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Development of Physical Employment Standards for the Royal Australian Navy: Validation of Identified Whole-of-ship Tasks

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ABSTRACT

The Royal Australian Navy's Advanced Combat Survivability Course was observed to inform the construction of a combat survivability job task analysis survey. From observations, 29 tasks were identified and subsequently incorporated into a pilot survey that was adminsistered to combat survivability subject matter experts. A focus group was then held with those experts to obtain feedback on survey design and content. The pilot survey resulted in a more detailed task list, a restructuring of answer options and a refined introductory script. The refined survey will be administered to a large number of personnel across a range of platforms, rates, ranks and experience levels to gain subjective ratings on key task parameters. The outcomes of the survey will inform the development of comprehensive field observations and simulations of whole-of-ship tasks.

RELEASE LIMITATION

Approved for public release

2.2.3.1 *Toxic Hazard*

During the toxic hazard exercise, six sailors performed a search and rescue of a 6.7 kg OSCAR water training manikin in a fire unit (Figure 1). The six sailors were divided into three teams of two with each individual within each team conducting identical tasks. Each sailor wore an intermediate rig of coveralls, anti-flash, gum boots, Open Circuit Compressed Air Breathing Apparatus (OCCABA) and two Emergency Life Support Respiratory Devices (ELSRDs). The combined mass of clothing and equipment equated to 23.8 kg. Each member of Team 2 also carried two gas monitors (~ 1 kg additional mass per sailor). Team 1 entered the gas boundary and proceeded directly to the suspected source of the hazard then commenced their search for casualties in an up and outward spiral from the hazard source. Team 2 entered the gas boundary and commenced their search for casualties in a downward spiral to the hazard source. Teams 1 and 2 continued to search for casualties until they met, signifying that all compartments had been searched. Team 3 entered the gas boundary and proceeded to the 'casualty' (6.7 kg; Oscar – water-rescue training dummy, Emerald Marine, Washington, USA) that was found in a compartment. Once a new ELSRD was donned on the casualty, Team 3 performed a RAN safety lift and carry of approximately 10 m to the bottom of a ladder, secured a fire hose around the casualty and then performed a fire hose lift through the hatch and out of the compartment (Figure 1).

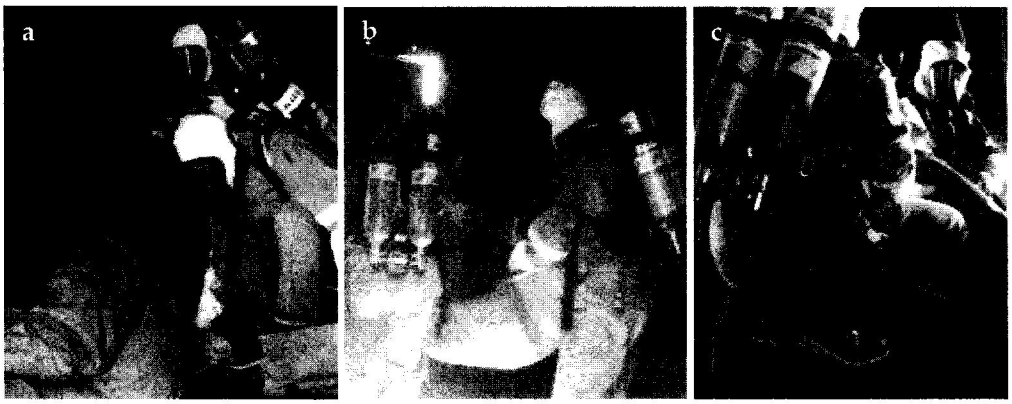

Figure 1: Toxic hazard exercise showing a team placing an ELSRD on the casualty (a) and performing a RAN Safety lift (b) and fire hose lift (c).

2.2.3.2 *Leak stop and repair (LS&R) and firefighting round robins*

Participants took part in a number of activities that were set up in the leak stop and repair (LS&R) round robin exercise (Figure 2). Activities included the use of a Broco Underwater Cutting System (Broco, Inc., California, USA), a SalvageMaster Underwater Marine Tool (211HD, Ramset, Victoria, Australia) and a Bauer Air Compressor (C-D/DV/NAVY, Bauer Compressors, Inc., Virginia, USA). These activities were deemed to be instructional rather than practical and were not included in subsequent analyses. The practical components of the circuit training included a leak stop and repair exercise where participants were required to cover a leak with rubber and sheet metal then secure with 'bulldog' clips. Participants also conducted a door entry whilst carrying a fire extinguisher (approximately 14 kg) and proceeded to simulate the extinguishment of a fire.

Table 1: Equipment masses from the ACSC.

Item Type	Item Description	Mass (kg)
Clothing	Fire helmet	1.5
	Mask	0.7
	Fire pants and jacket	3.4
	Gloves	0.3
	Shoring helmet	0.6
	Goggles	0.1
	Gumboots	2.4
	Coveralls	1.2
	Anti-flash	0.3
	OCCABA (fully charged)	14.6
Firefighting	9 L stored pressure fire extinguisher	14.2
	38 mm fire hose (uncharged)	6.6
	64 mm fire hose (uncharged)	16.4
	Typhoon fan	13.6
	Rake	2.6
	Nozzle	4.6
LS&R	4 x 4 timber (2 m in length)	12.3
	Pad piece	2.5
	Splinter box	3.2
	Gunter Batten	1.5
	Roaming bag	6.1
Toxic Hazard	Emergency Life Support Respiratory Device	2.3
	Oscar water rescue training dummy	6.7