December 2011

RANGE COMMANDERS COUNCIL FY11 SUMMARY REPORT

The RCC at Sixty

This year marks the RCC's 60th year of serving the range community as the premier forum for inter-change and collaboration. Since our inception in August 1951 the RCC has fostered the development of technical and operational solutions to range challenges without interfering with range management or Service priorities. Despite not being a regulatory agency, RCC technical standards continue to be adopted as industry best practices by member and nonmember ranges alike. Our membership includes ranges from NASA and all of the Armed Services with access to key policymakers in the entire T&E arena. Coupled with an organizational structure that equips leaders with an unparalleled awareness of emerging range issues, the RCC will remain an important advocate for the range community for many years to come.

The following pages summarize some of the many tangible contributions made during FY11.

Priorities for FY 2012

Establishing strong links with range customers (e.g. PEOs) to strengthen RCC goals.

Continue to enable range interoperability by development of technical standards.

Increase intergovernmental cooperation on environmental and sustainability issues (e.g. protection of DoD frequency spectrum).

Enable Information Assurance across multiple platforms and Services.

Posturing the range community to mitigate budgetary and workforce challenges expected to exist for the foreseeable future.

Protecting DoD RF Spectrum

As part of the federal effort to increase broadband access, the President directed the Secretary of Commerce to release a total of 500 MHz of RF spectrum within the next 10 years for wireless broad-band use. The National Telecommunications and Information Administration (NTIA) was ultimately tasked to develop an action plan for this effort. Part of the task included examining the feasibility of auctioning the 1755-1850 MHz bands to the telecommunications industry and reassign current DoD users of this band to the already-congested aeronautical mobile telemetry (AMT) bands. The DoD presently uses the 1755-1850 MHz band for the Tactical Radio Relay System, Air Combat Training Systems (such as the AN/TSQ-T4), the Space Ground Link Subsystem, UAV/RPV command and control, range telemetry, aeronautical telemetry, and in a variety of precision guided weapons. Thus reallocating the 1755-1850 MHz band from the current government-exclusive designation to the public sector would have deep consequences to the DoD. Protecting this band from commercial encroachment required providing policymakers with concrete

data on spectrum utilization and with an awareness of the adverse impacts to users of the AMT should additional users be forced into that band. The RCC quickly created an ad hoc team with members from the RCC Telemetry Group and Frequency Management Group to furnish AMT utilization statistics, Integrated Frequency Deconfliction System data, and other vital metrics. The team was assembled more rapidly and in a more comprehensive fashion than possible by consulting individual ranges and representative subject matter experts. The RCC's ad hoc team was aided not only by their inherent technical knowledge but also by their dexterous networking with policymakers in the Service, DoD, and regulatory arenas. Reallocation of the AMT bands is still an open issue but without the RCC's prompt intervention an unfavorable reallocation policy might well have already been established.

RADCAL Satellite Replacement

On June 25, 1993, the launch of the RADar CALibration or RADCAL satellite represented the culmination of an intensive effort by the RCC to deploy an accurate reference for radar performance monitoring (RPM) in a dynamic tracking environment. To date, RADCAL has been used by 13 tri-service, NASA and international range organizations on over 80 programs. Test ranges recognize RPM data obtained with RADCAL as their standard for establishing dynamic accuracy within the instrumentation community. RADCAL has now exceeded its expected life by 17 years; it is currently only marginally operational and is expected to completely fail sometime in 2012. The RCC is leading the effort using commercial satellites to minimize the impacts, gathering future requirements, leveraging from major radar improvement programs to improve the calibration for Range instrumentation of the future. This effort includes finding an affordable launch platform at funding levels acceptable to participating ranges. Current efforts center on partnering with the Hawai'i Space Grant Consortium. With members from both the range and space launch communities, the RCC is uniquely positioned to facilitate the replacement of this vital satellite asset.

Managing Range Encroachment

The RCC formed its Sustainability Group in November 2000 to address the increasing challenge of sustainability and encroachment while simultaneously fostering community outreach efforts that promote public understanding of range issues. Among these issues are mitigating the encroachment of energy and energy transmission projects upon ranges before large corporate investments are committed or irreversible state/local government policy decisions are made. Rapid development of renewable energy projects has often had the unintended consequence of incompatibility with military test, training, and readiness missions. The SG has published several Commanders' Guides to acquaint commanders with relevant issues and best practices. RCC member NAVAIR Point Mugu has also developed the Mission Compatibility Analysis Tool (MCAT), an intuitive energy and land-use encroachment visualization tool over a secure web. MCAT combines a project tracking relational database with GIS to providing a complete common operating picture of mission compatibility utilizing commercial-off-the-shelf software. USAF has recently awarded a contract to expand MCAT for use nationwide to support project reviews as required by Section 358 of the National Defense Authorization Act for Fiscal Year 2011. MCAT will be utilized by the OSD Energy Siting Clearinghouse to facilitate DoD enterprise-wide renewable energy project reviews and promote centralized identification and tracking of proposed projects.

TECHNICAL GROUP ACTIVITIES

Data Sciences Group (DSG)

Contributed to TRMC's DoD Information Assurance and Certification Process (DIACAP) Community Forum and follow-on work from the original DIACAP Tiger Team. Updated the Data Display Markup Language (DDML) to resolve known deficiencies. Surveyed member ranges on data analysis tools, products, and display systems for inclusion in a capabilities database. Created a metadata reference model. Completed a LVC Roadmap documenting the fundamental steps required to conduct LVC inter-range operations.

Electronic Trajectory Measurements Group (ETMG)

Provided guidance on lessons learned, reviewed detailed range requirements, and provided inputs to the RFP issued for the Range Radar Replacement Program and for the GPS (ARDS) Service Life Extension Program to enable both to finally enter production. Current projects include updating non- coherent radar transponder performance specifications to include recent developments in C-band, X- band, and CW Doppler transponders, improving the TENA Radar Object Model in association with TRMC and PEO-STRI and examining the viability of a range instrumentation multi-spectral calibration satellite to replace RADCAL. The replacement satellite will likely be offered as a CTEIP candidate.

Frequency Management Group (FMG)

Consulted for datacalls on GPS interference from LightSquared Mobile Satellite Service. Currently developing a repository of unlicensed frequency emitters and studying the impact of remotely piloted vehicle operations on RF spectrum. Invited officials from the NTIA, DSO, and service spectrum offices to FMG group meetings to discuss strategies regarding the Fourth Generation Wireless Broadband Spectrum Reallocation (National Wireless Initiative). Continuing to furnish spectrum use data to a variety of forums engaged in preserving aeronautical telemetry bands.

Meteorology Group (MG)

Addressing use of space weather products in range operations. Engaged in improving atmospheric soundings and modeling tools. Developing techniques of accessing lightning danger and warning dissemination. Disseminating lessons learned from non-routine meteorological support demands (e.g. forecasting for parachute drops, ballistic crosswind measurement methodologies) amongst RCC member ranges. Considering a new study of dual polarization radars in meteorological applications for FY12.

Optical Systems Group (OSG)

Developed image quality metrics, metadata formats, and uncompressed file standards for high speed cameras. Currently developing coordinated video format specifications and evaluating protocols for remote optical system control. Developing techniques to measure IRIG timing inaccuracies in visible and IR cameras for use in refining existing timing firmware. Investigating the feasibility of integrating a large aperture lens with a laser rangefinder.

Range Environmental Group (REG)

Partnered with the Strategic Environmental Research and Development Program and the Environmental Security Technology Certification Program on review of proposals, statements of need, and data sharing. Exchanged lessons learned with member ranges on tribal outreach, golden eagle and sage grouse preservation, the Army Compatible Use Buffer Program, and Environmental Impact Statements for

Directed Energy facilities. Consulted on data calls on emerging contaminants. Currently advising the State of California on implementation of their waste-to-energy program.

Range Operations Group (ROG)

Completed the Ground Moving Targets Directory and currently updating the Range Scheduling Guidelines and the Universal Documentation System Guide. Completely overhauling the RCC Targets Directory (last updated in 1988) which documents target capability information of member ranges. Collaborating with the Gulf Regional Airspace Strategic Initiative to address civilian and military airspace issues, to include airspace use, military/civilian airfield operations, and addressing the four-fold increase in aircraft sorties expected in the Gulf region by 2014.

Range Safety Group (RSG)

Updated the Flight Termination Systems Commonality Standard with technical developments on the Enhanced Flight Termination System. Completed an investigation on the use of GPS as a flight safety data source. Developing a new standard for range safety criteria for testing directed energy weapon systems as well as a common set of range safety policies, risk criteria, and guidelines for managing risk to people and assets during manned and unmanned flight operations (excluding aviation operations). Exploring procurement of EFTS ground support equipment among multiple ranges and the development of space launch enhanced flight termination receivers.

Sustainability Group (SG)

Collaborating with senior-policy level Federal, State, and Tribal leaders in the Western Regional Partnership (WRP) on issues impacting the sustainability of military bases (several SG members are on the WRP management team). Updated the Commanders Guide to Renewable Energy with a new chapter on energy encroachment management and a compendium of energy-related mission impact studies. Evaluated the extended capability of the Mission Compatibility Analysis Tool (MCAT) on energy and transmission project reviews as well as other encroachment issues facing the military. Addressing impacts of Section 358 of the 2011 NDAA on range activities.

Signature Measurements Standards Group (SMSG)

Completed Development of EO Standard Processes for Application document defining the levels of characterization synonymous with defined levels of fidelity and the processes required to meet these levels. Participating in the Signature Support Program and considering (for FY12) joint software development project for IR/Multispectral instrumentation software. Working with the SG characterization of wind turbine interference with radar (including air traffic control radars).

Telemetry Group (TG)

Working with C-Band Working Group to develop a plan for deployment of C-Band telemetry at DoD Test Ranges. Completed an assessment of airborne solid-state recorders and currently conducting a network telemetry recorder study for applications in the iNET program. Analyzing the proposed iNET standard as it pertains to PCM and bus data. Developing improvements to the TMATS XML schema and keeping the TMATS current with the IRIG 106 data standards. Augmenting the Instrumentation Engineers Handbook with a new chapter addressing measurement calibration intervals. Updating the IRIG 106 Digital Telemetry Recorder Standards and the IRIG 123 Digital Recorder Programmers Handbook to reflect new developments in data recorder capabilities.

Timing and Telecommunications Group (TTG)

Investigating new precision time protocols in IEEE 1588. Developing optimized signal formats to transmit multiple count signals via a single IP packet. Updating a compendium of current range timing systems. Authoring white papers on interface requirements with modernized cryptologic infrastructure and on strategies for implementation of traffic engineering methodologies in isolated range network environments. Developing an applications guide for video over IP technologies in range applications.

Underwater Systems Group (USG)

Disseminated lessons learned on recent SEAFAC array damage, refurbishment of the Southern California Anti-Submarine Warfare Range, as well as on instrumentation modernization efforts (e.g. Common Acoustic Acquisition System). Developing a compendium on all legacy cable systems in use at Navy range facilities. Accessing developments in transponder tracking, acoustic transponder data nodes, and the Portable Undersea Training Range. Will consider research into the standardization of 76-bit pinger signals as a USG task for FY12.

Digest of FY11 RCC Products

Number of Technical Standards Published: 11

- 106-11 IRIG Telemetry Standards (Part 1)
- 124-11 Telemetry Attributes Transfer Standards Handbook
- 173-11 DoD Information Assurance Certification and Accreditation Process (DIACAP) Survey and Decision Tree
- 175-11 Test and Evaluation Metadata Best Practices
- 215-11 Asynchronous ASCII Event Count Status Codes
- 319-10 Flight Termination Commonality Standard
- 321-10 Common Risk Criteria for National Test Ranges: Inert Debris (Basic)
- 321-11 Common Risk Criteria for National Test Ranges: Inert Debris (Supplement)
- 324-11 Global Positioning and Inertial Measurements Range Safety Tracking Systems: Commonality Standard
- 557-11 Ground Moving Target Inventory
- 600-11 Operations Security Guide

Number of Special Reports Published: 2

- 1755-1850 MHz Band Reallocation Test and Training Ranges Impact Report
- Digital Imager Lifecycle Evaluation

Cost Avoidance/Savings (FY11):	$ 8,698,615
Cumulative Cost Avoidance/Savings (since 1991):	*$ 512,935,136*

RCC Member Ranges

Army
White Sands Missile Range
Reagan Test Site
Yuma Proving Ground
Dugway Proving Ground
Aberdeen Test Center

Navy
NAVAIR Pacific Ranges (Point Mugu/China Lake)
NAVAIR Atlantic Ranges (Patuxent River)
Naval Undersea Warfare Center Division, Newport
Pacific Missile Range Facility
Naval Undersea Warfare Center Division, Keyport

Air Force
Air Armament Center
Air Force Flight Test Center
45th Space Wing
Arnold Engineering Development Center
30th Space Wing

Non-DoD
National Aeronautics and Space Administration

Secretariat
Range Commanders Council

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