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| PAWSA “MK III” Workshop Report - Port of Tampa 15 – 16 May 2024 |

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# purpose

## Background

This report describes the fact-finding and observations made by Dawn Seepersad and Sarah Robinson during a PAWSA workshop at the Port of Tampa on the 15th and 16th of May, 2024. Dawn and Sarah attended at the invitation of Mr John Stone and Mr Nicholas Neely of the US Coastguard (USCG).

The U.S. Department of Homeland Security, through the work of the USCG Marine Transportation Systems Management Department, is responsible for developing and implementing policies and procedures that facilitate commerce, improve safety and efficiency, and inspire dialogue within ports and waterways. The PAWSA methodology was developed to facilitate stakeholder communication and appreciation of navigational risk. The primary goal of a PAWSA workshop is to improve coordination and cooperation between government agencies and the private sector.

The responsibility for coordination and facilitation of PAWSA workshops lies with the USCG Navigation Center (NAVCEN) under the direction of Admiral Linda L. Fagan and Lieutenant Commander Michelle Rosenberg. The NAVCEN conducts PAWSA assessments nationwide, and the main objectives of the method are to:

* Gather stakeholder input to identify major waterway trends, safety hazards, and potential mitigation strategies.
* Bolster public-private partnerships and enhance cooperation across marine transportation systems (MTS).
* Develop a stakeholder-driven report that may be used by industry and government to advocate for future projects impacting the MTS.

For this report, the PAWSA methodology observed in Tampa is referred to as “Mk III,” although the USCG is still reviewing it and has not formally published it under this title.

## objectives

The USCG has refined the PAWSA MK II methodology in recent years with some significant modifications. Personnel changes have limited the full appreciation of these modifications. Therefore, Mr Nicholas Neely (on behalf of the USCG) is reviewing the methodology implemented at recent workshops, including at the Port of Tampa.

The IALA World-Wide Academy, in conjunction with the ARM Committee Working Group 3, is also keen to understand the modifications made by the USCG to the methodology, with PAWSA MK II being one of the tools currently promoted as part of the IALA Risk Management Toolbox. IALA is seeking to understand how the MK III version of PAWSA is currently being implemented and whether a corresponding update of the IALA PAWSA MK II tool may be appropriate.

The primary objective of this document is to describe the apparent similarities and differences between the MK II and MK III PAWSA, as evidenced at the Port of Tampa workshop. It is also considered valuable to relate workshop details, such as facilities and observed examples of facilitation best practice techniques.

In addition, it was useful to note that two of the attendees, Mark Luther and Terry Fluke, had attended the most recent Tampa PAWSA (Mk II), which was undertaken in 2003; their opinions were sought to compare the stakeholder experiences of the respective processes. This comparison is also described within the report.

## Report structure

Section 2 describes an overview of the practical arrangements undertaken by the US Coastguard during the Port of Tampa PAWSA workshop. Section 3 describes the PAWSA MK III process, including pre- and post-workshop actions. Section 4 compares the respective PAWSA MK II and MKIII characteristics. Section 5 contains conclusions on the implications for the current IALA PAWSA MK II tool and recommendations for short and longer-term actions. The Appendices further describe facilitation techniques, the workshop data-gathering tools, and how the workshop survey information is transformed into a prioritised list of actions.

# the port of tampa workshop

## Workshop objectives

The objectives of the Port of Tampa workshop are those described generically in section 1.1. The previous PAWSA workshop at the Port of Tampa was undertaken in 2003. Therefore, the Port was considered a useful opportunity to review and update navigational risk management issues. Further detailed workshop preparation documents, including the participants’ package for the PAWSA, can be found at:

<https://www.navcen.uscg.gov/pawsa-workshop/51425>

## Workshop agenda

The agenda for the Port of Tampa workshop proceeded as follows:

* The workshop started at 08:00 with sponsor introductions from the local USCG representatives and the workshop facilitators, followed by an agenda overview. Before introducing themselves, facilitators and participants collectively established the workshop ground rules (such as listening respectfully and collectively acknowledging when conversations deviated from a relevant topic). Appendix 1 further describes the ground rules.
* After a brief 10-minute break (and these were regularly incorporated into the agenda), the session resumed to discuss the first waterway risk category, “Navigation Conditions”, and its associated waterway risk factors, with the discussion being individually captured through the respective surveys.
* Lunch was scheduled for one hour from noon, and the afternoon session commenced at 13:00, with the morning process repeated for the remaining waterway risk categories.
* Day two commenced with resolution of any outstanding topics not covered on day one. The facilitators then presented the prioritisation of waterway risk factors from the survey results. The participants discussed this as a “second look” at risk prioritisation. Once they were happy with the prioritised list, the conversation turned to developing risk mitigation and completing the report items. The workshop included further short breaks and longer lunch breaks, and day two concluded with a session for workshop feedback and closing remarks.

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Figure 1 Port of Tampa Workshop Agenda

## Participants

The PAWSA MK III workshop participants included the facilitators, administrators, stakeholders, and observers. Below is an overview of each category of participants.

### Facilitation Team

The facilitation team consisted of three interchangeable facilitators who guided the stakeholders during the workshop. Members of the Tampa USCG supported the team, which had assisted with stakeholder identification and liaison prior to the workshop.

### Administrator

One dedicated, full-time administrator was supported by those facilitators mentioned above when they were not actively facilitating the workshop. On day one, the administrators processed the Baseline Risk Level (BRV) results from the waterway risk factor surveys using a dedicated Excel workbook (BRV is the level of risk assuming existing mitigation is in place – see section 4.1.2 and APPENDIX 3). On day two, the administrators developed the report for the workshop.

### Stakeholders

Invitations to attend the workshop were sent to approximately 70 organisations; there were 21 positive responses compared to the 30 participants typically recommended for a PAWSA workshop.

Organisations that confirmed their participation received documents detailing the workshop's objectives and overview (the participants’ package referred to in section 2.1) and confirmed specific attendees. The workshop teams of two or three attendees were finalised on the morning of the event. A specific objective was to pair or group individuals with complementary expertise and the ability and willingness to undertake constructive debates among themselves.

More information about the roles and responsibilities of the facilitator and the stakeholders is presented in Appendix 1.

## Tools and resources

Below is a list of specific tools and resources used during the Port of Tampa PAWSA MK III workshop:

* Software
* Pre-designed Microsoft Forms to conduct the attendee surveys - Participants used Surface Pro computers to access and complete these surveys, specifically designed to gather relevant data. Blank example forms can be found in the accompanying file titled PAWSA Surveys.
* Excel Workbook with a macro developed using Visual Basic for Applications (VBA) to analyse and evaluate the inputs from the surveys completed by the workshop participants. Further information about the surveys and the Excel workbook macro is presented in Appendix 2.
* Workshop-specific PowerPoint Presentation - This presentation outlined the workshop’s objectives, provided a comprehensive background and overview of the PAWSA method, and included the agenda, ground rules, and charts. It also featured a comment card (see Figure 3) for feedback and data related to WRFs.
* Microsoft Word was used to document the workshop's outcome in a report.
* Hardware
* Four microphone receivers were set up around the room to record the meeting. The recording was then sent to a transcription company, which provided an anonymized workshop script.
* One Surface Pro per team to facilitate the completion of the surveys.
* Television screens were placed on each wall so the PowerPoint slides were visible to all participants.
* Room set up
* The chairs and desks were set up in a “U” shape so the facilitator could walk amongst the participants and participants could face each other during discussions.
* Post-it notes and designated wall space for post-it note capture for various categories of issues.
* Sharpies – writing only in Sharpie, making visibility easier.
* Desk cards for participants’ names.

## Waterway risk model and terminology

The waterway risk model in PAWSA MK III consists of the risk categories shown in the figures below. The probability risk categories are navigation, vessel quality and operation, traffic, and waterway, and their related risk factors are listed below. Likewise, the consequence risk categories are immediate and subsequent consequences.

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During day one of the workshop, discussions were based on the four probability risk categories. The PowerPoint presentation listed these, in turn, to guide the conversation as a precursor to survey completion. There were no similar explicit discussions about the two consequence risk categories. However, participants were asked to evaluate the immediate and subsequent consequences of each risk factor within the surveys. The definition of all terms used in the risk categories can be found in the accompanying document titled PAWSA terminology.

Figure 2 Probability and Consequence Risk Categories (RC) and associated Waterway Risk Factors (WRF)

# Pawsa “Mk iii” process

## Workshop preparation

### Stakeholder invitations

Approximately one to two months before the workshop, the facilitators collaborated with local USCG staff to identify which organizations should be represented at the event. The USCG local team mentioned explicitly that organizations’ age, etc., were not considered in the selection process, ensuring that all relevant organizations and perspectives could be captured. A letter explaining the objectives of the PAWSA process was sent to the organizations, requesting them to send a suitable representative to the workshop. For the Tampa Bay PAWSA, 72 invitations were sent out, but only 22 organisations accepted. Organizations that received the invitations already have internal risk management processes, making it hard to justify sending their employees to the PAWSA. As a result, the outcome of the PAWSA might not reflect all relevant stakeholders’ opinions. The USCG cited no specific methodology for the selection of individual participants.

### Stakeholder engagement

The workshop participants represented a range of waterway users, stakeholders, federal, state, and local regulatory and public safety authorities. Before the workshop, the NAVCEN team shared pre-reading resources with the stakeholders and facilitated a stakeholder engagement meeting (18 January 2024) to enhance community outreach and prepare stakeholders for the formal workshop.

## Day One Workshop Activities

On day one of the workshop, participants engaged in a detailed examination of each WRF shown in Figure 2. This examination included discussions and a three-part survey to establish the BRV and Risk Characterization (RC) for each factor. The RC process uses qualitative descriptors to further prioritise the WRFs (see section 4.1.2 and APPENDIX 3). The WRFs were then prioritised based on the BRV and RC. Below are the steps followed on day one of the workshop:

### Waterway Risk Factors – Introduction and Discussion

The facilitator began by explaining each risk category and its associated risk factors and then led through discussions for each WRF in the risk category. During this discussion, the WRF was defined on the television screen along with the factors they should consider when completing the survey and discussing the specific WRF. The discussion involved participants discussing their top risks/issues in the waterway related to these risk factors, writing them on a sticky note, and then having the facilitator collect them and place them on a sheet of paper stuck onto the wall and labeled “ISSUES.”

The facilitator then summarised the identified issues related to each WRF and guided a discussion of those issues among participants.

### Survey completion and Risk Prioritisation

Each discussion concluded with participants completing a three-part survey to determine the BRV and RC for the WRFs. After completing surveys for all WRFs, the WRFs were ranked numerically from greatest to least based on their BRV and RC.

### Outstanding issues – “Parking Lot”

Before ending day one of the workshop, the facilitator asked whether there were any safety risks that participants thought were not already covered or might not fit into each WRF. The facilitators anticipated that the 16 probability WRFs would cover any issue, but this was the point at which it was explicitly considered, and the participants had the opportunity to comment.

### Comment cards

During the general discussion, if a participant commented about a specific geographic location, the facilitator asked them to document it on a comment card. The card included details such as the participant’s team number, name, grid check, and specifics about the location and conditions (e.g., navigation, vessels, traffic). These observations were later transferred to an ArcGIS online web application to generate chartlets depicting the location and context of each comment. A manual titled "GIS for Dummies" produced by the NAVCEN is available for further guidance, detailing how to develop and use the USCG ArcGIS online application.

A close-up of a form

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Figure 3 Comment card used to capture geographically specific information

Nicholas Neely observed that requiring participants to pause and fill out the comment card could interrupt their contribution to the main discussion, as they shifted their focus to completing the card while the conversation continued. The ArcGIS Online web application was not demonstrated to participants during the workshop; the intention was for the PAWSA report to include annotated chartlets created using the application.

## Day Two Workshop Activities

### Day one review and validation of Waterway Risk Factor list

At the beginning of day two, the participants were briefed on where they had reached in the PAWSA process. Using the illustration below, the facilitators explained that on the first day, they identified and characterised risks associated with the waterway and on the second day, they would identify what they could do to manage the risks.



Figure 4 PAWSA workshop progress explanation

The order of the WRF ranked numerically from the highest to lowest risk based on their BRV and RC, was presented to participants for validation and consensus. The facilitators commented that experience has shown that from three to an upward limit of five risks can be addressed over the second day.

When facilitating the prioritisation of the WRFs, four steps were taken to arrive at approximately three to five risk characteristics to facilitate evidence collection and mitigation strategies. These steps were:

1. Cull the “easy outs” that don’t make the cut, take votes, and majority rules. Dissenters have one opportunity to plead their case.
2. Pick the “easy wins” that are the highest risk and ripe for mitigation efforts.
3. Use multi-vote if “easy ins” aren’t evident
4. Gain team consensus on which ones are above the cut. Debate and vote if necessary to resolve the issue of having too many items.

Validation of the order of the WRFs was crucial to prioritise the subsequent discussions and development of mitigation strategies.

Appendix 3 provides detailed methodologies for calculating the BRV and RC. Appendix 1 includes additional information on facilitating the validation of the list of WRFs.

### Discussion of mitigation for inclusion in report

The validated list of WRFs then guided the prioritisation of risk mitigation strategy discussions. The risk mitigation strategies referenced are identical to those used in Form 5 of the PAWSA MK II process.

The facilitators recommended that any risk mitigation strategies be “SMART”, i.e., Specific, Measurable, Achievable, Relevant, and Time-Bound. This framework was introduced to assist in defining what needs to happen, who has responsibility for the “what”, whether the action makes a difference, and when it will be accomplished or how often it will occur. While the SMART goal framework is desirable, it is not a requirement that the PAWSA process result in a series of SMART goals.

An “Action Priority Matrix” was initially introduced as a guiding tool for selecting mitigation strategies. This matrix helps prioritise tasks and activities based on their impact and effort. It is a four-quadrant matrix that divides tasks into four categories: fill-ins, quick wins, major projects, and thankless tasks.



Although both SMART objectives and the Action Priority Matrix were introduced at the start of the workshop, there was little evidence of their explicit application during the discussion. The application may be more evident when the final report is published.

### Feedback Survey

Workshop participants were requested to complete a feedback survey on their Surface Pros. The survey aimed to help the facilitation team enhance their presentations, refine the methodology, and increase the overall benefit of the process for the port community participants. Participants were assured that their responses would remain anonymous to encourage candid feedback. Each participant completed the survey individually rather than submitting a collective response as a team. The feedback survey can be found in the accompanying file titled PAWSA SURVEYS.

## Post workshop Actions

### Report process

After the PAWSA workshop is complete, the workshop report, which captures the essence of the discussions and conclusions, is finalised. This document presents the risks identified, serves as a set of minutes of the workshop, makes recommendations about other risk mitigation strategies to consider, and defines who should take action on each recommendation. An initial draft of the report is generally given to the local sponsor of the workshop within one week.

The sponsor reviews the report for completeness and accuracy, considering standards, policies, and other relevant factors, and then provides comments and recommendations. The sponsor also conducts the following post-workshop actions:

* Evaluate and may initiate actions from the PAWSA.
* Refers recommendations falling in other agency areas of responsibility to those agencies at local level.
* Keeps the local port community informed.
* Distributes the PAWSA report to workshop participants via email attachment.

Complete PAWSA reports can be found on the NAVCEN webpage; at the time of writing the Port of Tampa report was not finalised and/or available.

# PAWSA MKII and Port of Tampa MKIII Comparison

## Comparison of characteristics

The following sections describe specific observed differences and similarities between the two methodologies. This has been informed by a series of documents shared by the NAVCEN team as well as observations made during the PAWSA MK III workshop in Tampa, including a blank copy of the Excel workbook used for processing the survey results. Therefore, the comments in the sections below are limited and merit further sensitivity testing with real data from a completed workbook. The list of accompanying documents is included in Appendix 4.

### Team expertise

In PAWSA MK II, the competent authority and facilitator selected the workshop participants, and participants with similar expertise were grouped as a pair/team. During the workshop, their relative levels of expertise were evaluated and weighted for each risk factor. This weight was applied to their opinions throughout the risk assessment process, and there was an opportunity to review this weighting as the process progressed.

In the Tampa PAWSA MK III, the competent authority and the facilitators identified the organisations whose opinions would contribute to the holistic discussion of the 16 waterway risk factors. About 70 invitations were sent to organisations or agencies. About 21 positive responses were received, but ideally, 30 responses were the goal. A package relating to the objectives and overview of the workshop was shared in response to the positive responses and the workshop teams were created on the morning of the workshop. The competent authority attempted to group persons with complementary expertise that could lead to constructive debate rather than selecting group participants with identical expertise.

### Baseline Risk Definition

PAWSA MK II Baseline Risk was the level of risk without existing mitigation. This could be a slightly tricky concept for attendees to remember when considering waterway risks and an issue that past PAWSA practitioners have highlighted as a potential distraction. The Baseline Risk Level in PAWSA MK III is the level of risk *assuming existing mitigation is in place*. This is analogous to the “Book 4 – Mitigation Effectiveness” risk level of PAWSA MK II.

### Risk algorithm

The PAWSA MK II methodology identifies a scale of risk distribution for a waterway risk factor (WRF, either a waterway feature, e.g. navigational conditions, or a consequence, e.g., petroleum discharge) using pairwise comparison, then asks the user to identify where the WRF risk level lies on that scale *without* current mitigation, then *with* current mitigation, and finally where the risk level could lie with *additional* mitigation. It adjusts all three respective risk levels based on the expertise of the attendees. The output is the identification of high-risk WRFs, based on the risk level and level of consensus and suggestions for risk mitigation.

The Port of Tampa PAWSA MK III methodology was based on the algorithm in **Error! Reference source not found.**, which defines the Baseline Risk Value (BRV) as the risk level *with* current mitigation and asks the users where the risk level lies based on the answer to one of four options (). A range of consequences are considered depending on the risk level indicated (see query 1 in section 4.1.4) and the consequence value is combined with the risk level to define the BRV. The BRV value is used to prioritise the WRFs numerically.

Attendees are then asked to qualitatively consider the tolerability of the existing risk levels, including whether higher risk levels could be tolerated and the appropriateness of existing mitigation. This process is referred to as the Risk Characterisation (RC) and uses qualitative descriptors to further prioritise the WRFs. The results are scrutinised for consensus among attendees.

The whole process is described in APPENDIX 3APPENDIX 3 but notable arithmetical differences between the two methods are that:

* Consequences are treated as individual WRFs in PAWSA MK II but are used as a parameter to adjust risk levels for individual WRFs in PAWSA MK III.
* Consequences are assigned a number either 0, 0.5 or 1 in PAWSA MK III; in PAWSA MK II they were individually considered as an individual WRF on the 1-9 scale.
* PAWSA MK II weights all responses depending on the area of expertise of the participants; the PAWSA MK III algorithm does not.



Figure 5 Port of Tampa PAWSA MK III algorithm

### Consequences as Waterway Risk Factors

Consequences WRFs were evaluated as a structured part of the PAWSA MK II process, and the eight consequence factors were presented as part of the Waterway Risk Model. In PAWSA MK III, consequences or the scale of impact of those were not an explicit part of the discussion at the stage described in section 3.2.1.

See Figure 6 for a comparison of the Waterway Risk Factors of MK II compared to those of MK III.



Figure 6 Comparison of Waterway Risk Factors between MK II and MK III

In the PAWSA MK III process, consequences regarding individual risk factors are subsequently referred to in the survey questionnaires. For example, in Figure 7, the participants are asked where there “are issues” with “Large Commercial Vessels”, and what the scale of impacts are likely to be. The Figure 7 example also raises further issues that require investigation:

1. What does where there “are issues” mean to the participant? Do they only complete this if, for example, in Figure 6 the answer to question 2 is (2), (3) or (4) i.e., if there are issues with some vessels rather than none. Numerically what is assigned depending on the answers to this question?
2. How are the answers to questions 2 translated numerically to the Excel Workbook?
3. The answers to question 3 in Figure 7 are assigned numerical values None = 0, Moderate = 0.5, Severe = 1.0.
   1. PAWSA MK II, at the same stage in the process, asked participants to translate the level of consequences to a four-point scale (having been transformed from a nine-point scale in Book 2)
   2. A value of 0 would imply a risk level of 0, irrespective of the probability factor combined with it. It is illogical to assess an undesired scenario as a risk where the consequence is 0.
4. PAWSA MK II uses a 9-point measurement scale ranging from 1 to 9 throughout the entire process. PAWSA MK III uses a 0, 0.5, and 1 consequence scale. The baseline risk values are numerically ranged between zero and eight, with zero representing low BRV and eight representing high BRV.
5. For the process generally, what are the arithmetic and psychological differences in incorporating consequences in this manner as opposed to PAWSA MK II, where consequences were assigned their status as a Waterway Risk Factor? When Terry Fluke (2003 PAWSA attendee) was asked this question, his answer was that “everyone knew what the consequences were and there was no need to waste time discussing them more than needed”.



Figure 7 Example of how consequences are incorporated into PAWSA MK III process

### Risk Level values

The survey for Baseline Risk Level in PAWSA MK II includes questions with specific percentages (25%, 75%, etc), but the BRV survey in PAWSA MK III has “All”, “Most”, “Many”, and “Some” (irrespective of the fundamental difference in the two parameters, as highlighted in 4.1.2). This change may be because it was felt that people had a qualitative feel for such issues rather than being able to accurately quantitatively describe the appropriate answer. Figure 7 shows the equivalent example in PAWSA MK II for the example question asked in Figure 6.



Figure 8 Baseline Risk Level example for Large Commercial (Deep draft) vessel quality from PAWSA MK II

### Ranking the risk factors

In PAWSA MK II, data from printed forms completed by participants is entered into the Excel workbook, and built-in algorithms highlight the significant waterway risk factors based on their baseline risk, mitigation effectiveness and additional intervention risk level values. Those risk factors with a relatively low level of risk are not included in subsequent discussions.

In PAWSA MK III, data from Microsoft forms completed by the participants are downloaded in an Excel format, and the algorithm above is applied to calculate a risk value (BRV). The BRV is then used to rank the sixteen risk factors in descending order. The ranking of the risk factors is reviewed and adjusted by the participants if required. Mitigation measures related to the “top risk factors” were discussed and noted in the report during the workshop (see 3.3.1).

### Digitisation of process

*Survey forms* - PAWSA MK II relies on printed forms completed by the workshop participants and manually entered into the PAWSA MK II workbook by administrators. Terry Fluke (see 1.2) explained that this was time-consuming during the MK II workshop. The Port of Tampa PAWSA MK III workshop utilised digital Microsoft Forms presented to the participants on one Surface Pro tablet per team. The results were automatically sorted and generated using an alternative Excel Workbook (see APPENDIX 2)

*Annotated charts* - During the PAWSA MK II workshop, nautical charts were placed on the walls of the room, and participants were asked to place colour-coded stickers on the areas related to Waterway Risk Factors. During the Port of Tampa PAWSA MK III workshop, participants identified the areas related to risk factors by annotating comment cards (see 3.2.4). The information from the comment card was filled into a GIS database using ArcGIS Pro. This GIS was not shown to the workshop participants during the Port of Tampa PAWSA MK III, although it is assumed that it will be incorporated into the report.

### Delphi Method and anonymity of participants

The Delphi method is a key component of the PAWSA MK II process, and it is interesting to understand if it is also a key principle of the PAWSA MKIII methodology. Key features of the Delphi process are listed below. Those features observed to be part of the PAWSA MK III workshop are preceded by a tick, together with further explanation where relevant.

* Expert Panel:
* A group of carefully selected experts in the relevant field is chosen to participate.
* These experts provide informed opinions and judgments about the subject matter.
* Anonymity:
* Experts remain anonymous to each other to prevent the dominance of any single opinion and to reduce the influence of group dynamics. Anonymity encourages free expression of opinions and reduces the bias that can result from authority, prestige, or personality.

During PAWSA MK II and III discussions, participants are privy to each other’s opinions. During subsequent discussions within the team, participants’ discussions are more private. Their survey responses are anonymous.

In PAWSA MK II, Books 4 and 5 were used to evaluate the effectiveness of mitigation measures. This involved a structured discussion among the participants and each team’s anonymous completion of the forms stating the mitigation categories they thought were most suitable and why, therefore capturing all participants’ opinions.

In PAWSA MK III, the report writer captured the participants' opinions, which were shared verbally and, in some cases, written on sticky notes and stuck onto the wall. The workshop participants read the report as it was written and engaged in further discussion and editing if necessary.

In PAWSA MK II, all participants shared their opinions on the mitigation effectiveness, whereas in PAWSA MK III, several participants did not share their opinions during this discussion period.

It should also be noted that participants were advised that the meeting was recorded and that their contributions would remain anonymous in the report. However, there was no anonymity during the workshop discussions.

* Iterative Rounds:
* The process involves multiple rounds of questionnaires or surveys. After each round, responses are collected, analysed, and summarized to form the basis for the next round of questioning. Participants are encouraged to revise their earlier responses considering the feedback from the group.

During the PAWSA MK III workshop, the participants engaged in an open discussion about a topic, they then discussed the topic within their team and completed the survey. The responses to the surveys were collected, analysed, and summarized and presented to the participants to form the basis for the next round of questioning. Participants were encouraged to revise their earlier responses in light of the feedback from the group.

* Controlled Feedback:
* After each round, a facilitator provides a summary of the group's forecasts and reasoning. This feedback helps to refine and clarify the group’s collective judgment without exposing individual identities.
* Statistical Aggregation:
* The results from each round are aggregated and statistically analysed. This helps in identifying trends, the convergence of opinions, and areas of disagreement.
* Final Consensus
* The process is repeated until the group reaches a consensus or a point where further rounds produce diminishing returns. The final output represents the collective judgment of the expert panel.

There were repeated discussions about each topic before completing the surveys, and then when validating the results of the surveys. There was also repeated discussions when developing the PAWSA workshop report.

### Report

A report is produced from the PAWSA process and shared with stakeholders, including key decision-makers. The aim of the PAWSA process is stakeholders’ ownership of the report. In the 2003 Port of Tampa PAWSA MK II, Terry Fluke remarked that participants did not see the report before leaving the workshop. In PAWSA MK III, participants contributed to the development of the report, which was drafted in real time on the screens during day 2 of the workshop. The final report is not yet available on the NAVCEN website.

## Facilitator and Participant comment

Consultation with workshop facilitators and Terry Fluke, a participant of the PAWSA MK II and III at the Port of Tampa Bay identified the following benefits of PAWSA MK III in relation to PAWSA MK II:

* There is more focus on the discussion rather than the process. This was suggested as one of the main reasons for developing PAWSA MK III. Terry Fluke’s memory of the 2003 PAWSA process was one of primarily form filling rather than discussion and debate.
* The workshop participants' opinions were captured and expressed in the report in real time, based on iterative discussions and report refinement. This ensured contemporaneous records and emphasis on stakeholder involvement and influence of the final product

# conclusions and recommendations for IALA PAWSA Methodology

The following conclusions are made following attendance at only one PAWSA MK III workshop and without detailed analysis of the Excel workbook:

* The PAWSA MK III process still retains many fundamental features of MK II. The main differences include a lack of expertise weighting, the incorporation of consequences for every WRF rather than as separate factors and the theoretical anonymity of participants’ views at all stages of the process.
* With reference to the anonymity aspect, this is a key characteristic of the Delphi method. The absence in part or fully of the Delphi method in the process does not render the PAWSA MK III process an ineffective navigational risk management tool. It is just erroneous to suggest that the full process is an example of the Delphi method, when certain steps are not anonymous.
* For the PAWSA MK III methodology, the Excel workbook and its macros used to process and analyse the survey data provided by the workshop participants are more flexible and customisable than the rigid equations built into each cell of PAWSA MK II. This flexibility allows for easier adaptation and modification of the workbook to suit specific assessment needs.
* It would be useful to explore further how the survey authors felt the answer to the question 4 regarding current risk “We could benefit by accepting more risk here” would be evidenced. How did they anticipate participants being able to give an evidence-based answer to this question?

With regard to the initial objectives that initiated IALA WWA attendance at the Port of Tampa PAWSA the following actions are recommended:

* In the short to medium term IALA continues to promote the PAWSA MKII tool as the primary PAWSA tool and this is reflected in the Risk Management Toolbox course.
* The WWA should investigate the digitalisation of the PAWSA MK II process to replace manual entry of information captured on paper forms. For example, the use of MS Forms to auto populate the existing Excel workbook.
* The WWA should attempt to obtain a fully populated version of the PAWSA MKIII workbook to understand the implications of the arithmetical changes to the main algorithm of the PAWSA methodology.
* The WWA should liaise with Nick Neeley, USCG to understand his perspective on the differences and respective benefits of the PAWSA MKII and MK III methods respectively and liaise during ARM in Q3 2024. Further discussions should also aim to provide an initial indication of the value of the PAWSA MKIII methodology either as:
* A replacement for the PAWSA MKII method.
* An additional tool for inclusion in the IALA Risk Management Toolbox (PAWSA “Lite” or similar)
* Inappropriate for inclusion within the IALA Risk Management Toolbox.

# abbreviations

BRV Baseline Risk Value (PAWSA MKIII)

PAWSA Ports and Waterways Safety Assessment

PAWSA MKII Current version of PAWSA promoted by IALA

PAWSA MKIII Modified version of PAWSA MKII observed at the Port of Tampa PAWSA workshop

WRC Waterway Risk Category – a grouping of Waterway Risk Factors (WRF)

WRF Waterway Risk Factor, in PAWSA MKII there are 24, in PAWSA MKIII 16 associated with Waterway Risk Categories

RC Risk Characterisation, the process of identifying the risk tolerance and trend and the nature of current mitigation measures within the waterway in the PAWSA MKIII methodology

1. facilitation techniques observed at Port of Tampa workshop
   1. Role of the Facilitator

In addition to the commonly recommended traits and responsibilities of a facilitator, the following qualities were demonstrated by the facilitators during the Port of Tampa PAWSA workshop:

* The facilitator must have common sense and an understanding of mitigation options to facilitate meaningful discussions and encourage participation.
* Identifying the appropriate “next step” based on the discussion, which may involve either
* recognising when a topic has been sufficiently explored and transitioning to the next item; or
* suggesting an “audible”, which is a term used by the Port of Tampa facilitators when deviating from the pre-planned process to address an emerging issue, responding to unexpected participant feedback, or redirecting the discussion. In the case of the Port of Tampa workshop, an audible was taken when there wasn’t consensus on keeping/removing a particular protocol, so a note was made to “explore options to amend and/or remove current relevant protocols”.
* moving a mitigation measure into a more suitable quadrant on the Action Matrix
* moving a point into the parking lot.
* Maintaining high energy and engagement within the room to sustain productive dialogue.
* Prompting the group to review the report on the screen as it is being written during discussions, ensuring alignment with the group's intentions and desired outcomes for the final report.
* Addressing all critical points, including those designated for further discussion in the parking lot, guarantees comprehensive coverage and fosters a sense of genuine participation among stakeholders. According to general workshop facilitation practice, this approach enables stakeholders to feel ownership over the results of the process.
* Managing conflicts or tense moments during discussions to maintain a respectful and constructive atmosphere. For example, in one instance, when participants disagreed with each other, there was silence and tense body language. The facilitator broke the workshop for about 30 minutes during this period.
* Guiding the conversation back to the main focus when it veers off track, facilitating forward momentum in the discussion.
* Recognizing consensus or the absence thereof within the group and taking appropriate action.
  1. role of participants
* Generally, the participants spoke briefly, allowing others to participate.
* Often, participants raised their hands and waited to be called on by the facilitator.
* Speaking one at a time was important for recording and transcribing the meeting.
* Participants occasionally entered/left the room and, therefore, the discussion. This was not recorded as part of the workshop report.
  1. Resources

During the afternoon, before day one of the workshop, the facilitators set up the room for the workshop. The room was set up in the shape of a “U” with team members sitting together and the facilitator speaking at the centre of the room. Notable features include:

* The admin staff off to the left at the top of the U
* The observers are on seats to the left at the bottom of the U
* Table for registration at the door
* The back of the room is set up with coffee, tea and snacks.
* On the participants’ desk:
* A grid-referenced chart for each participant and a schedule of the workshop.
* Comment cards
* Sticky notes
* Sharpies – agreed with the participants only to use sharpies to write with so text was easily visible
* Desk tags on which participants were asked to write their names at the start of the workshop. Before the workshop started, the team number and computer password were written on the side of the desk tag that faced the participant.
* On the walls
* Three white sheets of paper on the wall labelled: “Parking lot”, “Ground rules”, and “Issues”.

The parking lot was a separate sheet of paper on the wall labelled "Parking Lot". This was used to transfer issues that will be covered later by discussion during the risk categories on day one or by mitigation measures that will be discussed on day two; anything that is not relevant to be covered in either of these sessions will be explicitly addressed by the facilitator and removed if not relevant (unlikely).

Similarly, the ground rules were a separate sheet of paper on the wall labelled “GROUND RULES”. This sheet was used to attach the stickies with the rules that participants personally considered important to the workshop's conduct.

The issues was another separate sheet of paper that captured the top risks/issues that teams consider after the facilitator presents the risk category and engages in their discussions.

The Parking lot and Ground rules were kept on the walls and used throughout the workshop. The sheet labelled issues was removed at the end of Day 1 of the workshop and replaced with a separate sheet illustrating the “mitigation matrix”.

* 1. Ground rules

Ground rules included informing the participants of the following:

* The workshop was being recorded to produce a transcript for future reference and the final PAWSA report, therefore participants needed to speak one at a time to allow the transcription.
* The Chatham House Rule was applied to the final report. Under the Chatham House Rule, anyone who comes to a meeting is free to use information from the discussion but is not allowed to reveal who made any particular comment. It is designed to increase openness of discussion.
* Equal airtime was given to all participants. To make sure there was enough time to hear all sides of each issue, participants were asked to be concise. Participants were also asked to offer their perspectives, speak up, contribute and be active.
* The PAWSA is focused on waterway safety; not a forum for arguing the merits of an activity. A forum to identify risk and develop effective mitigation efforts.
* The “Parking lot” is a space for questions and issues.
* Each team suggests ground rules, for example, only speaking one at a time, actively listening, asking for clarification when something is not understood etc.



Figure 9 Parking Lot, Ground Rules and Issues locations

* 1. Specific facilitation techniques observed

At the start of the first day, the workshop participants were greeted by the local USCG representative. The objectives of the workshop were reiterated and participants were reminded why they were selected to participate, reasons being:

* They had the expert knowledge of the waterway activities being assessed.
* Together, they represent a cross-section of the waterway community.
* They have a stake in the safety and efficiency of the waterway.
* Their participation will help ensure the safety and economic viability of the waterway community of which they are a part.

The facilitation team was introduced along with house-keeping rules. Participants were then engaged in a round-the-room introduction and an icebreaker, where each person shared their name, representation, and one word to describe the Port of Tampa. Ground rules were presented from the facilitators to the participants and, participants also shared ground rules they considered important for a successful workshop. A second icebreaker followed the lunch break to re-engage participants. Throughout the day, relevant supporting statistics were intermittently presented to enrich the discussions.

The workshop was facilitated by three individuals who also served as administrators. Additionally, one dedicated administrator handled logistical tasks without participating as a facilitator. Regular breaks were provided after completion of the surveys for individual WRCs. Occasionally, WRFs were re-categorised into different WRCs as discussions progressed. Before participants completed the surveys, they were introduced to the tools and resources they would use. The facilitator demonstrated how to use the Surface Pro (turning on/off, entering password etc.) and how to access and complete the surveys.

1. workshop data collection and processing
   1. Microsoft Surface pro set up

Prior to the workshop, the facilitation team posts the workshop agenda, traffic visualisations, large comment grid, small comment grid, terminology definitions, participant package, and links to each survey to a custom-created webpage on navcen.uscg.gov.

During the workshop, each team is equipped with one Microsoft Surface Pro computer. While the workshop webpage can also be accessed on participants’ personal devices such as cell phones, the Microsoft Surface Pro combines the portability and convenience of a tablet with the functionality of a laptop and makes it easier for participants to type their survey responses.

The Microsoft Surfaces Pros were connected to a WiFi hotspot provided by the facilitation team. From their Microsoft Surface, each team was directed to open the workshop web page for the PAWSA and was shown how to access each file by clicking hyperlinks on the webpage.

* 1. survey forms

The surveys were presented to workshop participants using the MS Survey software on Surface Pro. The surveys included unique questions to assess the Baseline Risk Value (BRV) and the Risk Characterization (RC) for each of the sixteen Waterway Risk Factors (WRFs). There were questions related to the likelihood of undesired scenarios and immediate and subsequent consequences in assessing the BRV. To assess the RC, the same questions were used to assess the risk margin (tolerability), risk trend, and mitigation effectiveness (now and in the future). All questions were multiple choice, except for the open-ended question at the end of all questions related to the risk categories.

Before completing the survey for each risk factor, the participants were presented with an overview of the risk factor, what it means and additional features/elements to consider. The surveys related to each risk category were presented with a unique background colour.

* 1. Excel workbook

The PAWSA Risk and Mitigation Macro is designed to process and analyse survey data using the PAWSA (Port and Waterway Safety Assessment) methodology. The macro automates the conversion of survey data into actionable insights, facilitating the presentation of risk assessments to PAWSA participants. Below is an overview of the macro’s functionality:

1. Pre-Processing Requirements:

Before running this macro, it is essential to execute the "ColumnOrder" code due to potential reordering issues in the MS Forms export.

Ensure that the survey data is pasted into the empty sheet starting at cell A1. Verify that the team number variable matches the number of teams that submitted the survey (typically 15, though this can vary).

1. Macro Functionality:

Sets up a variable to represent the number of survey responses (teams) and defines the last cell with questions.

Creates arrays for risk factors and comment categories.

1. Data Organization:

Adds a new sheet for comments and populates it with data from specific columns, ensuring comments are wrapped for better readability.

Converts survey text responses into numerical values for easier analysis.

1. Calculation and Analysis:

Creates a new sheet for results and sets up a table to display final outcomes.

Computes average values for each risk factor by taking into account the team's responses.

Calculates risk values based on average probability and consequence, and aggregates consensus on current risk levels, trends, and mitigations.

1. Results Presentation:

Converts numerical results back into readable text.

Applies conditional formatting to highlight different risk levels and trends.

Sorts the results by risk value and creates a bar chart to visually present the findings.

1. Final Adjustments:

Formats the risk values and adjusts column widths to fit the data.

1. Additional Features:

Includes error handling to manage non-numerical data and ensures that the final results are presented in a clear and organized manner.

Provides options for visual representation of data through charts, aiding in the interpretation of risk assessments.

1. baseline risk Value (BRV) and Risk Characterisation calculation

At the beginning of the second day of the workshop, the order of the Waterway Risk Factors (WRFs), ranked numerically from the highest to lowest risk based on their Baseline Risk Value (BRV) and Risk Characterization (RC), was presented to participants for validation and consensus. This step was crucial to prioritise the subsequent discussions and development of mitigation strategies. This appendix explains how the BRV and the RC are assessed.

* 1. Baseline Risk Value (BRV)

The BRV is a numerical metric designed to assess the inherent risk level of specific factors within a waterway by evaluating their likelihood and potential impact. This metric provides a standardized method for comparing and prioritising various risks, enabling the identification of areas that require urgent mitigation efforts. The BRV is calculated from participant responses to detailed surveys.

In the first section of the survey, participants evaluate the likelihood of each WRF by selecting one of four tailored options, each associated with a numerical value ranging from one to four. Higher values indicate a greater likelihood of the risk occurring. The second section of the survey extends this assessment by asking participants to assign an Impact Level for both Immediate and Subsequent Consequences of each risk factor. Each WRF is presented with three choices for the Impact Levels, allowing participants to rate the immediate effects as well as the longer-term consequences of the risk. These numerical values for likelihood and impact are then combined using the algorithim in Figure 10.



Figure 10 PAWSA MK III algorithm

Participants complete the surveys on their designated Surface Pro devices, ensuring a streamlined and uniform data collection process. For further details and examples of the surveys, refer to the attached document titled PAWSA Surveys.

The intention of this approach is to enable an objective prioritisation of risks and support the development of effective risk management strategies.

A screenshot of a computer screen

Description automatically generated

Figure 11 A sample of the first section of the survey used to assess the risk level component of the BRV



Figure 12 A sample of the second section of the survey used to assess the consequence level component of the BRV

The choices correlated to the numerical values shown in Figure 13.



Figure 13 Impact level of consequences with associated numerical value

* 1. Risk Characterization (RC)

The RC assesses the potential consequence, the risk margin (tolerability), risk trend, and mitigation effectiveness (now and in the future) of existing mitigation strategies for a specific WRF.

The RC was ascertained from part three of the survey. It provides additional context to the BRV generated from the first and second parts of the survey and was mainly used by facilitators to better guide participant discussion. The third section of the survey asked participants to evaluate the RC in terms of the current risk level, risk trend, and current mitigations. Questions to ascertain RC were standard for all WRFs. The answers to these questions were calculated by “plurality”, which is the method used to determine the most common response or option among survey participants when evaluating the RC.

If no single option has a clear majority (i.e., there is a tie or responses are too evenly spread), the facilitators then review the raw data more closely to determine the most appropriate selection. This step ensures that even in cases where a clear plurality isn’t immediately evident, a decision can be made based on facilitator judgment and further analysis of the participants' responses.

The Figure below presents a sample of the questions used to evaluate the risk characterisation for each WRF. The first question captures the risk margin and trend. The risk margin refers to whether more risk can be accepted for a specific risk factor. This concept of a risk “margin” is analogous to the IMO’s Formal Safety Assessment framework which provides for three categories of risks – broadly acceptable, tolerable, or intolerable; described within the ”as low as reasonably practicable” (ALARP) triangle. The second question captures the risk trend. Risk can change over time. An assessment of how the risk is expected to change or perceived to be changing is therefore added in to the risk characterization equation. The third question evaluates the current mitigations in place to control a risk and the possible responses are pretty much self-explanatory.

 

Figure 14 A sample of part three of the survey used to identify Risk Characterization (RC)

After completing the questions related to each risk category, there is an open text field where participants can provide additional comments. These fields are optional, however they may become very useful when in Step 3, when deciding which risks are candidates for mitigation measures.

The positive comments regarding the current risk level are intended to capture thoughts on various aspects that reduce the nature of the risk. The negative comments regarding the current risk are intended to capture thoughts and perspectives on aspects of a specific factor that make the risk more severe. Similarly, the “mitigations efforts are unacceptable” comments are intended to capture thoughts and perspectives on why current risk mitigation strategies don’t work and the “mitigations are acceptable/sufficient” box is intended to capture thoughts on positive risk mitigation strategies and reasons why they work.



Figure 15 Sample of the open text field for additional comments

* 1. WRF Prioritization (WRF)

After completing all surveys at the end of the first day, the WRFs were numerically prioritised by BRV and RC from greatest to least. The starting point to characterize the baseline risk survey results was derived from the majority response to the multiple-choice questions.

At the beginning of the second day of the workshop, the combined WRFs, BRV and RC results were presented to the participants to validate the prioritisation of the WRFs. Prioritisation of the WRFs involved discussing the risk factors in relation to the order in which they were prioritised at the end of day one, highlighting them, and then manually shifting the order of the WRFs. The prioritised WRFs were listed from top to bottom as the critical areas in which to develop and discuss mitigation strategies. The WRFs were then discussed in terms of the mitigation strategy development and dialogue.

Figure 16 shows an example of the order in which the WRFs were ranked based on the BRV and the RC. The rows highlighted in green represent the highest priority WRFs based on the participants' validation of the WRFs. This Figure was taken from the Chicago Bay PAWSA MK III workshop report in anticipation of receiving the Tampa Bay PAWSA MK III workshop report.



Figure 16 Combined BRV and Risk Characterization results for all WRFs of the open text field for additional comments

1. List of documents provided by NAVCEN

001 – PAWSA Surveys

002 – GIS for Dummies

003 – MKIII PAWSA Excel Template

004 – Microsoft Surface Pro Setup IALA

005 – Tampa Bay PAWSA Slide Presentation

006 – PAWSA Results\_Tampa