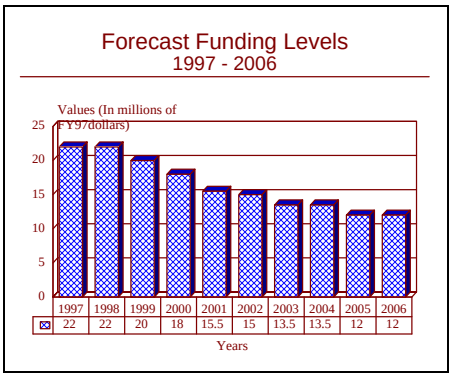
Marine Corps C^3 Systems - Archived 5/98

Outlook

- PROGRAM DISBANDED IN FY97
- Technology support program
- Integration of PLRS and GPS continues
- Emphasis on Joint Operations and littoral warfare



Orientation

Description. The program PE#0206626M Marine Corps Command, Control, and Communications Systems develops tactical C^3 systems and related subsystems for the US Marine Corps.

Sponsor

US Navy
Marine Corps Systems Command
Quantico, VA
(Projects C0045, C0103, C1067, C2035)

Marine Corps Tactical Systems Support Activity
Marine Corps Base, Camp Pendleton, CA
(Projects C0045, C0103)

Naval Research Laboratory
Washington, DC
(Project C1067)

Contractors

Advanced Computer Systems Inc
Fairfax, VA
(Project C0103)

ATAC Corp
Mountain View, CA
(Project C0045)

Columbia Research Corp
Dumfries, VA
(Project C2150)

Computer Sciences Corp
El Segundo, CA
(Project C1443)

Logicon Inc
Eagle Technology
Arlington, VA
(Contractor support services for USMC interoperability programs, Projects C0045 and C1443)

General Electric Co
Syracuse, NY
(Project C1067)

ITT Corp
ITT Gilfillan
Van Nuys, CA
(Project C1067)

Litton Industries
Defense Systems Division
Van Nuys, CA
(Project C0103)

Lockheed Martin Corp
Syracuse, NY
(Project C1067)

Loral Corp
Loral Fairchild Systems
Syosset, NY
(Project C1443)

Science Applications International
Sacramento Valley, CA
(Project 2122)

SENSIS Corp
Syracuse, NY
(Project C1067)

TRW
Los Angeles, CA
(Project C2122)

Unisys Corp
Paramax Systems Corp
McLean, VA
(Project C1443)

University of Central Florida
Orlando, FL
(Project C1443)

Northrop Grumman Corpp
(formerly Westinghouse Electric Corp)
Electronic Systems Group
Baltimore, MD
(Project C1067)

Status. Various stages of development.

Total Produced. Does not apply as this is a technology support effort.

Application. This program element is concerned with development of operational Marine command, control and communications systems. Efforts are directed toward achieving inter/intraoperability and total integration of tactical C^3 systems and related subsystems.

Price Range. Indeterminate due to the support role played by this program element.

Technical Data

Design Features. A number of different projects make up this effort.

Project C0036 Marine Corps Command and Control Systems. This project has focused on two tasks: 1) the Position Location Reporting System (PLRS); 2) evaluation of the manpack NAVSTAR GPS terminal. The project has also included evaluation of the Tactical Combat Operations (TCO) system, and the Marine Integrated Fire and Air Support System (MIFASS) which was canceled by Congress in FY87. As of FY90 work from this project has been transferred to Project C2035.

Project C0045 Tactical Systems Inter/Intraoperability Program. This project involves efforts to assure that Marine Corps tactical C2 systems are interoperable with each other and with the equipment of other defense services and allied countries that interface with the USMC in joint operations.

Project C0103 Tactical Air Operations (Operational Systems Product Improvement). Formerly titled Marine Air Command and Control Systems Operational Development, this project provides support for the Marine Air Command and Control System in an effort to ensure that it achieves interoperability and compatibility both within the Marine Corps and in joint/ allied operations.

Project C1067 Aviation Radar Product Improvement Program. This project attempts to ensure that modifications are made to existing radars and associated equipment in response to identified deficiencies. It also attempts to ensure that electronic counter-countermeasures and anti-anti-radiation missile capabilities for existing radar systems are defined.

Project C1079 Joint interoperability of Tactical Command and Control Systems. This project supports Marine Corps participation in the Joint Chiefs of Staff-sponsored Join Interoperability of Tactical Command and Control Systems (JINTACCS) program which provides for the development of joint character and bit-oriented message standards and procedures.

Project C1443 Training Devices/Simulators (Engineering) Program. This project develops tactical engagement/command and control, training devices/ simulators

in support of operational weapon systems, tactical equipment, and tactical command and control systems.

Project C2035 Position Location Reporting System/ NAVSTAR/Global Positioning System. This project supports the integration of PLRS and GPS capabilities into the Corps.

Project C2102 Improved Direct Air Support Center (IDASC). This project upgrades the current IDASC to include physical/functional enhancements and a digital data interface to associated C^2 systems.

Project C2122 Tactical Combat Operations (TCO). This project is the focal point of Marine Air Ground Task Force (MAGTF) command and control. It provides the automation required by MAGTF and subordinate commanders for the receipt, fusion, display, and dissemination of selective input from the other C^2 systems.

Project C2150 Marine Tactical Auto C2 System. This project provides engineering and testing required to ensure implementation of operationally suitable, cost effective, and integrated tactical command, control, computer and intelligence systems required by the Marine Cops ashore and afloat in a joint environment. FY92 and FY93 funding contained in Project C2122 Tactical Combat Operations.

Variants/Upgrades

A number of upgrade efforts are included in this program element. This includes upgrading and testing of Marine C^3 system software and hardware to maintain interoperability with Joint/Allied commands, development of hardware for the TPS-32 Improved Radar Display Console, and development of a product improved Marine Air Ground Task Force Tactical Warfare Simulator (MTWS) display system.

Program Review

Background. Work began in FY82 on the Marine Integrated Fire and Air Support System/Position Location Reporting System interface controller for the MIFASS engineering development model. The program also funded participation in the NATO message standard working group. Upgrade of the Direct Air Support Center software began in FY82. In FY83, the Direct Air Support Center interface with the PLRS was defined. Development of a TPS-59, Tactical Air Operations Central-1985 interface began in FY82. In FY83, development continued on the interface and on TPS-59 and TPS-32 radar decoys.

During FY84, Project C0036 continued ED model fabrication and DT II. Project C0038 continued FSD with fabrication of the ED model. Project C0042 deployed the ED model to the 2nd Marine Division and the Army 9th Infantry Division for concept refinement. Project C0045 developed specifications for a PLRS general purpose interface controller. Project C0052 completed fabrication of an ED model by Magnavox and Rockwell Collins, and monitored OT II in preparation for DSARC III. Project C0062 completed modifications to the query response unit, plotter and message retrieval units. Project C0103 continued evaluation of the Computer Aided Mission Planning Center. Project C1067 continued testing and upgrading the TPS-32, TPS-63 and TPS-59. Project C1443 continued development of STEELTHRUST, a battalion-level war game.

During FY85, Project C0036 integrated hardware and software into the Engineering Development model. Project C0038 continued FSD. Project C0042 conducted pre-production verification unit tests on the first 15 production basic user units, and deployed the ED model to Camp Pendleton and Twenty-Nine Palms, CA, to support OT. Project C0045 continued to develop specifications for a PLRS general-purpose interface controller. Project C0052 continued to monitor OT II in preparation for DSARC III. Project C0103 initiated an effort to improve the Direct Air Support Center. Project C1067 continued testing and upgrading the TPS-32, TPS-63 and TPS-59. Project C1443 commenced prototype development of amphibious variants of the TACWAR and STEELTHRUST war games.

During FY86, Project C0036 concentrated on developmental and operational testing in preparation for Marine Corps Acquisition Review Council III. Project C0038 conducted OT II of the ED model. Project C0042 commenced First Article testing. Project C0045 established a protocol testbed. Project C0052 continued to monitor Global Positioning System (GPS) equipment programs to discover potential Marine Corps applications. Project C0103 continued its efforts to improve the Direct Air Support Center and the Air Combat Command Center

(formerly Tactical Air Command Center after a 1992 restructuring). Project C1067 continued testing and upgrading the TPS-32, TPS-63 and TPS-59. Project C1443 continued development of amphibious variants of the TACWAR and STEELTHRUST war games.

In FY87, the MIFASS program was terminated under Project C0036. Marine Corps interoperability documents continued to be developed under Project C0045. Accomplishments under Project C0103 included the continued preplanned project improvement of the TPB-1D Radar Course Directing Central and the correction of test deficiencies found in the Tactical Air Operations Module's TYQ-23. Under Project C1067, the Marine Corps initiated development of a spectrum analyzer to reduce electronic countermeasure vulnerability of the TPS-59 radar. The Tactical Warfare Simulation, Evaluation and Analysis System was completed in FY87 under Project C1443.

FY88 activities under this program element included the following activities: Under project C0036, the first follow-on PLRS system was procured, and operational tests of NAVSTAR GPS manpack terminal were monitored by the Marine Corps. The development of interoperability standards continued during FY88 under Project C0045. Significant accomplishments in Project C0103 included the correction of deficiencies in the TYQ-23 and the continuation of interoperability upgrades for the TYQ-23A Tactical Data Communications Central. Project C1067 focused on the integration of a non-developmental item display console into the TPS-32 radar, and the continuation of previous efforts to develop the spectrum analyzer for the TPS-59 radar. The Combined Arms Staff Trainer (CAST) was installed at Twenty-Nine Palms, CA, and TWSEAS software was fielded under Project C1443.

In FY89 the follow-on contract for PLRS was awarded, the seventh PLRS system and spares was fielded, test program sets were developed, and communications enhancements were demonstrated. The Marine Corps revised its acquisition strategy in regards to the GPS procurement and conducted field demonstrations to refine GPS employment concepts. In Project C0045 development of the Interoperability Data Base was completed, the Interoperability Testbed was established at MCTSSA, and interoperability test and certification of new C⁴I systems was conducted. In Project C0103 evaluation and selection of components occurred for the Portable Heliport Lighting Set, and upgrades for the Marine Air Traffic Control System (MATCS) were tested and evaluated.

In Project C1067, FY89 saw the completion of the hardware for the TPS-32 Improved Radar Display Console, as well as the start of the TPS-59 Low Radar Cross-Section Target Detection and Multi-Spectral Sensor Suite (MSSS) studies. In Project C1443 the Marine Air Ground Task Force Tactical Warfare Simulator (MTWS) was reoriented into commercial computer use from tactical computers, and software development in the Ada computer language was initiated.

In FY90, under Project C0103 the Marines tested and evaluated the PHLS configuration to meet an urgent safety-related Fleet Marine Force deficiency, as well as continued upgrading, testing, evaluating, and implementing current systems software and hardware to ensure compatibility and interoperability with joint/allied tactical command and control facilities. In Project C1067 the Marines began development of the TPS-59 ECM analyzer Energy Management/Track While Scan study, low RCS target modification, TPS-65 Solid State Transmitter, Mark XV Interface, MSSS sensors and TPS-63 decoys. Project C1443 continued development of the MTWS system software design. Project C0045 continued with the development/upgrade of the Interoperability Database System (IDBS). Opened up the IDBS to system users. Continued system engineering support for the development of the Marine Tactical Systems Technical Interface Design Plan (MTS TIDP) and the Marine Tactical Interoperability Test set (MITS).

In Project C2035 development of the PLRS/GPS interface unit was initiated, as well as the downsized PLRS Master Station/Communications Enhancements. GPS test and evaluation was conducted, and remaining PLRS installation kits and ancillary hardware were purchased. Project C2102 Improved Direct Air Support Center (IDASC) Product Improvement Program reviewed non-developmental item (NDI) software packages. A modification effort to a typical Defense Mapping Agency (DMA) mapping application software package was ongoing at NAVELEX, Vallejo, CA. Candidate hardware has been acquired and a prototype system demonstrated.

Project C2122 tactical Combat Operations (TCO) focused on defining TCO systems engineering and acquisition strategy to deploy a baseline TCO system which provides for the integration of associated MTACCS systems such as Marine Air Command & Control Systems (MACCS), INTEL, and Marine Integrated Personnel System/Marine Integrated Logistics System (MIPS/MILOGS).

In FY91, under Project C0103, the Marines continued software modification to IDASC. An additional prototype was to be built and suitability testing conducted. C0103 continued to develop the KG-84 modification to the TYQ-3A. The Data Link Emulator Unit (DLEU)

was modified in order to be compatible with the Tactical Air Operations Module (TOAM) and the Advance Tactical Air Command Central (ATACC). Software version R for the TYQ-3A was fielded. Modifications to the TAOM software/firmware were to initiated in order to record and monitor Joint Tactical Air Operations (JTAO) messages.

Project C1067's FY91 efforts were to complete verification of the TPS-59 low radar cross section capabilities; develop specifications for full-scale development of a modification kit. The project continued reliability improvement study and analyses. MSSS-1: continued improvement of system software/hardware. MSSS-2: selected system and began development of an engineering development model. NDI Radar: continued evaluation of NDI radars. C0045 continued with maintenance of the IDBS and the expansion of the user base. Commenced with the graphic representation of the MCTCA in the IDBS. Continued with updates to the MIRC, MTS TIPD, and MCTCA. Continued to support the development of military standards. Continued development of the mid-term MCTCA and the MITS.

For FY91, Project C1443 completed the design phase with all documentation baselined. Commenced Coding Phase for software modules. Developed test plan and test description. Procured modified suite of hardware for subsequent use in operational tests. In Project C2035, FY91 plan was to enter in a cooperative effort with the Army and navy to rewrite the current CMS-2 software into Ada for application with DSMS. Development of PCE and GPS Interface Unit (IU) continued. Continued DEM/EVAL of various GPS receivers. C2102 continued work on software modification. An additional prototype was built. Suitability testing was conducted. Project C2122 will include an evolutionary design labeled as Field Development Systems (FDS) which will take all systems residing under this program through further design and hardware selection. FDS I will be conducted and followed by FDS II.

In FY92, Project C0045 continued with the development and maintenance of the Interoperability Database System (IDBS) and systems engineering support configuration management for the maintenance update of the MTS TIDP, MCTA, MIRC, and MITS. Project C0103 completed development of KG-84 Cryptographic capability modification to the AN/TYQ-3A Tactical Data Communications Central, fielded Version S of An/TYQ-3A software, and sustained low level of effort planning modifications resulting from late delivery of Tactical Air Operations Modules (TAOM). Project C1067 completed pre-contract preparation for the DSMS, continued development of Handheld GPS Receivers and of PCE. It also continued development of EDM for MSSS-2 and continued evaluation of NDI radars.

Project C1079 completed verification of AN/TPS-59 Low Radar Cross Section (LRCS) capabilities and awarded contract, developed specification for full-scale development of a modification kit, and continued reliability improvement study and analysis. Both MSSS-1 and MSSS-2 programs were terminated.

Also in FY92, Project C1443 continued the system engineering effort in the development of change proposals to Variable Message Format, Tactical Air Data Information Link-Joint, and US Message Text Format as evolving joint standards, as well as Joint Tactical Air Operations recertification of the Tactical Air operation Center and Military Air Traffic Control Aided Landing System (MATCALS).

In Project C2035, a total of 35 GPSIU prototypes were developed. Work continued on the development of the PLRS Communication Enhancement (PCE) as well as initiating developmental test on the Precision Location GPS Receivers. Marine Corps Tactical Systems Support Activity (MCTSSA) started effort to re-host Master Station software from UYK-44 and UYK-7 computers which are no longer in production to the Desk-top Tactical Computer and converted this software to the ADA computer language.

Project C2102 accomplished the downsizing of the IDASC baseline and incorporated previous hardware and software upgrades into highly mobile Standard Integrated Command Post shelters on the HMMWV vehicle.

Project C2122 accomplished the following in FY92: conducted Field Demonstration System (FDS)-1 with the 7th Marine Expeditionary Brigade during November 1992; refined system requirements, completed initial hardware and training analysis; initiated the Cost and Operational Effectiveness Analysis,; performed evaluation of alternative candidate systems; refined detailed program documentation for pending Milestone I review; and participated in a joint effort with the Army Combat Service Support Control System (CSSCS) program.

Also in FY92, Project C2150 conducted integrated test of MTACCS in the Field Development System. Continued development of the specifications for the MTACCS architecture in terms of component systems, information requirements, common software, common

hardware, system security requirements, communications/navigation systems, system control and operational facilities. Initiated development of the MTACCS Common Application Support Software (MCASS) V1. Initiated engineering efforts to integrate MTACCS with the Navy's evolving Copernicus and integrated Interior Communications Control projects.

During FY93, Project C0045 and Project C0167 continued the development work from FY92. Project C0103 proceeded to correct interoperability problems in fielded systems which arose with users of the TAOM and performance envelope deficiencies identified when the TAOM underwent joint testing. No program activity has been listed for Project 1079 for FY93.

Project C1443 continued with the efforts begun in FY92, as well as beginning joint testing and certification of TADIL-J C^3I Systems, and participated in system engineering effort to provide integrated Tactical Ballistic Missile Defense.

In FY93, Project C2035 continued Master Station software re-host efforts and took delivery of the 35 GPSIU prototypes. Operational testing of GPS receivers was begun and development of PCE continued. The PLRS Interface Controller software was completed and demonstrated in a MCTSSA System Integration Environment. Project C2102 commenced upgrading systems software to include compatibility with all external command and control agencies, and continued downsizing IDASC baseline and incorporated previous hardware and software upgrades aboard the HMMWVs.

During FY93, Project C2122 was scheduled for a Milestone I review during the fourth quarter of FY93 and obtain a Milestone I decision. Project C2150 continued to develop and configuration manage the specification for the MTACCS architecture. Completed development, test and integration of the MCASS V1. Completed engineering efforts to support prototype of initial data exchange between MTACCS and the Navy afloat C^4I systems. Developed the System Integration Environment (SIE) at MCTSSA.

FY94 plans called for the following: Project C0045 continued maintenance and updated work from FY92 and FY93; Project C0103 began upgrade of TAOM to a Joint Tactical Information Distribution System (JTIDS); Project C1067 monitored, tested, and evaluated the TPS-59 radar tactical ballistic missile upgrade contract; Project C1079 continued system engineering efforts in development of change proposals to VMF, TADIL-J, and USMTF as evolving joint standards. Project 1443 activity completed Milestone III and worked on achieving initial operational capability at the conclusion of field testing.

In FY94, Project C2035 fabricated 35 PCE engineering development models and performed operational testing, as well as continued the ADA conversion. Master Station software for Desk-top Tactical Computer in CMS-2 language was completed at this time. Project C2102 developed and incorporated new message standards to improve interoperability with the Air Combat Command Center (formerly Tactical Air Command Center). Project C2122 conducted operational testing during mid-1994, achieved a Milestone III fielding decision, implemented TCO training plan, initiated fielding, revalidated TCO hardware requirements, and continued MIPS/MILOGS cooperate effort with the Army to develop the Marine Corps unique functions in the Army CSSCS.

Also during FY94, Project C2150 continued to develop specification for the MTACCS architecture based on FMF user appraisals or new requirements, and integrated MTACCS architecture with the Joint Services Command and Control architecture; initiated the development of common integration design specifications for Marine C^4I systems within mobile operational facilities; and began the development of the MCASS V2.

In FY95, program activity focused on the following: Project C0045 continued systems engineering services to support development of military telecommunications standards, NATO working group, US Department of Defense (DoD) working/steering, and Marine telecommunications modeling; Project C0103 completed block upgrade of system to a JTIDS Receive and Transmit Platform, and completed Surface Anti-Air Weapons Center program to pre-production; Project C1067 continued to monitor, test, and evaluate the TPS-59 radar; Project C1079 continued joint testing and certification of C^3 systems through the JTAO program; and Project C1443 completed development, integration, and testing of preplanned product improvements for map display and after-action reporting, as well as conducting research and development of improvements to combat models.

During FY96, Project C2035 was set to complete Developmental Test II/Operational Test of DSMS software and provide software baseline for production of DSMS, as well as provide logistic support in preparation for fielding the 300 lops PCE; Project C2102 focused on developing and incorporating new message standards to improve interoperability with Air Combat Command Center (formerly Tactical Air Command Center) and Advanced Tactical Air Command Central software, Fire Support Coordination Center, Advanced Field Artillery

Tactical Data System software, ground combat element Tactical Combat Operations software, Intelligence Analysis System software, and external C2 Agencies for joint interoperability (i.e., Navy via NTCS software and Air Force via Contingency Tactical Air Command System Automated Planning Systems software).

Project C2122 began development on optional application tape for unit readiness, planning, and coordination systems - Marine Corps Fire Support System/ Advanced Field Artillery Tactical Data Systems; initiated development on interface between TCO and fire support planning and coordination systems; and continued developmental testing of large screen displays, vector-smart mapping, active-matrix, and conversion from RSC-IX to TAC IV platforms.

Project C2150 completed efforts to define and implement MAGTF C^{4}I system architecture within Joint Maritime Commanders Information System Unified Build; continue participation in Tactical Advanced Computer Program; participated in development of common Joint protocols, Joint data elements, and a seamless/unified communications architecture; and operated and maintained the systems Integration Environment.

Much of the program activity throughout FY97 was a continuation of the progress made in FY96. Project C0045 focused on maintaining and update MIAT, as well as continuing systems engineering services to support development of military telecommunications standards, NATO working group, DoD working/steering groups, and Marine Corps telecommunications modeling.

Project C0103 continued on toward completion with Block 3 of the JTIDS upgrade to provide JTAO upgrades, TMD capability, communications upgrade, and Sector Anti-air Warfare Coordinator capability.

Project C1087 proceeded with updating threat analyses, Advanced Change Study Notices, and implementation of Engineering Change proposals for TPS-59 Block Product Improvement Program.

C1079 stuck with its work on continuing system engineering efforts in development of change proposals to VMF, TADIL A, B, C, J, ATDL-1, NATIO LINK 1, SSSB and USMTF as evolving joint standards. Efforts also continued on joint testing/certification of C^3 systems through the JTAO program.

Project 1443 continued to upgrade resident software to achieve improved tactical simulation; man-machine interface; after action reporting, scenario generation, and tactical planning capabilities. Other work continued to refine and enhance, at intermediate levels, the integration into the Unified Build of Joint/Naval C^{3}I systems with emphasis on common Tactical Message protocols and automated intelligence interfaces.

Project C2035 continued its final transaction to procurement.

Project C2102 completed DASC Phase III Block upgrade requirements, along with the follow-on effort to complete tailoring software for one hardware platform. Efforts were also made to maximize recently introduced technology for large screen display and over-the-horizon satellite communications.

Project C2122 focused on the development of ground-to-air computer-to-computer target hand-off systems. Development was also begun on the Carrier Detect Multiple Access full duplex cellular telephone grid. Work on the LINK-11 to computer software and over-the-horizon targeting GOLD message format were reported to be completed.

Project C2150 transitioned marine Corps TDS to the JMCIS UB/GCGS hardware and software environments to ensure the MAGTF C^{4}I TDS are interoperable in joint operations. Other efforts focused on providing the Marine Corps' share of GCCS development and maintenance costs.

Funding

US FUNDING

	FY95		FY96		FY97		FY98 (Req)	
	QTY	AMT	QTY	AMT	QTY	AMT	QTY	AMT
RDT&E (US Marine Corps)								
PE#0206626M Marine Corps C3 Sys.	-	16.8	-	19.8	-	22.5	-	22.7

	FY99 (Req)		FY00 (Req)		FY01 (Req)		FY02 (Req)	
	QTY	AMT	QTY	AMT	QTY	AMT	QTY	AMT
PE#0206626M Marine Corps C3 Sys.	-	20.3	-	19.0	-	15.8	-	N/A

All $ are in millions.

Recent Contracts

Contractor	Award ($ millions)	Date/Description
Eagle Technology	6.6	Nov 1986 — CPFF contract with task order provisions for the base year with four one-year options for contractor support services in support of Marine Corps interoperability programs for the Development Center, Marine Corps Development and Education Command, Quantico, VA. Completed November 1991.
General Electric	3.5	Jan 1988 — FFP contract for 22 mod kits of two different designs each for the TPS-59 radar. One kit is the TPS-59 TAOC interface mod kit which will allow the radar to interface with TYQ-23(V)1. The second kit, the threshold mapper mod kit, will enhance the capabilities of the radar and thereby the TYQ-23(V)1 by reducing screen clutter by varying the threshold level of each TPS-59 3-D cell. Completed June 1991 (N00039-88-C-0013)
General Electric	156.8	Jul 1992 — CPIF/FPIF OPT for the TPS-59 radar modification. (M67854-92-C-1069)
Lockheed Martin	9.9	May 1995 — CPFF contract for TPS-59 radar modification engineering services and studies for the US marine Corps. Completed April 1997. (M67854-92-C-1069)
Litton	9.8	Mar 1996 — Undefinitized CPFF/FP contract for engineering support and improvements to the Tactical Air Operating Module (TAOM) to include added operational requirements, migration to an open system architecture, and correction of logistically insupportable high failure terms. The enhancements currently include replacing the operator console units with commercial-off-the-shelf/government-off-the-shelf operator workstations and modifications of the sector Anti-air Warfare Facility (SAAWF) Gateways for Voice Integrated Services Digital Network (ISDN). Completed May 1997. (M67854-96-C-2018)

Contractor	Award ($ millions)	Date/Description
Litton	10.5	Nov 1996 — Undefinitized modification to previously awarded contract for development of two TYQ-23 JTIDS prototype systems. The TYQ-23 JTIDS is a shelterized Joint Tactical Information Distribution System (JTIDS) that will house a JTIDS terminal and associated components, provide for an interface to the Tactical Air Operations Module (TAOM), TYQ-23, and provide space and power reserve for housing a Global command Control System (GCCS)/Defense Information Infrastructure Common Operating Environment (DII COE) for a Marine Air-Ground Task Force C⁴I baseline. Completed June 1997. (M6784-96-C-2018)

Timetable

FY87	MIFASS terminated
FY88	First follow-on PLRS system procured
FY89	Follow-on contract for PLRS; seventh PLRS system fielded; completed hardware for the TPS-32 Improved Radar Display Console; reoriented MTWS into commercial computer use from tactical computers
FY90	Began development of the TPS-59 ECM analyzer, Low RCS target modification, Energy Management/ Track While Scan Study, TPS-63 Solid State Transmitter, Mark XV Interface, MSSS sensors and TPS-63 decoys. Initiated downsized PLRS Master Station/Communications Enhancements. Initiated PLRS/GPS Interface Unit development
FY91	Began operational testing of the PHLS
FY92	MTWS Qualification Test and initial site (1st Marine Expeditionary Force). MSSS-1 and MSSS-2 terminated
FY93	Delivered 35 PCE EDM prototypes and 19 GPS EDMs
FY96	Milestone III delayed to allow testing of latest hardware and software

Worldwide Distribution

This a **US Marine Corps** program only, although other US armed services provide support. PLRS has cooperative agreements; however, the Army, as the lead service, maintains agreement documentation. GPS has cooperative agreements; however, the Air Force, as the lead service, maintains agreement documentation.

Forecast Rationale

Littoral warfare has become the catch-phrase of the decade as engaging several low-intensity regional conflicts simultaneously becomes the new operational battle plan. Now more than ever, it is crucial for the United States to have all its C³ networks working together for maximum use of existing assets.

Joint service operations are becoming the norm, especially with the defense budget being drastically cut and expected to remain low well into the turn of the century. It is therefore imperative that all services be able to communicate with maximum efficiency.

Traditionally, the US Marine Corps has always been the first to fight and the last to be funded, which typically means the least funded. The latest round of government cost-saving measures has made no exception to this practice. Yet, despite being faced with ever decreasing funding, the Marine Corps carries on, giving C³ upgrades, enhancements, and interoperability a top priority.

Under the Marine Corps C^3 Systems program, the Marines continued concentrating on areas that ensure anti-radiation missile survivability of their radars, enhance training capabilities, and integrate PLRS and GPS into the force structure for the remainder of the decade.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR FUNDING ($ in millions)

			High Confidence Level				Good Confidence Level			Speculative		
Designation	Application	thru 96	97	98	99	00	01	02	03	04	05	06	Total 97-06
MARINE CORPS C3 SYSTEMS	COMMAND AND CONTROL (USMC)	314.50	22.00	22.00	20.00	18.00	15.50	15.00	13.50	13.50	12.00	12.00	163.50