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Seaways

The International Journal of The Nautical Institute

The Master in today's world p22

The Nautical Institute

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Focus

The Season of Good Cheer?

> Professionals are an essential component of our industry, and the best means of finding solutions to the many issues it faces

As the year draws to a close and the festive season approaches, all at Headquarters join me in wishing our members as festive a time as possible despite the poor shipping markets. Similarly, we wish you a safe and more prosperous New Year – although, having just returned from the 8th City of London Biennial Meeting and the sessions on the market, there seems little prospect of that. While demand is clearly heavily down in the offshore sector, it is still growing in most of the other markets, albeit at a low rate. As ever, the malaise is over-supply of tonnage. Scrapping is happening too slowly, so little improvement is envisaged until 2019. Nevertheless, with the benefit of very nearly 50 years in the industry, I am confident that the markets will recover and there remains a great need for competent maritime professionals to operate shipping services safely and efficiently.

The Institute and your membership of it is an important part of the continual improvement process for the industry and continuing professional development (CPD) remains the crucial personal component of that improvement. As Theresa Nelson points out, making full use of, and contributing to, MARS reports is a means of CPD that will help in this regard and may even save your life and career (see p 16).

Understanding the complexities of the shipping markets and the rapid pace of change in some aspects of it can be a daunting prospect. It is good to see the return of our past President's wise seagull to help him put things in perspective (see pp 14-15). This wise bird should perhaps have been employed to state the industry's case in the early IMO debates on ballast water management (BWM). That Convention has now been ratified and these systems will be mandatory from September 2017 with the usual phase-in regulations. How you view them will depend upon your role in the industry and how much they will cost you in terms of money, professional duties or risk of sanctions. What is certain is that come they will, along with training needs (little seems to be in place on this as usual), and the possibility that their cost will generate the much needed increase in the rate of scrapping older tonnage.

On a brighter note, it is good to see branches picking up on a professional topic suggested as CPD and then reporting their contribution in full in *Seaways*. Safe mooring has now been addressed in London, Odessa and Glasgow to good effect and will hopefully be taken up by other branches as well. Mooring is an operation where risks are ever present and must be carefully managed through the practice of good seamanship (see pp 6-8). This includes proper preparation and effective communication, but must also encompass the design of the ship with adequate space for the equipment and crew as well as sufficient manning. These latter aspects are clearly the responsibility of the management ashore and they should not be absolved of blame when an accident occurs. Nor should they be allowed to hide behind the oft quoted 'failure to follow procedures' by the deck crew as the design, manning or equipment supplied may be the true causal factor. As Dr Ghirxi, an experienced accident investigator, says, criminalisation of failures under the ISM Code is not the answer (see p5). Instead, we need to treat the cause of the accident, and that is best done in an open culture without fear of prosecution. Whilst on the subject of criminalisation there was a robust debate on this issue and the Master's responsibility versus his/her authority at the Cadwallader Debate in London last month (see report p 22-3).

This is but one area of seamanship that we are addressing. We are pleased that our LinkedIn group, which numbers over 17,000, is also debating the issue, this time framed in terms of seamanship and the use of checklists (see p 30). The consensus is that much of good seamanship comes down to common sense and maintaining situational awareness but effective initial training, practice, experience and on-going development are also essential. Again it is worth mentioning design as well as the importance of maintenance, as the review of lifeboat accidents by the UK P&I Club emphasises (see Nautelex p 21).

All in all, the industry and our profession have plenty of problems to deal with and, despite measurable improvements in safety over the years, there is much still to do. Our working environment will always contain risks, and there will always be work needed to mitigate those risks. The upside is that professionals are an essential component in our industry, and the best means of finding solutions to these issues despite increasing automation – or perhaps because of it. On that happy note, enjoy the festive season and make a resolution to tackle at least one safety improvement next year. There are plenty to choose from in our Strategic Plan.

Mariners' Alerting and Reporting Scheme

MARS Report No. 290 December 2016

MARS 201665

Incinerator exhaust plugged

➔ The incinerator was fired up by an engineer. When the temperature of the secondary chamber had reached 400°C, the primary burner was lit. About five minutes later, when the primary burner was at about 300°C, garbage was fed into the incinerator. After about one hour of operation the incinerator was stopped to allow a period of cooling down. About 20 minutes later, the incinerator was again fired up and fed garbage, although the primary burner was only at a temperature of about 250°C.

After about three minutes of operation the incinerator vacuum broke and smoke started to come out of the burner air inlets. Smoke continued to exit the burner blowers for another 10 minutes until the garbage inside the incinerator was completely burnt. In the meantime, the incinerator main blower had been tripped as a result of excessive back pressure. Although the fire alarm had been sounded, the water mist system did not activate because there was no flame. Once the smoke had cleared and the incinerator stopped an investigation was carried out.

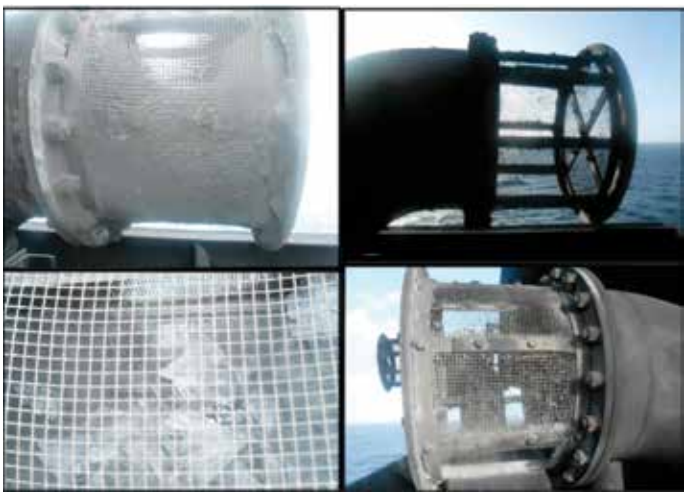
Among other things, the incinerator funnel flame screen was found to be completely clogged with unburnt paper and soot, which prevented proper exhaust flow (see photos below: before and after cleaning).

Feeding garbage into the incinerator when the primary chamber temperature is below 600°C can result in unburnt light materials blocking the flame screen at the funnel.

Lessons learned

- Deviations from procedures can cause accidents. In this case, each deviation led further down the casualty path;
- Feeding material into the incinerator when the primary burner temperature is lower than 600°C can cause unburnt garbage to collect at the incinerator funnel flame screen.
- The funnel flame screen was allowed to become clogged, setting in motion the subsequent sequence of events.

Before **After**



MARS 201666

Wrong helm applied and vessel grounds

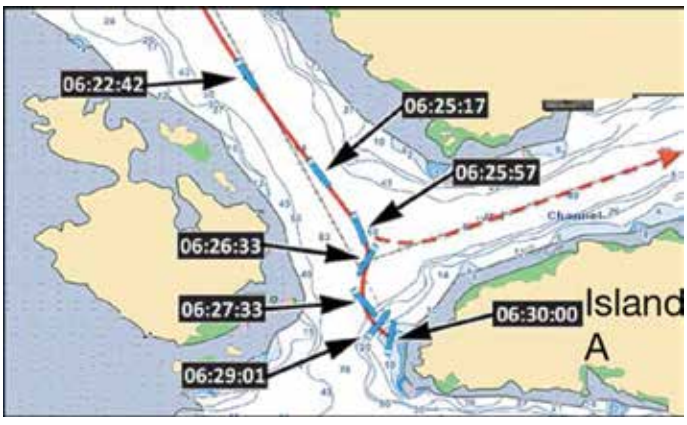
Edited from official Transportation Safety Board of Canada (TSB) report M14C0219

➔ A small tanker was making way in restricted waters and in darkness, proceeding full ahead at speeds sometimes greater than 19 knots (SOG) as a result of a following tidal current close to 3 or 4 knots. The officer of the watch monitored the vessel using the starboard radar and the ECS, and the Master was on the bridge. The vessel was approximately 2.6nm from the next course change of 071°T, through a channel that is 0.3nm at its narrowest.

The OOW, who had the con for the first time in this area, requested that the Master take over before the large alteration to port at Island A (see below), approximately 0.7nm before the next course change waypoint. The Master took over the con and the OOW went to the chart table and began preparing the next chart. The helmsman was manually steering a course of about 140°G and the vessel was now proceeding at 16.7 knots. The Master was monitoring the vessel's progress on the starboard radar; he had set up a parallel index to determine when to commence the port turn. A parallel index line was also set up on a course of 071°T to maintain a distance of 0.22nm off the northernmost point of Island A.

At the planned wheel-over position, the Master ordered the helmsman to apply 10° port rudder to initiate the turn. The helmsman acknowledged the order by repeating it, but instead put the helm 10° to starboard. Within seconds, the Master ordered the helmsman to apply 15°. The helmsman looked at the rudder angle indicator and repeated the order, but put the helm to 15° to starboard. Then, the helmsman asked for clarification about the direction of the order. The Master ordered the helm be applied faster without indicating the direction. The helmsman then stated that the helm was at starboard 15°. The Master ordered the helm hard to port. The helmsman acknowledged by repeating the order and applying maximum port helm (35°). The vessel's speed was now about 15 knots.

Over the next three minutes, the Master continued to monitor the vessel on the radar as it swung back to port while querying information being provided by the OOW. At some point during this time the Master applied astern propulsion. Nonetheless, the vessel made bottom



contact west of Island A on a heading of 012°G. The engines and the bow thrusters were used to manoeuvre the vessel back into the channel, and the vessel continued its voyage while the crew sounded the tanks and checked for damage. A crack approximately 0.6m long was found in No. 3 port water ballast tank that was allowing water ingress.

The official investigation found, among other things, that:

- At the time of the occurrence, three of six fatigue risk factors were present for the Master and for the helmsman: acute sleep disruptions, chronic sleep disruptions, and desynchronisation of the circadian rhythm. Both exhibited performance decrements consistent with fatigue, contributing to the bottom contact.
- The officer of the watch ceased participating in the monitoring of the vessel's progress after the Master took over the con so was not in a position to readily detect the helm error or to assist the Master in responding to it.

■ **Editor's note:** Many of us have experienced helm error and often it is corrected quickly and without serious consequences. In restricted waterways like this example, the margin for error is slim. One technique to help mitigate the consequences of helm error in restricted waterways is for the officer who has the con to closely monitor the helm order as executed via the helm angle indicator or by sighting the helmsman during the manoeuvre.

In this case, since fatigue was involved, even these techniques may not have been sufficient to avoid the grounding, as being fatigued is the equivalent to being drunk. Avoiding fatigue is every mariner's responsibility and not just a paper exercise.

MARS 201667

Capsize and loss of all crew

Edited from official UK Marine Accident Investigation Branch (MAIB) report 8-2016

➔ A small cement carrier with a crew of eight was loaded with cement and underway across the North Sea on a passage plan that brought the vessel through the Pentland Firth. Having spent 24 hours heading into deteriorating weather and increasingly heavy seas, the Master first reported that there would be a two-hour delay to the arrival time at Liverpool bar buoy. The next day, in consequence of increasingly bad weather, his report stated that there would be a further 10 hours delay to the arrival time.

As the vessel entered Pentland Firth (figure below), it was on a heading of 270° (COG of 272°) and SOG of 10.6kt. Once inside the Pentland Firth, the vessel was sighted by the crew of a nearby ferry. The cement carrier appeared to be upright and making slow headway, pitching heavily into the large waves. Later that afternoon the vessel's AIS transmissions ceased. The data from the last received transmission showed a heading of 239°, a COG of 276° and SOG of 6.3kt. Such a SOG, however, would have meant a speed through the water of less than one knot, rendering the vessel unmanageable and at the mercy of the ferocious oncoming waves.

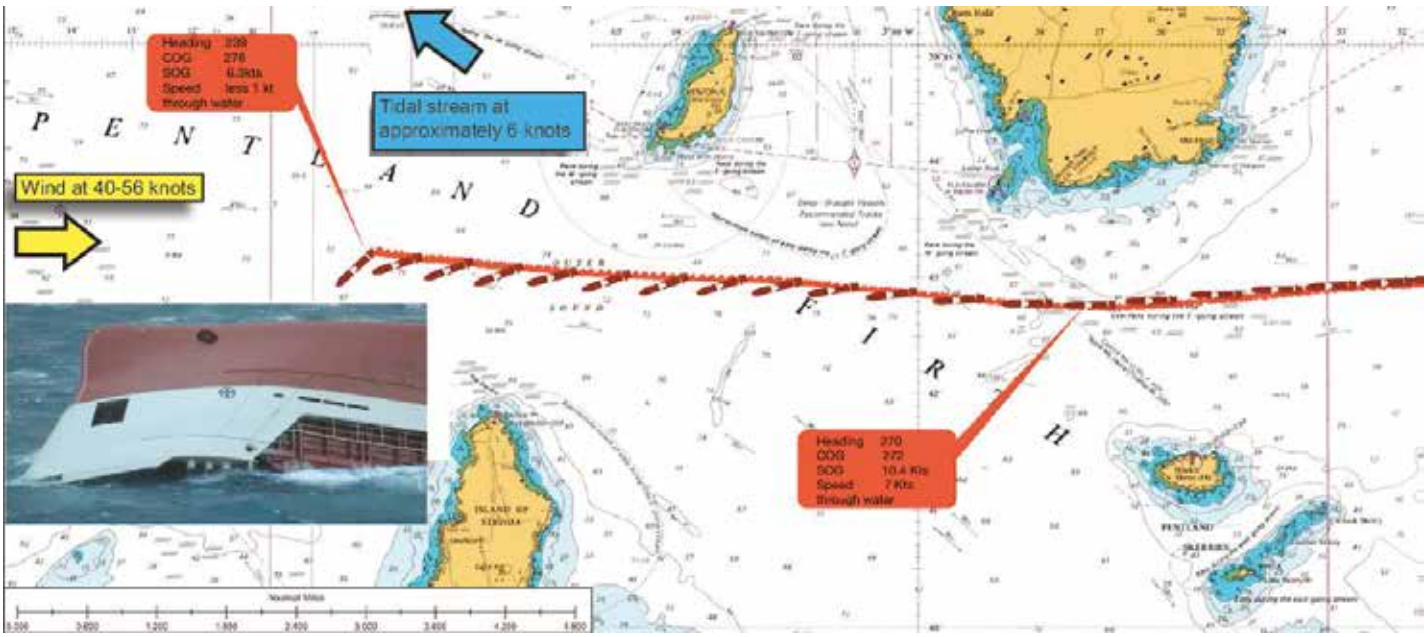
The hull of the capsized cement carrier was spotted and reported to the local coastguard 25 hours later. The damaged vessel soon sank. Search and rescue (SAR) activities were undertaken, but no surviving crew members were found.

The official accident report found, among other things, that:

- On one past occasion when the vessel entered the Firth with an opposing flood tide, the same Master held position by stemming the stream, and waited for it to ease. From this it can be deduced that the Master understood the tidal risks and actions were normally taken to abort or avoid the unfavourable tidal conditions in the Firth.
- On another occasion of rough weather in Pentland Firth, during the alteration of course across the sea, the vessel had heeled excessively and suffered a cargo shift, resulting in a significant list to port. The vessel was brought back upright using the ballast tanks. The Master's decision to proceed into the Firth on this (final) occasion, with very unfavourable conditions, was inconsistent with his previous actions.
- The extraordinarily violent sea conditions were created by gale force winds opposing a strong ebb tidal stream. Such conditions were predictable and passage through the Pentland Firth should not have been attempted.
- The cement carrier was loaded to its draught marks, but the density of its bulk cargo was not properly considered. As a result it is likely that its stability did not meet the minimum criteria set by the IMO. Potential reductions in its righting levers would have made the cement carrier more vulnerable to capsize in a heeling situation.

Lessons learned

- Always adopt a conservative approach to weather – your life depends on it.
- Never bring your vessel to a point where manoeuvrability is lost.



Visit www.nautinst.org/MARS for online database

MARS 201668

Containers overboard

Edited from UK P&I Club bulletin 1096 - 05/16

➔ Changes to the SOLAS Convention now require shippers to ensure containers are weighed before being loaded on vessels. A recent incident highlights the importance of this amendment.

Six containers had apparently gone missing while *en route*. The stack in question was located at the bow of the vessel on the very edge and had clearly been lost overboard during the voyage. Apparently, neither the Captain nor chief officer or crew were aware of what had occurred at the time.

It transpired that the stowage plan had been created using weights provided at the initial time of booking. While the final bills corrected the weights, this was never picked up by the planners, which resulted in the vessel being stacked incorrectly. The top four containers, all loaded with cement, were 28 tonnes each. The two bottom containers were only 5 and 3 tonnes respectively. This meant that the total weight for that stack was 143 tonnes, as opposed to the 50 tonnes permitted by the Cargo Securing Manual, as well as being top-heavy and unstable.

Lessons learned

- The new legislation will go a long way in preventing such accidents as the terminal and planners will be notified of the correct weights before the container is placed on board.

MARS 201669

Dangerous wave on deck astern

Edited from the Marine Safety Forum's Safety Alert 16-13

➔ A platform supply vessel was carrying out deck cargo and fuel operations alongside an offshore platform. Winds were 25 knots and the swell 3m. With the starboard stern quarter of the vessel against the weather/sea, suddenly the stern was hit by one larger wave and water flooded the stern deck. Two unsecured small containers were shifted/capsized by the force of the water on deck.

No people were injured – the deck crew were working at the forward end of the deck at the time of the incident.

Lessons learned

- The risk of abnormal waves must be taken into consideration in the risk assessment and toolbox talk for work with the stern positioned against the weather.
- For this vessel and those of similar build trading in a harsh environment a higher aft bulwark should be fitted.

MARS 201670

Cargo hook safety latches

➔ A port captain has reported several instances of poorly maintained, incorrectly installed or even missing safety latches on cargo hooks. Mariners should be advised that a cargo hook safety latch is a simple but critical safety measure that should always be in perfect order.

Visit www.nautinst.org/MARS for online database

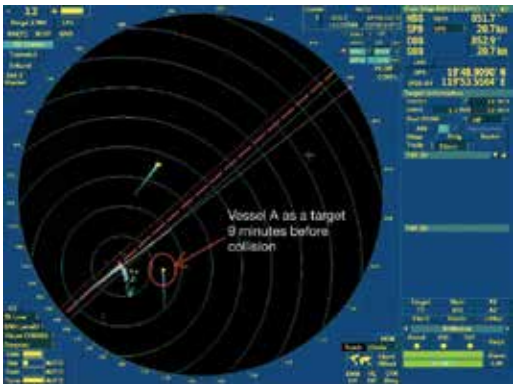
MARS 201671

On the bridge but not on the job

Edited from Transport Malta Marine Safety Investigation Unit report 07/2016

➔ A car carrier in ballast was making way at about 20 knots in good visibility (approximately 12nm) and light winds. As the vessel approached a major shipping lane it was observed that the traffic density was getting heavier. Two radars were set in relative motion on the 12nm range scale with an off-centred display. As a consequence, both radars were scanning approximately 18nm ahead. Another radar, also off-centred, was on the 6nm range scale. Apparently, no collision warning alarms were programmed on the ARPA sets.

In the afternoon, the OOW was alone on the bridge and immersed in the task of planning the next voyage on paper charts. Several vessels were within visual and radar range, including Vessel A. At one point, the OOW interrupted his chart work to make a minor course alteration of 3° to starboard on the autopilot. He then returned to his chart work, apparently unaware of vessel A approaching on his starboard side.



About 17 minutes after making the minor course alteration the noise of the collision with Vessel A brought him to his senses.

The official investigation found, among other things:

- A single lookout during daytime is the norm at sea and does not contravene international requirements. However, a number of factors need to be kept into perspective before deciding on the minimum number of lookouts on the bridge. In particular, consider the need to keep a proper lookout by sight and hearing at all time, and that the OOW is not to undertake any duties that would interfere with the safe navigation of the ship.
- All three ARPA sets had been set up off-centred, displaying a longer range in the ahead position. However, this mode carries an important disadvantage: the reduction in the scanning range on the vessel's beams and abaft the beams.
- Although the chart preparation area was part of the open-style bridge, its location was not ideal for visibility forward and quite inappropriate for visibility abeam.
- Neither vessel apparently took any action before the collision.

Lessons learned

- It is prudent to have a dedicated lookout at all times when in congested waters .
- As an OOW on a vessel underway, your primary job is to navigate that vessel in a safe and efficient manner. Accomplishing extra duties, as in this case, or allowing yourself to be distracted by mobile phones or irrelevant conversations with crewmates while navigating, will eventually lead to no good.

MARS as a CPD tool

A look through MARS might help to highlight a risk that was missed – but reflective learning goes beyond that

Theresa Nelson MNI
Training and Quality Manager

Back in the June issue I wrote that it is obvious that our members want to be the best they can be at what they do, and here at The Nautical Institute we want to provide members with the tools to achieve that goal.

This month I'd like to discuss how our MARS reporting system can be used as a tool for Continuing Professional Development (CPD), mentoring and improved risk assessment, and to promote reflective learning based upon MARS reports with a case study template.

The Mariners' Alerting and Reporting Scheme (MARS) is primarily a confidential reporting system run by The Nautical Institute to allow full reporting of accidents and near misses without fear of identification or litigation. MARS reports also regularly include alerts condensed from official industry sources. With onboard internet access becoming more affordable, the MARS database is a valuable risk assessment tool and training aid for crew and management. MARS reports are held in a publicly accessible database and an archive of reports dating back to 1992 is freely accessible online.

Supplementing experience

The value of the MARS database as a risk assessment tool became clear to me at the inaugural Maritime Symposium at the City of Glasgow College. John Lamb, Senior Lecturer Marine Electrical Engineering at New Zealand Maritime School, spoke about high voltage training. After showing some very graphic examples of how extremely wrong things can go when working with high voltage electricity, he emphasised the need for proper and effective risk assessments. He added that 'risk assessments are only as good as the experience of those creating them'. I immediately thought of the contrast between two vessels I know: one where the average experience of second mate, Chief Officer and the Captain is about 15 years, and one where the same average is about 36 years. The crew on the first vessel are no less professional than the second, but obviously have less actual experiences stored in their own memories. However, as John Dewey said,'We do not learn from experience, we learn from reflecting on experience'. Fortunately we can learn by reflecting on someone else's experience, such as those described in a MARS report.

For any operation or work to be risk assessed and planned, a look through MARS might help to highlight a risk that was missed. And regardless of the number of years of experience you have, it is still possible you will miss something.

The MARS database can also be used by individuals as a CPD tool. You might decide to read several MARS reports each week to broaden your own knowledge base. Or the Captain or Chief Officer might decide to mentor junior officers or crew members by choosing relevant MARS reports and using them as basis for discussion.

Reflective learning

Knowledge and understanding are the base levels of the learning process. But we want people to go beyond this, to apply the knowledge in the future, recognising a similar situation and averting the same outcome. This will be accomplished through reflective learning. Ideally, the reader will not only understand the incident, but:

- Compare it with something similar that may have happened aboard their own vessel;
- Analyse the causes and see if any of the conditions exist in their work environment;
- Evaluate what can be done aboard to mitigate or even eliminate the chance that a similar incident might occur;
- Possibly create procedures or physical deterrents to avoid the reported outcome.

This may sound difficult or time consuming but can in great part be accomplished by using our case study template, either as an individual or with a group. A template for the document can be downloaded from the CPD section of The Nautical Institute website.

This template can be used with MARS reports as well as accident/incident reports or after something has happened aboard your vessel. As always, please write to me at CPD@nautinst.org with any CPD questions or examples. If the case study template is helpful let us know how you have used it.

Case Study

The intent of the case study is two-fold:

1 That you become familiar with incidents that have actually occurred and the issues/deficiencies that investigators have identified in relation to that vessel's operating conditions.
2 That you reflect on your own vessel's operating conditions and consider whether any of the lessons learned from the case study incident can be applied to your own vessel and in what specific ways.

Part I: Incident Report
Incident: *(Name of Report and Reference Number)*
Causal factors/conclusions indicated in the report *(List the primary causal factors as indicated by the report. If prioritised, indicate so.)*
Contributing factors *(Secondary factors as indicated in the report)*
Relevant regulations *(Does the report cite violations or refer to domestic or international regulations that were not adhered to?)*
Part II: Own Vessel
Company SMS *(Are the causal factors identified in the incident report addressed in your own organisation's Safety Management System?)*
Similar situations *(Can you provide an example when a similar situation has occurred or does occur aboard your vessel?)*
Techniques for mitigating the situation *(What can be done to ensure a similar situation does not occur on your vessel?*
Action steps (Who will do what moving forward?)

Please share any **final thoughts** you have after completing and **reflecting** on the Case Study. If any thoughts occur to you days/weeks/months down the road, please return to this document and add them.