All India Maritime Pilots' Association





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President's desk
Capt. Gajanan Karanjikar, President - AIMPA

Pilot Personality of the Month

Guidance to the ships for safe rigging of Pilot ladder

Pilot Training and Education

Enhancing a Pilot's skills with PPU training

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From The President's desk

Capt. Gajanan Karanjikar
President- AIMPA

Dear Readers,

I am very excited to inform you that AIMPA, in association with the Indian Maritime University (IMU), is organizing a Research paper competition amongst numerous participating Maritime Training Institutes (MTI's) on the theme of improving the safety of pilots when transferring to or off ships. A catchy acronym “SAMIPTA” (Safe And Modern Ideas for Pilot Transfer Arrangements) has been set for this competition. It is a play on the Sanskrit word meaning (loosely) “coming close to”. The competition involves each MTI getting its students to form small teams to undertake research on the perceived pitfalls and hazards of the existing PTA design and governing regulations. Then brainstorm to find practical, innovative solutions to improve the safety of pilots during transfers to and from ships. The team's efforts should meet certain criteria that guide and orient the competition towards a common outcome thus affording the judges the chance to compare “apples with apples”. Every MTI can send as many entries as it can. A distinguished panel of judges, including a few who are international authorities on matters relating to maritime pilotage, has been set up who will scrutinize the submissions of each team. The submissions will be in the form a research paper presented in a structured format. The judge's panel will shortlist 10 papers. Each shortlisted team will get a chance to make a 15 minute online presentation before the panel of judges. There will be awards for the teams judged to be in the top three in the under-graduate i.e. pre-sea cadets' category and top two in the post graduate i.e. post-sea cadets' category. A memento will be awarded to the top ten papers and a certificate of participation to all teams. Registering of teams 15th May, deadline for paper submissions is 15th June, 20th July announcement of top 10 teams by the IMU, 24th & 25th July online presentations by selected teams, 30th July Final results and prize distribution. More details from AIMPA and IMU. Publicizing of the competition has already started via social media platforms and online interaction with MTI's.

The idea behind this competition is to harness the creativity and out-of-box thinking that young minds have in plenty. And who knows, a few such ideas could really spark a significant improvement in the safety of PTA. At the very least, it will bring into sharp focus the design issues, regulatory issues and rigging issues of PTA and in this way help our aspiring seafarers to realize the need for taking that extra bit of care when rigging the pilot ladder when they are at sea. That in itself will be a great achievement I feel.

As indicated in the April issue of our journal, a document “Guidance to Ships for the Safe Rigging of Pilot Ladders” (Guidance) is being published in this month's issue. Readers, particularly those who are pilots, are invited to read this 'Guidance' closely. It took some months in preparation and for vetting by several persons with related expertise. Any feedback should be directed to my official email id. It is the intention of AIMPA to, very shortly with help of Indian ports association request the managements of all ports and port facilities in India to arrange to send this 'Guidance' to every ship at least 3 days before it calls at their port/port facility so that that ship can take the steps advised to ensure better safety during pilot transfers. The sending of the 'Guidance' to ships will be done through the ship's agents under cover of a suitably drafted directive “Notice to Ships” from the port. AIMPA feels, currently, this is the best way to achieve a pan-India standard of expectations for the safety of PTA. And for affording a level playing field to ports and their pilots to deter ships who persist in not taking due care when providing PTA.

I extend my best wishes and prayers to all that you and your near and dear ones safely navigate through the pandemic currently ravaging us here in India and many parts of the globe.

Capt Gajanan Karanjikar
President- AIMPA
All India Maritime Pilots Association
Email:aimpaofficial@gmail.com

Pilot personality of the month - May 2021

Capt Iswar Singh Yadav

"The other vehicle I drive is an aircraft carrier" read the sticker at the rear of the car parked below the control tower of Mumbai port's Pilot Station. "But whose car could this be?" remarked one of the two new recruits who were discussing it. "It's mine", said a 6 foot tall, tan and handsome personality with a smile standing right behind them. He was Capt Iswar Sing Yadav, one of the most respected pilots of Mumbai port.

He was born in a small village of Haryana, in a family of Defence/Army background.

His initial schooling was done in King George School Belgaum and Chail (Simla Hills), before joining the Indian Navy in 1970 .

He specialised in Navigation and Aircraft Direction.

An Alumnus of the Defence Services Staff College, Wellington he went on to commanding the missile vessel INS Sindhudurg and was Executive Officer (Second in Command) of the aircraft carrier INS Virat.

Finally, after serving 27.5 years in Indian Navy, he joined as a pilot in Mumbai Port Trust in February 1998 and piloted till May 2016. During his stint as pilot his keenness in training new pilots earned him great respect, innovating new methods for safe navigation in Mumbai Port. His major contribution was in setting up new VTMS.

Joining the pilot service of Mumbai Port was one of the best decision of my life he recalls. "I could give best education to my children being stat,ioned at one place, that too in south Mumbai" he says.

He married in 1977 to Mrs Manju, a teacher by profession. They are blessed with a son and a daughter. Their son is working as Associate Vice President in a top bank and daughter is married and working in the US. They have two beautiful grandchildren.

"Post retirement I am enjoying visiting new countries and playing golf" he says,
while displaying his evergreen smile.

Guidance to the ships for safe rigging of Pilot ladder

Introduction

Ships that require the services of a pilot need to ensure that the Pilot Transfer Arrangements (PTA) they provide are in compliance with the requirements prescribed under SOLAS regulation V/23 and IMO Resolution A.1045(27), [as amended by IMO Resolution A.1108(29)]. Ships failing to do so may be considered to be in serious breach of their responsibility by the concerned authorities. As a result, ships may suffer delays, penalties may be imposed by the Authorities and/or they may be subjected to action via Port State Control (PSC).

Ships should be prepared to confirm that their PTA are in compliance with the above regulations, if asked on the radio by the Pilot / VTS.

It is common for ships to be provided with "bridge posters" approved by the IMO which show, by diagrams, how to rig PTA in accordance with the requirements. There may be additional guidance in the shipboard training manuals on rigging of safe PTA. Despite this it is noticed by many pilots in India that far too many ships provide non-compliant PTA. It shows that there are shortcomings in the existing guidance provided to ships.

Therefore, in addition to the guidance already provided on board your ship, you should pay attention to the guidance in this document. Because it provides more detailed information and advice on certain specific aspects of pilot transfer arrangements to better ensure that they will be in compliance with the requirements.

The more detailed guidance is as follows.

A) Relevant Parts of the SOLAS Regulations and International Standards

1. SOLAS REGULATIONS

SOLAS Regulation V/23

"*2.3 A pilot ladder shall be certified by the manufacturer as complying with this regulation or with an international standard acceptable to the Organization**"* (*Refers to the publication ISO: 799-1(2019) - Ships and Marine Technology - Pilot Ladders) As a result, pilot ladders must have a valid certificate, which must be on board at all times.

"2.4 All pilot ladders used for pilot transfer shall be clearly identified with tags or other permanent marking so as to enable identification of each appliance for the purpose of survey, inspection and record keeping. A record shall be kept on the ship as to the date the identified ladder is placed into service and any repairs effected." This means that records of maintenance, repair and inspections of pilot ladders shall be available for examination by authorities. AIMPA recommends that pilot ladders be **inspected before AND after every use,** besides on a regular basis as documented in the ship's SMS.

"3.3.4….;the securing strong point, shackles and securing ropes shall be at least as strong as the side ropes..

"**Note:** As ladders are to meet the requirements of ISO:799-1(2019) standard which specifies that the side ropes consist of rope of (MBL) minimum breaking load 24kN force, (approx. 2.5T), AIMPA recommends these strong points and shackles be of a SWL of at least 3T. And securing ropes are of a MBL not less than 24kN force.

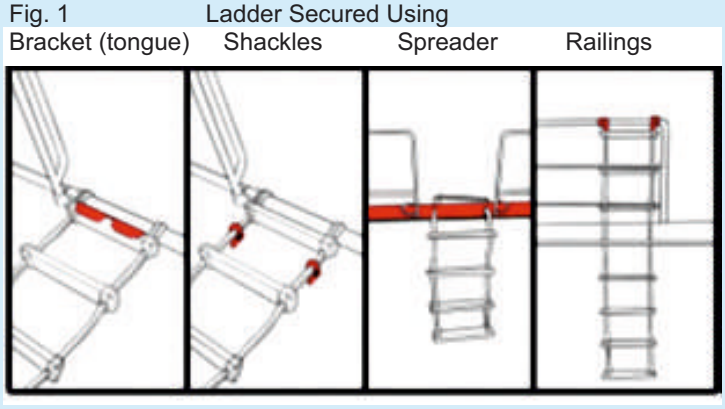
SOLAS Regulation I/12(a)(vi) *"The Passenger Ship Safety Certificate, the Cargo Ship Safety Equipment Certificate, the Cargo Ship Safety Radio Certificate and the Cargo Ship Safety Certificate….shall be supplemented by a Record of Equipment;"* All items that together form a ship's pilot transfer arrangements, including, obviously the pilot ladder and its associated equipment can be considered included in this "Record of Equipment" and required to be maintained in good condition.

2. ISO STANDARD [ISO: 799-1: 2019(E)]

Pilot ladders over 30 months old must have a certificate of strength testing. Pilot ladders that fail an inspection, or that are over 30 months old and have no strength testing certificate, should never be used.

B) Securing of Ladders - Unacceptable Methods

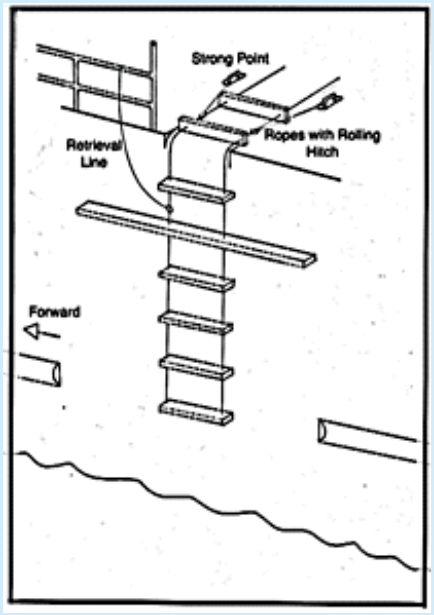
Fig. 1 Ladder Secured Using



ALL OF THE ABOVE ARE NOT ALLOWED

A few examples of bad practices that occur around the world are shown below in Fig-1. All are unacceptable. However, the "rolling hitch" method described in this guidance is considered as "acceptable practice" by pilots across the world.

C) Securing of Ladders - Acceptable Method



OVER ALL VIEW OF A PILOT LADDER SECURED USING THE "ROLLING HITCH METHOD"

The ladder must be secured only to the **designated** strong points. The most acceptable practice, as described below, shall be adopted. This method, of securing a ladder at an intermediate length, may be referred to as the **"Rolling Hitch Method".** See Fig-2 to Fig-5 below

The rolling hitch method uses a DEDICATED pair of securing ropes taken from a certified coil of rope. One end is secured to the designated strong point for securing the ladder. The other end is secured to the ladder by applying a rolling hitch around the side ropes of the ladder between a suitable pair of ladder steps. It must be ensured that after securing the rope length is

equal to prevent the ladder steps from become sloping (slanted). After applying the rolling hitch, the arrangement must be tested by stepping firmly several times on a step which is outboard of the rolling hitch. This is to check that the rolling hitch turns are tight and are gripping the side ropes. The securing ropes shall be of a minimum breaking load not less than 24kN force (2.5 T approx.) These securing ropes shall be used only for securing the pilot ladder and no other purpose.

HOW TO APPLY A ROLLING HITCH KNOT –

Ship side ⟵ ⟶ Deck securing point

LADDER SECURED USING ROLLING HITCH

DEDICATED SECURING STROPS

1. It is strongly recommended that the securing ropes for the rolling hitch method be in the form of a pair of dedicated "strops" (Fig-5 above). That is, one end is spliced over a thimble and the other end is seized and whipped to prevent it from fraying. The thimble end can then be simply shackled on to the designated strong points and the free end applied on the ladder side ropes as a rolling hitch. The length of the strops should be sufficient for the purpose. After use, these strops should be stowed away from weather and chemical damage, same as done for the pilot ladder.

2. If such strops are not presently available on board, then two pieces of good rope of CERTIFIED minimum breaking load not less than 24kN force (about 2.5T) may be used to secure the ladder at an "intermediate" length. Later, the ship should make (or arrange for supply), securing strops as shown. With thimble eyes and a certified shackle attached to each thimble. There is no need for the securing ropes to be manufactured with manila. Suitable non-slip manmade cordage could be used.

3. In every case it is recommended that the securing ropes, whether plain or made into strops, are included in the ship's planned maintenance system (PMS) same as for the other items forming part of the pilot transfer arrangements of the ship. Therefore, the securing ropes/strops shall be identifiable against their certificate. For this, it is recommended the rope used should have an identifying strand woven into it. And the shackles should have markings to identify against their test certificates.

D) Specific Guidance on Avoiding the Use of Shackles for Securing

It is our experience that most ships (perhaps from the time they were built) are fitted with dedicated securing points that are welded on deck close to the ship side so that securing is done using shackles (Fig-6). Using shackles across the side ropes thus became a very widespread practice. To now start securing the ladder with ropes and a rolling hitch gives rise to difficulties when using these securing points (Fig-7), but it **should be possible.**

So, to eliminate the practice of securing ladders using shackles applied across their side ropes, it is necessary that ships comply with the specific, detailed guidance as given below:

Fig-6

Fig-7

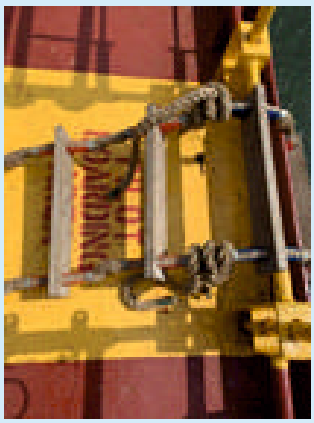


Fig-8

1) As an immediate measure:

a) Ships that do not have a pair of sufficiently strong securing points welded at some distance more than, say, 0.75 m inboard of the ship side, should use their existing securing points (see Fig-7) and apply the rolling hitch method described earlier in item-C) above. It is a bit difficult, but the result is acceptable. First, pay out the ladder overside to the desired level above the sea surface. Second, use a couple of pieces of certified securing rope, in good condition, and apply the rolling hitch on the side ropes of the ladder between a suitable pair of steps, tightening all slack in the hitch. Third, pass the free end of the securing ropes through the eye of the securing points and make a round turn. Fourth, equalise the securing ropes adjusting the slack and apply a hitch to finish securing to the point. Fifth, check the ladder steps rest horizontal overside. Sixth, apply some firm pressure by foot a few times to the outboard steps to test the securing.

b) Those ships which already have a pair of sufficiently strong securing points welded at some distance (more than 0.75 m inboard of the ship side), may use those them directly for securing with ropes as described in D-1(a) above and should finish up as shown in Fig-4.

2) As a measure to be taken later on but soonest possible:

Ships should arrange to weld a pair of securing points more than 0.75 m inboard, at the earliest. And then start securing the ladder as described in D-1(a) above. It should look like as shown in Fig-4. Even better would be to also obtain (or make on board) a pair of dedicated securing strops (see Fig-5) and secure the ladder as in (Fig-8).

E) Unsafe Practice - Rigging Ladders Too Low

It is very important that the lower step of the ladder is at the requested height above the sea surface. Because it is so important, the dangers and some bad practices in this regard are explained in great detail.

1. The Dangers

Failing to take due care to have the ladder step at the height required by the pilot/VTS can lead to the ladder snagging the deck fittings on the boat or getting pinned (crushed) between the

boat and shipside. In sea conditions, this can cause the huge weight of the boat to jerk and pull down heavily on the ladder. The ladder can break or get badly damaged. Or worse, the pilot could fall down by this jerk if he is already on the ladder at the time. This can typically happen when disembarking. **Damage to the ladder by such snagging or crushing can be severe and render it instantly unusable.**

The pilot or the pilot boat handler may judge it too risky and can refuse to board or disembark until it is rigged correctly. If the ladder gets damaged due to snagging or crushing, it must be replaced before the pilot can board. Adjusting the ladder length or replacing the ladder takes time. Vessels may not have time if they are already at the pilot station. **Therefore, it is best to get it right the first time.**

2. Never Use Retrieval Lines (Tripping Lines) to Shorten the Ladder

If the lower step is observed as too low after the pilot boat approaches, ship's crew shall not use the recovery line ("tripping line") to temporarily raise the height of the ladder above the sea surface. Because that extra length pulled up by retrieval line and forming a bight (loop) - is dangerous for the pilot to step on while embarking/disembarking. Therefore, recovery lines shall be used only for the purpose of recovering a pilot ladder on board after use. In any case, if fitted, recovery lines shall lead forward with all unnecessary slack picked up.

3. Sufficient Crew to Be in Attendance to Adjust the Length of the Ladder.

At the actual time and place of boarding the wind and sea conditions may have changed or may not be as per earlier estimates. So the pilot may require the height of the lower step to be adjusted at the last moment. Therefore, have sufficient crew in attendance during transfer to quickly carry out such adjustment. Else the transfer may have to be aborted and the ship may have to turn around and seek permission to approach again after adjusting the ladder in open waters.

4. Length of Ladder Should Be Checked Using a Proper Method

Checking the height of the ladder above the sea surface should not be only by visual estimation or some approximation. Instead, use shall be made of the length markings that are made on the ladder by its manufacturer. Or of a weighted measuring tape/rope. And properly calculating the height above the sea surface of the point on the ship after which the ladder goes over the side. Then. From this height, subtract the height above the sea surface as desired by the pilot/VTS. The result will be the length of the ladder to be paid out over the side.

In the case of a combination ladder using a trap-door (embarkation platform) arrangement - the height of the point from which the ladder is suspended for a given angle of inclination must be calculated after allowing for the length of the suspended ladder and the desired height of the lower step above the sea surface.

F) Other Common Issues

1. Plain Ladder or a Combination?

As a rule of thumb: a person on the ladder should never be able to fall more than 9 meters to the water. If that is the case, rig a combination ladder.

2. Ladder Reels

For ships with a pilot ladder reel/winch there are

additional measures that need to be observed.

a) The pilot ladder must be secured to the deck using the rolling hitch method described above. The winch reel shall not take the weight of the ladder during pilot transfer.

b) The winch reel should be secured from accidentally moving by a mechanical fastening or via a dedicated reel bolt.

c) For a powered reel, the hoist controls shall be mechanically locked to prevent accidental use. If no lock is present then the air supply / power supply shall be isolated from the reel.

3. Combination Ladders

Rig as per requirements of SOLAS regulation V/23 & IMO Resolution A 1045(27) (as amended)

3.1 Pay Special Attention To:

a) Secure the lower end of the accommodation ladder/gangway to the ship side.

b) Both the side ropes of the ladder must be secured to the shipside to prevent it from twisting.

c) The lower platform shall not overlap the ladder. It shall be close to the ladder - between 0.10 to 0.20 meters from the ladder.

d) Ensure the lower platform is horizontal and hinges locked in position.

e) Ensure that all required stanchions are in place on the lower platform. And a properly tight safety rope is rigged on these stanchions.

3.2 Trapdoor Arrangement

SOLAS regulation V/23.3.3.3.2.1 states *"In case of a combination arrangement using an accommodation ladder with a trapdoor in the bottom platform (i.e. embarkation platform), the pilot ladder and man ropes shall be rigged through the trapdoor extending above the platform to the height of the handrail."*

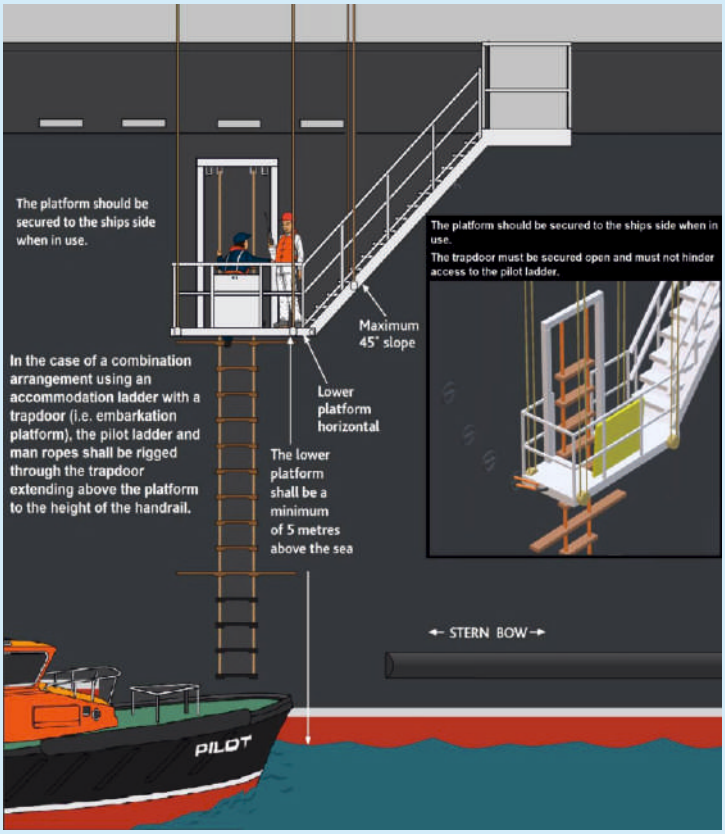


Fig-9 (adjacent) shows an example of a compliant trapdoor arrangement. The ladder extends up through and beyond the embarkation platform till the height of the handrail. And the ladder's securing ropes extend to securing points on a cross bar located well above the handrails.

Some ships whose trapdoor (embarkation platform) arrangement does not comply with the above requirement claim exemption by citing SOLAS regulation V/23.1.1.3 - the so called "grandfather" clause. However, a grandfather clause cannot be an excuse for not providing a safe boarding arrangement. Such ships will be considered to have provided non-compliant pilot transfer arrangements. Port managements in India will support pilots who refuse to use such arrangements.

G) Low Freeboard Transfers

Ships whose freeboard is low as compared to the height of the pilot boat's deck pose a special risk to pilots trying to transfer. Low freeboard ships, being smaller than most, are more prone to large motions in waves. Pilots thus have to judge the motion of the ship as well as the pilot boat. This is tricky. Therefore, on such ships it is very important that compliant handholds at the deck access are fitted: i.e. diameter 32 mm or more, extending at least 1.2 meters above the deck or the top of the bulwark, spaced not less than 0.7 m and not more than 0.8 m apart. Rigidly secured at base level and also at a higher point (recommend near the top of the rail or top of bulwark, as applicable). And, ships should rig manropes (28 to 32mm dia manila rope) through the top of these handholds. Attending crew to put these ready manropes overside only if requested by the pilot.

When approaching, ships should take into account that the pilot may take a much longer time to board or disembark as he has to judge the safe moment to do so. If the conditions are rough, transfer may be cancelled by the pilot. Ships should consider this in their approach passage plan.

The dangers of transfer on/off low freeboard ships is even greater when the deck of the ship is lower than the deck of the pilot boat. Special measures will need to be worked out with the port.

Fig-10

Fig-11

Fig-10 shows a non-compliant PTA. There are no proper handholds provided as required by the regulations. The pilot is forced to hold the ladder with his (left) hand at waist level. Which is at about the level of his centre of gravity. He will find it hard to remain balanced at the critical moment of transfer to/from the boat.

Fig-11 shows compliant handholds provided (yellow) secured at a higher point also (red) and manropes (light green) rigged. As shown, the pilot can now hold on to the manrope with his hand above shoulder height, well above his centre of gravity, allowing good balance at all times during the transfer. Manropes provide a better handgrip. Manropes also allow the supporting force, passing through the pilot's arm, to continuously align itself in the optimal direction throughout the ship's or boat's motion in the seaway. This greatly eases the strain on the pilot's arm and wrist reducing chances of injury to them.

Summary & Conclusion:

1. Prior to deploying the ladder check the condition of side ropes, chocks and steps. If in doubt about the ladder DO NOT USE IT!

2. Obtain the rigging side and required height above the waterline from VTS/Pilot Station.

3. Rigging and securing of the ladder MUST be supervised by a 'responsible Officer'. Pay special attention that the height of the lower most step is at the required height. And, in the case of a combination arrangement, pay special attention to the securing of the pilot ladder and lower platform of the slant ladder, to the shipside.

4. Secure the ladder by dedicated securing ropes using a rolling hitch which is properly gripping around the side ropes. Ensure after securing that the securing ropes are of equal length.

5. If the ladder is on a reel ensure ALL precautions listed above are taken.

6. If a recovery line (tripping line) is required it MUST lead forward and be tied not lower

than the lowest spreader of the ladder.

7. At low freeboards, ensure that handholds complying with the regulations are provided. Keep manropes ready for immediate use.

Thank you for your attention.

As can be seen from all of the above, a lot of the pilot's safety is in your hands!

Disclaimer: This document supplements the applicable SOLAS Regulations and IMO Resolutions which shall always prevail.

Acknowledgements: AIMPA acknowledges with thanks the base of public knowledge on pilot ladder safety created by the following persons / sources and which was used in compiling these guidelines.

Capt. Gary Clay - Pilot. And founder "Fathom Safety", UK

Capt. Kevin Vallance - Deep Sea Pilot. For his article "Securing pilot ladders at intermediate lengths" published 6th Jan, 2020 in “Marine-Pilots.com"

Capt. Herman Broers - Pilot. Founder - https://pilotladdersafety.com - for being so generously giving of his time to AIMPA.

Capt. Arie Palmers - Pilot. Prolific contributor to the on-line pilot ladder safety campaign "Dangerous Ladders”

Capt. Troy Evans - Pilot. For his article "Strength of Pilot Ladders and Intermediate Securing of Pilot Ladders" published Nov 2020 (Rev-1) in the journal of the NZMPA

MAIB Investigation Report No.21/2017**published October 2017 (Very Serious Marine Casualty - pilot transfer between the Sunmi and Patrol) (** Note by AIMPA: The report concerns a transfer involving a vessel with a ladder with a "climb" of less than 1.5 m i.e. a transfer at "Low Freeboard")

Compiled by Sanjeev Pande sr Pilot (Dahej)
Approved Capt Gajanan karanjikar, president AIMPA

Pilot Training and Education

Ed Verbeek FNI

The change in career path from mate/master to pilot takes a lot of training – and developing and maintaining key skills takes even more.

Ed Verbeek

Some time ago, a simulator institute asked me to be a pilot for Willemstad Curacao in a training exercise for bridge teams and pilots. When I said that I could not be a pilot there, they were surprised: to them a pilot is a professional shiphandler who could bring a ship into any 'hole in the wall'.

On the other hand, when I talked with Dutch shipowners, I got the impression that they see a pilot as someone standing a bit aside on the bridge, with or without a cup of coffee or tea, and assisting the captain with information such as 'Left here, right there; the current is setting to the North; did you see the barge? There is your berth.' To them the pilot is an advisor in a very strict sense of the word.

Although neither of these visions of the work of a pilot is incorrect, they are very incomplete.

I thought it would be helpful to describe how pilots are prepared for their task, as this gives an indication as to what a pilot organisation sees as important for the change in career path from mate/master to pilot.

Having been a pilot, instructor and training coordinator for Amsterdam pilots, I choose to describe the training of pilots of that port. This education and training is similar (although not identical) to the training of pilots in other regions of the Netherlands. There are differences due to the specific requirements of individual regions.

Selection

To be admitted to the pilot selection process, the prospective candidate has to have a CoC Master all Ships or Chief Mate all Ships. In the Dutch system, the holder of a CoC Chief Mate all Ships has completed all education, training and examinations necessary to become a master, but only lacks a limited amount of sea time. The candidate will possess a BSc.

The selection process consists of five parts:

Intake: Formally speaking, the intake is not a part of the selection process itself. Information is given about the selection procedure, the initial education, the possible career paths, and life as a pilot. The candidate has ample opportunity to ask questions.

Psychological test: The candidate will have a full day psychological assessment at an independent bureau. Some aspects are role plays, capacity tests and personality tests. A number of psychologists, trained in observing behaviour on the bridge, evaluate the candidate and come to a recommendation.

Test with training vessel: The candidate has a test of one hour where he is asked to perform some simple prescribed manoeuvres. Although it would be nice if the candidate is already a good shiphandler, at this stage it is not the most important point. Experience has shown that shiphandling skills can be taught successfully to persons who have never handled a ship before. This test is about insight and aptitude to act. The candidate is evaluated independently by two

trainers.

Physical examination: Being a pilot means climbing ladders when vessels are rolling and pitching, being winched to the vessel by helicopter, jumping down on the pilot tender; on top of having to work longer or shorter hours at unpredictable and varying times. This requires good general health, for the safety of the candidate as well as for the organisation.

Final Interview: At the final interview the President of the Dutch Pilot Cooperation, the President and the Vice President of the Regional Pilot Cooperation, and the national Coordinator of the training organisation of the Dutch Pilots are present. Candidates can explain their motivation to become pilots and all aspects of the selection process can be discussed.

Although there are large differences between individual selection rounds, on average about 25 -20 % of the candidates fail the selection.

Initial education

The initial education to become a pilot in the Netherlands is divided into National and Regional sections. For the national training, apprentice pilots from all the Dutch regions come together for eight weeks training in the aspects of pilotage that are the same nationwide. There are some refreshers course, such as the ColRegs; there are some subjects that will be discussed to a greater depth such as tides or buoyage systems; and there will also be subjects that may be new to the candidate such as the inshore Rules of the Road. Of course a lot of attention is given to the theory underpinning shiphandling and the (Inter)National legislation around pilotage.

There is a carefully designed programme with exercises in practical shiphandling with a training vessel. The apprentice pilots get simulator training in traffic situations, focussed on SMCP (Standard Marine Communication Phrases) and the applicable rules of the road. The national part is concluded with examinations. Occasionally an apprentice does fail (about 1 - 3 %).

After successfully completing the National Part of the training syllabus, the apprentice returns to their region and starts a 10 month education programme there. The most time-consuming part of this education is making the required 200 trips accompanying licensed pilots. The first ten to fifteen trips are just observation, but then, subject to the approval of the captain and under the guidance of the pilot, the apprentice will take on more and more of the navigation and shiphandling. After about 100 trips, the apprentice will do almost all the shiphandling, including working with tugs, on vessels up to about 200 metres under good conditions. After the first 35 trips, a report is filed after each trip. Each apprentice has five 'coaching weeks', during which they work with one pilot who acts as a coach and can assess their progress and identify where they require more attention. These trips are not just about shiphandling. Other important aspects include how the apprentice interacts with the bridge team and their ability to anticipate, both with regard to their own vessel and other vessels and situations. It is this intricate combination of situational insight and awareness, technical shiphandling and integration within the bridge team that promotes the best chance for a safe and efficient voyage.

On average, the apprentices spend half a day per week on theoretical lectures: local rules and regulations, topography, and all the local peculiarities which have a bearing on navigating and shiphandling, e.g. tides and special wind

effects. There are theory sessions about the local Vessel Traffice Services (VTS) given by a trainer from the VTS authority, and the apprentices will act as observers on the VTS traffic tower. There are sessions with trainers from the tug companies, and the apprentices will spend a number of days on board tugs. The training vessel is utilised for a number of sessions, such as use of anchors, and there is additional time on the simulators, mainly for fog navigation. There is also training on the use and limitations of portable pilot units. There are tests after both 5 and 8 months to check if progress is sufficient.

After the 2nd and 4th 'coaching' week, apprentices have to write a report reflecting on the week, which gives an indication of their introspective capabilities. This is a very important aspect of being a pilot as there is little opportunity for the organisation to observe a pilot's day-to-day work. When things don't work out as planned, an attitude of self-righteousness (it happened because of the boatmen, tugs, crew, captain etc.) is not very helpful. Even if some aspects of a less than perfect voyage might be traced back to other parties, an important aspect of the job is to try to work out how to act as a pilot to minimise the chances that boatmen, tugs or others act differently than intended.

During the regional training period there is some additional national training. This includes personal safety training focussed on the needs of pilots, with exercises such as falling off the pilot ladder and helicopter underwater escape training (HUET); and a Marine Resource Management course. This training must be repeated every three years.

This basic education to become a pilot is rounded off with 12 examination trips with pilot-examiners on vessels between 95 – 180 metres, followed up by written reports from the examiners, and a verbal examination observed by an official of the Port of Amsterdam. As we are an independent organisation, we want to be transparent to the port we are working with. The failure rate at the regional level is around 10 %.

Gaining experience

After passing the exams, pilots are able to draw, from memory, a chart of the area, with all the depths, widths, distances, directions etc. Pilots know all the relevant rules and regulations, procedures etc. They are local experts, even though learning all this local knowledge represents only about 25 % of a pilot's education, the rest being shiphandling, using this local knowledge. This education is deemed sufficient to pilot vessels up to 95 metres. The 95 metres is not just a random length: it is based upon the profile of the vessel visiting Amsterdam. The idea is to exclude vessels for which it is felt that more experience is needed (such as car feeders of 99 metres).

Thereafter follows a period of building up experience interspersed with additional training. After six months pilots are allowed to pilot ships up to 125 metres; after another year ships up to 150 metres and after two more years ships up to 175 metres. On average a pilot will do about 280 – 320 voyages per year in the first few years of their career, when the ships are smaller, lock passage is faster and the speed limits are higher. Later this reduces to about 225 – 275 for pilots that have no other responsibilities.

All pilots can take one day per year a voluntary simulator training during which they can ask the instructor for specific exercises of interest

Further training

After 3 ½ years as a pilot, and before passing the 175m limit, there is a two day training course, both theory and simulator, focussing on high windage vessels. This course includes training on software that can calculate wind forces and training on the Amsterdam Navigator Marginal Ships, a portable pilot unit that has its own independent position fixing, and course, speed, RoT and predictor facilities that are ultra-accurate (RTK, cm-accuracy).

After five years as a pilot, before passing the 200 metre limit, there is a four day training course, again both theory and simulator, mostly focussing on 'heavy' ships. Items covered are interaction and bank effects, controlled turns and controlled stops. The effects of interaction with regards to moored vessels and the effects of large passing vessels in basins and channels and the basics of POD handling are taught. A MRM refresher is given in the form of a simulator run.

Deep draft training

After 7 years and about 2000 trips, a pilot passes the 245 metre limit and is allowed to work on vessels of all sizes, but not all drafts nor all types. The 30 most experienced pilots are trained to do deep draft voyages (14.2 – 17.8 metres) and voyages with Post Panamax container vessels. This training requires 14 days of theory and simulator training focussing on handling of loaded capesize vessels and large containers vessels, tidal windows and other procedures and regulations. Deep draft pilots get a 1 ½ day refresher training course on the simulator each year.

General information exchange

Three times per year, pilots are given the opportunity to meet and talk about all operational issues. One item on the agenda is discussing incident and accident reports, so that all pilots are aware of the issues involved. Just as important as this formalised exchange are the informal meetings between pilots on the pilot tenders and the pilot station. A lot of experience is shared this way, especially from more experienced pilots to the more inexperienced pilots, in the form of stories that start with: 'You know what happened to me recently…'

Specialised training

There are a number of areas outside direct pilotage for which training is also needed. In the Netherlands there is a phenomenon called Shore Based Pilotage (SBP). During bad weather or other special circumstances the pilot may board smaller ships only once the vessel has reached a more sheltered position, rather than in the official pilot boarding ground. From the formal pilot boarding ground to the place the pilot actually boards, the vessel gets advice from a pilot based ashore, who uses a dedicated radar position at the VTS centre. These SBP pilots get special training, with examinations overseen by the VTS authority. The training utilises a specially designed simulator which is a combination of a shiphandling simulator and a VTS simulator. SBP pilots get a repeater course every three years, which is concluded with examinations.

A Chief Pilot is stationed at the VTS centre 24/7. This pilot oversees the pilotage operations and can discuss operational matters with the VTS team leader. A two-day training course is provided for this function.

Maintaining standards

Training is always dynamic, and training that is

adequate now will not necessarily be adequate in the near future. There are systems in place to evaluate all education and training, and to share knowledge and experience between the instructors and training coordinators within a region and nationwide. The training is updated on a regular basis, and at the time of writing the basic education is being accredited to MSc University of Applied Science standards.

Although outside the scope of this article, the quality of the instructors is of prime importance. Instructors are selected and trained in the required knowledge and skills, both nautical-technical and instructional. And of course they need continuing input in the form of courses and conferences to stay up to date and to maintain a fresh perspective. Systems are in place to feed back the information of accident and incident reports to the trainers so that these reports have an effect on the education and training.

What's the difference?

At the beginning of the article I talked about a change of career path from mate/master to pilot. I hope that by explaining the training needed to become am Amsterdam pilot, I have made it clear that a captain and a pilot have closely related, but different professions. It takes approximately 1200 hours of pilot trips, including preparations and travel, and 500 hours of additional activities (simulator, theory, VTS tugs and more), to make a start with that change.

When an apprentice has finished the basic education, they will have a thorough local knowledge. However the apprentice still has to gain a lot of experience and complete a number of additional courses before being allowed to handle all ships. This is an indication that being a pilot is something quite different to being a captain with local knowledge. In the discussion about the EU Pilot Exemption study it is sometimes said that a Pilot Exemption Certificate (PEC) holder would be equal to a pilot that is allowed to handle that kind of vessel. By comparing the training of a PEC holder with the education undergone by a pilot, it becomes obvious that that is not the case, and if it were required, it would make gaining a PEC practically impossible.

In a safety study carried out in 2012, the Australian Transport Safety Bureau (ATSB) stated that 'A marine pilot's local area knowledge and skills allow safer navigation of the area. In conducting a pilotage, the pilot effectively has control of the ship's navigation but legally only provides relevant advice to its master who remains responsible and always in command of the ship'.

What we try to achieve with the pilot education, training and experience, is to equip pilots with both the general navigational and shiphandling skills and the specific knowledge of the influence of local conditions on shiphandling and navigation that they will need to anticipate all critical parts of the voyage. This applies both to own vessels, and for all vessels that might be met. Pilots must be able to develop safe strategies to have the maximum chance of a swift and successful passage under all hydrological and meteorological circumstances; including aborting or not commencing the passage if conditions make this prudent. Moreover, having worked with hundreds to thousands of different bridge teams, pilots can identify the strong and weak points of a bridge team and fill gaps where needed.

The Master/Pilot relationship

Captains have an education aimed at fitting them for the manifold responsibilities and tasks they have to fulfil. For captains the focus of their task is to safely and efficiently run the vessel as an enterprise. With regard to manoeuvring and handling a ship 'in all conditions', the latest proposed IMO model course for Chief Mate/Master calls for 68 hours of theory and contains no compulsory practice. It is clear that the education and examination in shiphandling of captains and pilots are not comparable. Of course there are captains who are able to handle their ships with great skill, and no doubt as well or better than any pilot would do. And there are a few shipping companies that provide formalised shiphandling training, typically a five day course, half theory and half simulator. Some exceptional companies have organized a system of coaching captains and even assessments. But for most captains that do their own shiphandling, their skills are more likely to be the result of chance: the type of vessel and trade they have experienced, the captains that they have observed, and their specific familiarity with their own vessel, than the result of a well-designed training programme.

A captain is focussed on the ship and everything connected to it; a pilot wants the best for the ship they are piloting, keeping in mind their responsibilities towards the State and general public, the port and everything that is connected with that. Captains and pilots can assist each other by being risk-managers each with a different perspective. Their relationship should be one of mutual respect, and helping each other to keep the risk down to acceptable limits.

I hope I have been able to explain what we see as important to prepare and support the career change of master mariners to pilots: from generalists with overriding authority to specialists working under the authority of captains, supplying the vessel with the knowledge and skill as required by that specific vessel, captain, port and circumstances.

"This article first appeared in Seaways, the journal of The Nautical Institute".

Ed Verbeek

Ed Verbeek went to sea as an apprentice officer in 1973, and sailed as mate and (relief) captain on many different types of vessels. He was an Amsterdam pilot from 1984 until 2010, and is past vice-president and past training coordinator of the Amsterdam Pilots. He is currently owner of Verbeek Nautical Consultancy and Training.

Enhancing a Pilot's skills with PPU training

Cdr. David Hedgley

Portable Pilotage Units (PPUs) have been in the marine industry for many years and are fast becoming 'normal' on the bridges of ships in pilotage waters around the world. The PPU is designed to support the pilot's experience and knowledge by enhancing their situational awareness and by providing some independent and accurate empirical manoeuvring data (often independent of the vessel). Many port or pilotage authorities are now mandating the use of PPUs as part of their risk mitigation strategies for the port.

A Harbour Pilot is often viewed as an outsider to a Bridge Team yet, with their knowledge and experience of local waters, they play a vitally important role in ensuring the ship departs or arrives alongside safely. A recent incident investigation revealed that when a ship grounded in a narrow channel at night, a ship's officer remarked "You appear to have run us aground Pilot". On the face of it that would appear to be the case as the ship was under the Pilot's control. However, as we all know, the Pilot's presence did not remove the responsibility for the safety of the vessel from the Ship's team. The Pilot involved had embarked with a Portable Pilot Unit (PPU) but was not using it to its full capabilities. Such a system can provide a significant boost to the Bridge Team's situational awareness by not only providing accurate positioning data but also being able to share excellent predicted positions along with useful features such as shared passage plan and up to date local navigation data. However, the effectiveness of the equipment is only as good as the skills of the operator and the operator needs to be able to exploit the capabilities of their equipment.

The utility of a PPU extends well beyond that of the pilot only. Let us consider the Port Authority and the need to ensure that port operations remain safe as well as efficient. Loss of productivity through an accident or incident in a port can have significant financial, operational or even legal consequences. Ships are getting larger and larger and their sizes are often increasing much faster than the capacity of the ports to accommodate them. So something may have to give. Either a certain size of vessel is denied

Human Factors within a BRM environment
Gooder and Griffiths (2008)

entry into a port or the port adjusts its criteria and margins for that size of vessel. But how can this be done safely? The use of a PPU, which includes a highly accurate GNSS/ DGPS positioning system, will allow the pilot, master and port authorities to work within higher tolerances because they have the accurate information to support them.

A PPU in the hands of a competent and well-trained operator can support at least five of the human factors shown in the image above: namely:

- voyage planning;
- voyage monitoring;
- situation awareness;
- pilot integration;
- standard operating procedures.

IMO resolution A960[1] is clear in the need for 'competent Pilotage authorities' to ensure pilots are trained and certified and that their training is refreshed and certified to ensure they remain competent. Research has determined that, unlike the training and certification in the use of ECDIS, the IMO does not specify or accredit any formal training in the use of PPUs.

In their memorandum of 2016[2], the International Maritime Pilots' Association (IMPA) has provided an excellent set of guidelines for PPU training and they remain a comprehensive blueprint for ensuring that PPU users get the most from their investment.

Pilots should be trained prior to their first use of a PPU, and they should receive supplemental instruction any time the hardware or software configuration has an appreciable change. The amount and type of training required prior to using a PPU will vary depending on many factors.

Some of the factors to be considered in determining the type and amount of training are:

- Type of positioning or navigation tool– GNSS / GBAS / SBAS
- Type of display device – PC / Tablet / Hand-held or portable GNSS
- User interface – Windows / MAC / Manufacturer's Proprietary System
- Type of display format – Text / Graphical / Charts (RNC, ENC) / Manufacturer's Custom System
- Connectivity method(s) of equipment – Wired / Wi-Fi / Bluetooth

  Intended area or environment of use
- Other tools combined with the navigation system – AIS / Pilot Plug / Heading – Rate of Turn (ROT) Generators / internet connectivity

Training should cover the theory behind the selected positioning device(s), an extensive hardware and software orientation, principles and use of Electronic Navigational Charts and AIS (when equipped), and integration of the equipment into the pilot's Bridge Resource Management practices. The training should also include discussion of the potential benefits and limitations associated with PPUs.

All too often, training in the use of PPUs has been delivered in an ad-hoc manner where, typically, a single pilot has received some initial training on the equipment and is then expected

[1] RESOLUTION A.960(23) Adopted 5 December 2003 (Agenda item 17)
RECOMMENDATIONS ON TRAINING AND CERTIFICATION AND ON OPERATIONAL PROCEDURES FOR MARITIME PILOTS OTHER THAN DEEP-SEA PILOTS

[2] IMPA Guidelines on the Design and Use of Portable Pilot Units (2016)

to transfer that knowledge to other pilots in the team. Such an arrangement can be fraught with risk in that there can be an inherent dilution of knowledge as the training is filtered down. Additionally, a Pilot's availability to attend training due to duty rosters, may mean that they are not be sufficiently dedicated to the whole course.

Most training has been centred on how to operate the PPU and its associated equipment. Whilst important, this had had the effect of not providing the Pilot with the best opportunity to learn how to manage and utilise the PPU effectively.

Navicom Dynamics "ChannelPilot" in use in Dubai

A New Zealand company, a leader in the development, production and use of Portable Pilot Units, is now delivering training that meets the IMPA's aspirations. They have developed a PPU training course which not only meets the required IMPA recommendations for PPU use but also ensures that those who complete the course will use their enhanced skills to ensure safety in their area of operations. Not only has the course been developed but the delivery method has also been revised. In response to the COVID pandemic, training using ZOOM®

PPU training with Dubai Pilots

has been undertaken throughout the year and although not as interactive as face to face tuition the sessions have been well received.

The "Foundation" course is designed to provide the Pilot with revision and deeper knowledge into Global Navigation Satellite Systems (GNSS), Electronic Navigation Charts (ENCs), Electronic Charting Software (ECS) as well as looking at a PPU as a "system" rather than a piece of equipment. Training in monitoring navigational safety and passage planning, recognising faults and troubleshooting are also covered. This provides an excellent platform for incorporating the Human Factors, especially pilot integration, which are covered in the "Intermediate" course.

Ultimately, it is envisaged that this training will form a core Continuous Professional Development (CPD) opportunity for pilots who use PPUs and wish to keep their skills up to date.

Initial and Continuous Professional Development (CPD) in the use of PPUs is essential for ensuring that pilots use their equipment to its full extent. Rather than seeing it as an additional navigation aid for the exclusive

use of a pilot, a professionally operated PPU can become an essential tool in effective bridge resource management. This in turn will lead to the safe management of the port and vessels navigating within the port, which is what everyone wants!

David Hedgley, FNI

Director and Training Manager

Navicom Dynamics Ltd

Cdr. David Hedgley

Cdr. David Hedgley retired from serving the New Zealand Navy as a Senior Navigation Instructor after about 40 years of serving the Royal Navy, Royal NZ Navy and the Royal Australian Navy (the last during an exchange of personnel between RNZN and RAN). A Command experienced Specialist Navigator he has been actively engaged in providing training to all ranks in ship handling and Navigation and brings with him an invaluable wealth of knowledge and experience as he delivers training for Navicom Dynamics customers across the world. His current passion is developing an informative and professional PPU course to fill the training void with these systems.

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