

**Senate Foreign Affairs, Defence and Trade References Committee
Inquiry into Procurement Procedures for Defence Capital Projects**

Public Hearing - 5 and 7 October 2011

QUESTIONS ON NOTICE

Q1 - DSTO Support to Projects

Senator Johnston asked on Wednesday, 5 October 2011, Hansard page. 21:

Could you tell us what projects, in the white paper, you were giving that support to?

Response:

DSTO is the principal provider of science and technology (S&T) advice to projects, providing: a project S&T adviser to each project; an independent assessment of the technical risks associated with the project; and activities to support the development of the project and agreed S&T deliverables. In addition, the Chief Defence Scientist certifies technical risk in the Ministerial/Cabinet submission for all projects seeking Government approval.

The Defence Capability Plan provides the list of Defence Projects which reflect the strategic requirements outlined in the 2009 Defence White Paper, *Defending Australia in the Asia Pacific Century: Force 2030*. The following list contains the list of projects DSTO supports from the 2009 and 2011 public version of the DCP. Highlighted rows indicate projects from the 2009 DCP which received DSTO support, but are not in the 2011 DCP.

Type	No.	Phase	Title
AIR	5077	4	AEW&C Capability Assurance Study
AIR	5232	1	Air Combat Officer Training System
AIR	5276	CAP 2	AP-3C Capability Assurance Program
AIR	5376	2.3C	F/A-18 EWSP – Jammers
AIR	5376	3.2C	Hornet Structural Refurbishment Stage 2 – Additional
AIR	5397	2	Upgrade Australian Military Airspace Communications and Control System
AIR	5405	1	Replacement Mobile Region Operations Centre
AIR	5416	4B1	C-130J Radar Warning Receiver (RWR)

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AIR	5416	4B2	C-130J Large Aircraft Infrared Countermeasures (LAIRCM)
AIR	5428	1	Pilot Training System
AIR	5431	1	Deployable Defence Air Traffic Control Surveillance Systems
AIR	5431	2/3	Fixed Base Defence Air Traffic Control Surveillance Systems
AIR	5432	1	Communications, Navigation, Surveillance/Air Traffic Management
AIR	5438	1A	Lead-in-Fighter Capability Assurance Program
AIR	5440	1	C130-J Block Upgrade Program 7.0
AIR	5440	2	C130-J Block Upgrade Program 8.1
AIR	6000	2A/2B	New Air Combat Capability – 3 squadrons
AIR	6000	2C	New Air Combat Capability – 4th squadron
AIR	6000	3	Weapons for New Air Combat Capability
AIR	6000	5	Future Air-to-Air Weapons for New Air Combat Capability & Super Hornet
AIR	7000	1B	Multi-mission Unmanned Aircraft System (MUAS)
AIR	7000	2B	Maritime Patrol Aircraft Replacement
AIR	8000	1	Battlefield Airlift – Additional C-130J
AIR	8000	2	Battlefield Airlift – Caribou Replacement
AIR	9000	SCAP	Seahawk Capability Assurance Programme
AIR	9000	5C	Additional Heavy Lift Helicopter
AIR	9000	7	Helicopter Aircrew Training System
AIR	9000	8	Future Naval Aviation Combat System
AIR	9000	CH CAP	Chinook (CH-47F) Capability Alignment Program (CH CAP)
DEF	7013	4	Joint Intelligence Support System
JP	66	1	Replacement for Air Defence Targets
JP	90	1	ADF Identification Friend or Foe and Automatic Dependant Surveillance – Broadcast
JP	129	3	Tactical Unmanned Aerial Vehicles – Enhancements/Upgrades
JP	129	4	Tier 1 Unmanned Aerial Vehicle (UAV)

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JP	154	1	Joint Counter Improvised Explosive Device
JP	154	2	Joint Counter Improvised Explosive Device Capability
JP	154	3	Joint Counter Improvised Explosive Device Capability
JP	157	1	Replacement National Support Base Aviation Refuelling Vehicles
JP	1544	1	Enterprise Content Management System
JP	1770	1	Maritime Rapid Environmental Assessment
JP	1771	1	Geomatic Support System
JP	2008	3F	Military Satellite Capability
JP	2008	3H	Military Satellite Capability – Wideband Terrestrial Terminals
JP	2008	5B	Military Satellite Capability – Wideband Terrestrial Infrastructure
JP	2025	6	Jindalee Operational Radar Network (JORN)
JP	2030	8	ADF Joint Command Support Environment
JP	2030	9	ADF Joint Command Support Environment
JP	2044	3A.1	Operational Imagery and Geospatial Support
JP	2044	4	Digital Topographic System (DTS) Upgrade
JP	2047	3	Terrestrial Communications
JP	2048	3	Landing Helicopter Deck (LHD) Watercraft
JP	2048	4C	Strategic Sea Lift Capability
JP	2048	5	Landing Craft Heavy Replacement
JP	2060	3	ADF Deployable Health Capability
JP	2064	3	Geospatial Information Infrastructure and Services
JP	2065	2 & 3	Integrated Broadcast Service
JP	2068	2B.2	Computer Network Defence
JP	2069	2 & 3	High Grade Cryptographic Equipment
JP	2070	4	AP-3C Lightweight Torpedo Integration
JP	2072	2	Battlespace Communications Systems (Land)
JP	2072	3 & 4	Battlespace Communications Systems (Land)

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JP	2077	2D	Improved Logistics Information Systems
JP	2078	2	Hyper-Spectral imaging
JP	2080	2B.1	Defence Management Systems Improvement – PMKeys Replacement
JP	2080	3	Defence Management Systems Improvement – Financial System
JP	2080	4	Defence Management Systems Improvement – Roman Upgrade
JP	2085	2/3	Explosive Ordnance Warstock
JP	2089	2B	Tactical Information Exchange Domain (Data Links)
JP	2089	3A	Tactical Information Exchange Domain (Data Links – Infrastructure)
JP	2089	3B	Tactical Information Exchange Domain (Data Links – Armed Reconnaissance Helicopter)
JP	2089	4	Tactical Information Exchange Domain (Data Links – Upgrade)
JP	2090	1C	Combined Information Environment
JP	2096	1	Intelligence Surveillance and Reconnaissance Intergration
JP	2096	2	Intelligence Surveillance and Reconnaissance Intergration
JP	2097	1B	REDFIN – Enhancements to Special Operations Capability
JP	2099	1	Identity Management - Project CERTE
JP	2110	1B	Chemical, Biological, Radiological, Nuclear Defence
JP	3011	1	Joint Non-Lethal Capability
JP	3021	1	Joint Combined Training Capability
JP	3024	1	Woomera Range Remediation
JP	3025	1	Deployable Incident Response Regiment (IRR) Capability
JP	3027	1	JDAM Enhancements
JP	3028	1	Defence Simulation Program
JP	5408	3	ADF Navigation Warfare (NAVWAR) Capability
JP	8001	2C	Headquarters Joint Operational Command – Alternative Headquarters
LAND	17	1B	Digital Terminal Control Systems
LAND	17	1C	Self Propelled Howitzer

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LAND	19	7B	Ground Based Air and Missile Defence Enhancements or Replacement
LAND	53	1BR	NINOX - Night Fighting Equipment Replacement
LAND	75	4 & 5	Battlefield Command System
LAND	112	4	ASLAV Enhancement
LAND	121	4	Overlander – Protected Mobility Vehicle – Light
LAND	121	5A	Overlander – Light and Lightweight Tactical Training Vehicles
LAND	121	5B	Overlander – Medium and Heavy Tactical Training Vehicles
LAND	125	3A	Soldier Enhancement Version 2 – C4I Component
LAND	125	3B	Soldier Enhancement Version 2 – Survivability
LAND	125	3C	Soldier Enhancement Version 2 – Lethality
LAND	125	4	Integrated Soldier System Version 3
LAND	136	1	Land Force Mortar Replacement
LAND	146	2	Combat Identification for Land Forces
LAND	155	1	Enhanced Gap Crossing Capability
LAND	400	2	Land Combat Vehicle System
LAND	907	2	Main Battle Tank Upgrade
LAND	998	1	Replacement Aviation Fire Trucks
SEA	1000	1 & 2	Future Submarines – Acquisition
SEA	1000	3	Future Submarines – Weapons
SEA	1000	4	Future Submarines – Maritime Based Strategic Strike
SEA	1180	1	Patrol Boat, Mine Hunter Coastal and Hydrographic Replacement Project
SEA	1350	1	Navy Surface and Subsurface Ranges
SEA	1351	1	Replacement East Coast Tugs
SEA	1352	1	Evolved Sea Sparrow Missile (ESSM) Upgrade & Inventory Replenishment
SEA	1354	1	Submarines Escape Rescue and Abandonment Systems (SERAS)

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SEA	1357	1	Close-In Weapons System (CIWS) Phalanx Block Upgrade
SEA	1358	1	ANZAC Class Close-Range Asymmetric Defence
SEA	1360	1	Maritime Extended Range Air Defence
SEA	1397	5B	Nulka Missile Decoy Enhancements
SEA	1408	2	Torpedo Self Defence
SEA	1430	5	Digital Hydrographic Database Upgrade
SEA	1439	3.1	Collins Obsolescence Management
SEA	1439	5B.2	Collins Communications and Electronic Warfare Improvement Program
SEA	1439	6	Collins Sonar Replacement
SEA	1442	4	Maritime Communications Modernisation
SEA	1448	4A	ANZAC Electronic Support System Improvements
SEA	1654	3	Maritime Operational Support Capability – HMAS Success Replacement
SEA	1778	1	Deployable MCM – Organic Mine Counter Measure
SEA	4000	4	Air Warfare Destroyer (AWD) – Maritime Based Strategic Strike
SEA	5000	1	Future Frigate

The following projects are currently listed in the 2011 Public DCP, however have not yet progressed to the point of requiring DSTO support:

AIR	87	3	Armed Reconnaissance Helicopter Capability Assurance Program (ARH CAP)
AIR	5077	5A	AEW&C Interoperability Compliance Upgrade
AIR	5077	5B	AEW&C Mid-Life Upgrade
AIR	5333	2	Vigilante Upgrade
AIR	5440	3	C130-J Upgrade Program 9.0
JP	1544	2	Enterprise Content Management System Upgrade
JP	1771	2	Geomatic Support System Upgrade
JP	2044	5	Defence Geospatial Intelligence Capability Enhancement

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JP	2044	6	Defence Geospatial Intelligence Capability Enhancement
JP	2069	4	High Grade Cryptographic Equipment
JP	3023	1	Maritime Strike Weapon for New Air Combat Capability
LAND	159	1	ADF Small Arms Replacement
SEA	1442	5	Maritime Communications Modernisation
SEA	5000	2	Future Frigate – Weapons
SEA	5000	3	Future Frigate – Maritime Based Strategic Strike

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Q2 - Risk Levels of Projects

Senator Xenophon asked on Wednesday, 5 October 2011, Hansard page. 27-28:

Provide a breakdown of the risks levels of projects in terms of a percentage.

Response:

An analysis has been performed of the Technical Risk Certificates (TRCs) provided by the Chief Defence Scientist for the period starting from February 2008 through to the current date. The following shows the breakdown of the technical risk levels for First and Second Pass projects.

	1st Pass				
	Low	Low Medium	Medium	Medium High	High
Number	7	4	15	1	5
%	22	13	47	3	16

	2nd Pass/Combined Pass				
	Low	Low Medium	Medium	Medium High	High
Number	17	7	12	2	8
%	37	15	26	4	17

	Total				
	Low	Low Medium	Medium	Medium High	High
Number	24	11	27	3	13
%	31	14	35	4	17

Q3 - Engineering and Technical Shortcomings in Navy

Senator Mark Bishop asked on Wednesday, 5 October 2011, Hansard page. 46:

Provide a detailed response to what Navy is doing to implement the shortcomings and deficiencies on the engineering and technical side (hard data on skills, retention, numbers, levels of expertise that show that the problems that are now in the public domain are being attended to).

Response:

1. Navy is addressing a range of personnel and personnel competency shortfalls as well as lower retention rate consequences within its uniformed ship and submarine engineer and technician cohorts. This response to the Question On Notice seeks to provide detail on Navy's engineer and technician competency requirements, personnel and competency shortfalls, separation rates, and action that is being taken redress the shortfalls and other concerns.
2. Information on the Navy's aviation engineer and technician cohorts has been omitted on the basis that the context for the Question is the Plan to Reform Support Ship Repair and Management Practices prepared by Mr Paul Rizzo for the Minister for Defence.

Skills/Qualifications

3. The technical competency structure within the Navy reflects the educational, experiential, and job-currency requirements of the various roles in which engineer officers and technical sailors are required to perform in the seagoing environment.
4. Engineer Officers. The engineer officer competency structure comprises two levels:
 - a. Engineer Charge Qualification. This qualification denotes that the Engineer Officer has been assessed as having the requisite knowledge, experience, and skills to be the Marine Engineer Officer of Weapons Electrical Engineer Officer in a Ship or Submarine.
 - b. Engineer Certificate of Competence. This qualification denotes that the Engineer Officer has been assessed as having the requisite knowledge, experience, and skills to be a Deputy Marine Engineer Officer or Deputy Weapons Electrical Engineer Officer in a ship.
5. Technical Sailors. The technical sailor competency structure is somewhat more complex, reflecting the varying roles in which personnel in these cohorts are required to perform.
 - a. Management Qualifications

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- (1) Marine Technician Charge Certificate (MTCC). This qualification denotes that the Sailor qualified sailors has been assessed as having the requisite knowledge, experience, and skills to assume the duties of:
 - A. a sub-departmental officer capable of acting as the deputy marine engineering officer in a Major Fleet Unit or submarine, or
 - B. a Ship's Technical Officer in a Minor War Vessel.
 - (2) Electronics Technician Charge Certificate (ETCC). This qualification denotes that the Sailor qualified sailors has been assessed as having the requisite knowledge, experience, and skills to assume the duties of a sub-departmental officer capable of acting as the deputy weapons electrical engineer in a Major Fleet Unit or submarine.
6. Technical Qualifications. The qualification required to be obtained by technicians relate to both technical competence, know as trade qualification, and specific knowledge and competency in the maintenance of specific equipment.
- a. Trade Qualification. As Marine and Electronics Technicians progress through their careers they achieve contemporary equivalences under the Australian Qualifications Framework to the previously issued trade certificates. Certificate III is considered to be the trade-level whilst Certificate IV is considered higher or advanced trade skill level. Certificate V in Engineering, available to Chief Petty Officers, is a Diploma level achievement generally considered to be equivalent to one to two years of study at degree level.
 - b. Equipment Maintenance Qualification. Before a technician is authorised to diagnose faults in and conduct either corrective or preventative maintenance of a system, subsystem, or item of equipment, she/he is required to complete training related to the item under maintenance. This training utilises the trade skills obtained through Trade Qualification and instructs the sailor on the application of those skills in a specified context. System or sub-system maintenance commonly requires a technician with greater trade skills, and hence the requirement for a sailor to obtain further Trade Qualification during her/his career. Typically, a senior Leading Seaman or Petty Officer will be responsible for system or sub-system maintenance, which commonly requires the Certificate IV trade level qualification.
7. Marine Technician "Operator" Qualifications. In addition to requiring qualifications in the maintenance of equipment, Marine Technicians are required to achieve qualifications to operate the ship's machinery and plant. As each class of ship ordinarily comprises different machinery and plant, these 'operator' qualifications are class/platform-specific. The levels of 'operator' qualifications are::
- a. Marine Systems Manager (MSM) Certificate. The MSM Certificate reflects the minimum qualification requirement for managing on-watch machinery operating personnel at sea and, in the event of a machinery breakdown or an emergency, the diagnosis of cause, assessment of options, and restoration of the machinery and plant commensurate with safety considerations and command priorities. These sailors are normally Petty Officers or Leading Seamen.

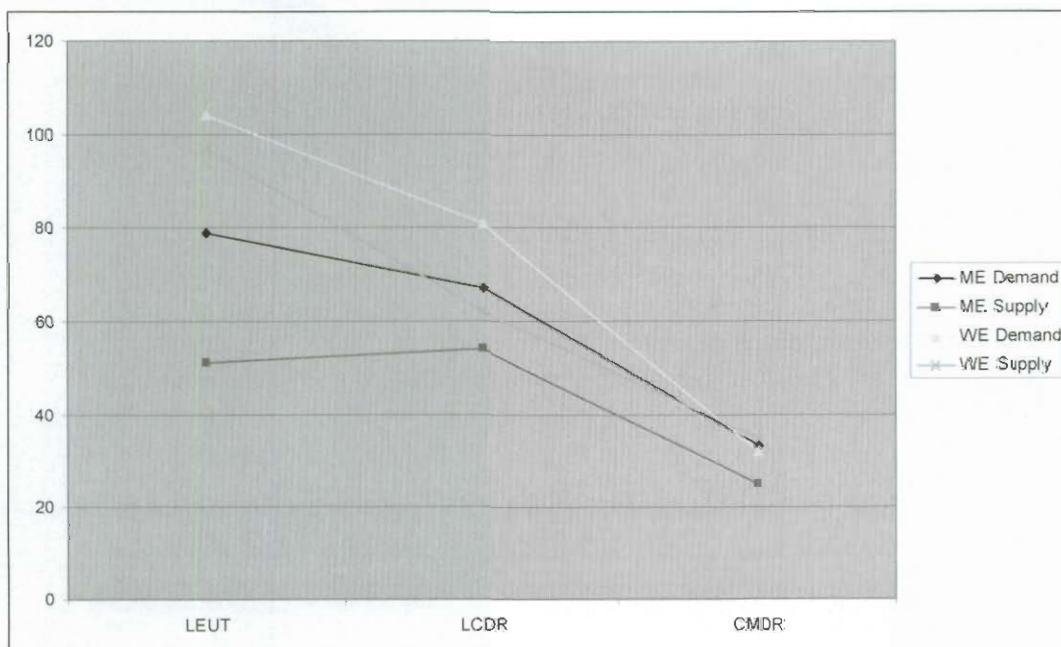
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- b. Marine Systems Controller (MSC) Certificate. The MSC Certificate reflects the minimum qualification requirement for managing the operation of the machinery and plant at sea. Specifically, the MSC exercises control over the machinery and plant utilising Marine System Technicians and is required to take appropriate and immediate action to bring the plant to a known, controlled state in the event of breakdown or unintended response. These sailors are ordinarily Leading Seamen.
- c. Marine Systems Technician (MST) Certificate. The MST certificate reflects the minimum qualification requirement for conducting checks of machinery and plant and local operation of auxiliary equipment at sea. These sailors are normally Able Seamen.

Demographics

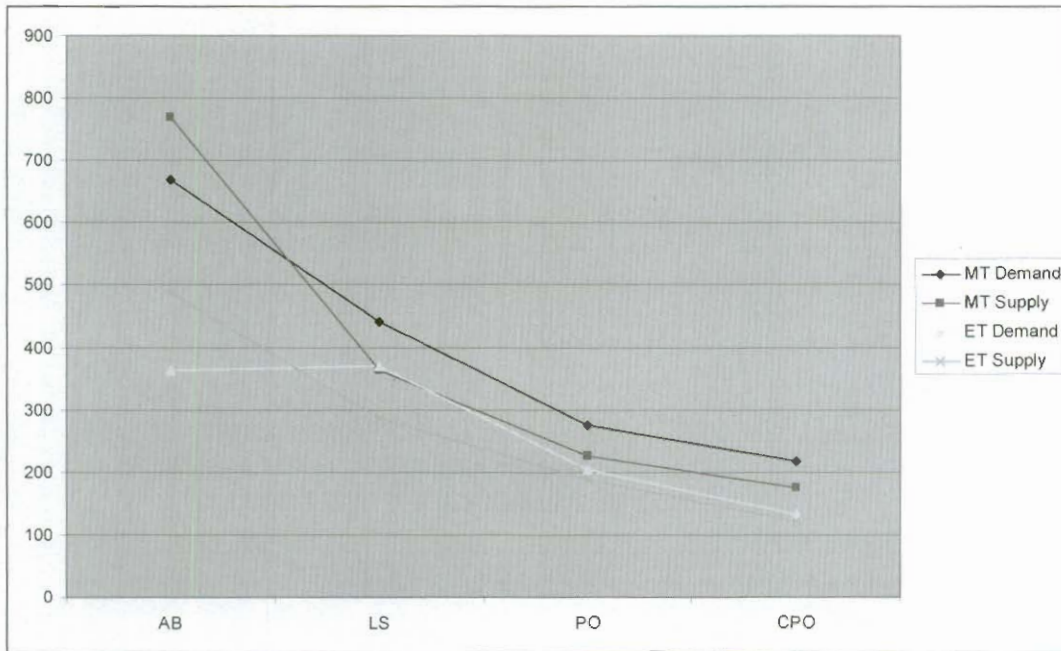
8. The figures below describe the Navy engineer and technician demographic with regards to rank; it should be noted that the technical competence and qualifications held by an individual does not directly translate to worn rank in all cases. "Demand" figures reflect the established Navy requirement for trained and qualified personnel of the nominated category and rank. "Supply" figures reflect the population of the nominated specialisation and rank at 30 September 2010. Personnel undergoing training to obtain qualifications are not included in these figures. Tabulated data from which these figures were created is at Annex A.

Weapons Engineer (WE) & Marine Engineer (ME) Officer - Demand vs Supply



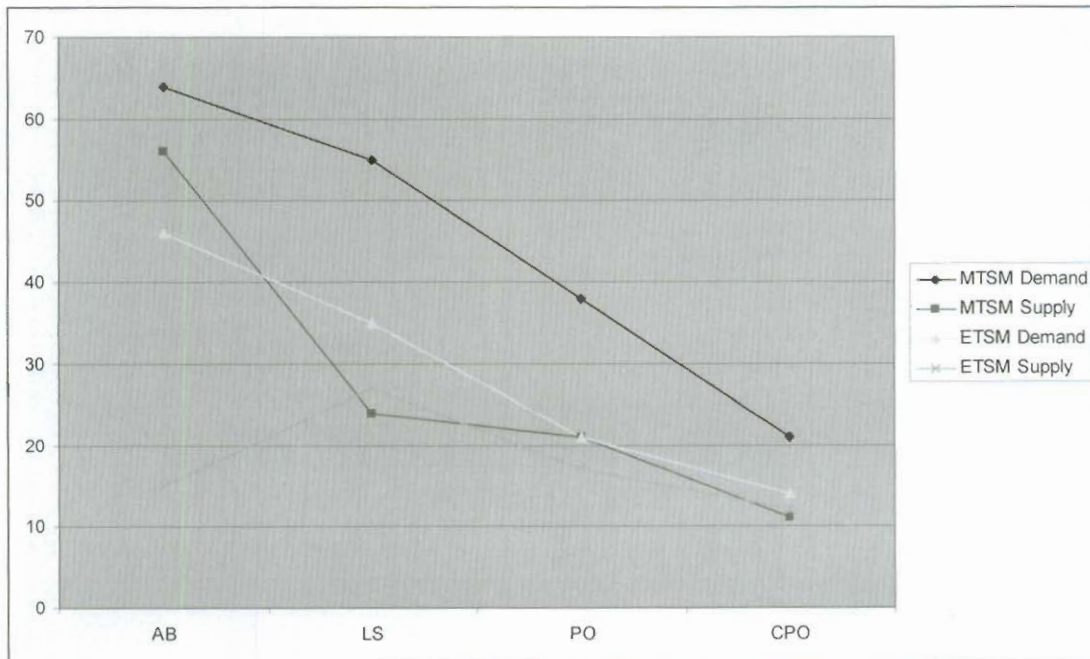
Electronics Technician (ET) & Marine Technician (MT) Sailor

(Non Submariner) Demand vs Supply



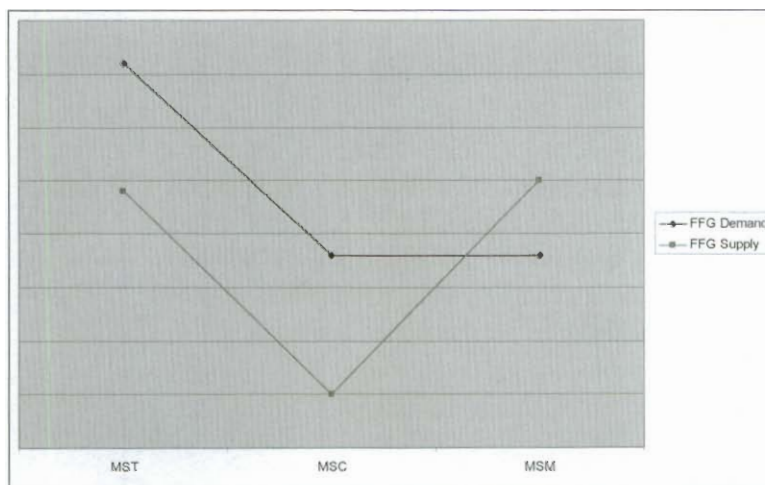
Electronics Technician (ET) & Marine Technician (MT) Sailor (Submarine Qualified)

Demand vs Supply

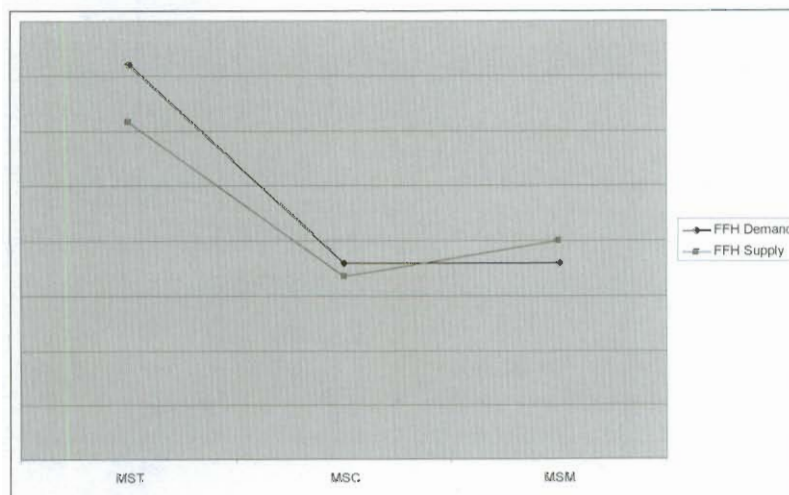


Marine Technician 'Operator' Demographics

9. The following charts advise indicative 'demand' and 'supply' figures for Marine Technician operators in the Frigate classes. Information is held on the skill level and population in all classes of ship, the submarine, and platforms but only the Frigates are included herein for the sake of efficiency. Above the number of positions requiring qualifications in each class/platform, the requirement to rotate personnel through sea-going and ashore positions, the desire to not employ the same person in the same role in subsequent sea postings, and the non availability of qualified personnel due to medical issues, other training, or compassionate reasons drives the 'demand' for personnel with Marine Technician operator qualifications for that class/platform. The 'supply' figures reflect the number of personnel with that operator qualification as their highest in that class/platform, irrespective of their availability for sea-going positions.



Indicative FFG Class Marine Technician 'Operator' Demand vs Supply



Indicative FFH Class Marine Technician 'Operator' Demand vs Supply

10. Competency shortfalls in the Marine Technician "operator" domain in specific classes/platforms are significant. The three-tiered "operator" qualification system requires that platform-specific competencies are achieved through 'hands-on'

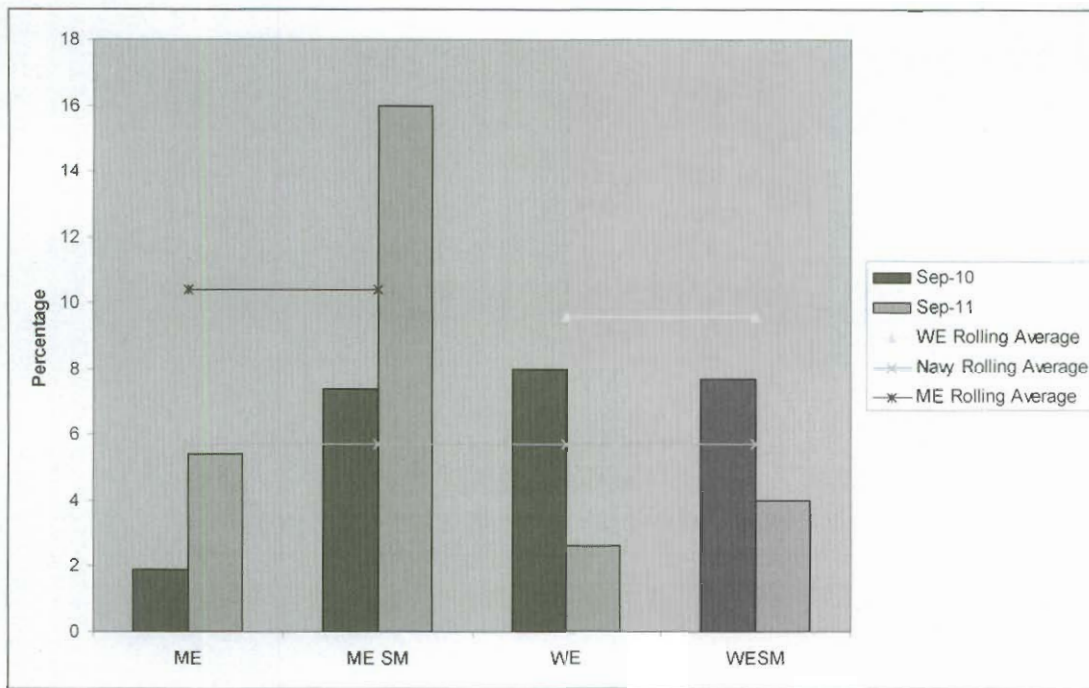
learning, under supervision. In the absence of high-fidelity, comprehensive shore-based simulator training to support the full achievement of the competencies, shipboard systems and already qualified crew have been utilised in this training activity. The time taken to achieve the competency standard varies with the complexity of the machinery and plant in the platform, the serviceability of the machinery and plant, the availability of qualified workplace assessors in the ships, the approach of individual workplace assessors to their task, an individual ship's operating profile, and the determination of the person undergoing the instruction to achieve the qualification in an optimal timeframe. These variables have frustrated planning for and achievement of qualification targets. The Marine Technician Training Continuum program is seeking to provide more comprehensive ashore simulation facilities to reduce the qualification timeframes and deliver consistency in both training methods and outcomes.

11. Shortfalls in the FFG Class are being managed by utilising MSM qualified personnel in the MSC; this solution is not as readily available in the FFH platforms due to the smaller proportional excess of MSM qualified personnel and inability to qualify MST personnel at a sufficient rate to feed the MSC pipeline. Training and qualification projections in the FFG Class advise of an ability to recover the number of MSC qualified personnel without additional measures at this time. Projected training and qualification shortfalls in the FFH Class, as previously mentioned, coupled with significant retention issues in W.A.-based ships has prompted specific retention initiatives for these sailors.

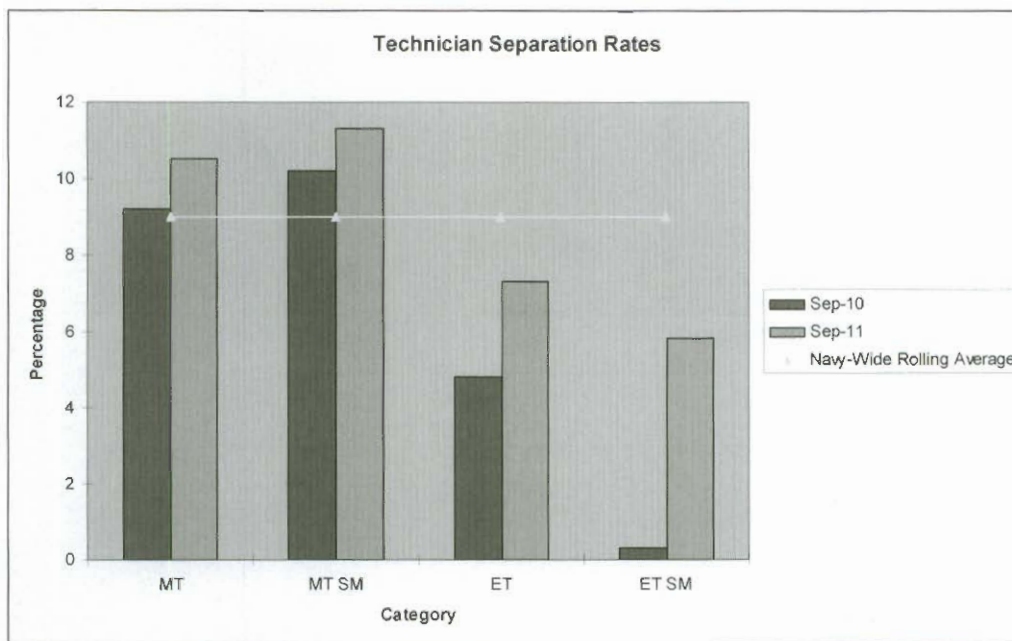
Separation

12. Separation rates are monitored and reviewed on a monthly basis for those categories for which it is deemed necessary, enabling detection of step changes in the number of personnel separating from Navy, monitoring of trends, analysis of causes, and formulation of responses as required. Identification of the location of separation can support the formulation of geographically specific responses.

13. The charts below advise of the Engineer Officer and Technical Sailor separation rates at 30 September 2011. The corresponding rate as 30 September 2010 is also shown, along with the category rolling average and the Navy-wide rolling average for separations. It is significant to note that the engineer officer rolling average separation rates are markedly greater than the Navy-wide figure.



Engineer Officer Separation Rate as of 30 Sep 11



Technical Sailor Separation Rate as of 30 Sep 11

14. Separations in all categories of Technical Sailors have increased over the corresponding rate of one year ago, with the rates in the Marine Technician category in both the surface and submarine forces being in excess of the Navy-wide rolling average. These Marine Technician separation rates represent approximately 13% of the trained/qualified cohort.