

# The portable pilotage unit – panacea or Pandora’s Box?



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The portable pilotage unit (PPU) is a highly precise aid to navigation that is undoubtedly a powerful new tool to help increase safety. But will the advent of the PPU introduce hidden risks and/or reinforce old bad habits?

This article picks up where *The Pilotage Paradox* (*Seaways*, Sept 2008) and *The Pilotage Paradigm* (*Seaways*, Oct 2009) left off. In the decade since these articles were published, the use of the PPU has become more prevalent in many pilotage areas. Additionally, ECDIS has become mandatory for most ships and electronic charts, in general, are as common as radar.

The stage therefore ought to be set for the near-faultless conduct of a vessel in pilotage waters. Yet accidents, and in particular groundings due to single-point failure, continue to occur.

Before going further, let’s review the conclusions of *The Pilotage Paradigm*:

- The situation is not a simple one: there is a complex web of interconnected issues that must coalesce for a complete paradigm shift to occur
- Ships’ bridge teams must be ready to step up and actively participate in pilotage
- Ships’ bridge teams must possess the bridge resource management (BRM) and English language skills to be effective partners with the pilot and support the operation
- Shipping companies must realise that their navigation officers and Masters cannot carry out ancillary tasks while under pilotage but must assist and validate the navigation process. As such, the chronic under-crewing that is observed on many vessels must be reversed
- Pilots must engage with and integrate the ship’s bridge team into the performance of the pilotage act
- Government bodies and port authorities must, in consultation with their pilots, establish and publish standardised routes to which preliminary passage plans in pilotage waters can be made.

Now, back to the future. Are there any unintended consequences from the increased use of PPUs?

One might ask, if the pilot is in a ‘PPU bubble’, what will become of BRM? How can the pilot share the plan to ensure all concerned have the same mental model? Admittedly, now a visual representation can be shared. But if no particular steps are taken to ensure this is done we could find ourselves almost back where we started from, when the plan was in one person’s head (albeit now also on that person’s equipment), creating a risk for single-point failure. That is exactly the situation which was supposed to have been resolved by having BRM and a common plan. Have we climbed out of one hole only to dig ourselves another?

In 2014, a bulk carrier was run aground on a charted shoal while under the conduct of a pilot using a PPU. The Transportation Safety Board of Canada concluded, among other things, that ‘the pilot’s

portable pilotage unit was not configured with all available route planning and monitoring features to assist in the detection of known hazards’. It is clear that, even with the advent of PPUs, the possibility of single-point failure is still present unless there is a shared understanding of the voyage. The need for a single, shared plan (loaded on both the PPU and the ECDIS) is more indispensable than ever.

## The importance of pilotage passage plans

In his article in *The Journal of Navigation* (2011), Captain Richard Wild, a pilot himself, reiterates a common theme of many accident investigation authorities:

‘The key is to be able to slot the pilot into the bridge team, or for the ship’s own conning-officer to assume that position and for the remainder of the team to support him by actively monitoring the conning orders. This means more than checking that the helmsman puts the rudder the correct way when an order is given. It means that, for example, set/leeway is applied in the right direction by the pilot; it means that if the pilot states that he intends entering the harbour or a major turn at 8 knots, the ship is not doing 12 knots because the pilot has been distracted and has not slowed down in time. In the first instance, the scene must be set correctly to encourage challenge and reply responses to conning orders. And communication and orders must follow a closed-loop pattern. All that is now required is an agreed passage plan.’

As far back as 1994, the Transportation Safety Board of Canada recommended that ‘...pilotage authorities publish official passage plans for compulsory pilotage waters and make them available to Masters to facilitate monitoring of the pilot’s actions by the vessel’s bridge team’ (Rec No. M94-34).

Thankfully, progress continues to be made in developing pilotage passage plans. Several pilotage jurisdictions have made them publicly available and certain ports are now providing the plan to the vessel well before the arrival of the pilot on board. As a major port has explained in the past, by developing a pilotage passage plan, ‘Ports reduce their own risk exposure and enhance safe operating procedures for the vessels and crews using their port by providing early and detailed information to port users... be they shippers, shipowners, charterers etc.’ Obviously, the same is true of pilotage areas in general, not just for ports.

In combination with ECDIS, these efforts should now easily allow a common plan to be formed and followed. Any small changes can quickly be rectified during the Master/pilot exchange. Any unintended changes due to developing circumstances can be explained ‘on the fly’ by the pilot and hence more easily followed, and challenged if necessary, by Master and crew.

Nonetheless, even when this plan is available, human error-related accidents are still happening with some regularity in pilotage waters. The New Zealand Transport Accident Investigation Commission (TAIC) has recently added Navigation in Pilotage Waters to its *Watchlist*, which highlights particular concerns. This item is also part of the Australian Transport Safety Bureau’s *SafetyWatch* list.

**Sharing the knowledge**

Some pilotage jurisdictions continue to stand against the concept of pre-determined pilotage passage plans. Paradoxically, these very pilots have ‘best case’ tracks and no-go areas already memorised and execute them time and time again. Why not get the word out? In a recent accident report (MO-2016-204), TAIC said: ‘Ideally, passage plans generated by port companies should be to the same IMO standards that vessels are required to meet, and should be compatible for use in an ECDIS.’

The commission recommended that ‘...port authorities produce and publish passage plans for their respective pilotage districts that meet the port-specific requirements and guidelines contained in Chapter V, Safety of Navigation, of the Annex to SOLAS and Resolution A.893(21) Guidelines for Voyage Planning (029/17)’.

After another accident and as part of a continuous improvement programme, one pilotage organisation undertook proactive safety action including a pilotage workshop. This helped identify practices and procedures to assist pilots to, among others:

- Establish involvement in and agreement to BRM techniques as essential for safe conduct of any pilotage
- Set operational parameters and limits for shiphandling and navigation for each of the company’s pilotage areas
- Ensure ships’ personnel have accurate detail of the passage plan the pilot will follow, well in advance of the pilotage
- Assign roles and responsibilities to ships’ personnel in support of and as assistance to the pilot
- Use a variety of techniques for engaging and informing ships’ personnel of the pilot’s plans and intentions, to establish and maintain a shared mental model and situational awareness. In doing so the ship’s crew can be actively involved and monitor the pilot and passage and provide challenge/intervention as needed
- Use the PPU not just as a significant navigation tool but also as an information, teaching and communication tool for use with the ship’s Master and crew. PPU’s were identified as being especially useful for developing expectations and explaining impending manoeuvres such as turns and course changes.



PPUs are a powerful tool for pilots – but is the information being shared?

**Making best use of the PPU**

While all of these points are important, the last one is crucial. According to Captain Ed Verbeek, himself a pilot for several decades, ship’s crews need to understand, among other things:

- The difference between a PPU operating on the pilot plug and a PPU with its own independent high-precision antenna with centimetre accuracy
- Additional tools such as predictors and what they can offer. Often they cannot be used with ship’s equipment but they are very useful with a PPU’s own high-precision configuration
- The difference between the capabilities of ECDIS and those of PPU – the latter can sometimes offer depth contours/safety lines in a detail of up to 0.1m.

We started by suggesting, ‘If no particular steps are taken we could find ourselves back to a time where the plan and the execution were in one person’s head’. The use of the PPU is expected to increase and become the norm. Should we not also ensure that we rule out potential negative consequences?

The PPU appears to be neither a Pandora’s Box nor a panacea. It certainly seems to be a welcome addition to the navigator’s toolbox. However, it is up to all mariners to ensure this equipment enhances the shared understanding of the passage plan and promotes BRM between crew and pilots. The adoption, by ship’s crews and pilotage authorities, of the points mentioned above would go a long way towards closing the gap of potential single-point failure.

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