Magic Pipes and MARPOL: An evaluation of the effectiveness of current legislative measures in dealing with illegal bilge-water filtration system bypassing, especially in relation to Scotland.

Scotland’s water system and seas are of global renown, with 97% of the coastal waters of Scotland being classified as ‘high’ or ‘good’ in 2016. Predictions for 2021 suggest that this quality of water will only improve. However, maintaining this high quality of environment has again and again proven itself to be a very difficult task to undertake. Pollutants of the sea can take a number of different forms, and fire-fighting all of these issues simultaneously is not simple. One issue which may increasingly cause problems for Scotland in the future is that of so called ‘Magic Pipes’. As shall be explored, the measures to tackle this issue have been only somewhat successful, an extra concern given that unlike other situations where the pollution may be accidental, the use of Magic Pipes requires a direct flouting of the laws on oceanic dumping.

The use of Magic Pipes is not a new phenomenon, rather it is a practice which has been used for a number of years, and appears to have persisted despite measures to stop it. However, given the prediction that 2018 will see record highs in vessel numbers for the Scottish cruise industry, moving to tackle this issue has taken on a new sense of urgency.

In order to prevent pollution of the seas, ships are required to filter their waste water before releasing it into the sea, removing oil and other potentially harmful waste products. When the ships reach port, officials make note of the readings on the oily-bilge water filtration machines to make sure they are being used, and that the law is being upheld. However, running all of the waste water through these systems, and then disposing of the waste when the ship reaches port, is more costly and less time efficient than dumping the water directly into the sea, so Magic Pipes are used to facilitate this dumping and save the companies money.

The Magic Pipe is attached to the water system and funnels the bilge water directly into the sea, bypassing the filtration equipment. Then, when port is reached, the pipe may be detached and hidden elsewhere in the ship, so that the port regulatory authorities cannot find it. In addition, clean sea water is sometimes run through the filtration system to ensure that the meter readings match

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2 Statement by Cruise Scotland Chair, Andrew Hemphill, More Cruise Vessels Targeted by Scotland’s Ports, Cruise Scotland, 5/3/18, found at http://www.cruisescotland.com/more-cruise-vessels, [accessed 12/3/18]
up to what the authorities would expect, had the bilge water been filtered properly. Once in place, this sort of operation is very hard for authorities to spot, and more often than not, the discovery of Magic Pipes on a ship is a result of a tip off from an employee or other party, and a subsequent spot check from port authorities.

Initially, it would appear as though these actions should fall under the gambit of the legislation against deliberate dumping into the sea – an area primarily led by the London Convention and Protocols, which provides that contracting states must prohibit the dumping of wastes\(^3\) - dumping being “deliberate disposal into the sea of wastes or other matter from vessels”\(^4\), and ‘wastes’ being taken to include “material and substance of any kind, for or description”\(^5\). However, this is not in fact the case. The London Convention and its protocols do not consider ‘dumping’ to include waste which is disposed at sea which is incidental to, or derives from, the normal operations of vessels\(^6\). The Magic Pipes are putting waste into the sea, however this waste is incidental to the functioning of these ships, consisting mostly of oily bilge water which has been used in the engines and mechanics of the ships in some capacity.

Therefore, this particular type of sea pollution actually comes under the MARPOL 73/78 Convention - or, to give it its full title, the International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978. Although not all of the annexes of MARPOL are compulsory for signatory states, Annexes 1 and 2, governing the discharge of oil and noxious liquid substances into the sea, are. As it is primarily oily water which is being released through the Magic Pipes, MARPOL is perhaps the best placed piece of legislation to deal with this issue.

Under MARPOL Annex 1, any discharge of oily mixtures from ships into the sea is prohibited, except when, amongst other requirements, the mixture has been passed through filtering equipment and the oil content of the water being released is less than 15 parts per million\(^7\). Anything exceeding this is a violation, and would be counted as pollution. Where there are violations found, MARPOL also provides states with a number of ways in which they may enforce the convention. Firstly, when in port, Annex 1 sets out that officers under the authority of the state may inspect a ship, should they have grounds to believe that procedures relating to the prevention of pollution by oil are not being

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\(^3\)Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter (The London Convention) 1972, Art 4.1
\(^4\)1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter 1972 (as amended in 2006), (henceforth referred to as the London Protocol), Art 1.4.1
\(^5\)Ibid, Art 1.8
\(^6\)London Convention, Art 3.1.b.i.
\(^7\)International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 (hereafter referred to as MARPOL 73/78), Annex 1, Chapter 3, Part C, Regulation 15.2
upheld, or that the crew are otherwise not familiar with them. Thereafter, the port authorities may prevent the ship from sailing until it has been brought into accordance with the requirements of MARPOL. Parties to MARPOL also have to monitor vessels in order to ensure they are complying with the guidelines using “all appropriate and practicable measures of detection and environmental, monitoring, adequate procedures for reporting, and accumulation of evidence.” Finally, there is a provision for punishment. When a party state finds that a vessel has been flouting regulations, it must report this to the vessel’s flag state, who must investigate the incident. If, during the investigation, a violation is found, then the flag state has to impose penalties which are “adequate in severity to discourage violations of the present Convention and shall be equally severe irrespective of where the violations occur.”

Looking at the different provisions within MARPOL, it would appear as though ample regulation has been provided to tackle the issue of Magic Pipes. Indeed, figures do seem to support this – in 1980, 1.5 million tonnes of the oil in the ocean was estimated to come from discharges from vessels, amounting to around half of all of the oil input into the sea. However as early as 2002, this had dropped to 37% of all oil under MARPOL.

Indeed, as recently as 2016 there have been cases of vessels being punished for using Magic Pipes under MARPOL in other parts of the UK – this issue is not so far removed from Scotland as to allow the issue to be ignored. In August 2013, an engineer on a cruise liner run by Princess Cruises quit his position within the company and reported to the British Maritime and Coastguard Agency (MCA) that a Magic Pipe was being used on the ship, and had most recently been used on the 23rd of August to discharge 4,227 gallons of bilge water 23 miles off the coast of England. Evidence was collected to back this assertion up by the MCA, who then reported the incident to the US Coastguard – the US being the flag state of Princess Cruises and the vessel in question. When the ship arrived in the US, a thorough examination was carried out, and despite an attempted cover-up by the chief engineer, it was found that there had been discharges of unfiltered water, using a Magic Pipe, from the vessel.

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8 Ibid, Chapter 2, Regulation 11.1
9 Ibid, Regulation 11.2
11 Ibid
12 MARPOL 73/78 Art 4(4)
14 Oil in the Sea III: Inputs, fates and effects, National Research Council Committee on Oil in the Sea, U.S. National Academy of Sciences Report 2002
As the investigation continued, it ultimately came to light that the cruise liner in question had been making illegal discharges since 2005, eight years before it was ever reported. Eventually, the US court system ruled that Princess Cruises would have to pay a $40 million criminal penalty, $10 million of which was to be given to community service projects aimed at helping to improve the marine environment. Additionally, Princess undertook remedial measures to ensure that a similar thing would not happen again, upgrading the monitors and separators on each of the ships in its fleet\(^{15}\).

It would seem as though MARPOL performed well here – the perpetrators received a significant punishment for what they had done wrong, and then took measures to rectify and prevent further incidents. This is a path which we have seen followed again and again – in 2005, MSC Ship Management (Hong Kong) Ltd agreed to pay $10.5 million in penalties when it was discovered that they had tried to cover up the existence of a Magic Pipe on one of their ships – the existence of which had seen some 40 tonnes of sludge released into the ocean in just 5 months in 2004\(^{16}\).

It certainly cannot be denied that in terms of punishment, MARPOL seems very effective at tackling the issue of Magic Pipes. The more the fines are increased, the greater the amount of money that goes back into helping the environment, and undoing the damage that has been done through the illegal actions of the companies.

However, prevention is better than a cure, and while the cases above are a good example of how MARPOL can be used to help put things back to rights after the Magic Pipes have already been used, they do not necessarily suggest that MARPOL has been effective in preventing use of Magic Pipes.

Firstly, consider the length of time during which the vessels in the above cases were able to continue to discharge bilge water into the oceans undetected. In the case of MSC Ship Management, the practice had been going on for at least a year. In the Princess Cruises case, this was five years. The environmental damage which can be done in such a stretch of time, especially given the figures showing how much oil was being released per discharge, is almost unfathomable.

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The question must therefore be raised – why wasn’t it spotted earlier? Of course, the very idea of the ‘Magic Pipe’ is that it can disappear when needed, avoiding detection. On top of that, noticing from pure observation outside of the ship that there is foul play at hand is extremely challenging. It is unlikely that there would be a visible oil slick on the water that could be seen by officials, and so authorities can only look around the vessel as it is docked to see whether or not there is an oil slick. If one is not spotted, then it is unlikely that the port officials would be able to find something which would reasonably suggest that the vessel had been skirting the law.

This is where a potential weakness in MARPOL comes into play. Without reasonable evidence, the port authorities cannot board the vessel to see whether or not there is something going on\textsuperscript{17}. Furthermore, if they do board the vessel, then they are limited to inspecting the vessel’s oil record book, and the oil discharge monitoring equipment. At a push, they may be able to look and see if the sludge in the oil residue tanks looks lower than it should, however there is nothing scientific about this – the port official would merely be making an educated guess\textsuperscript{18}. As has been explained, all of these methods of testing the oil are very easy for the crew of a ship to fiddle with or adjust in order to make things appear normal. As in the Princess case, sea water can be run through systems or used to top up tanks in order to make them look normal and keep the monitors registering levels within the right range, allowing them to evade detection for even longer. Without the port authorities gaining more power, it is difficult to see how the length of time taken to capture the perpetrators can be decreased, undermining the aim of MARPOL to help minimise the level of pollution in the oceans – in that area, and with so much oil being discharged, time is of the essence.

A further limitation to the effectiveness of MARPOL stems from the somewhat lackadaisical approach taken by a number of contracting states when it comes to facilities. If vessels do as they are supposed to do and filter the oil out of the bilge water, then they will be left with waste oil which must be disposed of in some way. Accordingly, MARPOL states that the governments of each of the parties must ensure that there are facilities able to take the residue in all ports which deal with a number of different types of oil, including bilge water\textsuperscript{19}. However, in practice this is not always what the situation looks like. One hundred and fifty-eight of the world’s one hundred and ninety-five countries are party to Annex I and II of MARPOL, accounting for 98.9% of the world’s shipping


\textsuperscript{18} ibid

\textsuperscript{19} MARPOL 73/78 Annex I, Chapter 6, Regulation 38.2
tonnage\textsuperscript{20}. However, there are a significant number of states – some developed, but many developing – which do not provide reception facilities in their ports\textsuperscript{21}. In part this certainly is due to a lack of funding and the necessary modern equipment to do the job, however it has been suggested that again, the way in which MARPOL is worded does not optimise the possible effectiveness of the treaty. Parties must ensure that that reception facilities are provided – some have taken that to mean that the government themselves need not provide anything, only that there must be some provision somewhere, and that thus this regulation in particular is not binding\textsuperscript{22}. In order to back up this viewpoint, a statement by the IMO itself has been used, in which it is stated that “this does not mean that the Government of a Party must provide the facility; it means, in practice, that the Government can require a port authority or terminal operator to provide the facilities.”\textsuperscript{23}

Whether or not this is the true meaning of that regulation could be debated back and forward, however ultimately, it does not matter. If there is adequate vagueness within MARPOL to allow for such interpretations to be made, then it is clear that the Convention is not acting as efficiently as it should. Of course, there may be other reasons why a country, especially a developing one, might decide to take a more obscure interpretation of a regulation – as has already been stated, there is often a premium on the resources and funding necessary to fulfil the obligations of MARPOL, and having a differing interpretation which allows for that country to remain technically within the bounds of that convention is, arguably, vastly preferable to having that country not party to the convention at all.

Regardless, such issues do leave vessels in a predicament – if they cannot empty their tanks at shore, then there is nothing else for them to do with the waste oil. Sometimes the only available option for a ship is to discharge their waste through the Magic Pipes and hope that they simply don’t get caught. That it could lead to this sort of situation highlights that, while it is understandable that some countries may have issues with providing reception facilities and this does play a part in the issue, ultimately the vague nature of some of the regulations in MARPOL can have a very serious, and very counter-productive, effect on the environment.

Perhaps the biggest hindrance when it comes to effective prevention of the use of Magic Pipes however is the flag system. Currently, if a ship discharges within the territorial waters of a state, 

\textsuperscript{20} Status of Conventions Table, International Maritime Organisation, 2016, found at http://www.imo.org/en/About/Conventions/StatusOfConventions/Pages/Default.aspx [accessed 6/1/18]
\textsuperscript{21} Implementation of the MARPOL Convention in Developing Countries, S. Karim, Nordic Journal of International Law 79, 2010, Martinus Nijhoff Publishers, p319
\textsuperscript{22} Ibid, p320
then it will fall under the jurisdiction of that country\textsuperscript{24}. Outside of that specific situation however, port states really have very little power when it comes to the enforcement of MARPOL. Upon discovery of a violation, the port state is required to report to the flag state – the state under which the vessel in question is registered. It is they who have the right to inspect the vessels, and to investigate and punish those who violate the Convention.

This would potentially have been fine, however, some states have sought to profit from this loophole, by becoming an ‘open registry’ country, or, in other words, offering flags of convenience (FOC). This is a country which offers low taxes and a lax attitude towards enforcing MARPOL, making them very appealing to companies who wish to save money by circumventing the law. It is a ploy which saves the companies money, makes the government money and, ultimately, has a negative effect on the environment. Sometimes, the open registry country does not even have a coast, but is completely landlocked\textsuperscript{25}.

Of course, it is not the fault of MARPOL that companies try to dodge responsibility by registering elsewhere – ships are free to register where they like – however on top of the limited powers that the Convention has given port states, the situation has been further exacerbated by the fact that the guidelines for inspecting ships etc which were provided to the flag states by MARPOL are not compulsory, and need not be followed\textsuperscript{26}. Rather, the flag state can inspect the vessels under its name in any way it chooses – be that stringently, and to the letter, or in such a way as to let non-compliance slip through the net.

Again, it is often found that it is developing countries which are going down this path. The tax revenues that they can make from such project can be very rewarding indeed, however all too often the situation comes to exist that, even if they did want to enforce the conditions set out in MARPOL, they are unable to come up with the resources and funds which would be necessary to do so\textsuperscript{27}.

Taking this issue into account, you can see another reason why MARPOL is not, in fact, an effective way of combatting the issue of Magic Pipes. Weaknesses in the Convention have led to a situation where port states, who arguably see the vessels more often, have very limited powers within which they must work, further decreasing the chance of action being taken against those who use Magic Pipes. On top of that, the lack of compulsory guidelines for flag states means that, all too often, companies can simply skirt around the Convention – there is no compulsion for a company to follow

\textsuperscript{24} Griffin, p506 \textsuperscript{25} Karim, p319 \textsuperscript{26} Mattson, p190 \textsuperscript{27} Karim, p319
rules which will lose them time and money when they know that these rules cannot and will not be enforced against them.

Of course, issues in the progression of the movement against the use of Magic Pipes cannot and should not be blamed entirely on the substance of the MARPOL convention. Indeed, many of the issues mentioned above have their roots in human desire for profit, or to cut corners, or just human error. When it comes to things being noticed in a timely manner, it must be considered that often, states are not willing to expend the time or resources to go out onto open water to look for violators. Indeed, going out to look for evidence is not necessarily guaranteed to lead to a find\textsuperscript{28}.

There are other factors which have been argued to have had an impact on the way in which Magic Pipes are being tackled, slowing down progress. Environmental apathy is still a massive issue, with many simply choosing to ignore the repercussions that their actions have on the environment. On top of that, the workers who are actually carrying out the filtration system bypass may not necessarily have to training or knowledge of the law to be able to question a superior’s order that a Magic Pipe be used. Sometimes, crews choose to chance a discharge simply to meet targets or get to a destination that bit faster\textsuperscript{29}.

Additionally, MARPOL cannot be blamed for the constantly changing state of affairs in the world – that countries should seek to profit by easing regulations, or that they would simply not have the facilities to deal with the consequences of MARPOL is not necessarily a reflection on the quality and intentions behind the legislation. Nonetheless, that does not necessarily mean that such possibilities should not have been planned for, at least in part.

Of course, the situation is not without hope. There are a number of things, both to do with MARPOL and to do with other factors, which give cause to believe that the push against the issue of Magic Pipes will continue to make strides.

First and foremost, it must be remembered that, even though the path there is not easy, convictions in Magic Pipe cases do happen regularly, with a number of contracting states seeming very eager to ensure that those who do not comply with the Convention are duly punished. The US, for example, has a strong history of convictions in cases such as these, including the Princess Cruises and MSC cases, as well as other cases such as Angelex Ltd v United States. Indeed, so much freedom was

\textsuperscript{28} Mattson, p189
\textsuperscript{29} Magic Pipe: The Mystery of the Illegal Activity Still Continues on Ships, Marine Insight, 9/10/17, found at https://www.marineinsight.com/maritime-law/magic-pipe-the-mystery-of-the-illegal-activity-still-continues-on-ships/ [accessed 7/1/18]
given to the US Coastguard in investigating possible cases of Magic Pipe use that the Angelex case raised controversy over whether or not their actions amounted to a breach of the US constitution.\(^{30}\)

Fines are also increasing with every passing case. The pay out in the Princess cruises case of $40 million was the highest ever pay out for crimes involving deliberate vessel pollution,\(^{31}\) while other cases prior to that have also ordered landmark pay outs. As fines continue to increase, it may come to be found that this acts as a deterrent to companies employing Magic Pipes – where such a high fine is at stake, it may economically be more viable for the company to adhere to the law. Additionally, as fines increase, they gain more media attention – the Princess cruises case, while it took place in the US, was reported on in a number of journals and – crucially – widely read national newspapers such as the Guardian in the UK. This sort of publicity is something that companies can ill afford – yet another incentive to follow the rules of MARPOL.

When the actions of the US are considered, it seems to show that, in spite of the various limitations which plague the MARPOL Convention, it is still entirely possible to consistently secure convictions if the motivation is there – the lack of powers within the Convention can be overcome and worked with to ensure that companies are still held accountable for their actions.

The issues with the collection of evidence have also partly been averted through the willingness of employees to come forward and whistle blow where they see poor practices. In the Princess cruises case, a former employee collected evidence of the practices utilised by himself, reporting it to the MCA, quitting his job with the company to do so. For his role in bringing the issue to light, the US District court awarded the engineer, a Mr Christopher Keays from Scotland, the sum of $1 million,\(^{32}\) a sum which, he said, would secure him financially.\(^{33}\)

While not perfect, whistle-blowers could potentially be a way forward, helping to overcome some of the limits within the legislation governing the issue of Magic Pipes. If employees see that there may be a financial award if they whistle blow, then they may be more willing to come forward and speak about what they have seen, rather than simply turning a blind eye.

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\(^{33}\) CLATWORTHY, B. AND HORNE, M., *Courageous whistle-blower awarded $1m by US court*, The Times, 25/4/17, found at https://www.thetimes.co.uk/article/courageous-whistleblower-awarded-1m-by-us-court-p6m5qt9q0 [accessed 9/1/18]
Of course, there can be no guarantee that a whistle-blower would receive a pay out on the scale of Mr Keays, or indeed any pay out at all. When rewards are given to whistle blowers, it is done purely at the discretion of the courts. However, the treatment of Mr Keays does somewhat set a precedent, and if employees can see that, then they may come to understand that, while whistleblowing may not make them rich, their jobs and financial security will not be at risk if they do decide to report the illegal conduct of their employers. The chance thereafter that they will be willing to come forward and report this conduct to the authorities is increased.

Taking these factors into account, let us go back to the question at hand – how effective are the current legislative measures within MARPOL at dealing with illegal bilge-water filtration system bypassing? While there are many positive points, there are a number of fatal flaws within the system as it stands.

Moving away from the flag state system is perhaps one of the most critical moves that could be made in order to increase the effectiveness of MARPOL. If greater powers were given to port states, then the number of violations caught and, crucially, prosecuted, may well increase. Added to a lessening of the powers of flag states, this would get rid of the system of flags of convenience as there would be nowhere for violating ships to hide, and therefore no incentive for states to be lax on those ships who are sailing under their flag.

Furthermore, amendments to MARPOL by way of protocol may also help to tackle the issue of Magic Pipes more effectively. As has been discussed, the vague nature of some of the provisions can lead to some states skirting the rules, creating a situation where ships sometimes have no choice but to discharge bilge-water into the ocean for lack of facilities to do otherwise. Protocols which set out clearly and in detail exactly what the legal obligations of the states are would close this loophole, ultimately creating a situation in which vessels cannot use a lack of facilities as an excuse to discharge the oil – there will be plenty of places for them to dispose of the waste safely, and without directly affecting the marine environment.

Overall, it appears that the picture of the effectiveness of MARPOL in dealing with the issue of Magic Pipes is somewhat mixed. It is true that strides have been made – higher fines and a greater number of convictions have made their mark, and pollution levels from Magic Pipes has gone down. However, there are still weaknesses within MARPOL which suggest that it has not been so effective, and thus will not provide effective protection for the Scottish coast moving into the future. While it is true that some of these issues can be attributed to the actions of member states, rather than direct weaknesses of the Convention itself, this still points to an underlying problem – if the
Convention is not strong enough to ensure that member states comply, then it cannot be working as effectively as possible. New protocols reinforcing MARPOL may be the answer here, providing a clearer and stricter outline to which states must adhere, however, as things stand, it must unfortunately be said that although progress is being made, MARPOL is not as effective at tackling the issue of Magic Pipes as is necessary.

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