



**The Bahamas  
Maritime Authority**

## **THE COMMONWEALTH OF THE BAHAMAS**

**“Grandeur of the Seas”**

**IMO Number 9102978**

**Official Number 8000400**



**Report of the investigation into a fire at sea  
May 2013**

*The Bahamas Maritime Authority investigates incidents at sea for the sole purpose of discovering any lessons which may be learned with a view to preventing any repetition. It is not the purpose of the investigation to establish liability or to apportion blame, except in so far as emerges as part of the process of investigating that incident.*

*It should be noted that the Bahamas Merchant Shipping Act, Para 170 (2) requires officers of a ship involved in an accident to answer an Inspector's questions fully and truly. If the contents of a report were subsequently submitted as evidence in court proceedings relating to an accident this could offend the principle that a person cannot be required to give evidence against himself. The Bahamas Maritime Authority makes this report available to any interested parties on the strict understanding that it will not be used as evidence in any court proceedings anywhere in the world*

Date of Issue 17<sup>th</sup> January 2014  
Bahamas Maritime Authority  
120 Old Broad Street  
LONDON  
EC2N 1AR  
United Kingdom

## CONTENTS

1. Summary
2. Particulars of Vessel
3. Narrative of events
4. Analysis
5. Conclusions
6. Recommendations

List of Appendices:

- I. General arrangement and schematic
- II. Log extracts and timelines
- III. Locations of Deck 3 CCTV Cameras
- IV. Photographs

## 1 SUMMARY

- 1.1 The M.V. “GRANDEUR OF THE SEAS” was on passage from Port Canaveral, Florida, USA, to Coco Cay, Bahamas on the 27th May 2013 with 2224 passengers and a crew complement of 796.
- 1.2 About 0235 hrs local time (UTC -4 hrs) a fire was reported in the centre portion of the aft mooring area on deck 3.
- 1.3 An Emergency situation was declared on-board, the crew were first sent to their Emergency Stations and then passengers were sent to their Muster Stations.
- 1.4 The fire was reported by “Pan Pan” message on VHF Channel 16 at 0238 hrs and the US Coastguard acknowledged.
- 1.5 The ship’s fire fighting and emergency procedures were initiated by means of a “Bravo Bravo Bravo” announcement on the public address system at 0238 hrs. While the fire rapidly spread from deck 3 up to deck 6, the crew made successful efforts in containing the fire to the aft decks and the fire was finally arrested and extinguished by 0600 hrs although boundary cooling activities continued until approximately 1036 hrs.
- 1.6 While fire fighting operations were underway passengers were mustered and preparations were made in anticipation of a potential need to abandon the ship. However, abandonment did not prove to be necessary and no personal injuries were reported to either passengers or crew members. This was despite what was evidently a serious and large conflagration which caused significant and major structural damage requiring one month shipyard repair period in Freeport Bahamas.
- 1.7 Although a forensic fire investigation was carried out, the source of the ignition or the material that was initially ignited has not been established. The suggestions that a cigarette end discarded from an adjacent or upper deck ignited stored rags or mooring rope, or self-ignition of rags (such as oiled towels discarded from the spa), or an electrical fault may have been the root cause are speculative.
- 1.8 Without definitive knowledge regarding the initial outbreak of the fire, the investigation analysis has identified issues relating to fire containment and fire fighting with respect to fixed fire fighting systems, monitoring of open areas, use of aluminium in ships structures and general housekeeping issues.

\*\*\*

## PARTICULARS OF VESSEL

2.1 The “Grandeur of the Seas” is passenger vessel, Vision class, registered at Nassau, Bahamas, of welded steel construction and diesel propulsion. She is owned and operated by Royal Caribbean Cruise Ltd, USA and has the following principal particulars:

- Official Number - 8000400
- IMO Number - 9102978
- Length overall - 279.60 metres
- Length BP - 233.70 metres
- Breadth - 32.20 metres
- Depth - 15.85 metres
- Draft - 7.820 metres
- Gross Tonnage - 73,817 tons
- Net Tonnage - 44,122 tons
- Deadweight - 7000 tonnes
- Call Sign - C6SE3
- Number of pax berths - 2400

2.2 The ship is powered by four diesel electric MAN B&W engines driving four generators supplying power to two fixed propellers at 140 RPM

2.3 The vessel was built at Kvaener Masa yards, Helsinki, Finland in 1996.

2.4 The vessel is registered under the Bahamas Flag and was entered with the DNV Classification Society. At the time of the casualty, the ship carried valid statutory and class certification.

2.5 The “Grandeur of the Seas” was last subjected to a Bahamas Maritime Authority Annual Inspection at the Port of Venice, Italy, on the 22nd June 2012. No deficiencies were noted.

2.6 All crew carried the appropriate documentation as required by the Standards on Certification Training and Watchkeeping (STCW) and issued by the Bahamas Maritime Authority as flag State.

2.7 Fire extinguishing systems – the ship is fitted and provided with all fixed and portable fire-fighting systems and equipment required by SOLAS for a passenger ship. The inventory of systems and equipment is not reproduced in this report but of particular relevance to the subject of this investigation it is noted that the seat of the fire, Deck 3 aft mooring area, was protected by a water drenching system with a supply valve located inside the Bosun's Workshop although this is not shown on the fire control plan furnished to the investigation.

2.8 The ship Fire Control and Safety Plan Deck 1 to Deck 4 (Drawing Number D.1874.1000.0000.003 dated May 02 2012) indicates that Mooring Deck 3 was provided with:

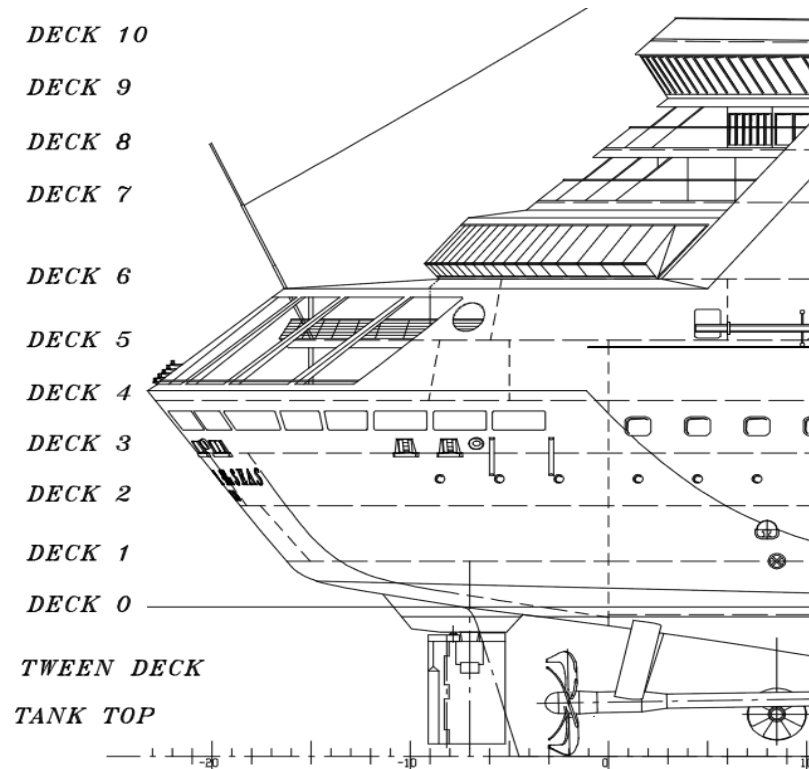
- One “Fire Cabinet + Fire Hose + Dual Purpose Nozzle” externally mounted on the after bulkhead of the CO<sub>2</sub> room port and starboard of the centreline of the ship
- Two Bell Fire Alarms (Mooring Deck); One Bell Fire Alarm (CO<sub>2</sub> Room); One Bell Fire Alarm (Bosun's Workshop)
- International Shore Connection (mounted on aft bulkhead outside Bosun's Workshop)
- 12 kg portable Dry Powder extinguisher (Bosun's Workshop)
- A manually operated call point and bell fire alarm in the port and starboard stairwells.
- One “Fire Cabinet + Fire Hose + Dual Purpose Nozzle” and 9 litre portable water fire extinguisher located adjacent to the internal access to the stairways in the port and starboard crew accommodation alleyways.

It was noted that this version of the Fire Control Plan did not reflect the installation of the mooring deck drencher system. See extract at Appendix I.

\*\*\*

### 3 NARRATIVE OF EVENTS

- 3.1 The following narrative is based on documentary evidence collected during the investigation including the statements taken from crew and officers, logbook extracts and Voyage Data Recorder (VDR) records which are found in Appendix II to this report.
- 3.2 As would be expected on a large passenger vessel, the VDR and logbook extracts attached to this report go into more detailed timings of events and should be read in conjunction with this narrative. It should be noted that the VDR timings are shown as GMT (UTC). However, it was noted that there is a discrepancy of two minutes between the times found in the VDR extract and those found in the Deck Log Book summary. Timings have, for consistency, been taken from the VDR extract.
- 3.3 The “Grandeur of the Seas” departed from Port Canaveral on the evening of 26th May 2013 with 2224 passengers and 796 crew members. It was bound for the private island of CoCo Cay, previously known as Little Stirrup Cay, which is located on the northern end of the Berry Islands in the Bahamas.
- 3.4 According to the log extracts the weather conditions at the time were an Easterly Force 5 Beaufort wind speed with slight seas. There were no reported incidents during the passage in the evening time and the Officer of the Watch (OOW) was in charge on the bridge.
- 3.5 Routine Fire patrols were being made which meant that individual areas of the vessel were inspected once or twice each night. Fire patrols were organised into three “Rounds” – “Red”, “Green” and “Blue”.
- 3.6 A procedure was in place to accomplish all patrols every night with one patrol being repeated between 0400 and 0600. Each patrol was conducted in the periods of 2200 - 0000 // 0000 - 0200 // 0200 - 0400 // 0400 - 0600 and ensuring round colours were not repeated one after the other.
- 3.7 The aft mooring deck on Deck 3 was checked as point 35 on the “Red” round at 00:38 and examination of CCTV camera footage indicated that this was the last time anyone entered the mooring deck. The patrol subsequently recalled that having entered the mooring deck area no other personnel were seen and nothing unusual was noted.



Schematic of aft deck arrangements

- 3.8 Early on the morning of the 27th May 2013, personnel who had been at what was described as “a Jamaican themed party” on Deck 4 started to detect unusual smoke smells and two individuals proceeded down the starboard stairwell from Deck 4 to Deck 3. The alarm was raised by a telephone call to the Bridge which is recorded on the VDR as follows: “There is a massive fire on deck 3 aft mooring deck: its right at the centre of the mooring deck – there is a big pile of something burning right now”

### **Command and control**

- 3.9 At 0238 hrs the VDR data indicates the first audible alarm on the vessels fire detection system. At 0238 hrs the first announcement was made over the vessel’s PA system for crew to proceed to their Emergency Stations. At 0247 an announcement was made for passengers to assemble at muster stations.
- 3.10 The vessel’s “Red” condition was implemented and the ships speed was reduced from 19 knots to approximately 8 knots at 0240 hrs. The vessel’s heading was maintained at that time.
- 3.11 At 0301 hrs the vessel commenced altering course to starboard to head south for a better lee and keep smoke and flames from going further forward
- 3.12 At 0305 hrs the general Alarm was sounded and a Mayday message was despatched on VHF Channel 16 and by the GMDSS system.



- 3.13 At 0306 hrs the lifeboats were ordered to be lowered to the embarkation deck. Some problems were encountered with the electronic passenger mustering system and personnel had to revert to hard copies. This delayed the tally of passengers and crew alike and it was a considerable time before all crew and passengers were finally accounted for.
- 3.14 At 0249 hrs a PAN PAN message was despatched which was answered by the US Coastguard Sector Miami and by the passenger ship “Carnival Sensation”. This was closely followed by a second announcement for passengers to proceed to their muster stations.
- 3.15 Subsequent to this second announcement further announcements were made to emphasise the need for passengers to proceed to, and remain at muster stations and to maintain calm by explaining the situation and the justification for the actions taken – such as the preparation of lifeboats and other life-saving equipment.

#### **Fire-fighting activities**

- 3.16 Crew members attempted to rig a fire hose on the port side of Deck 3 but almost immediately after the Safety Officer (SO) arrived they were forced to evacuate the area due to the heavy smoke being generated by the fire.
- 3.17 Of critical importance at this stage is that they were unable to reach the master control valve for the water suppression/drencher system located in the aft bosun’s store on deck 3 due to the proximity of the fire. This system did not have a remote operations system and was therefore rendered un-useable due to the close proximity of the fire.
- 3.18 The fire spread rapidly upwards and outwards to decks 4 and 5 and then onto the exterior of deck 6 where stowed life-rafts ignited outside the glass screening of the lounge area on deck 6
- 3.19 The SO set up a forward control position on Deck 5 port side at stairway 68 as the SO considered that, due to the already intense nature of the blaze, Deck 4 would be quickly affected.
- 3.20 The SO, with the personnel who had accompanied him from Deck 3, commenced rigging hoses but by this time the railings on Deck 5 were already on fire. Two mobile fire-fighting teams arrived on scene and attempts were made to start water spray onto Deck 5 but the fire was increasing to the extent that it was considered too dangerous for personnel to exit onto the deck. The SO orders water spraying to commence inside the staircase.
- 3.21 With the arrival of the mobile fire-fighting teams the fire could be fought from the open deck areas on Deck 5 and the SO noticed that the inflatable life-raft canisters which were located on the centre-line of Deck 5 were in flames. One hose was directed towards these containers and the SO also ordered a further team to proceed to engage on fire-fighting on the starboard side of Deck 5 to prevent further spreading of the fire.

## mv Grandeur of the Seas - Casualty Investigation Report

- 3.22 By this time the aft air compressor for the self-contained breathing apparatus sets was inaccessible due to flames and fire. This necessitated bringing bottles to and from the alternate air compressor located at the forward end of the vessel.
- 3.23 The SO then received an order to send fire teams to Deck 3 to commence boundary cooling as it was feared that the temperature of the external bulkheads could lead to fire breaking out in areas forward of the deck.
- 3.24 Meanwhile the fire-fighting efforts on Deck 5 were proving successful and the intensity of the fire had been significantly reduced and almost extinguished.
- 3.25 Fire teams proceeded down stairway 68 and entered onto Deck 4 where it was reported that there were no visible flames. Firefighting then commenced from both port and starboard sides of Deck 3 and all flames were extinguished.
- 3.26 Checks of surrounding areas and compartments were made and boundary cooling continued to ensure that the risk of re-ignition from hotspots was minimised. The flammables locker on Deck 3 was entered and found to be intact, with no evidence of conflagration inside.
- 3.27 The VDR log shows the fire was reported to the USCG as contained at 0328 hrs.
- 3.28 Fire fighting efforts continued thereafter until approximately 0600 hrs with further boundary cooling, release of Hi-Fog and checks of all spaces together with ventilation and clearance of smoke.
- 3.29 At 0732 hrs all lifeboats were secured and the vessel then made way under its own power with tug escort to the Grand Bahama Shipyard in Freeport. Two tugs were despatched from Freeport Bahamas to provide escort, the vessel was left without a useable aft mooring system or stern thruster. Aft mooring lines were transferred from the forward mooring deck.

\*\*\*

## 4 ANALYSIS

- 4.1 An analysis of the incident from studies of the vessel, interviews and documentation can provide an insight into the actions taken in fighting, and consequences of, a major fire at sea.
- 4.2 The causation of the fire has been investigated by specialist forensic fire investigators who have produced a comprehensive assessment of the events leading up to the fire.
- 4.3 One of the potential causes of the fire investigated is that of human activity. The port side bosun's store, and the immediate area outside, was stated to have been in regular use as an informal recreation area for a section of deck and engineering crew known as the "blue boys". These crew members were commonly seen during fire patrol rounds around 23:00-00:00 hours.
- 4.4 As this was a sitting and smoking area it is conceivable that a discarded cigarette could have been the initiator of the fire. However, no personnel were seen during the fire round on the night in question and other information gathered during the investigation indicated that there was a very strong safety culture on board regarding the disposal of any garbage including cigarette ends. In any event the seat of the fire was located a significant distance from the area used for sitting out. It is therefore not likely that this activity can be presented as a strong contender for the cause of the fire.
- 4.5 The two other possible sources of a discarded cigarette end were the fire patrol officer, who stated that they had never been a smoker or some other, unauthorised, person. Review of CCTV records did not reveal the presence of anyone on the mooring deck in the period prior to the fire so it appears that human activity, including attempted arson, may be ruled out.
- 4.6 The second possible mechanism for ignition is through an electrical failure or sparking. While this remains as a possibility the intensity of the fire resulted in the destruction of much of the electrical equipment, cables and lighting in the area and consequently no definitive conclusion can be drawn.
- 4.7 Whilst the original ignition point is not clear, the evidence revealed that there were two bins of rags on the aft mooring deck. The investigation found that one of these bins was utilised for dirty rags and one for clean rags.
- 4.8 It has been stated that these "clean" rags sometimes comprise of old towels used in the spa area and have been discarded and used as deck rags because they cannot be properly washed of aromatic spa oils which have soaked into them.

- 4.9 While the forensic fire investigation rules out spontaneous combustion of such towels in his investigation it is noted that the Aromatherapy Trade Council produced guidance in 2011 on the matter as found at <http://www.vtct.org.uk/LinkClick.aspx?fileticket=WH0yNPadm4g%3D&tabid=225>.
- 4.10 It is clear that a number of mooring ropes had been left openly stowed on the aft mooring deck although this is common practice when a vessel is trading with short voyage durations between ports. Additionally, mooring ropes on winch drums were also exposed on an unprotected open deck
- 4.11 The aft deck is fitted with Closed Circuit Television Cameras which are intended for security and safety purposes. The locations of the cameras installed on Deck 3 are shown in Appendix III.
- 4.12 The actual start time of the fire is unknown and there is limited video footage available of the aft mooring deck. However, what has been viewed revealed white smoke entering into frame from the right hand side at least as early as 0133 hrs but the source is out of frame. This indicates that material smouldered for some time before flames developed.
- 4.13 The first sight of flame on the video is at 0225 hrs and thereafter the video shows the development of flames until the recording failed. See still images from the centre camera at Appendix IV.
- 4.14 SCBA bottles used during the fire fighting situation were quickly used up and because the aft re-filling station became un-useable due to the fire, bottles had to be transported and charged at the forward filling station some considerable distance away. While inconvenient this did not directly impact on fire-fighting operations. However, for a ship of this size and length an additional recharge station would be beneficial.
- 4.15 The stowage of life-rafts below the exterior of deck 6 provided a combustible hazard in the vent of a fire outbreak and contributed to the fire extending to the aft exterior of the deck 6 lounge.
- 4.16 The fixed CO<sub>2</sub> fire-fighting system in the Emergency Generator Room became non-operational. It is not known exactly why the pilot bottles failed to operate but heat could have been a factor. The system was tested successfully after the fire.
- 4.17 There were two non-insulated aluminium hatches, one on deck 4 and one on deck 5 both on the centreline. Although non-combustible, Aluminium melts at a low temperature without evidence of “red heat” and structural failure of the hatches contributed to the spread of the fire.
- 4.18 The fire resistance of the deck structures between Deck 3 and Deck 4 is required to be of “A-0” standard. A-0 is defined in SOLAS as being constructed of steel or other equivalent material; suitably stiffened and insulated with approved non-combustible materials such that the average temperature of the unexposed side will not rise more than 140°C above the

original temperature, nor will the temperature, at any one point, including any joint, rise more than 180°C above the original temperature, within 0 (zero) minutes.

- 4.19 In light of these stated requirements it is clear that aluminium hatches which are not suitably insulated and have not been subjected to the required test to verify integrity and temperature rise are not compliant with SOLAS. No information has been found that the aluminium hatches had been replaced since the original construction of the vessel in 1996 and no material specification for the hatches is included on the “as-built” drawings. The conclusion is that these aluminium hatches were installed without the necessary authority during the building phase and their presence was neither detected during the new-building survey and oversight nor at any survey or inspection, whether by the Owner, by the flag State, nor by port State in the intervening period.



Aluminium hatches destroyed in fire

- 4.20 At some point, interviewees were unable to give specific detail on timing, a large explosion was heard and investigations revealed extensive buckling in way of deck 4 which had separated from the supporting pillars on deck 3. In the absence of anything else to explain this sound it is concluded that the noise resulted from this structural failure.
- 4.21 The passengers and crew were mustered without serious incident, however the failure of the electronic mustering system caused a considerable time delay in ensuring all crew and passengers were safely accounted for.
- 4.22 In photo 8 of the appended photographic report the main sprinkler valve can be seen in the Bosun store on deck 3. Due to the flames and heat this valve,

which is manually operated, could not be reached. It is understood that this valve is located inside stairwell 68 on the sister vessel “Enchantment Of The Seas”

- 4.23 Reaction by USCG was positive and a flyby by USCG plane was made on several occasions while they kept in constant contact with the vessel.
- 4.24 The ship’s crew was able to mount a co-ordinated and effective fire fighting effort to finally bring the blaze under control and extinguished.
- 4.25 Passengers were kept informed at 20 minute intervals on the vessel’s PA system.

**Post-incident actions taken by the operator**

- 4.26 The operator of this vessel has responded in a very proactive way to this incident in carrying out a full internal investigation and circulating a “Lessons Learned Report” to all vessels in the fleet. This action was completed just three months after the incident.
- 4.27 The scope of the internal investigation covered the damage caused and examined whether prevention was possible by looking at all the possible causal issues – both accidental and deliberate.
- 4.28 The report identified 19 corrective actions and recommendations to improve fire safety. New policies have been developed covering: emergency signals; fixed fire fighting quality assurance; fire safety (storage of combustible materials and liquids); and smoking.
- 4.29 Flame and smoke sensors have been installed on the mooring deck, and improved remote and automatic release improvements have been provided for the drenching system. The aluminium deck hatches have been replaced by steel on this and one other ship in the fleet (the only other example found). Fire safety plans are to be updated to reflect current fire fighting and safety installations and arrangements.

\*\*\*

5

## CONCLUSIONS

- 5.1 There is no doubt that this was a major fire and a major incident exposing a large number of people to a serious possible hazard. However, fire fighting and passenger management during the incident was effective and professional with no reported personal serious injuries.
- 5.2 The location and origin of the source of ignition has not been definitively identified but a number of potential sources were concluded against. It is not inconceivable that a lighted cigarette discarded from an upper deck, e.g. the crew decks on Deck 4 and 5 directly above, was blown by the cross wind onto the mooring deck where it set light to combustible materials stored in the open.
- 5.3 The failure of the aluminium hatches in Decks 4 and 5 significantly increased the spread and extent of the fire.
- 5.4 Irrespective of the source of ignition there were materials on the aft mooring deck which were able to fuel the fire and contribute to the spread to the other areas and the increase in intensity. These materials included rags and exposed mooring ropes.
- 5.5 The delay in the discovery of the allowed smouldering materials to become an intense blazing fire. The lack of any detection system (although difficult on an exposed mooring deck) and the timing of the fire patrols meant that the smouldering fire continued for an extended time.
- 5.6 The positioning of the manual sprinkler valve in the adjacent Bosun's store contributed to the spread of the fire because personnel were unable to gain access to the manually operated valve and there was no remote activation in the event of a localised fire.
- 5.7 The fire fighting capability and co-ordination of the vessel's staff in being able to successfully deal with a major outbreak, without the use of external assistance and with no reported injuries can be seen to be the result of effective training and management programs.
- 5.8 The management of the response to the fire was effective and highly professional. The efforts of all involved in the response to the fire are highly commended.

\*\*\*

## 6 RECOMMENDATIONS

### Recommendations for the operator<sup>1</sup>:

- 6.1 Review of the storage of combustible materials on open deck spaces with particular emphasis on mooring lines and materials which should be stowed in steel bins with covers.
- 6.2 Consider a more effective CCTV system for open deck areas remotely controlled from a 24hr monitoring station which will allow early detection of a possible hazardous situation when normal fire rounds are in other locations.
- 6.3 Manual valves fitted for fire fighting purposes which may become inaccessible due to localised fire should be able to be remotely activated from a remote and safe location.
- 6.4 Whether or not it was the initial causation, a review of smoking policies on board the vessel should be undertaken.
- 6.5 Consideration should be given to an additional mid-length SCBA refilling facility or storage of additional bottles when an incident can render one of the two systems inoperative at extreme ends of the vessel.
- 6.6 Review, test and confirm the electronic tagging system used during the muster of passengers and crew to show its effectiveness and time saving capability.
- 6.7 Review document control procedures to ensure that fire safety plans are updated whenever alterations or additions are completed.

\*\*\*

---

<sup>1</sup> The exceptionally close co-operation received by the flag State investigator resulted in the fact that many of the observations and recommendations were implemented at the repair drydocking prior to the completion of this report. However, the recommendations made have been retained for record purposes and for the information of other operators.



**LIST OF APPENDICES**

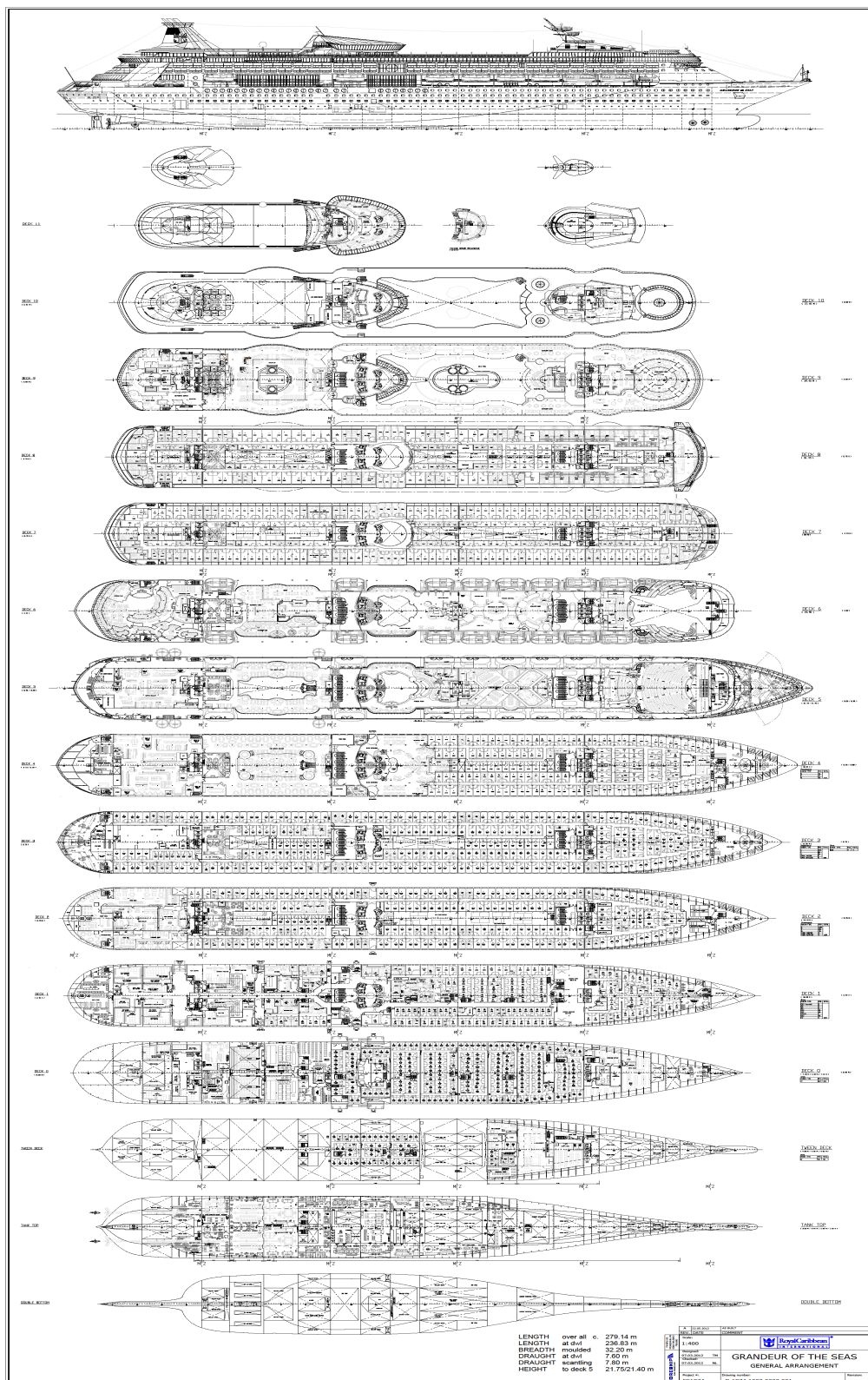
- I. General arrangement and schematic**
- II. Log extracts and timelines**
- III. Locations of Deck 3 CCTV Cameras**
- IV. Photographs**

\*\*\*

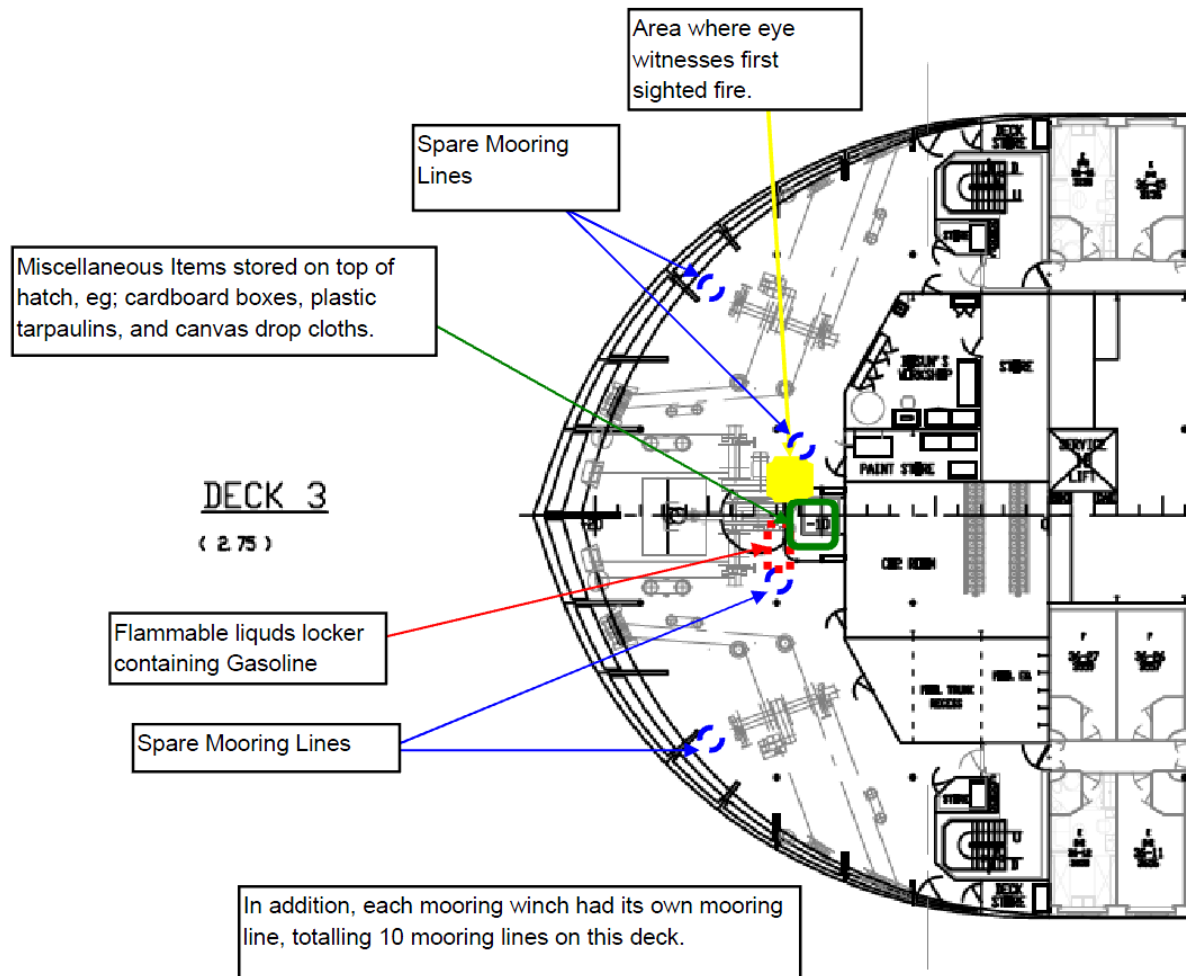
## **Appendix I**

General arrangement and schematic drawings

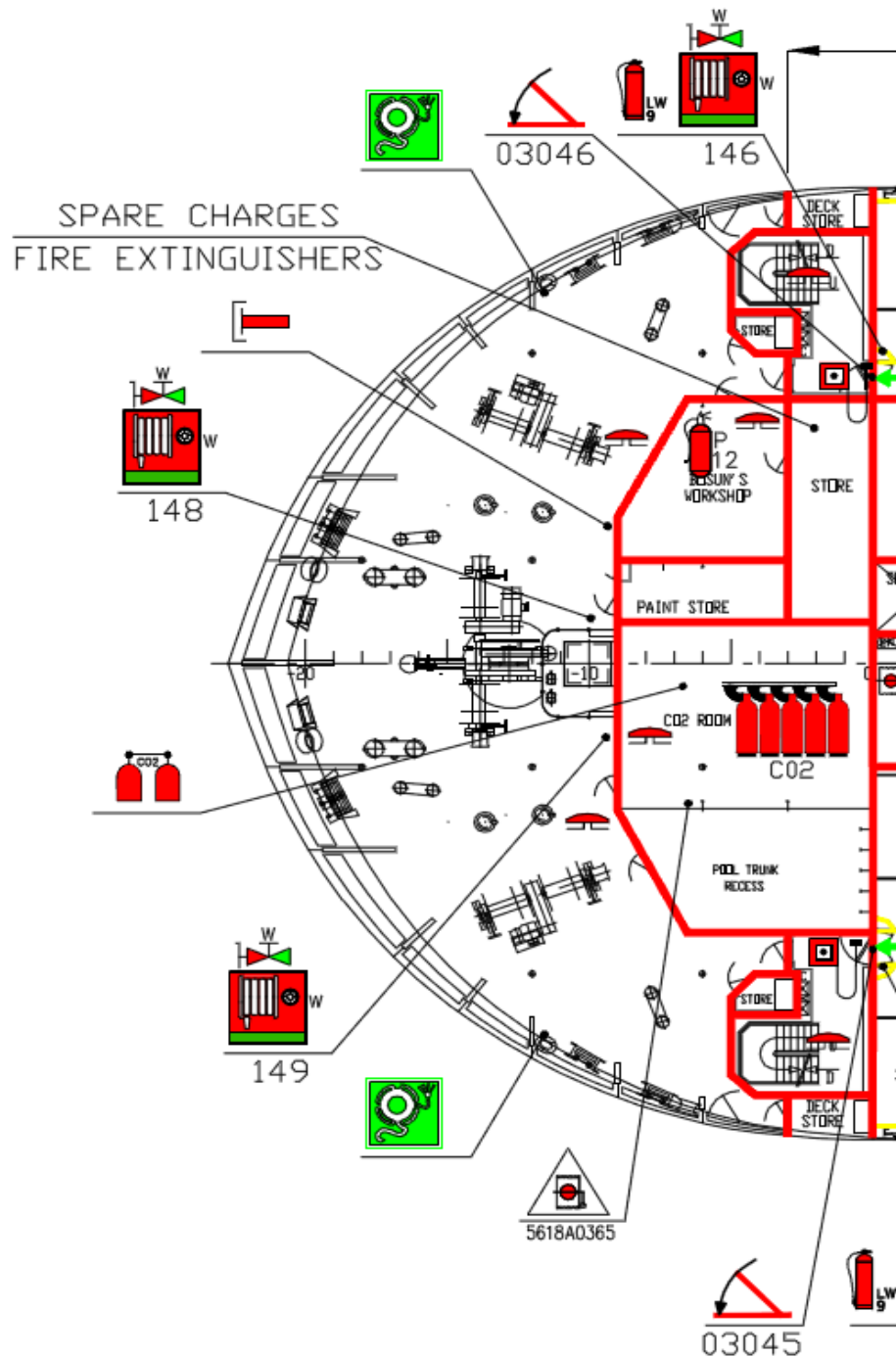
## mv Grandeur of the Seas - Casualty Investigation Report



## General Arrangement – Grandeur of the Seas



Schematic of Deck 3



Extract from Fire Control and Safety Plan – Deck 3

## **Appendix II**

Log extracts and timelines

# mv Grandeur of the Seas - Casualty Investigation Report

GR Fire - May 27, 2013

All times referenced to GMT (local time subtract 4 hours)

Time	Event	Source
6:30:00	Ship Heading 151 degrees true 19.8 kt STW/18.6 SOG	VDR
	Wind Relative 320@36 kt (port bow) 088@25 kt	VDR
6:37:16	911 call to bridge - crew member (em. # 1004) - "there is a massive fire on deck 3 aft mooring deck: Its right at the center of the mooring deck - there is a big pile of something burning right now"	VDR
	The bridge tells the crew member to close the doors - the crew member confirms the doors are closed	VDR
6:38:05	Bravo x 3 announced - aft mooring deck	VDR
6:38:08	1st audible alarm on fire detection system	VDR
6:38:49	another 911 call by crew member - multiple fire detection system alarms - security on UHF radio responding	VDR
6:39:00	vessel position 27 deg 07.2'N 079 22.1'W speed 19.9 STW/18.7 SOG	VDR
6:39:00	Low level lights on	VDR
6:39:57	Master on Bridge	VDR
6:40:08	Reduction in speed	VDR
6:40:31	Red condition on bridge	VDR
6:40:31	Master informed wind on port bow	VDR
6:41:58	Security guard confirms crew deck 4 evacuated	VDR
6:42:18	Medical teams standing by in medical facility	VDR
6:42:25	Staging area announced deck 5 port side under lifeboat #10	VDR
6:44:30	Engine control Room manned and ready	VDR
6:44:40	PA announcement from Master - all crew to emergency statons	VDR
6:46:43	Power secured - Fire zone 6	VDR
6:47:00	Mobile fire groups mustered at staging area	VDR
6:47:18	First announcement from Master to pax - proceed to muster stations - Master informs guests of fire on aft mooring deck	VDR
6:49:00	Pan Pan message from Grandeur on VHF channel 16	VDR
6:49:25	2nd announcement from Master to pax - go to muster stations	VDR
6:51:47	3rd announcement to guests - go to muster stations	VDR
6:57:10	4th announcement to pax - muster station #10 to muster at casino	VDR
6:58:29	2 fire teams attacking fire	VDR
6:59:00	5th announcement to pax - Muster station #8 and 10 to muster in casino	VDR
7:01:00	wind on port bow - vessel starts altering course to starboard - South 180	VDR
7:02:00	Confirmation all adjacent areas evacuated	VDR
7:02:11	6th announcement to pax from master - General emergency	VDR
7:04:25	Fire dampers in MFZ#6 closed - except for stairs	VDR
7:04:45	7 short 1 long emergency signal sounded	VDR
7:05:34	Mayday from Grandeur on Channel 16 - GMDSS alarms activated	VDR

## mv Grandeur of the Seas - Casualty Investigation Report

7:06:05	Fire reported on deck 5 aft liferaft stations	VDR
7:06:20	Order given for all lifeboats to embarkation deck	VDR
7:11:00	SECO confirms boundary cooling established in all areas including deck 6	VDR
7:14:16	start closing fire dampers in MFZ 5 - except for stairways	VDR
7:15:58	7th announcement to pax - all emergency stations #7/8/9 to move to main theater	VDR
	8th announcement to pax - update on fire and precaution to have lifeboats at	
7:22:44	embarkation deck	VDR
7:28:00	Report to USCG - fire contained	VDR

### Extract from Voyage Data Recorder

\*\*\*



# mv Grandeur of the Seas - Casualty Investigation Report

## Deck Logbook summary

LOG EXTRACT	
NAME OF VESSEL:	GRANDEUR OF THE SEAS
CALL SIGN:	C6SE3
PORT OF REGISTRY:	NASSAU,BAHAMAS
GROSS TONNAGE:	73817 ton
NET TONNAGE:	44122 ton
OWNERS:	ROYAL CARIBBEAN CRUISE LINE
ADDRESS:	
BUILT AT:	KVAERNER-MASA YARD, FINLAND
YEAR BUILT:	1996
TYPE OF VESSEL:	PASSENGER SHIP
CLASS:	VISION
MASTER:	CAPTAIN ESPEN BEEN

DATE:	5/27/2013 TIME: 02:36
POS:	27°08.13'N 079° 22.54'W
WIND:	E 'LY FORCE 5
SEAS:	SLIGHT

TIME:	DESCRIPTION:
2:36	BRAVO, BRAVO, BRAVO- Dk3 aft mooring staion over PA system
236	Master & other key position notified by phone, beeper and radio,
236	Staff Captain on scene
236	Navigation
236	Lookout/Helmsman
236	Lookout/Helmsman
236	GMDSS Leader
2:36	Chief Officer Safety on scene
2:38	"PAN PAN " call on VHF/ acknowledge by USCG
240	Medical Staff, Stretcher teams mustered and ready
Mobile Groups Reporting Times	
239	MFG #1
243	MFG #2
245	MFG #3
243	MFG #4
243	MFG #5
243	Back up 1
243	Back up 2
243	BA control
240	Medical Facility ready
241	staging area deck 5 under life boat # 10
242	staircase 68 closed infected by smoke
2:42	Control Room / Emergency Generator Room Manned
2:42	Overall Command
2:42	Operational Command Asst.
2:42	Safety officer on scene

# mv Grandeur of the Seas - Casualty Investigation Report

2:42	Security Officer on scene
2:43	security deck 3 & 4 portside clearing guest cabin
2:43	Mustering of Mobile Fire Groups
2:44	Environmental Officer on scene
2:44	chief engineer called will secure power via substation
2:45	Hotel Director Standing By
2:45	Power Secured FZ6 Reported by ECR
2:45	Deployment of mobile fire groups
2:45	Safety System Assistance
2:45	Attack Fire
2:46	Recordkeeping
2:47	Communication (ext. / int.) (cruise director)
2:47	Communication (internal)
2:47	Crowd Management Team on scene
2:47	Documents & Valuables Secured
2:47	Crew Documents Secured
2:47	Evacuation Control Center Manned
2:47	Guest muster station team
2:47	Assistance Group
2:47	Document Control Team
2:47	Crew Areas Evacuation Team
2:47	deck 3 aft 95% guest cabin clear
2:47	bravo team assembled
2:48	deck 5 evacuated
2:49	Computer Room manned:
2:50	Guest & Crew Manifest Printed & Sent:
2:50	Power shut off
2:50	Close fire screen door or water tight doors
2:50	Marine Operations contacted
2:51	Guest Staterooms
2:51	Public Areas
2:51	Evacuation on deck 3 guest cabin complete
2:53	Seco boundary cooling established
2:53	alpha team on deck 5
2:54	muster station 8 & 10 relocate to fwd casino
2:55	Communication (broadcast)
2:57	two mobile fire groups fighting fire
2:57	deck 2 & 3 aft cabins port and starboard side evacuated
2:57	MFG # 5 going to boundary cooling
2:57	attack fire
2:57	Evacuate, isolate area
2:59	Low Location Lighting activated
2:59	MFG #5 going to deck 6 and 7 for boundary cooling
3:00	Set port condition
3:01	fire reach deck 6 aft
3:02	Ventilation shut down zone 5 and zone 6
3:02	Fire doors closed zone 5 and zone 6
3:04	MFG 1 & 2 attacking fire

# mv Grandeur of the Seas - Casualty Investigation Report

304	Port side lifeboats ordered to embarkation deck
304	Starboard side lifeboats ordered to embarkation deck
304	all guest to theater
304	order for life boats to embarkation deck
305	Alarm Signal Sounded (7 short & 1 long)
305	boundary cooling established on starboardside
305	fire dampers closed
306	life boats prepared port and stbd side
306	May Day Call & distress call sent
307	MFG 2 to stbd side deck 5
307	MFG 3 on air deck 4 galley entry
309	MFG 2 going to deck 6 south pacific area
311	fire doors closed
312	muster stations 7, 8, 9 relocate to theater
315	high temperature alarm in generator area
3:15	Close engine room fans and sky lights
3:18	Altered course to the South for firefighters advantage
318	MFG 3 reported to much smoke and heat in deck 4 port side
319	no crew missing reported by ecc
3:19	Search for personnel unaccounted for
320	port / stbd side life boats ready on embarkation deck
321	MFG 4 attacking fire
323	Security supervisor to BA controller
325	MFG 3 fire attacking on deck 4
326	Cabin 3568, 3599 established boundary cooling
327	No fire on deck 6
328	Ordered to break nozzles manually to release Hi-Fog on deck 3
330	On deck 2 boundary cooling established
331	Deck 5 and deck 4 mobile fire groups are fighting the fire
338	MFG 5 going to south pacific area to inspect if there is a fire in the area
340	138 guest missing, counting manually
342	replacing B.A Bottles
343	Fire Door aft Port side hot
344	smoke behind 03034, mobile 3
345	Mobile 2 Ready, stand by Fire Door 0303
349	All B.A. bottles collected on all MFG stations and back up stations
353	MFG 5 Refilling BA bottles
354	HR Center to relocate in ECCR
356	MFG 1 going to galley dk 4
356	MFG 3 going back to staging area to replace bottles
357	MFG 1 reported no fire in dk 4 galley only smoke
358	SECO near fire door 3158 doing boundary cooling
400	HR Center relocated in ECCR
402	MFG 5 will attack fire at back deck
406	MFG 5 Ready to attack fire
410	MFG 5 replacing MFG 1
412	MFG's 2, 3, 4 in staging area waiting for BA bottles
413	SECO reported there is too much smoke in deck 2

# mv Grandeur of the Seas - Casualty Investigation Report

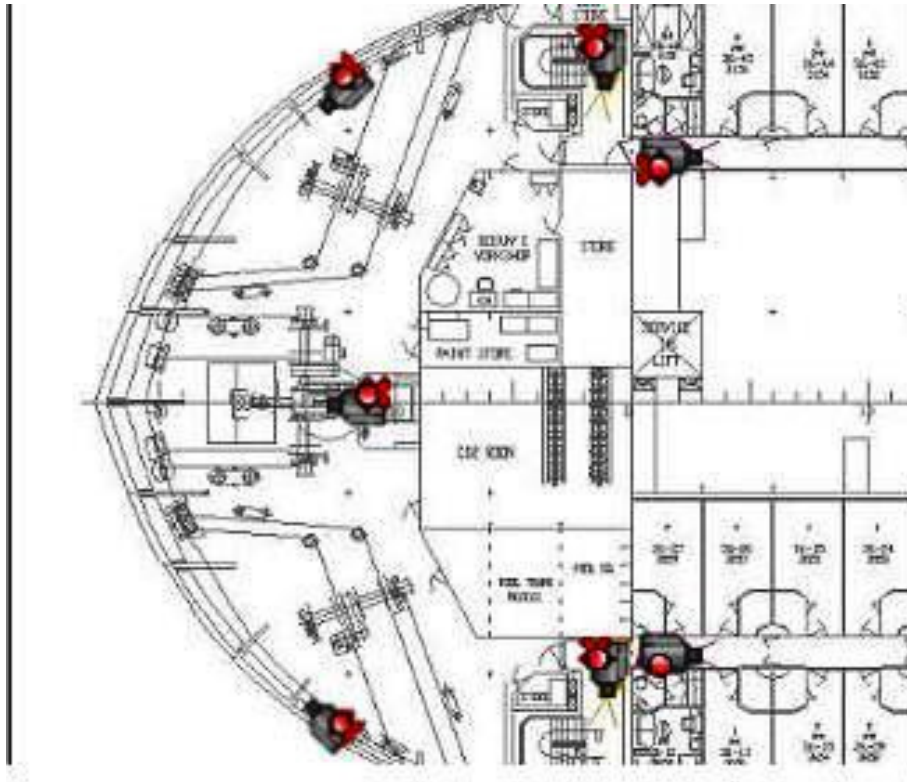
413	MFG 2 going to deck 2 up to deck 3 to attack fire
414	MFG 5 to dk 5 going down to deck 4 back deck to attack the fire
416	Boundary cooling on deck 3 port and starboard side
4:17	Close discharge valves
417	Swimming pool dump valves opened
422	MFG 5 attacking fire on deck 4 back deck
424	MFG 2 port side entering deck 3 thru guest area
426	MFG 2 attacking fire on deck 3
427	Boundary cooling on deck 2 and deck 3
429	GSS reported flame in stbd side deck 4.
429	Boundary cooling on deck 5, reported liferafts are burned
430	MFG 4 assisting OFCS
434	ECC called advise master to make announcement to guest
435	ECC called all guest accounted
435	Staff Captain calling staging area to give update
438	Staircase 68 forward control point
439	Near cabin 3657 deck 3 stbd side MFG 2 attacking fire
440	Master's Announcement to Guest
443	Deck 4 port side no fire
444	MFG 2 needs assistance to rig hoses and to refill BA bottles
448	2 members from MFG 3 to help MFG 2
448	MFG 2 attacking fire on deck 3
451	no more fire on deck 4
453	MFG 4 attacking fire from deck 4 going to deck 3
454	MFG 2 retreat no more air
455	MFG 1 boundary cooling deck 4 back deck
455	deck 3 aft port side no fire
456	Boundary cooling on mooring deck from deck 4
458	Fire is out reported by OFCS
459	port side deck 3 no fire
500	lots of smoke in deck 2 crew mess and sob
500	Fire pumps started manually
501	Master's Announcement to Guest
501	Mixed member of MFG 2 & 3 going to deck 4
503	deck 4 about only smoke
503	Mixed member of MFG 2 & 3 going on deck 4 port side
504	MFG 2 going to deck 3 guest corridor
510	deck 3 stbd lots of smoke
514	Boundary cooling team can not enter deck 3 to much smoke
513	no flames seen on deck 4
513	OFCS going to deck 3 training room
515	cooling down deck 3 aft area
518	SECO to provision area
519	3 members of boundary cooling going to training room
519	SECO reported no smoke in provision area
521	deck 2 OFCS checking the area
522	deck 5 and deck 4 continue boundary cooling
523	deck 3 mooring deck no more fire

# mv Grandeur of the Seas - Casualty Investigation Report

523	MFG 4 continue boundary cooling in deck 4 & 5 - No more fire
524	deck 1 & 2 no fire, only smoke
525	SECO going to deck 4
526	deck 2 checking for fire
528	OFCS reported to much smoke in emergency generator
529	Vents stop in emergency generator
530	High fog released
531	3 members of MFG going to assist SECO
533	Boundary cooling in deck 5
533	Boundary cooling on deck 3 to deck 2 crew mess
534	aft anchor no hot spot
535	staff mess down
5:36	CO2 releasePrior to release ensure air ventilators and dampers properly closed, all personnel evacuated from the area
537	deck 3 and deck 4 under control
538	SECO reported no fire in SOB
539	OFCS reported deck 2 all area clear
546	deck 5 aft port side no hot spot
555	SECO to check deck 2 crew cabins and provision area
556	SECO no smoke in provision area
556	OFCS checking battery room - all ok
600	Chief jr reported that every area cooling down
600	Master's Announcement to Guest
604	deck 3 aft OFCS checking facility locker and CO2 room
608	OFCS reported facility locker clear
608	SECO reported deck 5 aft no more hot spot
609	Hi-Fog Stop
610	Bosun store port side clear
617	CO2 room clear only smoke inside
627	deck 4 all area clear
628	thick smoke in deck 2 crew mess and staff mess
632	deck 4 and deck 5 all clear
636	all crew accounted
654	MFG 2, 4, Rapid response, Back-up 1 & 2 all complete
655	Master's Announcement to Guest
656	Fire pump stop
704	Master's Announcement to Guest
706	All MFG to staging area for debriefing
706	Staff captain order life boats port & starboard side to secure
718	All MFG accounted
728	deck 8 and deck 7 clear of smoke
731	SECO deck 6 south pacific and deck 5 galley aft all clear
732	All boats secured
every 20 mins	Guest and crew informed of the situation on a regular basis
10:45	Drug and alcohol testing for all directly involved

## Appendix III

### Locations of Deck 3 CCTV Cameras



### CCTV camera locations on Deck 3

## **Appendix IV**

### Photographs



# mv Grandeur of the Seas - Casualty Investigation Report

## Screenshots from CCTV





mv Grandeur of the Seas - Casualty Investigation Report



## mv Grandeur of the Seas - Casualty Investigation Report



1 Starboard Side of Deck No. 3 Aft Mooring Deck



2 Starboard Side Deck Head of Deck No.3



3 Deck No. 3 Aft Mooring Deck Winch Control Station and Flammables Cabinet



mv Grandeur of the Seas - Casualty Investigation Report



4 Deck No. 3 Aft Mooring Deck Centre Winch



5 Deck No. 3 Aft Mooring Deck Rag Drum



6 Deck No. 3 Aft Mooring Deck Pillar and Girder

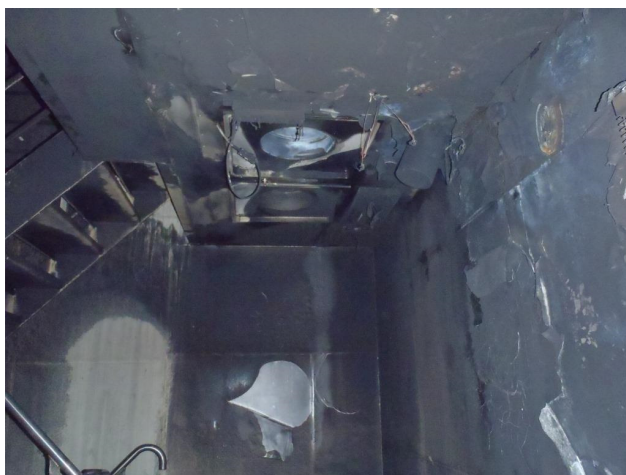
## mv Grandeur of the Seas - Casualty Investigation Report



7 Deck No. 3 Aft Mooring Deck Port Side



8 General View in Bosun's Workshop on Deck No. 3 Aft  
(Note the location of the aft mooring deck fire suppression system valve)



9 Deck No. 3 Aft Port Side Stair Well



## mv Grandeur of the Seas - Casualty Investigation Report



10 General View of the Crew Deck No. 4 Aft



11 General View of the Crew Deck No. 4 Aft



12 General View of the Crew Deck No. 4 Aft  
(Note the access hatch down to the aft mooring deck)

## mv Grandeur of the Seas - Casualty Investigation Report



13 General View of No. 5 Deck Aft



14 General View of No. 5 Deck Aft and Spare Life Rafts

mv Grandeur of the Seas - Casualty Investigation Report



15 Fire Damage in the Deck No. 6 Aft Lounge