operational spectrum picture.

One function of AESOP that's very important, although some users don't realize it, is to create a spectrum plan when steaming alone. Anytime a ship leaves port, even when steaming alone, it's necessary to use AESOP to create a spectrum plan. While that may seem counter-intuitive − after all, it's impossible to interfere with other ships where there are none − reducing interference between ships is only one of AESOP's features. Because AESOP also helps keep your shipboard systems off frequencies that are used by land-based systems, a properly made spectrum plan can be your ticket to staying out of trouble. And, because the U.S. Navy is not the primary user of many parts of the spectrum throughout the world, keeping systems off frequencies they shouldn't be using is a continuous process.

In addition to its uses in spectrum planning for SG and individual deployments, AESOP can be used with spectrum planning for land-based systems. For instance, AESOP is often used at missile range facilities to plan for Ballistic Missile Defense (BMD) exercises. Navy-Marine Corps Spectrum Offices (NMCSOs) and numbered fleet commanders use AESOP for the management of a fleet's standing Operational Tasking Communications (OPTASK COMM) Plan assignments and mitigation of radar electromagnetic interference (EMI). To ensure that all necessary protocols have been followed, some Local Area Frequency Coordinators (LAFCs) often request AESOP workspace files from deploying SGs.

USN-USMC Spectrum Management Conference

The 30th annual U.S. Navy-U.S. Marine Corps (USN-USMC) Spectrum Management Conference was held 16 through 19 March 2009 in San Diego, at the Mission Valley Marriott with approximately 150 spectrum managers from across the fleet and Marine forces in attendance. Separate USN and USMC closed sessions were conducted the first day and combined sessions, open to all attendees, were held the remaining three days. The theme of the conference, "Spectrum Management Transformation", focused on continually evolving processes, procedures, and facilitation of electromagnetic frequency management. The conference provided the opportunity to raise a multitude of spectrum management issues and concerns.

The AESOP Team actively participated in the conference. In conjunction with this event, AESOP technical assistance was provided on 12 through 13 March 2009 at Navy Information Operations Command (NIOC), San Diego, with 27 in attendance. Conference briefs and additional details are posted on the AESOP website (see "Editor's Corner" on Page 2)

Visit AESOP on the Web

The Afloat Spectrum Management (ASM) website (see "Editor's Corner" on Page 2) supports the fleet by providing information on current spectrum management issues and events, technical assistance resources, and references.

The Secret Internet Protocol Router Network (SIPRNET) website contains classified documents, including OP-3840, *Electromagnetic Compatibility Criteria for Navy Systems (U), AESOP Spectrum Restrictions and References (U)*, and up-to-date fleet spectrum management guidance messages. The SIPRNET website hosts a calendar of events, and as they become available, downloads of AESOP software updates.

NEOP 2007 Released

AESOP representatives presented an overview brief and demonstration of the North Atlantic Treaty Organization (NATO) Electromagnetic Operational Programme (NEOP) 2007 spectrum planning software to delegates from Great Britain, Germany, Norway, Canada, and the Netherlands at the NATO Radiation Hazards (RADHAZ) Working Group (WG) Ad Hoc Meeting, hosted 18 to 19 March 2008 by the Norwegian delegation at Haakonsvern Naval Base outside of Bergen, Norway.

The NATO RADHAZ WG is responsible for examining radiation-related issues in the NATO naval community, including the update of a NATO Standardization Agreement (STANAG), and is the sponsor of NEOP 2007. NEOP 2007 is based on AESOP 2.0, which was delivered Mar 2007 to the U.S. Navy. The NEOP 2007 installation features an option that allows users of the previous NEOP-RADAR 5.0 to merge their existing data with that of the NEOP 2007 database.

The AESOP Team attended the meeting at the invitation of Mr. Charles Denham, head of the U.S. delegation to the NATO RADHAZ WG.

18–19 Mar 2008 NATO RADHAZ WG Meeting attendees, pictured L to R: Andy Hunt [Great Britain (GBR)]; Roald Hernar [Norway (NOR)]; Mark Kuisma [Canada (CAN)]; Uwe Reitmaier [Germany (DEU)]; Lt (N) Jennifer Spearman (CAN); Mona-Leigh Mc Elveny (CAN); CDR Dieter Engelhardt (DEU, Chairman); Charles Wakefield [United States of America (USA)]; Charles Denham (USA); Victorin Kagoue (DEU); Aad de Jong [Netherlands (NLD)]; Ken Roberts (GBR); Arie Klerk (NLD).

18–19 Mar 2008 NATO RADHAZ WG Meeting U.S. reps, chairman & host, pictured L to R: Charles Wakefield [United States of America (USA)]; CDR Dieter Engelhardt [Germany (DEU), Chairman]; Charles Denham (USA); Steiner Nestas [Norway (NOR)].

Engineering Spotlight

AESOP engineers have conducted tests on the Single-Channel Ground and Airborne Radio System (SINCGARS), AN/GRC-171 radio, and Digital Modular Radio (DMR) to gather data for use in AESOP models and help validate model predictions, or to enhance model performance when measured data indicates the need to do so.

SINCGARS

SCSC

DMR

SINCGARS Testing

To validate the model's prediction of off-frequency rejection (OFR), SINCGARS radios were tested in a single-channel mode, and to determine how accurately the model predicted potential interference between two fixed-channel SINCGARS links, they were tested at various frequency separations. The test setup consisted of three SINCGARS radios (two transmitters and one receiver) and a communications analyzer used to assess the performance of the desired signal link in the presence of an undesired signal. To simulate a desired signal path with a variable received desired signal strength, one transmitter, designated the "desired signal" transmitter, was connected to the receiver through a series of variable attenuators. The second transmitter, designated the "interference signal" source, was similarly connected to the receiver through variable attenuators and a signal combiner. Attenuation levels of the desired signal and interference signal paths were varied and recorded, along with the communications analyzer's assessment of the received signal quality [specifically, the bit error rate (BER) at the receiver].

To determine the ratio of desired signal-to-interference signal that would degrade the SINCGARS signal beyond acceptable levels, these measurements were repeated for various frequency separations between the desired signal and interference signal. AESOP was used to predict the relative interference signal level that would be expected to result in unacceptable performance for the desired signal levels and frequency separations tested, and the predictions were compared with test results. When signals were co-tuned or tuned within a couple of channels of each other, test results demonstrated excellent agreement between measured values and predicted values, but for greater frequency separations, they indicated there was some room for improvement. As a result of these tests, modifications have been included in AESOP Version 2.1 to improve the performance of the model.

AN/GRC-171 Testing

AN/GRC-171 radios were tested at the Surface Combat Systems Center (SCSC) in Wallops Island, Virginia. The AN/GRC-171 is a multimode ultra-high frequency (UHF) radio that is capable of both amplitude-modulated (AM) and frequency-modulated (FM) operation, and that also supports both Tactical Digital Information Link 11 (TADIL-A) and Link 4 (TADIL-C). Testing included narrow-band AM and FM modes, as well as Link 11 and Link 4. The SCSC Multiple Unit Link Test and Operational Training System (MULTOTS) was used to generate a desired Link 11 data link and measure its performance.

Standing Plans or Templates

AESOP Version 2.1 includes 30 standing Operational Tasking Communications (OPTASK COMM) Plans which contain pre-populated common circuit baseline requirements and their approved frequencies. These standing plans were developed with the help of the Navy-Marine Corps Spectrum Offices (NMCSOs) and fleet commanders. Each fleet area has Carrier Strike Group (CSG) and Expeditionary Strike Group (ESG) plans for use.

A "standing plan" is defined as an off-the-shelf plan that contains all the normal communications nets to be used by a Strike Group (SG), as well as their approved frequencies. To use one of these standing plans, the SG Spectrum Planner must contact the appropriate NMCSO (listed below) for an assignment.

Once the NMCSO assigns a standing plan to the SG, it can be imported into AESOP and used as a draft "strawman" OPTASK COMM. To finalize the OPTASK COMM, the Communications Planner must assign guard requirements to nets, verify keying material (KEYMAT) and assign it to nets, establish the net restoral plan, and make other minor adjustments.

In addition to standing plans, AESOP 2.1 contains OPTASK COMM templates for CSG, ESG, and Surface Strike Action Group (SSAG) operations, independent steaming operations, and port visits. Unlike standing plans, templates contain a basic list of nets without frequencies, and they're to be used as a baseline or "starter" OPTASK COMM that will enable you to easily generate a net frequency request and send it via message or email to the appropriate NMCSO.

The AESOP Team is grateful for the fleet's continued feedback on improving and expanding the standing plans and templates delivered with AESOP. Your feedback is crucial, and after verification, it will be incorporated into OP-3840 Appendix F, Standard Emission Designators, Line Numbers, Circuit Titles, and Net Explanations to be used in Afloat U.S. Navy Communications Plans, which was announced in All Commands (ALCOM) 89/08 as the replacement for the old NAVY-WIDE OPTASK COMM message and is now the basis for Navy OPTASK COMMs.

Fleet	Standing Plan Authority
SECONDFLT	NMCSO LANT
SIXTHFLT	NMCSO EUR
THIRDFLT	COMTHIRDFLT*
SEVENTHFLT	COMSEVENTHFLT (CSG)*
	COMPHIBRON ELEVEN/CTF 76 (ESG)*
FIFTHFLT	NMCSO CENT

Until assumed by NMCSO PAC, 2009

Engineering Spotlight from Page 8

The purpose of the tests was to validate or improve OFR prediction algorithms, electromagnetic interference (EMI) predictions, and emission spectrum/receiver selectivity models. Measurements were taken with the desired link signal strength at various levels, ranging from a minimum level (just above sensitivity) to a relatively strong signal [20 to 30 decibels (dB) above sensitivity]. As with SINCGARS testing, AESOP was used to predict test results, and the comparison of predicted data and measured data was used to validate AESOP's performance and identify areas where improvement might be possible. Modifications to AESOP have been undertaken to achieve better agreement with test results.

DMR Testing

DMR testing was performed at the Space and Naval Warfare Command (SPAWAR) Systems Center, Charleston (SSC Charleston), South Carolina. The DMR is a software-defined radio capable of operating in a large variety of modes. Some waveforms the DMR is programmed to generate include SINCGARS, HAVEQUICK, AM line-of-sight (LOS), and Link 11 and Link 4.

The purpose of initial testing was to measure the emission spectrum of the DMR in selected modes for comparison both with the modeled spectrum and measured emission spectral data from a non-DMR radio of the same waveform (e.g., SINCGARS, Link 11).

Additional Testing

Additional validation tests are planned using other radios and modes (e.g., frequency hopping modes of SINCGARS). The results will be used to improve or validate AESOP models.

Communications Planning Tips:
KEYMAT Identification and Assignment

"...the SG

Communications

Planner has an

enormous amount

of external

information to

consider when

preparing a

spectrum plan ..."

The Strike Group (SG) Communications Planner has an enormous amount of external information to consider when preparing a spectrum plan that must be comprehensive, accurate, and readable, all while minimizing the effects electromagnetic interference (EMI). After all, the ultimate goal of the Operational Tasking Communication (OPTASK COMM) is that it enables rapid and reliable communications during your deployment. Today, AESOP users are more likely to use a pre-written standing OPTASK COMM Plan, meaning that the assigned OPTASK COMM has pre-populated common circuit baseline requirements and approved frequencies. Because baseline communications requirements are pre-established and it isn't necessary to request frequencies, standing OPTASK COMM Plans offer a tremendous advantage over previous methods.

Another area of consideration is the assignment of communications security (COMSEC) keying material (KEYMAT) to a net. Communications Planner must add, update, and/or verify KEYMAT short titles used with nets listed in the B3/FREQ PLAN section of the OPTASK COMM. Theater-approved KEYMAT short titles and associated usage types can be found in the area communications station's recurring Daily Communications Status (DCS) Message often referred to as the 2301Z and COMMSTAT message. On a daily basis, the area's communications master station transmits a DCS message containing a standard XX2301Z MMM YYYY date-time-group over common broadcast channels. You can also obtain the DCS Message from the area communication station's Collaboration at Sea (CAS) website. A section in the DCS Message, the Over-the-Air Transfer (OTAT) Plan, lists KEYMAT pre-approved for use in the specified area with restart

times. For each encrypted net in an OPTASK COMM, you must identify the appropriate KEYMAT short title listed in the DCS Message and enter it in the KEYMAT field associated with the encrypted net, thereby ensuring that every ship directed to guard the net will use the same KEYMAT and be able to communicate.

A communications planning tip: For Ultra-High Frequency (UHF) Encrypted Voice, the emission designator is 25K0A1E; for High-Frequency (HF) Encrypted Voice, 2K80J2E; for (VHF) Encrypted Voice, 25K0F2E. Therefore, when trying to figure out which nets in your OPTASK COMM require KEYMAT short title entries, simply use the emission designator as an aid. All satellite communications (SATCOM) nets with emission designators ending in either G7W or G7B require a KEYMAT short title assignment.

Generally speaking, most nets require a KEYMAT assignment; however, nets that remain unencrypted can be easily identified by their emission designators. The unencrypted emission designators most commonly used in afloat Navy communications are: UHF Unencrypted Voice, 6K00A3E; for HF Unencrypted Voice, 2K80J3E/3K00J3E; for VHF Unencrypted Voice, 25K0F3E. Nets associated with these emission designators don't require an entry in the KEYMAT field, and should be left blank, indicating the net isn't secure.

Fortunately, descriptions of emission designators are maintained in AESOP and are outlined in the OPTASK COMM message. Lastly, before you depart on deployment, be sure to have your Inter-Theater COMSEC Package (ICP)/ KEYMAT onboard, because you'll need it as a backup for OTATs.

AESOP Provides Technical Assistance to the Fleet

Spectrum planning process and tools are included in the curricula of various training facilities (see the training facility list below), as well as those of pre-deployment Carrier Strike Groups (CSGs) and Expeditionary Strike Groups (ESGs). Upon request, the AESOP Team provides technical assistance to individual U.S. Navy ships and commands.

Center for Surface Combat Systems and Aegis Training and Readiness Center, Dahlgren, VA :
• Prospective Commanding Officer/Prospective Executive Officer (PCO/PXO) Course
• Combat Systems Officer (CSO) Course
• Combat Systems Common Core (CSCC) Course
• Combat Systems Maintenance Manager (CSMM) Course
• Aegis Weapons Systems (AWS) Course

Center for Information Dominance (CID) Learning Site LS, Norfolk, VA; Corry Station, Pensacola, FL; San Diego, CA; as well as other various locations such as Ingleside, TX; Yokosuka, Japan; and Pearl Harbor, HI:
• Information Professional (IP) Basic Course
• Information Operations (IO) Course
• Information and Communications Managers Course (ICMC)

Navy Information Operations Command, Norfolk, VA; and San Diego, CA:
• Navy Information Warfare Tactics and Operations Course (NIWTOC)

U.S. Army Signal Center of Excellence, Fort Gordon, GA:
• Basic Spectrum Manager (BSM) Course
• Joint Spectrum Manager (JSM) Course

Keesler AFB, MS:
• Electromagnetic Spectrum Management Course (ESMC)

For individualized assistance, the AESOP Team stands by to answer questions, troubleshoot problems, review draft AESOP messages, and provide technical assistance upon request. Do not hesitate to call or email at any time for assistance with any problem, large or small. AESOP Office contact information is located in "Editor's Corner" on Page 2.

AESOP Version 2.1 Sent to the Fleet

In anticipation of authority to operate (ATO) approval, in December 2008, AESOP Version 2.1 was distributed to the fleet. At the time of this printing, the ATO was not yet granted. The AESOP Office is coordinating an on-going effort with the appropriate commands to achieve the ATO for U.S. Navy computers and networks, including the Shipboard Information Technology for the 21st Century (IT-21) network and the Navy-Marine Corps Intranet (NMCI). If specific identification numbers for accreditation are required for installing AESOP Version 2.1 at your location, please contact the AESOP Office (See "Editor's Corner" on Page 2) for assistance. AESOP key reference numbers are listed below:

AESOP Version 2.0:
• IT-21 Preferred Product List (PPL): PPL-07-0019
• Department of Navy Application and Database Management System (DADMS): 48584
• NMCI Request to Deploy (RTD): NSCM982
• NMCI Request for Service (RFS): 104464
• Information Strike Force (ISF) Identification: 115611

AESOP Version 2.1:
• Department of Navy Application and Database Management System (DADMS): 52038

If you received AESOP, we hope that you have installed it and are successfully developing spectrum coordination plans for your operations. Also, if you have received AESOP and have installation questions, feel free to contact the AESOP Office.

Ship to Shore

The AESOP Team enjoys receiving comments from Sailors about their operational usage of the AESOP program, especially in preparation for upcoming Carrier Strike Group (CSG) and Expeditionary Strike Group (ESG) workups, deployments, exercises, and independent steaming. Recently, the AESOP Team solicited feedback from three Sailors regarding their experiences in developing Radar Plans and Communications Plans for their operations.

Lieutenant (LT) Frederick Calalang, Commander, Amphibious Squadron Three (COMPHIBRON THREE), said:

"OPTASK COMMs is a critical OPTASK for a Strike Group. Programs like AESOP and creating good communications with fleet communications personnel can make the task of developing this OPTASK a little bit easier. At first, it can be daunting. However, there are many tools to help you out."

Chief Information Systems Technician (Surface Warfare/ Aviation Warfare) [ITC(SW/AW)] Derek Strodman, COMPHIBRON THREE, said:

"I extensively used the AESOP for the drafting of all my OPTASK COMMs during recent deployments with the Peleliu Expeditionary Strike Group. Although my first few times using the program were met with a bit of difficulty – basically, just trying to navigate my way through the program and manipulate the OPTASK COMMs into a product that was easy for everyone to read and understand – about my third or fourth time accessing AESOP for drafting my OPTASK COMMs, it became a lot easier to maneuver and navigate my way through the program."

Cryptologic Technician (Technical) First Class (CTT1) David Bailey, Commander, Carrier Strike Group Two (COMCARSTRKGRU TWO), said:

"I did not receive any formal training. The software is actually very user friendly. All it takes is a little bit of initiative and a couple of helpful tips. If you can receive the formal training, I say, go for it. But if not, there are plenty of helpful people from the AESOP Team and Sailors in the fleet."

Fleet feedback is essential to AESOP's continued success as a quality product. Please contact the AESOP Office (see "Editor's Corner" on Page 2) with your comments for software improvements.

Be safe, and "Fair winds and following seas."

THE LONE SAILOR

HE WAS JUST A LONELY SAILOR
STARING OUT TO SEA,
WAITING FOR ANOTHER SHIP
WONDERING WHERE HE'D BE.

THE VASTNESS OF THE OCEAN'S SPAN
WAS PREYING ON HIS MIND.
HE STOOD IN THOUGHTFUL SILENCE
KNOWING WHAT HE'D FIND.

HE'D FIND CONTENTMENT FAR AT SEA
WITH THE DAWNING OF EACH DAY
AND THE ROLLING MOTION OF HIS SHIP
WHILE IT WAS UNDERWAY.

HE'D FIND EACH WORLDLY PORT O' CALL
A DIFFERENT PLACE TO SEE
BUT KNOWING WELL HIS PEACE OF MIND
WAS FOUND FAR OUT TO SEA.

FOR A MAN WHOSE MISTRESS IS THE SEA
CAN HAVE NO SHORE-BOUND LOVE.
HIS LOVE IS DANCING ON THE WAVES
CARESSED BY SKIES ABOVE.

ONE DAY HE'LL HAVE TO LEAVE HIS LOVE
FOR AGE DOES TAKE ITS TOLL
BUT HIS HEART WILL ALWAYS BE AT SEA
WHEN THE BOS'N CALLS THE ROLL.
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