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DEPARTMENT OF THE ARMY
BALLISTIC MISSILE DEFENSE SYSTEMS COMMAND
P. O. BOX 1500
HUNTSVILLE, ALABAMA 35807

ANNUAL HISTORICAL REVIEW

KWAJALEIN MISSILE RANGE

1 OCTOBER 1981 THROUGH 30 SEPTEMBER 1982

APPROVED BY:

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Range Directorate

ANNUAL HISTORICAL REVIEW
KWAJALEIN MISSILE RANGE
OCTOBER 1981 - SEPTEMBER 1982

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Chapter I

MISSION AND ORGANIZATION

Mission and Organization

The mission of the Ballistic Missile Defense Systems Command (BMDSCOM) Kwajalein Missile Range Directorate (KMRD), located in Huntsville, Alabama, is to plan, manage, direct, control and coordinate the overall activities of the Kwajalein Missile Range (KMR), a Department of Defense (DOD) National Range, in accordance with DOD National Range policies and procedures and under the guidance and direction of the National Range Commander.

The directorate also serves as the principal advisor and staff to the National Range Commander for all matters pertaining to the KMR including those matters pertaining to the Trust Territory of the Pacific Islands (TTPI).

The mission of the Kwajalein Missile Range, located on the Kwajalein Atoll, Marshall Islands, is to direct, maintain and operate a National Range, and provide associated services and materiel to support range users and tenants at the KMR. The KMR is government owned and contractor operated. Logistics support is provided by Global Associates under Contract DASG60-80-C-0001. Technical facilities, with the exception of the Kiernan Reentry Measurements Site (KREMS), are operated by Kentron, International, Inc. under Contract DASG60-76-C-0002. The KREMS is operated by Radio Corporation of America (RCA) and General Telephone Electronics (GTE)/Sylvania under the technical direction of Massachusetts Institute of Technology Lincoln Laboratory. A map of the Range showing equipment location is shown in Figure 1, page 3.

The KMRD organization is shown on Figure 2, page 4. Office symbols for the directorate are listed in Table 1, page 5.

Staffing

Personnel strengths for the KMRD are reflected on Table 2, page 6. Key personnel of the directorate are listed in Table 3, page 7.

Funding

The approved funding program to accomplish the mission for Fiscal Year (FY) 82 totalled $140,351,000. Table 4, page 9, reflects a summary breakout of the FY 82 approved funding program.

In addition to the above funding guidance, the KMR was provided funding by range customers in the amount of $21,170,000 in FY 82. Table 5, page 10, reflects the range users and amount of reimbursement funding provided them.

Range Commanders Council

The Range Commanders Council, founded in August 1951, and discussed at length in the FY 72 Historical Summary, continued to function; and the Commanders convened their semi-annual sessions (Fall and Spring) during FY 82 for technical interchange of matters affecting the National and Service Ranges.

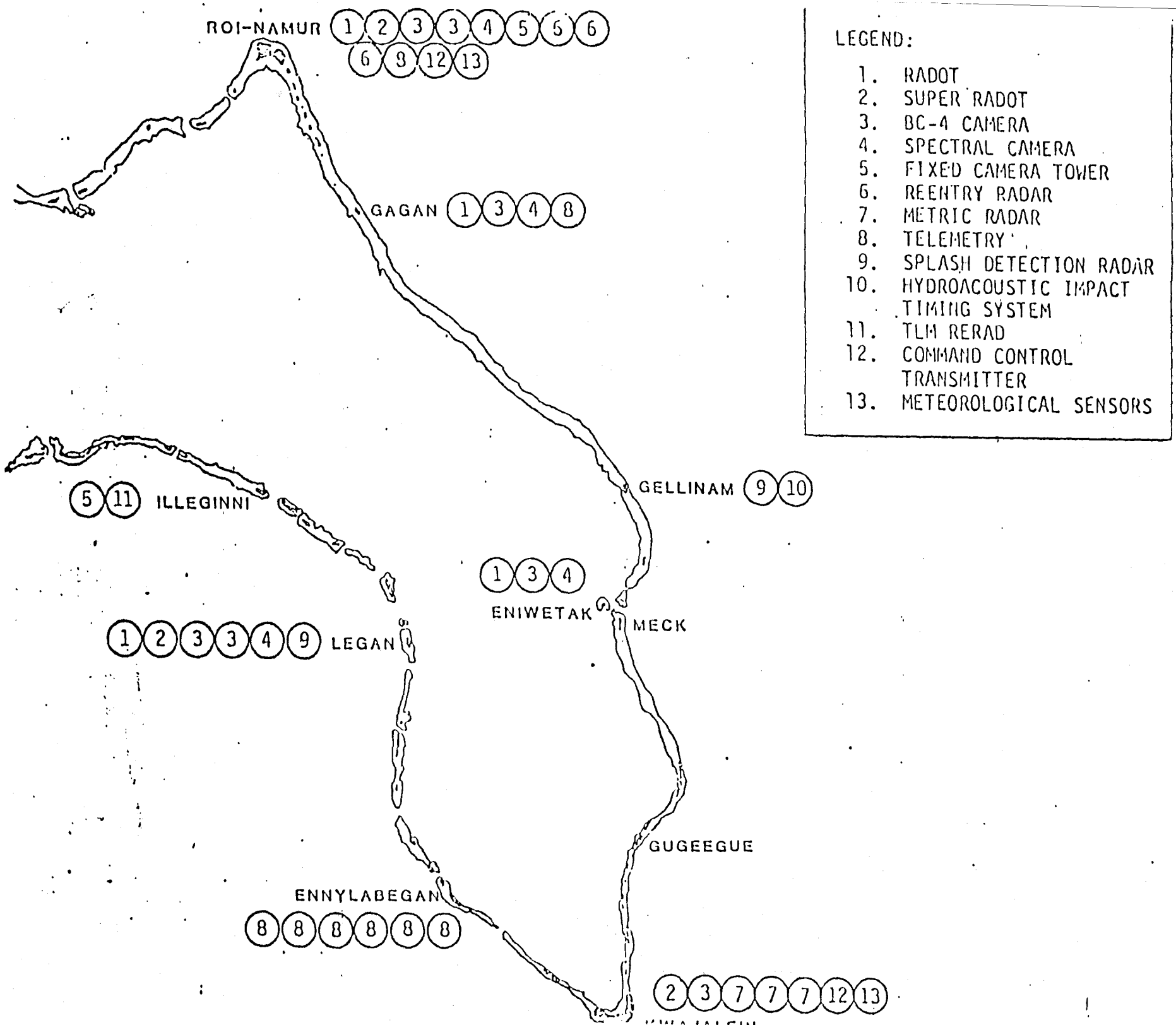

Figure 1 - Kwajalein Missile Range

KWAJALEIN MISSILE RANGE DIRECTORATE

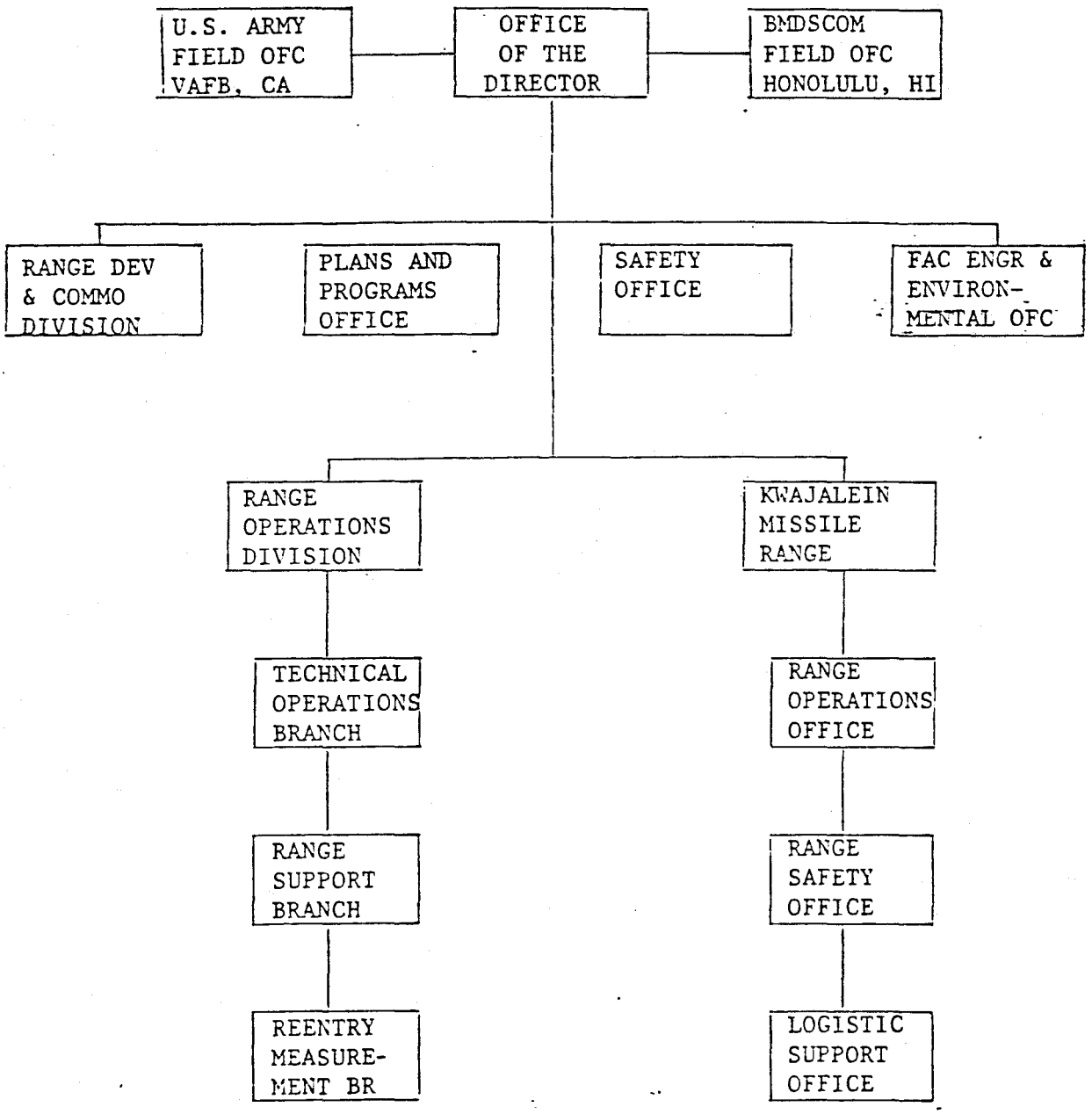

Figure 2 - Kwajalein Missile Range Directorate Organization

OFFICE SYMBOLS
BALLISTIC MISSILE DEFENSE SYSTEMS COMMAND
P.O. BOX 1500
HUNTSVILLE, ALABAMA 35807

SYMBOL	ORGANIZATIONS
BMDSC-R	Office of the Director, Kwajalein Missile Range Directorate
BMDSC-RA	Administrative Office
BMDSC-RP	Plans and Programs Office
BMDSC-RS	Safety Office
BMDSC-RE	Facilities Engineering and Environmental Office
BMDSC-RO	Range Operations Division
BMDSC-ROO	Technical Operations Branch
BMDSC-ROS	Range Support Branch
BMDSC-ROM	Reentry Measurements Branch
BMDSC-RD	Range Development and Communications Division
BMDSC-RK	Kwajalein Missile Range
BMDSC-RV	U.S. Army Field Office, Vandenberg Air Force Base (VAFB), CA
BMDSC-RH	BMDSCOM Field Office, Honolulu, Hawaii

Table 1 - Office Symbols

PERSONNEL STRENGTH

	KMRD & FIELD OFFICES		KMR	TOTALS
30 Sep 79	MILITARY	7	20	27
	CIVILIAN	71	32	103
				130
30 Sep 80	MILITARY	7	20	27
	CIVILIAN	71	32	103
				130
30 Sep 81	MILITARY	7	20	27
	CIVILIAN	71	32	103
				130
30 Sep 82	MILITARY	7	20	27
	CIVILIAN	71	32	103
				130

Table 2 - Personnel Strength

KEY PERSONNEL

POSITION		
KWAJALEIN MISSILE RANGE DIRECTORATE		
OFFICE OF THE DIRECTOR		
DIRECTOR	COL ROBERT J. FEIST	Mar 81 - Jan 82
	MR. O.E. OVA	Jan 82 - May 82
	COL WILLIAM A. SPIN	May 82 -
DEPUTY DIRECTOR	MR. O.E. OVA	Jun 64 - Jan 82
	MR. H.R. BRASWELL	Mar 82 -
EXECUTIVE OFFICER	LTC ANDY GILEWICZ	Mar 81 - Oct 81
	MAJ TOMMY H. MARSHALL	Mar 82 -
CHIEF, U.S. ARMY FIELD OFFICE, VAFB	LTC JOHN S. MACK	Jul 80 - Jun 82
	LTC ROBERT L. WENDT	Jun 82 -
CHIEF, FIELD OFFICE, HONOLULU	LTC WALLACE R. NAPIER	Jul 80 -
CHIEF, PLANS AND PROGRAMS OFFICE	MR. JOHN H. COTTEN	Feb 80 -
CHIEF, SAFETY OFFICE	DR. C.D. SMITH	Dec 78 -
CHIEF, FACILITIES ENGINEERING AND ENVIRONMENTAL OFFICE	MR. JOHN E. ROGERS	Feb 69 -
RANGE OPERATIONS DIVISION		
CHIEF	MR. H. R. BRASWELL	Sep 76 - Mar 82
CHIEF, REENTRY MEASUREMENTS BRANCH	MR. WALTER L. HOLMAN, JR.	Jul 81 -

Table 3 - Key Personnel

CHIEF, TECHNICAL OPERATIONS BRANCH	MR. LEROY KEARBY	Aug 81 -
CHIEF, RANGE SUPPORT BRANCH	MR. REINHART LEO	Feb 71 -
CHIEF, RANGE DEVELOPMENT AND COMMUNICATIONS DIVISION	MR. HARRISON MAXEY	Jul 76 -
KWAJALEIN MISSILE RANGE		
OFFICE OF THE COMMANDER		
COMMANDER	COL PETER F. WITTERIED	Mar 80 - Jun 82
	COL JOHN BANKS	Jun 82 -
DEPUTY COMMANDER	LTC JAMES C. COOPER	Jun 80 - Jul 82
	LTC JAMES VANVLECK	Jul 82 -
CHIEF, RANGE OPERATIONS OFFICE	LTC JAMES ALLRED	Jun 78 - Jun 82
	LTC JOHN S. MACK	Jun 82 -
CHIEF, RANGE SAFETY OFFICE	LTC ALVA SHRONTZ	Jun 80 -
CHIEF, LOGISTIC SUPPORT OFFICE	LTC HOWARD REED	Jul 81 -

PROGRAM STATUS

FY 82

PROGRAM MANAGEMENT	$ 5.850
GOVERNMENT SUPPORT SERVICES	17.450
MATERIALS AND SUPPLIES	24.705
MODERNIZATION	7.800
CONTRACT SUPPORT	84.546
TOTAL	$140.351

(Figures are in millions of dollars.)

Table 4 - Program Status

KMR DIRECT SUPPORT REIMBURSEMENT

FY 82

Army	
BMD Advanced Technology Center	$ 2.195
BMD Systems Technology Program	7.215
Troop Support and Aviation Materiel Readiness Command (TSARCOM)	.090
Missile Intelligence Agency	.010
Air Force	
Strategic Air Command	6.560
Electronic Systems Division	.145
Western Space and Missile Center	3.160
Eastern Space and Missile Center	.130
Ballistic Missile Organization	1.625
Space Division	.040
TOTAL	21.170

(Figures are in millions of dollars)

Table 5 - KMRD Customer Funding

CHAPTER II

RANGE USERS

The KMR, established as a national range in 1968, provides support facilities and technical services for DOD components responsible for Research, Development, Test and Evaluation (RDTE) of weapon systems and materials. KMR also supports other federal agencies having a need for its support as well as domestic and foreign government agencies under certain conditions. A summary of the range user programs in planning or in progress at KMR in FY 82 is given below.

Army Programs

Ballistic Missile Defense Advanced Technology Program

The Kwajalein Missile Range supported an operational test and evaluation of the COBRA JUDY. The objective was to perform joint testing with the KMR sensors in order to evaluate selected radar functions and calibrate the COBRA JUDY radar systems, participate in associated operations with domestic Minuteman (MM) launches, and conduct a special mission using the air launched probe system (ALPS).

The ALPS is designed to provide special payload to aid in the developing and testing data scaling techniques. The missile system is composed of a two-stage rocket carried to its drop point by a F4J fighter aircraft. Guidance is achieved by selecting the conditions at missile release through ground control.

The Designating Optical Tracker (DOT) Program experiments are designed to determine the ability of missile borne optical sensors to designate and track incoming reentry vehicles. During FY 82, KMR successfully supported missile launches associated with this program.

Multistatic Measurements System (MMS), a program jointly funded by Ballistic Missile Defense Advanced Technology Center (BMDATC) and Ballistic Missile Defense Systems Technology Program (BMDSTP), has as its objective the increased accuracy and reliability of metric measurement of reentry vehicle (RV) trajectories. Remotely located radars provide different views of the same target in real time. Final design and installation was achieved during FY 82 and the collection of engineering data began for system evaluation.

Ballistic Missile Defense Systems Technology Program

Planning continued for the Ballistic Missile Organization (BMO) to launch Minuteman MMIs as Systems Technology Reentry Program (STREP) missions from Western Space and Missile Center (WSMC) at Vandenberg, AFB as targets for Homing Overlay Experiment (HOE) missions launched from Meck Island.

The Signature Measurements Radar (SMR) Program was continued utilizing targets-of-opportunity to collect data to support the design of an X-band phased-array Ballistic Missile Defense (BMD) radar system. Planning continued for dedicated SMR targets under STREP.

Air Force Programs

The HAVE JEEP Program is a continuing program for testing payloads utilizing low-cost sounding rockets, launched locally, to simulate intercontinental ballistic missile (ICBM) reentry. Launches are made from Roi-Namur Island. Planning continues for HAVE JEEP VI flights for testing PEACEKEEPER penetration aids.

The Strategic Air Command (SAC) MM II Operational Tests (OT) are designed to define the operational capability of the MM II weapon system. Test objectives include miss distance, reentry accuracy, fusing accuracy, chaff geometry, and signature. This requires metric, signature data, telemetry and impact scoring by KMR.

The SAC MM III Operational Test Program has the same general objectives as discussed for the MM II OT above and requires the same KMR support. Vehicles targeted for land areas continued in FY 82.

The TITAN Program supports diversified DOD and National Aeronautics and Space Administration (NASA) payloads. Support requirements are identified with the particular payload program. Present planning predicts an average of two launches per year from Patrick Air Force Base (AFB). KMR support is required for telemetry and metric data acquisition for orbital missions.

The PEACEKEEPER Flight Test Program sponsored by the BMO is designed to gather data for the development of a new ICBM. To meet the requirement for PEACEKEEPER, a new range terminal area support system was added to the range inventory in FY82. The Caribou Terminal Area Support Aircraft (C-TASA) with telemetry and optics systems and a sonobuoy missile impact location system (SMILS) makes up the new terminal area support system.

In the Space Object Identification (SOI) Program, the KREMS radars, (Target Resolution and Discrimination Experiment (TRADEX), Advanced Research Projects Agency (ARPA) Lincoln C-Band Observable Radar (ALCOR), and ARPA Long Range Tracking and Instrumentation Radar (ALTAIR)), respond to the operational requirements of the U.S. Air Force (USAF) spacetrack system during normal duty hours on a non-interference basis with other range requirements. Approximately 60 identifications per year are made.

The ALTAIR continues to support the Air Force's Space Detection and Tracking System (SPADATS).

The U.S. Air Force has been appointed to manage a DOD program to implement the Global Positioning System (GPS). The eighteen satellite constellations will be controlled by the Master Control Station at Colorado Springs, with ground antenna stations at Kwajalein, Diego Garcia and Ascension. Monitor station (receivers) will be at several locations, with one at Kwajalein. During FY 82, extensive planning has been devoted to fielding the GPS ground antenna and monitor station at Kwajalein; construction of facilities will begin in FY 83, while operational status is anticipated in FY 84. Phase II satellites will be placed in orbit beginning in 1986; two-dimensional coverage will be available by late 1986, with a three-dimensional coverage expected in 1988.

National Aeronautics and Space Administration Programs

KMR continues to support the NASA Space Transportation System (STS) Program. This effort is currently increasing and NASA increases their annual missions.

Missions

During FY 82, KMR participated in approximately 174 missions including 158 Earth Resources Support System (ERSS) and Defense Meteorological Satellite Program (DMSP) meteorological rockets launched from KMR.

31 Oct 81	ETR 6243, an Air Force TITAN III C, a space probe mission.
12 Nov 81	ETR 9101, a NASA Space Transportation System STS-2.
24 Nov 81	WSMC 7037, a SAC MM III Operational Test designated GT-84GM.
09 Dec 81	WSMC 6857, A SAC MM III Operational Test designated GT-85GM.
29 Jan 82	WSMC 7190, a SAC MM III Operational Test designated GT-86GM.
06 Mar 82	ETR 5768, an Air Force TITAN III C, a space probe mission.
19 Mar 82	WSMC 8583, a SAC MM II Operational Test designated GT-141MS.

22 Mar 82	ETR 9102, a NASA Space Transportation System STS-3.
31 Mar 82	WSMC 9110, a SAC MM III Operational Test designated GT-87GB.
07 Apr 82	WSMC 8495, an Advanced Technology Center (ATC) ALPS.
22 Jun 82	WSMC 6358, a SAC MM III Operational Test designated GT-88GM.
27 Jun 82	ETR 9103, a NASA Space Transportation System STS-4.
20 Jul 82	WSMC 3918, a SAC MM II Operational Test designated GT-142M.
05 Aug 82	WSMC 8380, a SAC MM III Operational Test designated GT-89GM, also target for DOT-5.
05 Aug 82	WSMC 2230, an ATC DOT advanced technology design program.
24 Sep 82	WSMC 2240, a SAC MM III Operational Test designated GT-90GB.

CHAPTER III

REENTRY MEASUREMENTS RADARS

Kiernan Reentry Measurements Site

During FY 82, KREMS provided support to a number of users. The Air Force continued testing of Minuteman III ICBMs launched from VAFB. The BMO completed its Advanced Maneuvering Reentry Vehicle (AMARV) Program with a third launch to the Kwajalein lagoon. The ALPS mission, which consisted of a two stage rocket incorporating a small payload, was launched at intermediate range ballistic missile (IRBM) velocity from an F-4 airplane for the collection of reentry signature data by the KREMS radars and the SMR. The Army's SENTRY program flew the first of its dedicated payloads.

The SMR was moved from Illeginni to Roi-Namur in order to collect data on a number of targets at different look angles. SMR did not track targets, but relied on directing files supplied by the KREMS Radar Control Center (KRCC) from the KREMS radars.

The ALTAIR SPADATS modifications were completed and ALTAIR began its new dual life as a contributing sensor to SPADATS and as a KREMS radar supporting KMR missions.

The MMS collected metric and signature data on a number of missions in preparation for becoming operational next year. The principal metric concern of MMS was developing calibration procedures that would enable it to achieve its inherent high accuracy.

KREMS Radar Control Center

A number of modifications were made to the Real Time System to support HOE. One was acceptance and processing of metric data from the FPQ-14 radar at Kaena Point, Hawaii. Because of its earlier coverage of the HOE target vehicle, this radar can supply track data of the quality needed for a preinterceptor launch solution. Data at 2 Hz is received by KRCC from the Instrumentation Control Center (ICC), edited and smoothed like data from one of the KREMS radars, and then sent to the HOE Mission and Launch Control at Meck Island.

After considerable development and testing, the High Speed Data Link aproached operational status. Data from ALCOR and TRADEX was sent to Lexington on a September mission within 24 hours after the test.

KRCC sent designation data to the SMR for tank breakup and reentry vehicles.

ARPA Long Range Tracking and Instrumentation Radar

The low altitude SPADATS became operational and within the 1 October 1981 through 16 September 1982 time period, ALTAIR successfully tracked

14,596 of the North American Defense (NORAD) tasked 15,105 near earth objects. The new foreign launch system also became operational and from 1 June 1982 through 16 September 1982, ALTAIR supported 41 of its 43 tasked events (rev 0, 1, 2).

The ALTAIR/SPADATS System Verification Tests (SVTs) were completed in September of 1982 at which time ALTAIR officially became a SPADATS contributing sensor. In addition to the near earth and new foreign launch systems, the deep space system is now operational.

MMS bistatic ultrahigh frequency (UHF) data was collected on four missions.

Target Resolution and Discrimination Experiment Radar

Because the real time system was operating at very close to capacity, a Telefile T-85 computer was installed at TRADEX.

Most of the work at TRADEX was aimed at bringing MMS up to operational status. Completion of the MMS console allowed continuous monitoring of remote site status. TRADEX demonstrated that it can remotely control basic system operations (power up, shutdown, etc.) without assistance from personnel at the two sites. Calibration constants derived from GPS tracks were repeatable and consistent. The MMS collected metric and signature data, routinely building a data base, so that a metric accuracy statement could be issued when the radar becomes operational.

Millimeter Wave Radar (MMW)

Work was completed on installation of the 35 GHz portion of the MMW radar. At the end of the year, checkout of the system had begun and the radar was nearly ready to begin tracking some test targets. Plans were made for the addition of 95 GHz in FY 83.

CHAPTER IV

RANGE TECHNICAL FACILITIES

Photo Optics

Super Recording Automatic Digital Optical Tracker (RADOT) number 6 was delivered and installed on the island of Legan during FY 82. The delivery of this system completes the planned Super RADOT configuration, giving KMR one of the most sophisticated and highly accurate optical tracking capabilities in existence.

TPQ-18 Radar

The TPQ-18 is a high-accuracy, long-range, C-band instrumentation radar, built by RCA. The system at KMR is Serial Number One and was acquired from the Space and Missile Test and Evaluation Center's (SAMTEC) Canton Operating Location, in 1975. Disassembly of the radar at Canton Island began 18 October 1975. The radar arrived at KMR 6 December 1975. Site construction was completed atop Launch Hill on Kwajalein Island and system installation began 26 April 1975. Installation and checkout phases required two months; initial calibration and operator training took another month; and the radar was declared operational on an engineering test basis 16 August 1976. The first instrumented RV mission (5688) was supported that date. The radar was declared operational March 1977.

The contract to develop, design, and manufacture the upgraded equipment was awarded to RCA in February 1981. The contract is proceeding on schedule and will be completed in May 83.

Meteorological Radar System (WSR-74S)

A contract was awarded on 20 January 1981 to Enterprise Electronics Corporation, Enterprise, Alabama, for a weather radar replacement for the WSR-57 at KMR. The new WSR-74S radar system satisfactorily completed site acceptance testing at KMR and was placed in operation in November 1981. The radar uses solid state electronics and is much easier to maintain than the previous radar. The wave length of the system is in the S-band region (about 10 cm) which allows the radar to penetrate through, or not be attenuated by, light or moderate rain and rain showers.

The radar is located in the KMR weather station with remote monitors at the Range Operations Control Center, Air Terminal and the Reentry Environmental Measurements Program (REMP) Control Room. The monitors make use of conventional television receivers and display weather data in six color levels. Data from the radar is digitized and can be recorded in standard TV format on a video cassette recorder for play back at a later time. The digitized data can also be processed by a computer and stored on disc or magnetic tape.

Meteorological Sounding System

In FY 81, requirements were developed for three MSSs to replace the antiquated Ground Meteorological Device (GMD) systems at KMR. A contract was awarded to Space Data Corporation, Tempe, Arizona, on 19 April 1982 for the three systems to be delivered in FY 83.

The MSSs are automated and will provide improved performance in the measurement of atmospheric parameters such as temperature and humidity, and will be compatible with all 1680 MHz sondes. The systems will have tracking precisions of .035 degrees in both axes and are essential for effective complex test operations at KMR.

Wind Finding Radar (WFR-100)

An unsolicited proposal for upgrading the two KMR wind finding radar systems was received from Enterprise Electronics in April 1982. Action was initiated to place Enterprise Electronics on contract for the proposed effort with a contract award date expected in FY 83. The proposed effort would upgrade the WFR-100 systems to the new generation WF100-4/82 configuration which incorporates many improvements.

Communications

Digital Microwave System (DMS) - During FY 82, the DMS was expanded to service the islands of Legan and Ennylabegan. With this expansion, the DMS "backbone" path now includes the islands of Roi-Namur, Gagan, Gellinam, Meck, Legan, Ennylabegan and Kwajalein. The spur routes to Illeginni, Eniwetak and Omelek Islands complete the system. The path from Roi-Namur to Gagan Island was increased from a 45 mb/s to a 90 mb/s transmission capability to support the KREMS millimeter wave radar.

HF Antenna - The KMR HF Receiver facility provides adequate antenna coverage for all areas except for the south/southwest and north/northeast quadrants. This deficiency was corrected in FY 82 by providing a high gain, directional, horizontally polarized, rotatable log-periodic antenna at the HF Receiver Facility.

Telemetry Systems

A contract was awarded to Datron Systems, Inc., Chatsworth, California, for a Transportable Telemetry System (TTS). The TTS will consist of a 5.5 meter auto tracking S-band antenna system and associated telemetry data receivers magnetic tape recorders and calibration/test equipment. The system is scheduled to be operational in August 1983.

Data Handling Systems

A newly developed Status Display Console (SDC), a new Programmable Controller Subsystem (Perkin Elmer 3241 Computer System), and a HYPER Channel Communications network were delivered and installed in the ICC at KMR. A contract award was made to Harris Corporation for a new Harris 800 computer system to be installed at the Honolulu Data Reduction Facility.

Range Instrumentation Systems Analysis (RISA)

The Kwajalein Missile Range assures the performance and data accuracy of the range instrumentation sensors through a continuing test and analysis program. This effort is performed by the RISA group under the direction of the Range Development and Communications Division. KMR instrumentation performance and data accuracy were monitored on a continuing basis resulting in consistently high KMR data quality for FY 82. Semiannual reports documenting this data quality were published for trajectory and impact instrumentation. In addition to these reports which are distributed to the KMR range user community, KMR performance and accuracy presentations were made to the Joint Range Instrumentation Accuracy Improvement Group and inputs to Program Support Plans were provided for direct response to users.

The RISA group conducts Performance Evaluation Tests (PETs) to establish baseline instrumentation behavior. This serves as a reference for the performance and accuracy monitoring program. PETs also establish instrumentation certification enabling range users to utilize KMR instrumentation data with confidence. In FY 82, a PET was conducted on the Kwajalein Missile Range North (KMRN) SMILS. Certification was established in a timely manner.

To assure that high quality instrumentation is developed in the most efficient manner, the RISA group participates in all instrumentation development efforts as appropriate. The most significant effort of this type during FY 82 was support for the TASA/Kwajalein Broad Ocean Area Tubboat (K-BOAT) system development. Other developments supported included the Super RADOT system and upgrades for the TPQ-18 and BC-4 instruments.

The extraction of performance and accuracy results from the KMR instrumentation requires a continuing effort to develop statistical and analytical methodology. During FY 82, a method was developed and implemented to provide analysis of video and optics distortion models to validate calibrations. Other efforts included upgrades of the software utilized in producing the semi-annual data quality reports, and implementation of software frequency tracking time for series data such as are acquired by the KMR instrumentation, and software to analyze K-BOAT data.

The analysis of raw data continued to be a source of insight into instrumentation characteristics. Raw data from the MPS-36 systems were analyzed to study the improvements using circular polarization. TPQ-18 data were analyzed to study the influence of RV spin on angle oscillations. Raw data from K-BOAT were extensively analyzed.

Analytical studies were numerous and included investigations of HOE support, Low Level Meteorological Rocket (LLMR) support, trajectory reconstruction algorithms, MX support, and radio frequency (RF) radiation hazards.

In response to the increasing complexity of KMR instrumentation systems and in recognition that many performance problems should be attacked in the real-time environment, an on-site analyst is assigned to RISA at Kwajalein. Methodology for quick-look post-mission data analysis were developed and feedback provided after each mission. On-site performance evaluations were performed using stars, spheres, GEOS and Apache vehicles. A comprehensive program to improve the real-time pointing data continues, including ICC filters and coordinate transformations, and use of FPQ-14 data. On-site instrumentation development efforts included MPS-36 tracking in circular polarization, MPS-36 closed-loop Radar Error Detection System (REDS) mode, and software design for TASA/K-BOAT. Also in FY 82, analytical studies were made of Kwajalein Range Safety System (KRSS) filters, HOE and Low Altitude Defense System (LoADS) support, and accuracy statement methods.

CHAPTER V

RANGE SAFETY

The Range Safety mission is to insure that all reasonable precautions, consistent with operational requirements, are taken during the preparation and conduct of missile and other hazardous operations to prevent injury or damage. Range safety for all such operations at KMR is the responsibility of the National Range Commander, who discharges this responsibility through the Director, KMRD. This responsibility is carried out by the KMRD Safety Office located in Huntsville, Alabama, and the KMR Range Safety Office located at Kwajalein, Marshall Islands. The KMRD Safety Office develops all range safety policy and criteria that apply to hazardous operations at KMR and is responsible for long-range planning and negotiations with potential range users. The KMR Range Safety Office is responsible for insuring that all established criteria are followed and for providing operational range safety support during missile operations.

During FY 82, the following events occurred in the range safety area:

Sail-In Safety Analyses - On 19 June 1982, a group of 250 Marshallese landowners of the Kwajalein Atoll staged a protest by occupying several islands leased by the United States for test purposes. Kwajalein and Roi-Namur Islands were the principal camps, but some Marshallese also occupied Eniwetak, Omelek, Yabbenohr, Boggenatjen, Gegibu, Eru, Jakeru, Ennumet, Burle, and Ninni. Several missions (ICBM reentries, met rocket launches) were conducted during the occupation period. Risk calculations and close coordination with WSMC safety personnel facilitated the mission accomplishment.

Mid-Atoll Corridor Study - During the July - August period of 1982, the Marshallese negotiations for a three-year interim use agreement were underway, and several options relating to the continued use and modification of the boundaries of the mid-atoll corridor were evaluated. Coordination with WSMC safety and briefings to DOD Test and Evaluation (DDTE) and Mr. Koch, Department of Defense/International Security Affairs (DOD/ISA) resulted in a slightly modified southern boundary for the mid-atoll corridor. The eastern boundary (just north of Ningi) was not changed, but the western boundary was moved (to north of Gehh).

Strategic Systems Test Support Study (SSTSS) Follow On Study - The SSTSS was completed in late September 1981, but the Executive Sponsor, DDTE, requested that the tri-service study group perform an additional analysis activity called the Aircraft Evaluation Study. Air-Eval, as it was called, addressed the future mobile terminal test support requirements and compared the alternative methods for long-term broad ocean area (BOA) test support: Air Force sponsored Advanced Range Instrumentation Aircraft (ARIA) upgrades (specifically, a 707 aircraft with ARIA Phased Array Telemetry System (APATS) antenna) versus the Navy P-3 aircraft (with the Extended Area Test System (EATS) follow-on antenna). Final briefings were made to the DDTE and the Major Range and Test Facility Council (MRTFC)

on 26 August 1982. The ARIA phased array telemetry antenna program was cancelled.

Range Safety Manual - The Safety Office prepared and coordinated a major republication of the KMR Range Safety Manual. It describes the current safety philosophy and criteria used by KMR in assuring that operations and tests are conducted so as to minimize danger to persons, property or equipment. The document was signed by the BMD Program Manager in April 1982 and supersedes the 1975 manual.

Sky Screen Augmentation - Because radars, being used for safety track of missiles tested at KMR, are precluded from seeing the missile during the first few, but critical seconds by the radar horizon; and because of nearby indigenous populations, some early augmentation of safety sensors for the HOE missions was required. A manual sky screen approach was developed whereby two observers, located on Legan and Gugeegue, can sight through a time graduated template of nominal trajectory to relay to the flight safety officer early indications of non-nominal flight. This concept was found to be highly successful in providing safety confidence in missile performance prior to radar acquisition.

Range Safety Group of the Range Commanders' Conference (RCC) - The KMRD Safety Office has supported the Range Safety Group and its two Ad Hoc Committees on Laser Safety and Flight Termination Systems. Reports were published on Antennas, Couplers, Dividers, Mixers, and Amplifiers; Batteries, Power Supplies and Switches; Timers, Monitor Units, Switching and Control Interfaces; and Explosives, Initiators, Shaped Charges, and Safe and Arm Devices. A Laser Safety Report (Volume 1) was completed, as was the "Unguided Rocket Safety" document.

Kwajalein Range Safety System - A fully redundant flight safety display and command system became operational at KMR with the demonstration test of an apachee rocket in September 1982. The system is designed to operate in a fully automatic mode with either an automatic command destruct or a manual command destruct capability. It has three computer systems, two dual Cathode Ray Tube (CRT) displays, two command/status panels and two command control transmitters. The computational software is triple redundant in a CDC 7600 computer and the two VAX 11/780 computers. The second VAX 11/780 computer with dual CRT displays was added in January 1983 and the backup command/status panel was added in April 1983. The display software is dual redundant in the VAX 11/780 system. The system was used in March 1982 in a passive mode to support the launch of the ALPS at KMR. The DOT 5 mission which was launched in August 1983 was also successfully supported in the passive mode and served as an excellent target of opportunity as a part of the pre-HOE mission certification process. Other targets of opportunity were also supported including ICBMs and met rockets.

The certified system is capable of using input data from up to five radars at KMR and display vehicle position, velocity and instantaneous impact information.

Signature Measuring Radar Safety Evaluation - The SMR was sited within the normal hazard area three sigma impact zone of an incoming target vehicle from VAFB. Since the system could not be operated in remote control except for a very short length of time, it became necessary to shelter the radar crew in lieu of evacuating them. As a result, a small shelter was designed and installed in the impact area near the radar control van. A procedure was then incorporated whereby shelter occurred after the target vehicle had been launched. The mission was successfully completed.

Designating Optical Tracker Follow-On - A safety study for a new booster for the DOT program was initiated in 1982. The booster system is a Minuteman I second stage vehicle that has been modified in support of the Air Force Aries program. Several problems were identified for future investigation which include a near launch area tracking requirement, a very accurate Instantaneous Impact Prediction (IIP) calculation, methods of debris containment, and aircraft recovery requirement. Some of the solutions being considered include: a new range safety support system; a mobilized MPS-36 radar; use of telemetry data; addition of an interferometer tracking system; and the addition of a transportable safety system.

Sampling Program - During 1982, questions regarding possible radioactive materials in the Kwajalein lagoon were asked by the Marshallese leadership. The questions were asked during a meeting between DOE (Mr. Roger Ray) and several Marshallese leaders. At Mr. Ray's request, a written response to the questions was provided to President Kabua by MG Tate. The response provided assurance that no hazardous radioactive materials were being left in the lagoon. The sampling program results were referenced as evidence that depleted uranium, which was introduced on Air Force reentry vehicles, has not caused a detectable increase in total uranium concentrations in the Kwajalein environment. No health or safety problem exists with uranium in the Kwajalein lagoon.

Contractor Injury Experience, KMR - During the routine FY 82 mid-year KMR accident experience review by this office, a significant trend toward certain types of injuries was noted. Specifically, in 67% of the personal injury cases, the injury resulted from slips/falls or overexertion during manual lifting operations. Although the overall accident experience at KMR is considered low, especially given the nature of the complex industrial operations and the cultural mix in the workforce, it was believed that such accidents were further reducible. The accident causes were not specifically reported, but were suspected to involve lack of training, lack

of motivation and supervisory controls, and lack of readily accessible material handling equipment, as well as general inattentiveness. A letter from KMRD management was sent to the KMR Logistics Support Contractor (LSC) in April 1982, with follow-up correspondence in August 1982, requesting the LSC to initiate and aggressively pursue a personnel safety campaign which specifically focused upon prevention of slips and falls and upon proper lifting techniques, and which would gain high visibility as both an industrial and community safety theme. The LSC complied and by year's end, the statistical injury rates began to reflect an improvement.

Fire Protection Study - The outer island fire protection study was completed during 1982 and presented to KMRD management for implementation decisions. The study was quite thorough and comprehensive, and began with identification of all remote sensors, processors, and other unique, high dollar-value, mission essential equipment. Then followed a risk assessment analysis to properly focus corrective action on the truly significant hazards. The risk assessment process included consideration of mission criticality, probability of fire initiation, vulnerability to fire damage, and cost/benefit ratio. Each facility was graded and then rank ordered by priority of highest risk first. The study concluded that of 38 facilities reviewed, 17 facilities on seven islands merited automatic Halon fire protection systems, and that all such new facilities be equally protected. KMRD management accepted the study conclusions and approved a project to accomplish the protective systems' installation. Target date for Priority 1 facilities was set for 1 October 1983, with the remainder completed by 1 October 1984.

Relocation of KMR Hot Spots - KMR had two designated areas for parking/unloading explosives laden aircraft which were remote yet convenient to other KMR operations. These areas are called hot spots. During 1982, a problem developed with one hot spot surface which gave indications that the sub-surface load bearing support was suspect, and as a result of expressed USAF concerns, the hot spots were temporarily closed for inspection and repairs. A plan, developed by the KMR logistics support contractor, was initiated which involved load testing and resealing the surface area over the most suitable locations. The action resulted in re-establishment of one hot spot, in a new location, which satisfied both KMR and USAF safety concerns. An additional hot spot may be developed at a later date depending upon usage factors.

Ground Safety Support for LoAD/SENTRY - During 1982, extensive safety support was devoted to test facility design analysis for the SENTRY (formerly LoAD) program. Facilities included a scaled test site, which primarily involved rehabilitation to existing structures to support the Initial Propulsion Test Vehicle (IPTV) launches, and a new test site at Rhodes Canyon, both facilities at the White Sands Missile Range, New

Mexico. Concept level designs for the KMR test support facilities for SENTRY were also analyzed. Safety support included active participation at numerous planning meetings and ultimately produced DOD Explosive Safety Board approval of the Rhodes Canyon facilities.

CHAPTER VI

MAJOR CONSTRUCTION ACTIVITIES

This chapter discusses the major construction activities for FY 82. This includes construction under Major Construction Activity (MCA) and RDT&E Appropriations, Plans & Programs.

Resize and Modernize Range Facility - FY 80 MCA

This FY 80 MCA project, funded at $2.9M is essentially complete; however, due to updating of TPQ-18, Kwajalein Island, equipment to comply with the "state-of-the-art" modifying of certain areas, has been accomplished to accommodate these changes.

Barracks Modernization, Kwajalein Island - FY 81 MCA

This project is to upgrade the largest bachelor housing facility (Pacific Barracks) on Kwajalein Island by providing increased privacy and additional space. Project was completed in FY 82. The project cost is $4,450,000.

Digital Microwave System Installation

One each, 10' x 20', tilt-up, concrete slab structure, was constructed on the islands of Omelek and Eniwetak. This is in addition to those previously constructed on the islands of Ennylabegan, Legan, Gellinam, and Gagan. In addition to the concrete structure, a tower and electrical power was added to support this facility.

Pollution Abatement Facilities, Kwajalein Island - FY 81 MCA

The total cost for this project is $990,000. All outfalls, which were not covered by the Environmental Protection Agency's Municipal Permit, consist of the pick-up and tie-in of piping to the Sewage Treatment Plant, Kwajalein Island. All outer islands' pollution abatement was completed in FY 81.

Marine Shop, Kwajalein Island - FY 82 MCA

This project includes the demolition of an entire existing old structure and the rebuilding on the same foundation for a total cost of $1,697,000. The structure houses the offices, shops, and all support areas required to operate the Army's marine fleet at Kwajalein Island.

Live Explosive Storage Facility, Roi-Namur Island - FY 82 MCA

This project is being constructed for a cost of $515,575. The project consists of removing existing old structure and berm and installing a new

larger facility to accommodate present and upcoming programs. Old berm will be reconfigured to suit new structure.

Missile Assembly Building, Roi-Namur Island - FY 82 MCA

The project will cost $932,295 to construct. The project consists of the removal of existing old structure and berm and installing a new and larger facility to accommodate present and upcoming programs. Old berm will be reconfigured to suit new structure.

CHAPTER VII

BASE SUPPORT ACTIVITIES

General

The KMR nonindigenous population was 2,987 at the end of FY 82 and is tabulated in Table 6, this chapter. This is 117 more than the population at the end of FY 81.

Base Support

Scope of Work (SOW), SW-K-1-80, which delineated the effort to be performed by the LSC, Global Associates, under Contract DASG60-80-C-0001, was formally revised once during FY 82. This revision, which became effective 1 March 1982, addressed such subjects as control of PCBs, mothballing of the liquid nitrogen plant, changing Environmental Protection Agency reporting requirements, revising American Forces Radio and Television Service operations and adding personnel to the Systems Technology Project Office direct support operation.

As the present contract for logistics support at KMR was scheduled to expire on 30 September 1982, actions which were started in FY 81 for a competitive procurement were continued throughout FY 82. Two prospective bid proposals were received by BMDSCOM, evaluated, and a new contract (DASG60-82-C-0063) for logistic support was awarded to Global Associates, Oakland, California for the three year period, 1 October 1982 through 30 September 1985, with an additional two year option period.

The basic security and law enforcement contract with Washington Patrol Service (WPS) was also scheduled to expire on 30 September 1982. This contract contained provisions for a two year extension option period (1 October 1982 through 30 September 1984) and this option was exercised by BMDSCOM. Concurrent with actions to exercise the option with WPS, an unanticipated Marshallese "sail-in" demonstration started in June 1982 which was related to the executed agreement for a status of forces agreement between the U.S. Government and the Republic of the Marshall Islands (RMI). This civil disturbance rapidly increased in intensity, straining the existing workforce of WPS. To alleviate this situation, a contract change order modification was expeditiously executed and resulted in augmenting the WPS patrol officer staff by an additional 20 officers (on Temporary Duty (TDY) basis). With no relief in sight from the demonstration, an extensive assessment of the total security and law enforcement capabilities at KMR was performed by BMDSCOM and outside agencies. The assessment indicated a need for a substantial increase in the number and quality of security and law enforcement personnel assigned to KMR along with other needed improvements. A long term plan for improving KMR security capabilities was formulated. This plan included the need for increasing personnel strength and qualifications, upgrading of the communications systems, installing sophisticated alarm systems, obtaining two marine patrol boats for a harbor patrol, improving training of

personnel, adding riot control equipment and capabilities including an emergency response team, and improving public relations. At the close of FY 82, this plan for security upgrade had been approved and expedited actions were initiated to formally incorporate these needed capabilities into a major revision of the WPS Scope of Work.

The KMR Backlog of Maintenance and Repair (BMAR) program which was initiated in FY 81, continued through FY 82. The Pacific Ocean Division (POD) Corps of Engineers was provided an additional $3,000,000 to accomplish Phases II and III of the electrical feeder system rehabilitation project ($1.9M) and Phase II of the family housing plumbing repair project ($1.1M). During FY 82, the BMAR projects for the hospital plumbing repair and Phase I of the family housing plumbing repair were completed.

In addition to the BMAR projects, POD designed a project to construct a sanitary sewer system on Echo Pier and connect it into the main island sewer system. This allowed the LSC marine department to offload the marine vessel waste water systems directly into the island sanitary sewer system, thus eliminating the discharge of raw sewage into the ocean.

The LSC completed facility engineering projects during FY 82 totaling $358,000 for construction; $1,312,000 for repair; $230,000 for equipment-in-place; $32,000 for maintenance projects; $17,000 for fabrication and $61,000 for range user technical support. Facility engineering projects approved during FY 82 included the expansion of the Digital Microwave System, repair of both the fuel and cargo piers on Kwajalein Island and the cargo pier at Meck Island, modification of the Gagan TM facilities, replacement of the asbestos insulation on the exhaust system in power plant 1 and repair to the airfield "Hot Spot". In addition, the LSC provided substantial assistance to the Corps of Engineers contractor for accomplishment of BMAR projects.

Major overhaul of the nine diesel engines in power plant 1 at KMR, which began in FY 79 (six overhauled in FY 79, 80 and 81), continued in FY 82 with one additional engine being overhauled.

The installation of the new Signature Measurement Radar in FY 81 at KMR required the loan of two kilowatt (KW) precise power generators from TSARCOM. A loan agreement which was consummated with TSARCOM in FY 81 was continued throughout FY 82.

The energy conservation program which began in FY 74 was very successful in FY 82. In terms of British Thermal Units (BTUs) of energy, overall consumption was 8.15% under the Department of the Army (DA) assigned goal of 1.57 trillion BTUs. In terms of diesel fuel, the reduction equates to 922,000 gallons.

KMR participated in the first annual Army Energy Awareness Week. Activities included posters, radio, television and newspaper publicity, decalcomanias and organized school activities focusing on conservation and efficient use of energy.

Two projects were approved by Headquarters Department of the Army (HQDA) under the Productivity Enhancement Capital Improvement Program (PECIP). One of the projects (potential FY 83 funding) will provide energy savings by double glazing family housing quarters windows to minimize air conditioning losses. The other (potential FY 84 funding) project will reclaim waste heat from air conditioners by installing hot water generators which provide heat for domestic water heating. Both projects will be self amortizing in approximately two years.

Hayes International Corporation of Dothan, Alabama was awarded a competitive contract for inspect repair as necessary (IRAN) of six C-7A aircraft in FY 81. The first C-7A aircraft under this competitive contract arrived at Hayes International on 23 October 1981 from KMR. Four C-7A aircraft completed the IRAN cycle in FY 82. Three of the aircraft had modifications for the TASA which included navigational, electrical and structural modifications.

During FY 82, studies continued to determine the most suitable aircraft that would be a replacement candidate for the C-7A aircraft. Two aircraft, De Havilland's DASH-7 and Lockheed's C-130, were considered. Both aircraft had some disadvantages for KMR mission support. The DASH-7 could not support TASA requirements and the C-130 required a runway extension for Meck operations. The conclusion reached was to retain the C-7A for the foreseeable future.

An aviation safety team from the US Army Safety Center, Fort Rucker, Alabama visited KMR to review KMR's overall aviation operations (i.e., maintenance, flight operations, safety, etc.). Shortcomings were identified together with recommended countermeasures, which have been implemented.

The Army Safety Center at Fort Rucker, Alabama agreed to support Class A and selected Class B aircraft mishap investigation requirements for KMR aircraft. The Safety Center agreed to provide a board president, a recorder and a civilian specialist.

The modifications for the C-7A aircraft stall warning system for KMR aircraft were approved by Robins Air Force Base, Georgia, and were scheduled to be installed on all seven aircraft.

Load testing and repair of the "hot spot" area at Kwajalein, as noted previously, was successfully completed during FY 82. The testing and

repair was accomplished with minimum expenditure of funds by the LSC. The repair methodology utilized avoided substantial expenditure of funds associated with the repair approach recommended by POD.

A waiver of military customs inspection at KMR applicable to predeparture inspections of DOD aircraft, DOD sponsored cargo, air passengers, crew members and accompanied baggage was extended by HQDA (i.e., for one year).

The Environmental Protection Agency requirement for oil water separator kits to be installed on KMR's Landing Craft, Utility (LCU) was completed on LCU 1514 in FY 82.

Disposition instructions for disposal of KMR's Landing Craft, Mechanized-6s (LCM-6s) serial numbers 6135 and 6057 "as is, where is" were received from the Naval Sea Systems Command. The LCM-6s will be replaced by two LCM-8s being obtained from Sharpe Army Depot.

A decision was made to replace KMR tugs LT 2086 and LT 2087 after both tugs experienced an inordinate amount of operating difficulty. Suitable Army assets were nonexistent. Two tugs from the Navy Inactive Ship Facility, Bremerton, Washington, were selected as the best candidates for replacement to the Department of the Army for use at KMR. After transfer, tugs will be drydocked/overhauled.

A memorandum of understanding for installation of communication units for KMR's four LCUs was agreed to with the Communications and Electronics Command, Fort Monmouth, New Jersey.

Priority replacement actions were submitted to TSARCOM for replacement of several fire fighting vehicles at KMR. These included replacements for the MB-1 crash/rescue firefighting vehicles with the new P-19 vehicles being purchased by the Air Force as replacements for the older P-4 units. In addition, three purple "K" model firefighting vehicles were requested as replacements for the skid mounted chemical units which are mounted on pickup trucks.

The Base Level Commercial Equipment Budget input for FY 84 was submitted to HQDA (DAMA-CSS-P). This budget input included equipment requirements totaling $731,000. Previous submittals for FY 81 ($2,600,000), FY 82 ($42,776,000) and FY 83 ($3,679,300) resulted in allocations of $100,000 (FY 81), $107,000 (FY 82) and $485,000 (FY 83). HQDA was advised of the problems being created by the low funding amounts and was requested to eliminate the low baseline figure ($100K) previously established in FY 80.

U.S. Army Tank-Automotive Materiel Readiness Command (TARCOM) obtained funding for procurement of the 60 ton crawler crane which had been on backorder since 1978. Global, Oakland, made the competitive purchase and this item was delivered to KMR within 90 days of the purchase request. Total price of this unit, complete with all attachments and selected spare parts, was approximately $310,000. Original estimates in 1978 indicated this item would cost $450 - $500,000; however, due to the depressed market conditions, Global was able to find new units in inventory at greatly reduced prices.

The new replacement 125' condor crane was delivered to KMR during FY 82. This unit had been allocated in FY 81 and was being purchased by TARCOM. The old unit on-site was expected to last until delivery of the new unit from production; however, this unit was damaged beyond repair when the ALTAIR antenna accidentally slipped downward and sprung the maintenance platform during routine antenna work. The boom was severely damaged (warped and cracked) and would have required complete replacement at the contractor's facility in California. Due to the high cost of shipping and repair, it was decided to utilize other equipment at KMR to perform the large antenna work until the new crane delivery could be made. The new crane was completed at the Calavar facility in May 1982 and shipment arrived at KMR on the July barge.

Actions were taken to reduce procurement of subsistence items due to the restrictions placed on Marshallese purchases as a result of demonstrations on-site. These restrictions would have created a large overstocked condition on items with limited shelf life, however, expeditious actions taken resulted in cancellation of open orders which had not been filled and deleting future orders until the inventory levels were reduced.

Administrative Use Vehicles (AUV) allocated from FY 81 procurement actions were delivered to KMR during this period. FY 83 requirements were submitted to TARCOM and initial indications (based on DA severe budget constraints) were that allocations for FY 82 would be only 25% of requirements. Intensive management actions by both TARCOM and BMDSCOM resulted in significant improvements in these projections. Allocations for FY 82 and FY 83 were increased to 46 and 100 percent, respectively.

The rental rates for all KMR family, bachelor and barracks quarters were surveyed in accordance with Army Regulation (AR) 210-12 by the POD. The results of this survey were used as a basis for adjusting the rental rates for KMR's quarters for FY 83.

A study was conducted for the purpose of defining policy and procedures for housing use and allocations at KMR for unaccompanied personnel. Results of this study produced a plan whereby the site manager of organizations equal to or more than 15 people would be eligible for family housing. Site managers with less than 15 people would be eligible for trailer housing (single occupancy). Persons who would be eligible for family quarters if accompanied would be eligible for trailer (double occupancy) or a bachelor quarters room (single occupancy). Technical and skilled persons, as space permits, would be eligible for a bachelor quarters room (double occupancy).

A medical and dental survey, consisting of a three member team from Tripler Army Medical Center, was conducted of KMR's medical and dental facilities. This survey was a follow-up survey to insure that corrective actions had been taken on deficiencies noted in the FY 81 survey. This survey resulted in an outstanding rating for the medical and dental facilities.

Headquarters Pacific Air Force (HQPACAF) recommended that the departure time for the Friday Military Airlift Command (MAC) flight from Hickam AFB to Kwajalein be changed from 0830 hours to 0440 hours thereby requiring check-in time for passengers on the Friday flight to report at 0240 hours. This change was recommended due to a severe bird strike problem at Midway Island. This command nonconcurred with this recommendation and requested MAC explore other alternatives. Eventual resolution of a new schedule was reached; however, the change in departure time was not implemented during FY 82.

Air Micronesia reduced its flights from Honolulu to KMR from four a week to three a week.

RMI formally advised the command of potential plans to operate a larger aircraft into Kwajalein in lieu of the NOMAD aircraft. This larger aircraft is a HS-748 with a 48 passenger capacity. RMI was provided information relative to service charges for operation of the larger aircraft into KMR. The HS-748 began service into Kwajalein in July 1982.

During the term of the current LSC contract (DASG60-80-C-0001), both the recreation fund account and the dining facilities account had accumulated a substantial excess of funds. Extensive efforts were taken in FY 82 to eliminate these excesses prior to the end of the contract year by holding (or reducing) some prices and accomplishing a number of needed recreational program facility/equipment improvements.

KWAJALEIN MISSILE RANGE NON-INDIGENOUS POPULATION - 30 SEP 82

Kwajalein Island		
Commanding Officer, Kwajalein Missile Range and Staff		142
United States Air Force		8
Ballistic Missile Defense Operations		5
U.S. Trust Territory		4
Corps of Engineers, Pacific Ocean Division		21
Intelligence and Security Command		5
Defense Mapping Agency Topography Center		6
Federal Aviation Administration		22
Kiernan Reentry Measurements Site (MIT/LL, RCA, Sylvania)		542
Global Associates		1,082
Kentron International		463
Control Data Corporation		46
Martin Zachary Corporation & SUBS		83
Systems Technology Program Contractors		134
Department of Energy (Brookhaven National Laboratory and U.S. Oceanography)		7
Washington Patrol Services		52
Transients		56
	SUBTOTAL	2,678
Roi-Namur Island		
Kiernan Reentry Measurements Site		98
Global Associates		133
Kentron International		15
Washington Patrol Services		14
Transients		2
	SUBTOTAL	262
Ennylabegan Island		
Global Associates		8
Kentron International		12
	SUBTOTAL	20
Meck Island		
Global Associates		8
	SUBTOTAL	8
Ebeye		
Global Associates		19
	SUBTOTAL	19
	TOTAL	2,987

Table 6 - KMR Non-Indigenous Population

CHAPTER VIII

KMR RELATIONSHIPS WITH THE TRUST TERRITORY AND THE MARSHALLESE

Negotiations between the Government of the Marshall Islands (GOMI), DOD, and the Department of Interior (DOI) resulted in the signing of the KMR Interim Use Agreement (IUA) on 9 January 1982. This IUA provided GOMI's assurance of noninterference with KMR operations during the term (1 October 1981 - 30 September 1982) of the IUA. In return, DOD and DOI agreed to provide additional funding and projects to GOMI during FY 82 totaling $9.0M.

The Compact of Free Association was signed by the GOMI and the Government of the U.S. on 30 May 1982. (The compact is to become effective upon approval by the people of the RMI through a plebiscite and approval by both Houses of the U.S. Congress.)

Negotiations began on a new IUA to become effective 1 October 1982 since it was considered highly unlikely that the compact would receive approval by both governments prior to the expiration of the current IUA.

In January 1982, the Marshall Island judiciary was certified by the Trust Territory High Court as meeting all constitutional agreements of the Marshall Islands. President Amata Kabua used this certification as a basis to declare that the GOMI was now a fully functional Republic, thereby was redesignated (unilaterally) the RMI.

Notwithstanding the provisions of the IUA relating to noninterference with KMR operations, on 19 June 1982, RMI landowners occupied portions of Kwajalein, Roi-Namur, and mid-corridor islands. The Marshallese occupied these islands in an attempt to pressure the government of the RMI to cause the lease agreement to be renegotiated to increase the rental payments paid to RMI (Kwajalein Atoll landowners). The number of demonstrators varied between 300 and 600 and consisted mainly of old men, women and children. The demonstration was still in process at the end of FY 82, but appeared to be fairly well contained.

The U.S. Army License and Support Agreement between the RMI and BMDSCOM, which provides for landing rights at KMR for RMI aircraft, was extended through 30 September 1982.

CHRONOLOGY

OCT 81	ALTAIR commenced low altitude SPADATS mission
JAN 82	RMI and U.S. Governments finalized and signed IUA for the period 1 Oct 81 - 30 Sep 82
MAY 82	Compact of Free Association signed by the RMI and U.S. Governments
JUN 82	Marshallese demonstration began
JUN 82	DMS installation completed on all islands comprising KMR
JUL 82	New 125' Condor crane arrived at KMR
SEP 82	ALTAIR Deep Space System verified and commenced operations
SEP 82	KRSS verification test successfully completed
SEP 82	A new three year contract was awarded to Global Associates
SEP 82	BMDSCOM exercised the option to extend the security contract through Sep 84

GLOSSARY OF ABBREVIATIONS (ACRONYMS)

AFB	Air Force Base
ALCOR	ARPA Lincoln C-Band Observable Radar
ALPS	Air Launched Probe System
ALTAIR	ARPA Long Range Tracking and Instrumentation Radar
AMARV	Advanced Maneuvering Reentry Vehicle
APATS	ARIA Phased Array Telemetry System
AR	Army Regulation
ARIA	Advanced Range Instrumentation Aircraft
ARPA	Advanced Research Projects Agency
ATC	Advanced Technology Center
AUV	Administrative Use Vehicles
BMAR	Backlog of Maintenance and Repair
BMD	Ballistic Missile Defense
BMDATC	Ballistic Missile Defense Advanced Technology Center
BMDSCOM	Ballistic Missile Defense Systems Command
BMDSTP	Ballistic Missile Defense Systems Technology Program
BMO	Ballistic Missile Organization
BOA	Broad Ocean Areas
BTU	British Thermal Unit
CRT	Cathode Ray Tube
C-TASA	Caribou Terminal Area Support Aircraft
DA	Department of the Army
DDTE	DOD Test and Evaluation
DMS	Digital Microwave System
DMSP	Defense Meteorological Satellite Program

DOD	Department of Defense
DOD(ISA)	Department of Defense (International Security Affairs)
DOE	Department of Energy
DOI	Department of Interior
DOT	Designating Optical Tracker
EATS	Extended Area Test System
ERSS	Earth Resources Support System
FY	Fiscal Year
GMD	Ground Meteorological Device
GOMI	Government of the Marshall Islands
GPS	Global Positioning System
GTE	General Telephone Electronics
HOE	Homing Overlay Experiment
HQDA	Headquarters Department of the Army
HQPACAF	Headquarters Pacific Air Force
ICBM	Intercontinental Ballistic Missile
ICC	Instrumentation Control Center
IIP	Instantaneous Impact Prediction
IPTV	Initial Propulsion Test Vehicle
IRAN	Inspect Repair As Necessary
IRBM	Intermediate Range Ballistic Missile
IUA	Interim Use Agreement
K-BOAT	Kwajalein Broad Ocean Area Tugboat
KMR	Kwajalein Missile Range
KMRD	Kwajalein Missile Range Directorate
KMRN	Kwajalein Missile Range North

KRCC	KREMS Radar Control Center
KREMS	Kiernan Reentry Measurements Site
KRSS	Kwajalein Range Safety System
KW	Kilowatt
LCM	Landing Craft, Mechanized
LCU	Landing Craft, Utility
LLMR	Low Level Meteorological Rocket
LoADS	Low Altitude Defense System
LSC	Logistics Support Contractor
MAC	Military Airlift Command
MCA	Major Construction Activity
MM	Minuteman
MMS	Multistatic Measurements System
MMW	Millimeter Wave
MRTFC	Major Range and Test Facility Council
NASA	National Aeronautics and Space Administration
NORAD	North American Defense
OT	Operational Tests
PECIP	Productivity Enhancement Capital Improvement Program
PET	Performance Evaluation Test
POD	Pacific Ocean Division
RADOT	Recording Automatic Digital Optical Tracker
RCA	Radio Corporation of America
RCC	Range Commander's Conference
RDTE	Research, Development, Test, and Evaluation
REDS	Radar Error Detection System

REMP	Reentry Environment Measurements Program
RF	Radio Frequency
RISA	Range Instrumentation and Systems Analysis
RMI	Republic of the Marshall Islands
RV	Reentry Vehicle
SAC	Strategic Air Command
SAMTEC	Space and Missile Test and Evaluation Center
SDC	Status Display Console
SMILS	Sonobuoy Missile Impact Location System
SMR	Signature Measurements Radar
SOI	Space Object Identification
SOW	Scope of Work
SPADATS	Space Detection and Tracking System
SSTSS	Strategic Systems Test Support Study
STREP	Systems Technology Reentry Program
STS	Space Transportation System
SVT	System Verification Test
TARCOM	Tank-Automotive Materiel Readiness Command
TASA	Terminal Area Support Aircraft
TDY	Temporary Duty
TRADEX	Target Resolution and Discrimination Experiment
TSARCOM	Troop Support and Aviation Materiel Readiness Command
TTPI	Trust Territory of the Pacific Islands
TTS	Transportable Telemetry System
UHF	Ultrahigh Frequency
USAF	United States Air Force

VAFB	Vandenberg Air Force Base
WFR	Wind Finding Radar
WPS	Washington Patrol Service
WSMC	Western Space and Missile Center