



Office of Transport Safety Investigations

FERRY SAFETY INVESTIGATION REPORT

**SYSTEMIC INVESTIGATION INTO TRAINING OF FERRY CREWS
OPERATIONAL PROCEDURES AND EMERGENCY DRILLS
SYDNEY FERRIES**

NOVEMBER 2007 - MAY 2009



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ABBREVIATIONS

AIS	Automatic Identification System
AC	Alternating Current
AQTF	Australian Quality Training Framework
ARPA	Automatic Radar Plotting Aid
CCF	Critical Control Failure
CCTV	Closed Circuit Television
CRM	Crew Resource Management
CSIRS	Confidential Safety Information Reporting Scheme
CVIRC	Commercial Vessels Incident Review Committee
FGOM	Fleet Generic Operations Manual
FLIR	Forward Looking Infrared
FOCIS	Ferry Operations and Customer Information System
FSG	Fleet Standards Group
GPH	General Purpose Hand
GPS	Global Positioning System
MED	Marine Engine Driving
NSWMA	NSW Maritime Authority
OTSI	Office of Transport Safety Investigations
PFD	Personal Flotation Device
POB	Person Overboard
RTO	Registered Training Organisation
SF	Sydney Ferries (previously Sydney Ferries Corporation)
SFC	Sydney Ferries Corporation (Sydney Ferries from January 2009)
SHEQ	Safety, Health, Environment and Quality
SMS	Safety Management System
SOP	Standard Operating Procedures
TDS	Training & Development Section
USL	Uniform Shipping Laws Code (aka the “Code” or the “USL Code”)
VETAB	Vocational Education Training Accreditation Board
VOM	Vessel Operations Manual

TERMS OF REFERENCE

The Terms of Reference established by the Chief Investigator for the systemic investigation into the training and drills conducted by Sydney Ferries prescribed that the purpose of the investigation was to investigate the following:

- a. training curricula for each vessel class and crew category, including the frequency and methods of training;
- b. delivery of training/drills in accordance with the Uniform Shipping Laws, Section 15 *Emergency Procedures and Safety of Navigation*;
- c. qualifications of trainers appointed by Sydney Ferries to deliver operational procedures and emergency drill training;
- d. recording of training undertaken by ferry crews in both vessels' log books and staff records; and
- e. other safety matters that emerge during the course of the investigation that impact the safe conduct of ferry operations.

The period to be subjected to investigative scrutiny was from November 2007 to May 2009.

EXECUTIVE SUMMARY

This investigation was initiated following receipt of reports from Sydney Ferries' employees who expressed specific safety concerns through OTSI's Confidential Safety Information Reporting Scheme (CSIRS). The reporters claimed that the number of drills undertaken by onboard ferry crews had decreased since November 2007 when the responsibility for this "collective" training was transferred from the Training and Development Section to the Fleet Standards Group. It was also alleged that some personnel participated in numerous drill practices whereas other personnel received very little drill practice.

The investigation methodology involved interviews and informal discussions with a large number of ferry crew members and operations staff, observation of drills being performed, examination of documentation, and analysis of various random samples from the over 12,000 training records provided by Sydney Ferries for the period November 2007 to May 2009. It also involved progressive feedback to Sydney Ferries concerning those findings that affected crew training and drills.

Throughout the course of the investigation, Sydney Ferries responded to the findings which were brought to its attention and instituted a number of changes which substantially addressed the main areas of safety concern. As a result of these changes, Sydney Ferries has restructured the way onboard emergency drills are undertaken and recorded. In addition, it has implemented remedial action in response to the majority of safety issues identified during observation of drill practices and other safety matters that emerged during observation of ferry operations in general.

The principal lines of inquiry of the investigation concentrated on the conduct of drills since there is a requirement for compliance with the Uniform Shipping Laws (USL) Code for such drills to be conducted at regular intervals on all ferries. Sydney Ferries has also incorporated a requirement for additional drills in its Safety Management System (SMS). The primary objective in conducting these drills is to ensure the maintenance of a high standard of crew competency in handling a wide range of emergency situations which could endanger the lives of

passengers and crew. As an integral part of the procedures, safety equipment onboard is subjected to regular inspection and testing.

At the time the investigation was initiated, it became apparent that there lacked a rigorous, systematic approach to meeting the requirements of the USL Code and SMS. No direction was given to Masters as to the type of drills to be practised when they were scheduled for drills. Drills were not necessarily completed in full but were recorded as such, with partial completion not being reflected in the records. Records did not always identify the particular vessel on which the drill was conducted; rather, the record was identified by the class of ferry. Drills were not being conducted at the required intervals; some were seldom being conducted while others were repeated far more regularly than required. Drill practice performance was not independently assessed, so competency of crew members individually and collectively was not known and records showed only that individual crew members had “attended”. No collision drills were undertaken during the period under examination. Vessel Operating Manuals (VOMs), the primary reference material for Masters, were inadequate in detail and not always consistent in content for matters common to all vessels.

The situation was further complicated because the scheduling of vessels for drills has been a complex exercise especially as drills have to be conducted within regular, set timeframes. Flexibility has been limited by the diversity of the vessels in the Sydney Ferries’ fleet, resulting in an inability, with very few exceptions, to interchange vessels between services.

The rostering of crew members meant that some individuals went for long periods without being involved in a drill practice; some were involved more often than required, while others experienced multiple repetitions of the same drill/s in a short space of time. However, the recent introduction of crew-based rostering has facilitated the avoidance of such inconsistencies and also assisted in meeting the challenge of crews having to be competent in handling their responsibilities in an emergency on a number of different vessel classes.

A number of observations made in this investigation are consistent with those made variously in three previous reports.¹ In response, since 2006, Sydney Ferries has placed a priority on adopting and applying risk management concepts and tools. In particular, it has developed and continues to implement a Risk Management Framework and an integrated Safety, Health, Environment and Quality Management System. Restructuring has also resulted in the Training and Development Section again being responsible for both individual and “collective” training.

As a result of these initiatives and the changes effected as a result of this investigation, Sydney Ferries has effectively redesigned its programs of crew training and the conduct and recording of onboard emergency drills, such that:

- the drill schedule now provides for compliance with the USL Code and its own SMS;
- full instructions for the conduct of drills are provided to Masters including scenarios that can be used;
- a true record of partial or full drills is made with the individual name of the ferry thus allowing scrutiny of compliance with the USL Code;
- drills are also scheduled during hours of darkness;
- increased time is allowed for drills;
- Training Masters and Engineers oversee drills twice yearly; and
- refresher training is provided to onboard staff after a long period of absence.

Given the remedial action which has already been implemented by Sydney Ferries, the recommendations which follow are designed to further enhance the safe conduct of its ferry operations:

- institute a quality control regime to ensure the content, conduct and assessment of drills are maintained at a consistent standard and continue to meet the full requirements of the USL Code and Sydney Ferries’ SMS;

¹ *Review of Operations of Sydney Ferries 2001* (Taylor Report).
 OTSI Ferry Safety Investigation Report *Systemic Investigation into incidents of collision involving Freshwater Class vessels operated by Sydney Ferries Corporation 2006*.
Report of the Special Commission of Inquiry into Sydney Ferries Corporation 2007 (Walker Report).

- ensure that GPH utilised in the secondary roles of helmsman and greaser onboard the Freshwater Class ferries are trained and qualified in the tasks they are required to perform, such that they are able to take over from the Master or Engineer in the event of an emergency;
- during the hours of darkness, station one of the GPH onboard the Freshwater Class ferries on the bridge to assist the Master as an extra lookout;
- enforce the wearing of PFD by all crew members throughout the conduct of drills;
- mark the anchor chains and rode on all ferries and standardise instructions on anchoring procedures to include obtaining depth of water and amount of chain or rode to be let out; and
- enlarge the signage indicating the location of Crew Assistance alarms, and remove clutter around them, so that they are readily obvious to passengers.

It should also be noted that Sydney Ferries' adherence to the USL Code and its SMS will be subject to compliance audits by the NSW Maritime Authority which has advised that it has established three full-time positions to conduct regular SMS compliance audits which will include the inspection of records and training documentation; the checking of record-keeping procedures and SMS documentation; and observation of drills and operational and emergency procedures of commercial passenger-carrying vessel operators.

During the course of the investigation, OTSI provided feedback to those Sydney Ferries' employees who had brought their safety concerns to OTSI's attention, and sought their views concerning the effectiveness of the changes which had been progressively introduced. The reporters indicated that the remedial organisational, procedural, scheduling and crewing arrangements which had been introduced satisfied the safety concerns that they had raised and contributed to the improvement of safe ferry operations.

PART 1 ISSUES ARISING FROM THE INVESTIGATION

Introduction

- 1.1 Based on confidential reports received from employees of Sydney Ferries (SF) under the Confidential Safety Information Reporting Scheme (CSIRS), the Chief Investigator determined that the safety concerns which had been brought to his attention warranted independent investigation. Accordingly, an Office of Transport Safety Investigations (OTSI) systemic investigation was initiated in accordance with the provisions and requirements of Section 46BA of the *Passenger Transport Act 1990*.
- 1.2 It was alleged that the number of drills undertaken by onboard crews on ferries had decreased since November 2007 when the drills came under the control of the Fleet Standards Group (FSG). It was also alleged that some personnel participated in numerous drills whereas other personnel received very little drill practice.
- 1.3 During the investigation, nine onboard drills were observed and 67 masters, engineers and deckhands were interviewed. Records of drills provided by SF for the period November 2007 to May 2009 were examined along with drill logs onboard and other SF instructions and documentation relating to the administration and conduct of drills.

SF Fleet

- 1.4 SF currently owns and operates a fleet of 28 ferries made up from six different classes of vessels. The fleet composition by vessel class is:
 - Freshwater Class consisting of four vessels of which the *Freshwater* was the first built in 1982, and *Collaroy* the most recently built in 1988;
 - Lady Class consisting of two vessels, the *Lady Northcott* built in 1974 and the *Lady Herron* built in 1986;
 - First Fleet Class consisting of nine vessels, the *Supply* being the first built in 1984 and the remainder built between 1984 and 1986:

- Rivercat Class consisting of seven vessels with the *Betty Cuthbert* built in 1992 and the last, the *Nicole Livingstone*, built in 1995;
- Harbourcat Class consisting of two vessels both built in 1998; and
- Supercat Class consisting of four vessels built in 2000 and 2001.

The fleet is in commercial survey with the NSW Maritime Authority (NSWMA) in Class 1C, 1D and 1E classifications.²

- 1.5 There are differences between the ferries within some of the classes. Within the Freshwater Class, the *Collaroy* has a different control system to the other three ferries. The *Lady Northcott* and *Lady Herron* are totally different in size, operation and crewing. The Rivercat Class has two different control systems in operation.
- 1.6 The fleet vessels are not interchangeable on regular routes due to differences in vessel size, capacity, speed, draft and survey levels. The Freshwater Class is limited to the service between Manly and Circular Quay due to its size and survey for area of operation. The vessels cannot berth at other than Manly and Circular Quay wharves or operate on the Parramatta River due to their size, draft and hydraulically operated gangways.
- 1.7 Seven Rivercats, two Harbourcats and three First Fleet ferries as well as the *Lady Northcott* are in current NSWMA survey to cross Sydney Heads when the “*significant swell*” height at Sydney Heads is less than 1.5 metres from trough to crest at least 90% of the time. Because of its greater passenger carrying capacity, the *Lady Northcott* is the preferred ferry to replace out-of-service Freshwater Class ferries. However, the *Lady Northcott* is restricted by wave heights at Sydney Heads and does not have the speed to keep to the Manly service timetable.
- 1.8 Across the fleet, because there are six different vessel classes with further differences within classes, the training requirement for SF is quite complex. In addition, the very limited operational flexibility among classes impacts on drill

² A survey classification regulates the area of operation, crew manning requirements, passenger numbers and onboard safety equipment.

training plans in that substitute vessels are not readily available when a vessel scheduled for drills becomes unavailable at short notice.

Drill Requirements

- 1.9 The purpose of regular drill practice is twofold: to ensure crews remain proficient in the use and operation of all equipment and systems which may be required in an emergency, and to provide the opportunity to identify any defects in the emergency equipment and machinery onboard.
- 1.10 During the period of the investigation, SF was required by the *Commercial Vessels Act 1979* to comply with the Uniform Shipping Laws Code, Section 15, Part II - *Emergency Procedures*³. In addition, SF has its own Safety Management System (SMS) which requires all onboard crew members to be fully trained on the type of vessel they are crewing.
- 1.11 Schedules I to IV of Section 15 of the 2008 USL Code stipulated the content of emergency drills and the maximum time intervals between drills:
- Schedule I *Crew Emergency Practice Procedures* are to be conducted at intervals of not more than one month. (SF included this requirement in its Drill Pack 1).
 - Schedule II *Survival Craft Drills* are to be conducted at intervals of not more than one month. (SF included this requirement in its Drill Pack 2).
 - Schedule III *Crew Fire Drills* are to be conducted at intervals of not more than two months. (SF included this requirement in its Drill Pack 2).
 - Schedule IV *Crew Collision Drills* are to be conducted at intervals of not more than two months. (SF included this requirement in its Drill Pack 2).
- 1.12 In response to a spate of serious incidents on ferries between 2004 and 2005 involving loss of control at crucial times, Sydney Ferries Corporation (SFC) introduced its own drills in addition to those required by the USL Code and incorporated them in its SMS as *Critical Control Failures (CCF)*, *Emergency Steering Drills* and *Master Incapacitated*.

³ USL Code 2008 was superseded by USL Code 2009 incorporating National Standards for Commercial Vessels, Part E – *Operational Practices* on 1 October 2009.

1.13 SF introduced Drill Packs in 2006 which incorporated the requirements of the USL Code, Section 15:

- Drill Pack 1 *Crew Emergency Procedures, Prepare to Abandon Ship, Abandon Ship, Steering Gear Testing, Emergency Procedures for Passengers and Allocation of Each Crew to Emergency Station* - to be completed daily;
- Drill Pack 2 *Survival Craft Drills, Crew Fire Drills, Crew Collision Drills* - to be completed every two months;
- Drill Pack 3 *Person Overboard and Injury/Medical Emergency* - to be conducted at two monthly intervals;
- Drill Pack 4 *Critical Control Failures (CCF), Emergency Steering Drills, Master Incapacitated, Major Fire and Confined Spaces Emergency* - to be conducted at three monthly intervals;
- Drill Pack 5 *Crew Resource Management (CRM)* - conducted annually on shore; and
- Drill Pack 6 *Security* - also conducted annually on shore.

1.14 SF provided records of all drills completed by every onboard crew for the period under examination. Analysis of random samples of these records confirmed that the requirements of the USL Code relating to Schedules I - IV were not being complied with, nor were SF's own SMS requirements being met in relation to the time intervals stipulated in its own Drill Packs.

Drill Administration

Responsibilities

1.15 A transfer of responsibility for onboard drills from the Training and Development Section (TDS) to Fleet Standards Group (FSG) commenced in November 2007.⁴ This involved managing the program so that SFC remained compliant with the USL Code requirements and individuals remained competent in emergency procedures as outlined in the SFC SMS.

⁴ Though directed, the transfer was never fully achieved and FSG was subsequently disestablished.

- 1.16 FSG was also responsible for the technical content, structure and issue of standard operating procedures (SOP) and instructions which are onboard all ferries as Vessel Operations Manuals (VOMs), but this responsibility was transferred to the Safety, Environment, Quality and Risk Directorate in January 2009.
- 1.17 A structured approach to the conduct of drills and monitoring of compliance with the USL Code was not evident from the investigation. Detailed instructions were not provided to Masters on drill content or method of delivery. The choice of which drill was to be performed, the content of the drill, the way it was delivered and how it was recorded was left entirely to the discretion of the individual Master. No independent assessment or oversight by a qualified training assessor was provided. It was left to the Master to assess both his own and his crew's performance and competency should he choose to do so, resulting in no formal recording of crew competence in performing emergency procedures. FSG was left without staff capacity and integral professional training capability to undertake these tasks when the qualified trainers who had transferred to FSG from the TDS left SF employment.
- 1.18 Masters relied on going back through the Drill Log records as a basis for their decision making on which drill to conduct. However, they did not have sufficient information available to them to be able to determine the full USL Code compliance requirements. Additionally, crew drill history was not readily available to them so they were unable to ascertain if crew competency requirements were being met. Masters did not seek to explore other avenues that might have been available to them to acquire the information they needed to assist in their decision making.
- 1.19 Masters were not provided with regular updates on changes to the USL Code and other relevant regulations. Thus, unless a Master's knowledge was current by virtue of having recently gained his certificate of competency, he may not have been directing drills in accordance with current requirements.

Scheduling

- 1.20 There was no comprehensive planning to specify what ferry was due to complete a particular drill or what crew members needed to undertake a particular drill to meet their competency requirements. Scheduling was done in an unstructured manner resulting in some crew doing many drills of the same type in a very short timeframe while others did very few at all.
- 1.21 FSG liaised with Ferry Operations and the Balmain Shipyard to ascertain which ferries were available to be scheduled for onboard drills and then produced a weekly "*Drills Footprint*". The Footprint identified the vessel to perform drills, identified a covering vessel for service needs and indicated a start time. However, there was no instruction stipulating which drills were to be conducted.
- 1.22 The nominated ferry in the Footprint was often withdrawn due to maintenance requirements or breakdown, resulting in some ferries and crew missing drill sessions altogether. If a substitute vessel was available, it would be scheduled without consideration being given to how recently the vessel and/or crew had been involved in a drill.
- 1.23 As the vessels of the fleet age beyond their service life, maintenance and breakdowns beyond regular servicing regimes are occurring with increasing frequency, making the forecasting of ferry availability for drills increasingly more difficult. By way of example, drills on the Freshwater Class can only be undertaken when the four ferries are in service as three of them are required to maintain a regular Manly service. Regular servicing and breakdowns place severe restrictions on the availability of ferries in this Class.
- 1.24 SFC policy constrained the available time for conducting drills by precluding them during hours of darkness, Christmas school holidays, weekends or when passengers are onboard. From a risk management point of view, it is of concern that practice during the hours of darkness is prohibited on the basis of crew concern that drills conducted during the hours of darkness would create a danger to the ferries and crews from other vessels on the Harbour. Any night time emergency is likely to pose the greatest risk to all parties

concerned and so should be a primary focus of emergency training rather than being excluded.

- 1.25 Emergencies can occur at any time and not necessarily during regular service runs. They can occur before and after commencing service as was the case with two tragic fatal collisions in 2007 involving the *Dawn Fraser*, before commencing service, and the *Pam Burridge*, at night and after finishing service.
- 1.26 The training situation was further complicated by the absence of crew-based rostering, so crew often changed from vessel to vessel on a regular basis. This constant rotation of crew among vessels resulted in some personnel having completed a drill on one vessel, changing vessels and then having to complete the same drill again. Alternatively, timings could be such that they continued to miss out on drills altogether because of the arbitrary nature of the structure of the schedule. The introduction of crew-based rostering on 29 June 2009 should contribute significantly to resolving this issue.
- 1.27 During the period covered by the investigation, SF had no established policy in place indicating when a Master, Engineer or GPH, qualified on two or more different classes of ferries, required retraining, or refresher training, before returning to a class of ferry they had been absent from for a lengthy period of time. From a competency and safety perspective, refresher training should be mandatory following a specified period of absence from a particular class of ferry before resuming service on that class.

Records

- 1.28 SF supplied a large quantity of data pertaining to all drills conducted in the 18 months under examination. However, the way drills were recorded on the electronic database made it impossible to determine accurately if all the ferry drills were compliant with the USL Code that was in place.
- 1.29 The record of drills undertaken was made by the Master in the Drill Log which was kept onboard each vessel. The Drill Log record included the type of drill conducted, the date and the name of the crew members involved, and space was also provided for Masters to make comments regarding the drill

interventions. A copy of the Log sheet was forwarded to the TDS where the Records Officer entered the details into the electronic database.

- 1.30 The data was recorded in terms of each participating crew member having “*attended*” Drill Pack 1, 2, 3 or 4. Completion of only part of a Drill Pack was not recorded on the electronic database, although this was done prior to FSG taking over the responsibility for drills.⁵
- 1.31 The vessel was recorded either by a class or by its name. In the First Fleet Class comprising of nine vessels, drills were recorded variously under First Fleet, “Borrowdale Class” or the vessel name. The Freshwater Class entries were made under “Collaroy Class”, Freshwater Class, *Collaroy*, *Queenscliff* and *Freshwater*, but there were no entries recorded in the name of the *Narrabeen*. The drills performed on the *Narrabeen* may have been recorded under the name Freshwater Class. However, with the recording system in place at the time, it was impossible to determine accurately if *Narrabeen* had completed any drills. Compliance with the requirements of the USL Code was therefore indeterminable.
- 1.32 Masters expressed the opinion that the scheduled time allowed for drills was often too short resulting in only a part of a drill being completed before the ferry returned to regular service. Several instances of Drill Logs showing Drill Packs 1, 2 and 3 being completed were identified when the time available for drills was only 45 minutes to an hour. In reality it takes two to three hours to conduct these drills fully, especially on the Freshwater Class ferries.
- 1.33 Following observation of drills on two occasions, a check was done of the duplicate of the Drill Log entry submitted for record purposes. It showed that all crew onboard had completed Drill Packs 1, 2 and 3 when the practice had only consisted of a fire drill, a person overboard simulation and dropping the anchor. There was no “*testing of steering gear*”⁶, “*prepare to abandon ship*” or “*abandon ship*” completed as required by Drill Pack 1; no “*survival craft*

⁵ Instead of recording a Drill Pack completed, the record could have shown the activity completed as, for example, “*fire – non engine room*”.

⁶ USL Code, Section 15, Part III, sub-clause 16.6 provides for vessels which regularly ply on voyages of short duration to carry out steering gear tests at least once every week. Though SF conducts daily checking of steering, these checks were not fully completed in accordance with the USL Code requirements.

drill or “*collision drill*” carried out or discussed in accordance with Drill Pack 2; and no elements of Drill Pack 3 practised other than “*person overboard*”. Such inaccurate recording of the detail on drill completion was shown to be a common occurrence.

Drill Data Analysis

- 1.34 Data supplied by SF showed 31 Masters and nine Engineers had completed very few drills. It also showed that, while some crew were not involved in drills regularly, others were unnecessarily involved far in excess of the requirement. There were many occasions when crew members performed the same drill on near consecutive days, and several times the same drill on the same class of vessel within the same month. There were similar circumstances applying to individual vessels.
- 1.35 Ferries were requested to be available for drills in the period from 10:30am to 2:00pm Monday to Friday. Consequently, crew rostered for evening shifts or standby duties had far fewer opportunities to be involved in drills than crews regularly rostered for day duties.
- 1.36 As SF has now introduced crew-based rostering, it will be easier for rostering of personnel to comply with the drill requirements. However, a comprehensive program will be needed to schedule vessels to conform to the USL Code as well as satisfying crew competency requirements.
- 1.37 Records revealed that no collision drills had been undertaken by any Master, Engineer or GPH since November 2007 despite the requirement they be completed at two monthly intervals. It was confirmed in interviews with 67 Masters, Engineers and GPH that collision drills were not being practised although Drill Pack 2 was being recorded on the Drill Log as completed. Two Masters stated they may have briefly discussed a collision with crew but had never carried out the drill.
- 1.38 Onboard crew expressed the opinion that, since FSG had taken over responsibility for drills, the number of drills had decreased, especially Drill Pack 4 *Critical Control Failures*. Masters and Engineers were generally of the opinion that Drill Pack 4 was particularly valuable as they considered critical control failures on approaching a wharf to be their greatest risk.

- 1.39 The data showed that Drill Pack 4 was completed 457 times by 93 Masters in the year November 2006 to November 2007. Just over 50% of Masters completed the Drill three, four or five times; 17% completed one or two. Nine Masters completed more than seven but they may have been involved in practices conducted for the purpose of risk assessment and refinement of procedures on the introduction of this Drill. In the May 2008 to May 2009 period, 83 Masters completed Drill Pack 4 308 times; 44% completed the Drill three, four or five times but 41% completed only one or two.
- 1.40 The overall records of Drill Pack 4 completed by vessel class showed that the number of drills conducted in each class averaged the required number of drills to be completed over the 18 month period. However, the frequency of completion did not always meet the time interval requirement of three months which had been set as the goal by SFC in its SMS. For example, the Lady Class averaged the required number of drills but the distribution over time was very irregular with long periods when no drills were performed despite the requirement they be conducted at three monthly intervals (see *Table 1*).

Month	Lady Herron	Lady Northcott
Nov-07	0	0
Dec-07	0	0
Jan-08	0	0
Feb-08	0	0
Mar-08	0	0
Apr-08	0	1
May-08	1	0
Jun-08	0	0
Jul-08	0	0
Aug-08	0	0
Sep-08	1	0
Oct-08	1	0
Nov-08	0	0
Dec-08	0	0
Jan-09	0	0
Feb-09	0	3
Mar-09	1	0
Apr-09	1	3
May-09	2	2
Total	7	9

Table 1: Drill Pack 4 recorded - Lady Class, November 2007 - May 2009

- 1.41 No pattern in Drill Pack 4 completion could be determined for other ferry classes as the record was by class name rather than individual vessel.

However, a check on when the individuals crewing the *Queenscliff* on 28 August 2009 had previously attended a Drill Pack 4 revealed the following:

Position	Previous Drill Pack 4
Master	26.11.07, 4.8.08, 1.9.08, 3.12.08, 4.2.09
Engineer	9.4.08
GPH 1	4.3.08, 4.12.08
GPH 2	9.12.08
GPH 3	22.11.07, 8.8.08
GPH 4	Nil

Table 2: Previous Drill Pack 4 recorded – *Queenscliff* Crew, 28 August 2009

1.42 The history of participation in Drill Pack 2 by the crew members of seven vessels involved in incidents in the period November 2008 – September 2009 was examined and the results are shown at *Table 3*. Though a small but random sample, it again tends to indicate irregularities in meeting set requirements, in this case, especially the frequency of drill practices undertaken by Masters and Engineers.

Ferry	Lady Northcott	Lady Herron	Betty Cuthbert	Lady Northcott	Louise Savage	Collaroy	Queenscliff
Date	23.11.08	13.1.09	15.2.09	6.4.09	30.5.09	18.6.09	7.9.09
Number of previous Drill Pack 2 attended							
Master	1	1	3	1	4	4	2
Engineer	1	2		1	1	5	1
GPH 1	1	8	3	6	0	6	5
GPH 2	0	6	3	4	2	1	3
GPH 3						5	3
GPH 4						4	0
Number of months since last Drill Pack 2							
Master	12	12	2	12	12	3	8
Engineer	12	3		14		7	16
GPH 1	7	4	5	2	18	5	5
GPH 2	12	4	3	2	>1	10	4
GPH 3						1	8
GPH 4						4	nil on class

**Table 3: Sample of Drill Pack 2 recorded for seven crews
(Drill Pack 2 is required to be undertaken at 2 monthly intervals)**

Drill Observations

- 1.43 During the investigation, nine drills were observed. The standard varied from poor to good, and generally depended on the enthusiasm and knowledge of the individual Master. No Master had been trained in the delivery or assessment of training.
- 1.44 On no occasion was the Master given any indication as to which drill was to be conducted. Instructions onboard did not provide the Master with a structured plan as to how to conduct any drill. Often, a discussion would be held between the Master, Engineer and GPH as to what drill they should do. On three occasions the selected drill was discussed, then performed, and a debriefing held. On all other occasions there was no discussion or debriefing conducted at any stage.
- 1.45 **Person Overboard (POB).** Only on two occasions when conducting a person overboard drill was anything deployed overboard to represent a person in the water, contrary to normal practice. On no occasion was any life ring or floatation device deployed and no recording or simulation of recording was made on the GPS POB button. There appeared to be no recording of the course steered at the time of the POB so that a reciprocal course could be steered to bring the ferry back to the person in the water.
- 1.46 The practice of deploying a floatation device in a POB situation allows the person overboard the chance to swim to the device and also allows lookouts to have a better visual reference, or datum point, on which to establish a search area.
- 1.47 The VOM covering Drill Pack 3 *Person Overboard* for the Freshwater Class includes the instruction to Masters to deploy a life ring and, at night, a life ring with a light attached. VOMs for other classes of ferries were inconsistent and did not include any instruction to deploy a floatation device in a POB situation.
- 1.48 As all SF ferries are equipped with GPS onboard, VOMs should include an instruction to record the position on the GPS by the POB button, or a waypoint

mark.⁷ There should also be an instruction to record the ferry's course so a reciprocal course can be steered to place the ferry back at the approximate position where the POB occurred. These basic procedures are contained in all teaching manuals for both professional mariners and recreational boating.

- 1.49 **Life Jackets.** Of the nine drills observed, only on three occasions did the crew don life jackets as required. On one occasion the crew put on life jackets but removed them immediately after trying them on. On the other two occasions Personal Flotation Devices (PFD) were provided for the drill which the crew wore, but then the PFDs were removed from the ferry after completion of the drills.
- 1.50 Feedback from the crews indicated that the standard life jackets onboard all ferries were too bulky and did not allow them easy movement when moving around the ferry while conducting drills. One Master issued instructions to his crew not to wear life jackets as he considered them too bulky and hampered the crew during drills.



Photograph 1: Rescue boat drill

⁷ GPS units are being replaced by a new suite of navigational aids which do not include a POB button. However, a way point can be entered in the new Visionmaster radar/chart displays.

- 1.51 On one occasion on the First Fleet ferry *Borrowdale*, inflatable PFDs were onboard for trial purposes but were not issued to the crew by the Master when performing drills. He considered the PFDs were too small for some of the crew, although they were adjustable in size and would have fitted.
- 1.52 As a result of the trial, SF has issued all afloat staff with inflatable PFDs which are comfortable to wear, and do not restrict movement and entry into small openings and hatches as does the standard coastal life jacket provided for passenger use.
- 1.53 **Anchor Chains.** During anchoring drills it was noted that there were no markings on anchor chains or rodes on any of the First Fleet, Supercat or Lady classes of ferries. VOM instructions to Masters on other classes require the Master to determine the depth of the water and then indicate to the crew how much anchor chain or rode is to be let out. This is not included in instructions to Masters of First Fleet vessels. No crew members, including Masters, onboard First Fleet and Lady Class ferries knew the length of chain attached to the anchor.
- 1.54 **Fire Drills.** During fire drills onboard the First Fleet and Lady Class ferries, the location of the fire was indicated as the toilet area. The crew initially responded using the water based fire extinguisher located near the toilets, then simulated escalation of the fire by bringing the emergency fire pump hose into operation. No crew members identified the danger of electrocution in not isolating the 240 volt AC power supply before using water-based extinguishers on a fire in the toilets. This risk applies to all areas serviced by a 240 volt AC supply but is not covered in VOMs.
- 1.55 **Shopkeeper.** One Master on a Freshwater Class ferry used the shopkeeper in a fire drill to assist with crowd control. The shop business is contracted out but passengers would not be aware that the shopkeeper is not part of the crew in an emergency. Using the shopkeeper to assist in emergency situations should be encouraged on all ferries which carry shop personnel onboard. On overseas passenger ships all staff onboard, e.g., hairdressers, stewards, shop assistants, are required to hold basic fire fighting, survival and

first aid qualifications. Similar qualifications would be appropriate for shop staff onboard SF vessels.

- 1.56 **Safety Equipment Maintenance.** The conduct of realistic drills serves the very important secondary purpose of providing a regular check on the condition and operability of safety and emergency equipment. The harsh environmental conditions in which a ferry operates can quickly cause deterioration and defects in emergency equipment, e.g., seized valves, faulty securing mechanisms, rust, inlets to fire pumps blocked with marine growth, depletion of pressure in fire extinguishers and damaged lifesaving apparatus.
- 1.57 On three occasions during anchoring drills, the anchor would not release as it was jammed in the fairlead and took considerable time before being dropped. On two other occasions during fire drills on First Fleet ferries, the flow of water from the emergency pump was restricted due to foreign material and marine growth restricting the sea water inlet to the pump. This fault was rectified by the Engineer at the time on one occasion and on the other, a work order had to be made out for repairs.

Vessel Operating Manuals

- 1.58 VOMs and a booklet, *Implementation Guidelines for Drill Assessors*, were the key training references available onboard every ferry. They provided guidelines but did not extend to providing detailed instructions on the content of drill practices, methods of delivery or competency assessment.
- 1.59 An examination of the instructions contained in the VOMs relating to drills showed the VOMs issued to crews only provided an abridged version of the requirements of the USL Code. As such, they did not give Masters the full information necessary to assist them in complying with the Code. Several Masters expressed the opinion that VOMs should spell out the USL Code requirements in full.
- 1.60 Some material in VOMs is common to all vessels, while there is also content specific to different classes of ferries, and in some cases individual vessels. Inconsistencies were identified in the VOMs between some classes of ferries where the subject matter was common to all ferries. There also appeared to be important safety-related material not included in some of the guidelines.

For example, the following USL Code requirements for Crew Collision Drills were not addressed in the relevant VOMs:

“Doors which are already closed at the commencement of the drill shall be opened and then closed.”

(The purpose is to check locking devices ('dogs') are in working order.)

“Members of the crew allotted to sounding duties shall immediately sound tanks and bilges in the section of the vessel indicated for the purpose of the drill.”

“As many pumps as available and operated from the engine room shall be connected to the section of the vessel indicated for the purpose of the drill.”

However, it is noted that this specific detail contained in USL Code 2008 is not repeated in USL Code 2009 which, instead, presents a list of very briefly stated “*typical actions*” in response to “*collision/grounding/flooding*”.

NSW Maritime Authority

1.61 The NSW Maritime Authority (NSWMA) is the regulator responsible for marine safety in NSW. As such, it is responsible for ensuring SF meets its obligations in maintaining crew proficiency in certain baseline emergency drills and procedures mandated by the *Commercial Vessels (Emergency Procedure and Safety of Navigation) Regulation 1986*. NSWMA is also responsible for the surveying of all commercial vessels.

1.62 In response to a request to provide details of any audits of SFC/SF undertaken by the Authority in the period 2007 to 2009, NSWMA indicated that it reviewed training and drills carried out by SF in the following manner:

“1. The Commercial Vessels Incident Review Committee (CVIRC), which meets on a regular basis to analyse and review commercial vessel incidents, including those involving Sydney Ferries vessels; and

2. Periodical structured audits of Sydney Ferries, including periodical reviews of OTSI’s recommendations for Sydney Ferries’ operations.”

1.63 No audits of drills or training had been conducted since 2007 and the CVIRC only conducted investigations into reportable incidents during the period 1 November 2007 to 31 May 2009.

Other Safety Related Issues

- 1.64 During the observation of various drill practices and operations as part of the investigation, a number of other operational safety issues were identified and are discussed below.

Freshwater Class Crewing

- 1.65 The Freshwater Class ferries carry 1,100 passengers and provide the Manly service. Each vessel is 69.54 metres in length and powered by two 2,238kw engines. They carry up to 180,000 litres of fuel (300,000 litres in the case of the *Collaroy*) and travel at a normal service speed of 12.5 knots or, with both engines engaged, up to 15 knots.⁸
- 1.66 They have a crew of six: a Master holding a Master 4 Certificate of Competency, an Engineer and four GPH. During normal operations the Master is in control of the ferry from the bridge and has a GPH as helmsman. The Engineer has another GPH as a greaser, and the remaining two GPH are supposed to patrol the two passenger decks.
- 1.67 The position of the GPH helmsman during a normal shift is rotated between the four GPH, each performing several service runs steering the ferry at the voice control of the Master. Helmsmen have no watchkeeping qualifications and do not have the formal knowledge of 'collision rules', signals or emergency control procedures which might be required should the Master become incapacitated. The GPH helmsmen also have no training in radar or pilotage, or in the operation of GPS and depth sounding equipment. As crew constantly change and the helmsmen rotate, a Master does not necessarily know the capabilities of any particular helmsman so cannot be confident they have the necessary knowledge of how to stop the ferry or take it to a wharf should the need arise.
- 1.68 In 1982 the *Lady Wakehurst* conducting the Manly service collided with a yacht resulting in a fatality. In the Marine Court of Inquiry conducted into the accident in 1984, Judge Sinclair stated that:

⁸ Fleet information is available from Sydney Ferries' website : <http://www.sydneyferries.info/about-sydney-ferries/fleet-facts.htm>

“...an unqualified helmsman should not be in charge of a ferry.”

The Taylor Report 2001 also addressed the watchkeeping issues onboard Manly ferries stating:

“In Manly Ferries there should be at least two competent persons in the wheelhouse at all times.”

and,

“The competencies of persons utilised as helmsman on Manly ferries should be checked regularly.”

- 1.69 Several helmsmen were asked about their knowledge of how to stop the ferry if the Master became incapacitated. All of them said they did not have the knowledge to take over proper control of the ferry in such a situation especially if in close proximity to a wharf or restricted space. None knew the stopping distance of the ferry in sailing mode though several had a limited knowledge of some of the sound signals.
- 1.70 A similar situation applies to the GPH who rotate duties as greasers assisting the Engineer. They have no engineering training or qualifications apart from what they have picked up from observing the Engineer. As with the Master, the Engineer is critical in any emergency situation especially in the event of a control failure occurring when the ferry has limited sea room in which to regain control (i.e., in close approach to a wharf), a ferry becoming disabled while traversing the Sydney Heads in severe weather, or in the case of the Engineer becoming incapacitated or injured.
- 1.71 Consideration should be given to replacing the position of helmsman with the position of Mate holding at least a Master 5 Certificate and that the greaser hold a minimum qualification of Marine Engine Driving (MED) Certificate III. This would provide an effective back-up in the event of incapacitation of either the Master or Engineer.
- 1.72 The position of the helmsman on the bridge of the Freshwater Class ferries gives a view of traffic which is restricted to directly ahead of the ferry. Consideration should be given to having one of the two remaining GPH also on the bridge as an extra lookout during the hours of darkness because of the increased number of recreational vessels on Sydney Harbour. The other deckhand would be able to conduct the required patrols of the passenger

decks as the number of passengers decreases after the evening peak services.

- 1.73 The addition of forward looking infrared (FLIR) imaging technology and the Ferry Operations and Customer Information System (FOCIS) on the bridge of the Freshwater Class ferries, along with new Automatic Radar Plotting Aid (ARPA) and Automatic Identification System (AIS) capabilities will require the Master to monitor these technical aids in addition to keeping a proper lookout. The employment of a second qualified watchkeeper to assist the Master to monitor these additional aids would contribute to effective CRM on the bridge.

Passenger Number Recording

- 1.74 SF was not able to determine accurately the number of passengers onboard any ferry at any given time. Further, the number of passengers onboard was not being entered in any ferry Log Book contrary to VOM No. 1.11 *Counting of Persons Onboard*, and the VOM appeared more concerned about exceeding the number of passengers the vessel is certified to carry than genuinely accounting for all onboard.
- 1.75 Passenger numbers were obtained on some services through the automated turnstiles located at Circular Quay and Manly. Tallies of passengers on services on the Parramatta River were obtained from ticket sales by cashiers onboard. On all inbound runs to Circular Quay requiring production of a ticket on arrival at the Quay, information on the number of passengers carried on the ferry was not available until the passengers had disembarked and presented their ticket at the turnstiles.
- 1.76 Passengers boarding at Circular Quay often entered through the gate rather than the turnstiles. The gate attendant usually swiped the ticket to allow persons with baggage and holding a ticket to enter but, on other occasions, just opened the gate without swiping a ticket. Children under the age of four are carried free and the numbers are not recorded.
- 1.77 In the event of a major incident requiring a ferry to be abandoned, such as an uncontrollable engine room fire, an explosion or major collision, no accurate head count would be available on which to account for all passengers. At any time, but particularly at night, this would make it very difficult for rescue

services, and unnecessarily tie up resources. The true position might only be determined when family or friends made inquiries as to a missing person or when a body was recovered days after the incident. As ferries carry appreciable numbers of overseas and interstate visitors, the number missing may not be confirmed for some time.

- 1.78 Although the accurate recording of the number of persons onboard including the crew is not a statutory requirement, it is recommended by the NSWMA and is included as a requirement in SF's SMS.
- 1.79 FOCIS includes a smart CCTV passenger counting system with a specified 98% accuracy. It is expected the System will be operational by the end of September 2011.

Passenger Safety Announcements

- 1.80 The SF website states that it provides:

".. safety messages that are played before, during and after journeys."

Anecdotal information indicates this was seldom the case, with one regular commuter indicating he had only ever heard a recorded message on five occasions over a two year period. These messages instructed:

".. aisles are to be kept clear ..",

".. do not lean over the side when approaching the wharf ..", and

".. take your rubbish with you to dispose of thoughtfully .."

In the past two years travelling onboard the Manly service, this commuter had not heard any warning to passengers of the ferry rolling or pitching when a large swell or waves were occurring in the vicinity of the ferry crossing Sydney Heads.

- 1.81 The Freshwater Class ferries on the Manly service are equipped with automated recorded voice announcements activated by the Master. They include messages for the initial part of the journey after passengers embark, just prior to disembarking and for warning of more (vessel) "movement" when in the area of Sydney Heads. However, they were not being played over the PA system regularly.

- 1.82 In contrast, announcements are made on the Manly Fast Ferry service on each trip giving instructions on location of life jackets and information on sea conditions to be expected when near the Heads. Palm Beach Ferries operating across Broken Bay also give warnings on expected sea conditions to be experienced on route as well as the location of life jackets.
- 1.83 As an enhanced service to its customers, SF could include the screening of pre-recorded videos on all ferries similar to those shown on all commercial aircraft providing advice to passengers on safety issues, location of life jackets and additional warnings on adverse weather conditions crossing Sydney Heads or other special conditions as they arise.

Passenger and Crew Communication

- 1.84 On the Freshwater Class ferries there is an alarm button available for passengers to contact crew on each deck and in the two toilets for people with a disability should the passenger become ill or wish to report a safety incident. This crew contact button on the two decks is badly signed and requires considerable searching to locate it (see *Photograph 2*).



Photograph 2: Crew assistance button

- 1.85 The four GPH on the Freshwater Class ferries work shifts of up to 12 hours and operate on a self-relieving rotation for 'crib' (rest) breaks. In addition to GPH acting in the roles of Helmsman and Greaser, the rotation provides for one to be on a crib break and one to conduct three complete deck patrols through the passenger spaces on each trip between Circular Quay and Manly. However, during observations made over a two year period, the two available GPH disappeared once the ferry left the wharf and were not seen by passengers until the ferry was in manoeuvring mode arriving at the next wharf. Thus, contrary to VOMs, there were no crew members readily available to assist passengers or to exercise passenger control if the need arose.
- 1.86 In August 2008, a person climbed over the rail of the *Freshwater* and sat on the sponson of the ferry for over ten minutes before passengers could find a crew member to inform of the situation. A check on when the individuals crewing the *Freshwater* on 6 August 2008 had attended a Drill Pack 3 in the preceding nine months revealed the following:

Position	Previous Drill Pack 3
Master	13.11.07
Engineer	31.3.08, 13.5.08
GPH 1	5.11.07, 15.5.08
GPH 2	11.3.08
GPH 3	1.11.07
GPH 4	23.4.08, 15.5.08

Table 4: Drill Pack 3 recorded - *Freshwater*, November 2007 – July 2008

- 1.87 With such large numbers of passengers carried, visible crew presence or ready access to communication with a crew member is particularly important.

Onboard Crew Communications

- 1.88 Communications between the Master and crew onboard the First Fleet ferries rely on a fixed intercom system and one portable radio. Fixed intercom units are located on the main and first decks, within the main passenger areas, with another located outside on the main deck near the anchor winch. Any

communications through the fixed intercom system can be heard by passengers in close proximity to the fixed units. Should a crew member use one of the fixed intercom units and does not shut it off, then goes to another unit, the previous open unit blocks any further communication between the bridge and the crew.

- 1.89 In the event of an emergency, and depending on its type, some information of the situation may not be appropriate for general broadcast to passengers. There is only one portable radio onboard but, in the event of an emergency situation arising, both the Engineer and GPH are required to attend. Unless they are both together, only the crew member with the portable radio has direct communication with the Master for the purpose of exchange of information and instructions.
- 1.90 Communication between the crew and the Master on the Freshwater and Lady classes is by portable radio with each crew allocated a radio at the commencement of duty. This is a more appropriate arrangement than exists currently on the First Fleet vessels.

CCTV Onboard Freshwater Class

- 1.91 The Freshwater Class ferries are fitted with CCTV covering the passenger decks with the display only (no recording ability) on the bridge in a position only able to be viewed by the Master. All Masters interviewed stated that, during night running, they either turned the screen away or did not switch it on as it is a major distraction to their responsibility to maintain a proper look out at all times. Thus, the CCTV currently serves no useful purpose.
- 1.92 The display also affects Masters' night vision. Maintenance of night vision is imperative given the challenges of navigating a large vessel such as a Freshwater ferry on Sydney Harbour during darkness with the constant changing of light sources, reflections on the water, water traffic and obstructions.
- 1.93 Having a third person on the bridge to assist the Master as lookout, who could also monitor the CCTV, would allow the Master to concentrate on the traffic and safe navigation of the ferry while observation of the passenger decks was still maintained.

Previous Reports

- 1.94 Since 2001, there have been three significant reports into Sydney Ferries / Sydney Ferries Corporation and its predecessor organisation.

The Taylor Report

- 1.95 In 2001, the NSW Minister for Transport directed an independent review into the operations of Sydney Ferries. The report of this review is known as the Taylor Report. The terms of reference included:

“.. to fully investigate and report on staff management practices of Sydney Ferries, with particular reference to the adequacy of operational instructions issued to crews, adequacy of crewing arrangements and related human resource arrangements and adequacy of crew competency, training and development.”

- 1.96 The Report stated:

“The audit concluded that Sydney Ferries did not fully meet training requirements of the legislation and policy under which it operates.”

“The audit also found that the legislative requirements to carry out emergency drills by all vessel crews are not always met, despite requests from crews and masters for time to undertake such drills.”

“.. the competencies of persons utilised as helmsman on Manly ferries should be checked regularly.”

It was also critical of the lack of comprehensive records being maintained.

OTSI Freshwater Class Systemic Investigation Report

- 1.97 In 2006, OTSI published a Ferry Safety Investigation Report, *Systemic Investigation into incidents of collision involving Freshwater Class vessels operated by Sydney Ferries Corporation*⁹. This report also addressed aspects of onboard operations, crewing, training in emergency drills and adequacy of record keeping.

- 1.98 The investigation highlighted deficiencies in the standard of drills:

“The standard of delivery of drills has varied significantly, with some drills being practiced frequently and some members frequently participating, while other drills and crew members have received little attention.”

The report further noted:

⁹ At the time of the OTSI Systemic Investigation, Training and Development Group had the responsibility for drills as the Fleet Standards Group had not yet been created.

“.. the delivery of drills that were conducted by Masters ... were not subject to independent evaluation.”

and that:

“Sydney Ferries recognised the need to improve its management of training records.”

The Walker Report

1.99 In 2007, Mr Bret Walker SC was appointed to conduct a Special Commission of Inquiry into Sydney Ferries Corporation. The Commission included in its considerations the adequacy of operational instructions, training content, crewing arrangements and adequacy of crew competency. The report of its findings (the Walker Report) was published on 31 October 2007.

1.100 The Walker Report noted that the SFC training program was impacted by the rostering arrangements which at the time were not crew-based:¹⁰

“The current rostering processes establish a different ‘line’ of roster for GPH, Masters and Engineers, which results in differences between start and finish times for the shift of each of these three type of crew members.”

1.101 The report also commented that:

“SFC does not, however, appear to monitor its compliance with the requirement of the Code.”

1.101 These three reports highlighted issues relating to training similar to those included in the concerns expressed to the Chief Investigator through the CSIRS reports which gave rise to this systemic investigation.

¹⁰ SFC introduced crew-based rostering on 29 June 2009.

PART 2 FINDINGS

- 2.1 The investigation identified that SF was not meeting its obligations under the USL Code, as it applied at the time of the investigation, to conduct particular drills at specified intervals on all its ferries. It was also not meeting the additional drill requirements of its own SMS. A number of the issues that came to light had been raised in three previous reports, the Taylor Report (2001), the OTSI Freshwater Systemic Investigation Report (2006) and the Walker Report (2007), but with little apparent change as a result.
- 2.2 Though the FSG was responsible for the management of the drill program, it was left to individual Masters to design, deliver and assess drill practice on their vessels without assistance. They were given no support in the form of any instructions as to the type, content and method of delivery of drills to be practiced; training in delivery and assessment; or advice and assistance from professional trainers. Masters did not have access to records of the drill history of their vessel or crew members as a sound basis on which to make decisions on the drills to be practiced.
- 2.3 The program was based on availability of vessels without taking into account mandatory time intervals for repetition of drills. Hence, some crews and vessels experienced few drills while others experienced a surfeit, and drills could be practiced far more often or far less often than necessary. Policy precluded the conduct of drills at night despite this being the time of highest risk and potentially the greatest impact in the event of an emergency on the water.
- 2.4 VOMs, the primary reference material onboard to assist Masters in planning and conducting drills, were of limited use in that they only provided an abridged version of the USL Code requirements. There were also inconsistencies in material common to all classes of ferries and apparent omissions of important safety material. Time allocations

for drill practice were usually not sufficient to allow full completion of most Drill Packs.

2.5 Electronic records did not discriminate between full or partial completion of individual Drill Packs and vessels were often recorded by class rather than name. Thus, it was not possible to verify compliance with USL Code and SMS requirements or determine the current competency, or extent of experience, of individual crew members in relation to being able to respond to any emergency situation.

2.6 A number of factors contribute to the complexity of the task of scheduling SF ferries and crews for drills. These include:

- the diverse nature of the fleet with its six classes of vessel;
- operational inflexibility in not being able to readily substitute vessels on different services;
- the increasing maintenance liability of older vessels;
- the need for crew to be competent in operating on more than one class of vessel; and
- crew rostering (up until crew-based rostering was introduced).

2.7 A number of key safety issues were highlighted during the process of observing the conduct of drills. In summary, they were that:

- an actual simulation was not always included in POB drills and VOMs were inconsistent in their instruction in this regard;
- GPS was not being used as an aid in POB situations and VOMs were silent on the matter;
- life jackets were seldom being worn during drills on the grounds they were perceived to be too bulky and interfered with performance;
- VOM instructions and practice varied in relation to marking anchor chains or rode during anchoring drills;

- crew were being placed at risk of electrocution due to the common practice of using toilet areas for fire drills without the AC power being isolated, a risk not addressed in VOMs;
- deterioration in serviceability of some safety equipment was escaping identification (a serious consequence of not undertaking drills regularly); and
- collision drills were not being practised and VOMs did not include all the USL Code requirements for them.

2.8 “*Analysis and review*” of incidents involving SF vessels and “*periodical structured audits of Sydney Ferries*” by NSWMA did not result in any change to the administration and conduct of ‘collective’ training in SF during the period covered by the investigation.

2.9 A range of other safety related issues worthy of further examination came to notice as a result of the investigation. They relate to;

- crewing arrangements on the Freshwater Class ferries,
- formal qualifications for the helmsmen and greasers on the Freshwater Class ferries,
- accurate accounting for passengers,
- passenger safety announcements,
- communication between passengers and crew,
- onboard crew communications,
- CCTV onboard the Freshwater Class ferries, and
- the shopkeepers on the Manly service as a potential additional resource during emergencies.

PART 3 REMEDIAL ACTIONS COMPLETED

- 3.1 OTSI and staff of SF were in regular communication throughout the investigation. OTSI kept SF abreast of progress and emerging findings in the investigation and SF regularly reported on initiatives that were underway or planned in relation to training.
- 3.2 The action being taken on specific issues identified in this investigation as reported by SF is summarised below. This action substantially addresses the main areas of concern highlighted in the findings of the investigation.
- 3.3 The responsibility for the administration of drills has been returned to the TDS as part of restructuring that has included the disestablishment of FSG. TDS now has responsibility for both individual and 'collective' training.¹¹
- 3.4 A more structured approach to the conduct of drills has now been implemented which includes the provision of full instructions to Masters for the conduct of drills including scenarios they can use. Training Master and Engineer positions have also been established to oversee drills twice a year and conduct refresher training following staff absences.
- 3.5 A properly constructed vessel schedule has been compiled which fully covers the requirements of the new USL Code requirements and SF's SMS. Two and a half hours are now allocated for drills on each ferry six times a year, with a further four hours allocated for Critical Control Failures twice each year. Drills are also being conducted during hours of darkness.
- 3.6 Anomalies identified in record keeping have been rectified. Drill completion is recorded in the database under the ferry name and not the class of vessel, and partial completion of drills is accurately recorded as such.
- 3.7 As a matter of policy, all Masters, Engineers and GPH are required to undergo refresher training after a period of absence from operating on a particular class of ferry. Originally the period of absence was to be 12 weeks

¹¹ SFC gained Registered Training Organisation (RTO) status in 2006 and was successfully audited by VETAB in September 2009 for compliance with the AQTF 2007 *Essential Standards for Registration* and also with its *Conditions of Registration*. AQTF 2007 Compliance Audit Report - Sydney Ferries dated 08-09-2009 refers.

but it has been extended to 26 weeks. Absence can include long term sick leave, annual leave, leave without pay and long service leave. Revised Safety Management System Currency advice is also now available to crews in the Vessel Day File.

- 3.8 All onboard crew have been issued with inflatable PDF and portable radios.
- 3.9 Ferries on the Manly service now regularly broadcast safety announcements to passengers as the ferry leaves the wharf and prior to disembarkation. A further warning is given to passengers in the event of adverse sea conditions near or during crossing of the Sydney Heads. Regular deck patrols are now being conducted on this service at least twice per trip.
- 3.10 In relation to VOMs, within Sydney Ferries' new Safety, Health, Environment and Quality (SHEQ) system, there is a Fleet Generic Operations Manual (FGOM) containing the information relevant to all vessels and separate 'Class' VOMs containing information relevant to that class only. As at the end of July 2010, revision of VOMs had commenced and will take into account:
- changes to the USL Code and in the SF SMS;
 - consistent content associated with subjects common to all classes of vessel;
 - the need to shut down the electrical system before applying water-based fire fighting appliances; and
 - standardisation of procedures for POB situations.
- 3.11 Installation of FOCIS is expected to be completed on all ferries by the end of September 2011. In the meantime, SF has initiated measures to account for the number of passengers onboard, particularly in circumstances where a Master considers that the number of passengers a vessel is certified to carry is likely to be exceeded.
- 3.12 New digital CCTV with back to base facility and including forward facing cameras has been ordered for all vessels.

3.13 NSWMA has advised that it has now:

“established three full time positions dedicated to Safety Management System (SMS) audits and conducts regular SMS audits of Class 1 passenger carrying vessels and other vessel types within the Sydney Ferries’ fleet.”

These audits are reported to:

“include the inspection of records and training documentation, the checking of record-keeping procedures and SMS documentation and regular observation of drills and operational and emergency procedures”.

PART 4 RECOMMENDATIONS

4.1 In addition to the action already taken and currently in hand, it is recommended that Sydney Ferries;

- institutes a quality control regime to ensure the content, conduct and assessment of drills are maintained at a consistent standard and continue to meet the full requirements of the USL Code and SF's SMS;
- implement a requirement that GPH onboard the Freshwater Class ferries utilised in the roles of helmsman and greaser be trained and qualified in the tasks they are required to perform, such that they are able to take over from the Master or Engineer in the event of an emergency;
- during the hours of darkness, station one of the GPH onboard the Freshwater Class ferries on the bridge to perform the role of extra lookout;
- enforce the wearing of PFD by all crew members throughout the conduct of drills;
- mark the anchor chains and rodes on all ferries and standardise instructions on anchoring procedures to include obtaining depth of water and amount of chain or rode to be let out; and
- enlarge the signage indicating the location of Crew Assistance alarms, and remove clutter around them, so that they are readily obvious to passengers.

PART 5 SOURCES AND SUBMISSIONS

Sources of Information

- NSW Maritime Authority
- NSW Vocational Education and Training Accreditation Board
- Sydney Ferries

References

- OTSI Ferry Safety Investigation Report: *Systemic Investigation into incidents of collision involving Freshwater Class vessels operated by Sydney Ferries Corporation* 2006
- *Review of Operations of Sydney Ferries* 2001 (Taylor Report)
- *Report of the Special Commission of Inquiry into Sydney Ferries Corporation* 2007 (Walker Report)
- Uniform Shipping Laws Code 2008 and 2009

Submissions

The Chief investigator forwarded a copy of the Draft Report to the Directly Involved Parties (DIPs) to provide them with the opportunity to contribute to the compilation of the Final Report by verifying the factual information, scrutinising the analysis, findings and recommendations, and to submit recommendations for amendments to the Draft Report that they believed would enhance the accuracy, logic, integrity and resilience of the Investigation Report. The following DIPs were invited to make submissions on the Draft Report:

- Sydney Ferries
- NSW Maritime Authority

Submissions were received from both Sydney Ferries and NSW Maritime Authority.

The Chief Investigator considered all representations made by DIPs and responded to the author of each of the submissions advising which of their recommended amendments would be incorporated in the Final Report, and those that would not. Where any recommended amendment was excluded, the reasons for doing so were explained.