



# All India Maritime Pilots' Association



**ISSUE XV**

**All India Maritime Pilots' Association**

**OCTOBER 2021**

Pilot-Speak to  
AIMPA- Steady Focus on Pilot's Safety  
and Wellbeing  
Snakes or Ladders

How Does the Brain of a Maritime Pilot Work?  
SAMPITA  
Maritime Pilot ambassadors and  
cadets with Trophies



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## Pilot-Speak to



In this month's journal, we have published a report to show that AIMPA's focus the past 12 months or so has been steadily on the safety issues that surround PTA (pilot transfer arrangements). The report is sobering. In that, the changes and improvements in work practices being sought through our efforts, are still some distance off from being implemented on the ground. The report makes a plea for colleagues to step forward and help in the effort to bring about the improvements we seek.

We also present a paper by Ewan Rattray, a research scholar in the maritime field. The paper is close to one of AIMPA's concerns. Namely, that of the high rate of non-compliance in PTA. The paper very lucidly explains the underlying causes for such a high non-compliance rate. Most important, it recommends a set of immediate, short term and long term measures to bring the desired changes. Colleagues and readers – please read and take careful note of this paper. For, it will definitely guide AIMPA's endeavours on PTA.

We are very proud to publish here the runner up prize winning paper of the SAMIPTA competition was submitted by AMET, Chennai. It is about using Drone Technology to carry out pilot transfers.

Capt. Amitava Chakrabarty – Dock Pilot, Shyama Prasad Mukherjee Port Trust, Kolkata has very kindly provided us an article “How Does the Brain of a Maritime Pilot Work?” The article gives a vivid description of the thinking process of a maritime pilot when manoeuvring in tight spaces. Capt. Chakrabarty has expressed himself so well that fellow pilots can easily visualise what he describes.

AIMPA seeks articles, interesting anecdotes, or ideas from readers - which AIMPA may take up for acting upon or publishing. Our email for this is: [President@aimpaofficial.in](mailto:President@aimpaofficial.in)

Please do enrol into formal membership of AIMPA. It takes little time and effort. Details to be found on our website: <https://aimpaofficial.in> Use the tab “Meet us> Become a member”



# AIMPA- Steady Focus on Pilot's Safety and Wellbeing

*Report on the Efforts by AIMPA Over the Past 12 months*



By: Capt Sanjeev Pande, Member, AIMPA



Pilot transfer arrangements (PTA) are key to a pilot's personal safety. The past one year or so, the All India Maritime Pilots Association (AIMPA) made a lot of efforts to spread awareness in India amongst

stakeholders about issues related to the safety of PTAs. In fact, AIMPA's first ever webinar in Oct 2020 brought this subject into focus.

Across the first half of this year, several pilots gave of their time and conducted online lectures on pilot transfer issues to students at various Maritime Training Institutes (MTIs) in India. Some of these were recorded by the hosting MTI for re-use and to build up their electronic libraries.

Pilots serving at India's ports participated in the worldwide PTA safety reporting campaigns periodically conducted under the aegis of IMPA (International Maritime Pilots Association) & CHIRP Maritime, UK. In the absence of AIMPA, earlier such participation was rather poor. These surveys provide vital data to help bring change to the regulations dealing with PTA.

A "Guidance to Ships On the Safe Rigging of Pilot Ladders" was prepared by this writer and with the support of AIMPA's President, Capt Gajanan Karanjikar, who arranged for technical reviews of the drafts and assistance of several eminent industry personnel who provided good input. However, sad to say that efforts by Capt Karanjikar since the past 4-5 months to have this "Guidance" formally promulgated via a "Notice to Trade" that is formally endorsed by the concerned Authorities, have not met with success. These efforts shall continue.





And of course, AIMPA's monthly journal has been regularly carrying articles on PTA safety and improvement in its regulatory framework.

Another significant step to help AIMPA in its



efforts was the launching of its official website on 26th July 2021.

Some time since August 2021, membership of AIMPA was formally launched. Hopefully, more formal members will better empower AIMPA in its efforts.

Finally, to motivate stakeholders more effectively, Capt Karanjikar, sometime in April this year, hit upon the brilliant idea of organizing a competition amongst Indian MTIs. The competition was about raising awareness about safety issues surrounding current methods used for PTA and while doing so, to also **bring stakeholders together and participate in finding solutions**. The competition was given, quite aptly, a catchy name



“SAMIPTA”. In Sanskrit “samipta” means “to bring close or bring together”.

Capt Karanjikar was given full backing by the VC, IMU Dr.Mrs. **Malini Shankar IAS(Retd)**, and **several Industry associations like FOSMA, MASSA, CMMI, IMEI** and several more. The Nautical Institute provided great encouragement through its President Ms. Jillian Carson-Jackson. All the MTIs participated wholeheartedly and even deputed several of their cadets to assist Capt Karanjikar in the very hard work of organizing the competition and the grand finale. Several Pilots from India and abroad and eminent maritime professionals gave a lot of their time to read through the 113 submissions to shortlist them to 10 and then finally to choose the final three for awarding prizes at a grand finale. That finale was held on the 4th of Sept. It was a huge success and widely reported in trade journals, including AIMPA's journal in its Sept 2021 issue.

The many dignitaries who attended the grand finale were unanimous in their view that the ideas put forth by the students who participated should not gather dust. So, after the dust of the grand finale had settled, an online meeting of industry leaders and influencers was held on 26th Sept. With a view to follow up on the wishes expressed by distinguished invitees at the grand finale. At the meeting it was decided to again screen the submitted papers by the cadets with a view to shortlist a few ideas that have a fair potential of being taken forward. “Taken forward” meaning for discussion at national Maritime Administration levels and then, if suitable, even taken to International fora (IMO).

All this means serious painstaking work over an extended period of time. It will require those who can, to step up and devote some of their precious time and expertise to take things forward and enable real change and not let efforts go in vain. AIMPA needs all the help it can get. Please come forward! (See our contact details on our website <https://aimpaofficial.in>)

AIMPA will continue to provide leadership in this effort through its President and those he and his colleagues can get to give of their time and knowledge as and when requested.



AIMPA is grateful to the following (in no particular order) who attended the meeting of the 26th Sept.

**Capt M P Bhasin** (Chairman, MASSA), **Mr. Chitta Dash** (ex Area Manager SE Asia – Lloyds Register), **Ms. Jillian Carson-Jackson** (President, The Nautical Institute), **Mr. Rajeev Nayyar** (ex CEO and whole time Director, OGD Services Ltd), **Mr. Surendra Rai**, Technical expert, **Capt Sanjeev Pande** (Pilot, at a terminal at Dahej Port). **Capt. Nazir Upadhyay** – a senior mariner for providing the online platform for the meeting. And last but not the least, three of the core members of

the SAMIPTA organizing team – Cadets Md. Farhan Aqduş, Shubham Thakur and **Shivansh Tejaswi**.

**We immensely thank all the well-wishers and supporters of AIMPA worldwide and also all Indian Pilots for supporting the cause. Special Thanks to BHANDARKAR Publications Capt Vivek Bhandarkar who just did not help but also invested time and efforts in taking AIMPA to a recognisable height.**

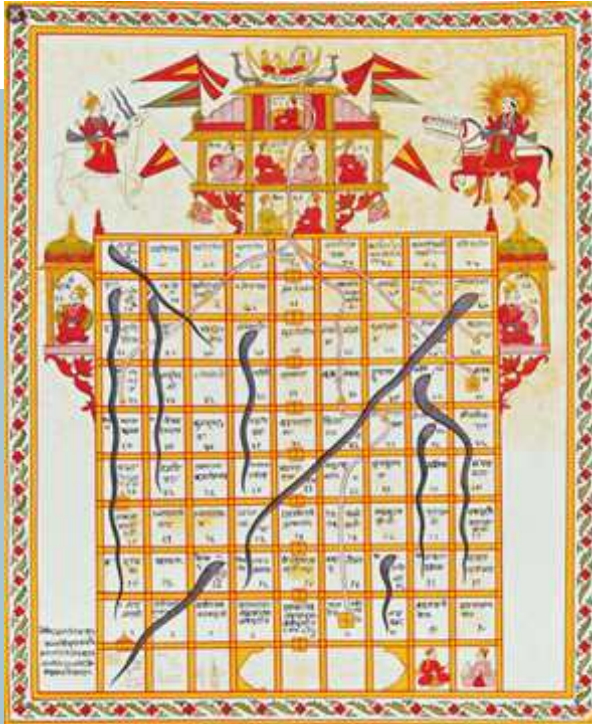
**We also Thank Sagar Sandesh (Capt Ashok Advani) and Marex (Capt Kamal Chaddha) for helping AIMPA to promote the awareness among the pilot and maritime Fraternity.**





# SNAKES OR LADDERS

A MIXED METHODOLOGY REVIEW INTO THE BOARDING  
AND LANDING OF MARITIME PILOTS



**EWAN Ratray**

**Capt Ewan Ratray Senior Manager in the Maritime Industry. Qualified Master Mariner with MSc in Shipping Operations with Distinction. Active in the Maritime and wider industry - Honorary Secretary for the N.E of Scotland Honourable Company of Master Mariners Outport, and a Freeman of the City of London by Redemption.**

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Summary of findings and Conclusion

To conclude this research, this final chapter will summarise and document the key findings from both the literature review and the data analysis. To ensure the research has met its objective of identifying any shortfalls, conclusions have been drawn and recommendations will be made to facilitate a positive change throughout our industry.

After identifying both fatalities and a high level of non-compliance in the industry, the literature review set out to exam the regulation, and the factors which contribute to regulatory success. This led us onto analysing the key areas which affect the boarding and landing of pilots, namely the regulation itself, training, enforcement, culture and accidents and incidents. Worryingly, the theme that emerged from the literature review was one of non-compliance and one which highlighted failings in all key areas which affected the safe boarding and landing of pilots. The aim of the research was to

identify what was affecting non-compliance and with that in mind, further research was carried out to align the literature review through the collection and analysis of empirical data.

Compelling evidence emerged when data was collected and analysed. After coding the data, the emerging themes set the scene whereby pilots felt helpless in the battle against non-compliance. So-much-so, that non-compliant transfer arrangements have become an everyday feature. Furthermore, pilots have very worryingly and wrongly been left as the only line of defence in what could be a catastrophic journey to work. To put it more simply, the pilot's journey to work is unsupported by failing regulation, enforcement, training, culture and vessel design and all wrapped up in a system which does not support, encourage or learn from reporting errors.

However, on a positive note, the foundations are in place. Above all, it should also be noted that these foundations can be worked upon and the shortfalls easily addressed. No human being





deserves to face life-or-death on their way to work. Although each and every pilot has a duty to report and refuse a non-compliant transfer arrangement, it is the fundamental shortfalls that have been identified in this paper which must be addressed in order to make a real difference. The assessment of life and death must not be left to a pilot when all other barriers have been left to fail. The pilot should be concerned with the safety of navigation and not whether they have landed on a snake or landed on a ladder.

## 5.2 Recommendations

The researcher recognises that certain recommendations can take longer than other to implement, with that in mind, they have been grouped into three phases, immediate, short term, and longer term.

Each recommendation must be implemented and then maintained; collectively the recommendations will serve to greatly improve the safe boarding and landing of pilots.

### Immediate

- Enforcement is incredibly important for regulatory compliance, this needs to be heavily increased to combat the problem we are facing but in a positive, open and transparent manner.
- Enforcement must take into account due regard for safety standards adopted by the IMO prior to 2012 and ship owners must not be allowed to use Regulation 23 Section 1.3 as a get-out-clause for unsafe arrangements.

### Short Term

- A unified and international code or best practice would simplify the regulation for seafarers, pilots, ship builders and industry professionals. It would form a clear set of instructions which are easy to interpret, implement and also serve to remove any ambiguity.
- A Responsible Officer should be defined. Furthermore, they should receive regular and specific training approved by the administration.
- Transfer arrangements should be studied and tested to ensure the best possible design solution; a tool used in all other safety critical

industries.

- Without robust accident and incident statistics, it is very difficult to create a learning culture. Government Authorities should collate information surrounding non-compliance, accidents and incidents. It should be mandatory for both vessels, regulators and port and pilot authorities to feed information in.

### Longer Term

- All of the regulation and associated documents must be consolidated, simplified and brought into The International Convention for the Safety of Life at Sea.
- All ambiguity must be removed from the Regulation.
- The clause in Regulation 23 section 1.4 must be removed, and any future safety critical changes must be time-bound for all vessels.

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## Appendix A – Emerging Themes from Thematic Analysis

Survey Themes	Focus Group Themes
<b>Regulation</b>	<b>Regulation</b>
<p>The legal wording and phrases are difficult to understand.</p> <p>The legislation is spread over many difficult documents, making it very difficult to piece together and to understand.</p> <p>ISO 799 should be regulation and written into SOLAS not merely a reference from an external organisation.</p> <p>The Regulation is ambiguous and can be interpreted differently by different people or organisations.</p> <p>The regulation must state how pilot ladder is secured to deck and these securing methods should be tested and approved.</p> <p>All grandfather rights should be removed.</p> <p>A large number of seafarers and pilots do not fully understand the Regulations.</p> <p>Enforcement needs to be increased.</p> <p>The pilot ladder poster has some errors and does not show how to secure a pilot ladder.</p>	<p>The regulations are not written for the seafarer, the people who are implementing the regulations.</p> <p>The regulations are spread far and wide spanning several different documents. This on-top of them being difficult to read, is a massive barrier to successful implementation.</p> <p>The regulations are too ambiguous and contain get-out-clauses.</p> <p>ISO 799 goes beyond its remit and contradicts IMO. It has good purpose but may be part of the problem.</p> <p>Terminology across the regulation must be made consistent, the use of acronyms is confusing.</p> <p>Enforcement is difficult because port / flag states also struggle to correctly interpret the regulation. The MCA ask pilots for advice which is wrong.</p> <p>There is no definitive guidance on how to secure a pilot ladder.</p> <p>Low-freeboard transfers are among the most dangerous, but the regulations leave too much room for the seafarer to interpret in any way they wish.</p>
	<p>There is no guidance regarding how a responsible officer is trained or where they should be positioned.</p> <p>Amendments must be made time-bound.</p> <p>Different countries interpret the regulations differently resulting in further confusing for vessels.</p>
<b>Training</b>	<b>Training</b>
<p>Pilots do not understand the rules and regulations.</p> <p>Seafarers should have better / regular training on setting-up PTA..</p>	<p>Both seafarers and pilots do not fully understand the regulation.</p> <p>Properly and effective training is essential to solve the issue.</p> <p>There is no guidance regarding how a responsible officer should be trained or deemed responsible.</p>





<p>Pilots feel that a successful Master Pilot Exchange is very important when it comes to ensuring the safety of navigation, and they feel confronting the Master may jeopardise this relationship.</p>	
<p><b>Accident / Incident</b></p> <p>There is no effective or worldwide reporting system to report and follow up non-compliant PTA.</p> <p>Pilots are demoralised reporting incidents and receiving no change or feedback.</p> <p>International statistics would improve understanding and help the industry learn from mistakes.</p>	<p><b>Accident / Incident</b></p> <p>The ports and the industry need to work together to share data in order to learn from accidents and incidents.</p> <p>International accident and incident data would be very useful.</p>
<p><b>Vessel Design</b></p> <p>The regulation does not take account for the vessel's draught.</p> <p>Boarding positions can be close to vessel extremities making boarding more dangerous.</p> <p>Vessel design often makes it difficult for the vessel to comply with the regulation.</p> <p>Classification societies are approving ships which do not comply with the regulation.</p> <p>New build vessels are still being built where they leave the vessel unable to comply through design.</p>	<p><b>Vessel Design</b></p> <p>Vessels are leaving shipyards unable to comply with the regulation, they are being signed off by surveyors when they simply can't comply. This results in seafarers trying to work around bad design.</p>

## Appendix B – Focus Group

### **Boarding and Landing Focus Group**

The aim of this focus group is to gain thoughts and options regarding the boarding and landing of pilots from leading experts in the field. The data gathered forms part of a research project and will be used to compare and contrast data gathered from a perception survey.

### **Regulatory Framework and Enforcement**

- ❖ Are the current regulations fit for purpose?
- ❖ Are they easy to interpret and implement?
- ❖ Are the regulations an effective safeguard against accident and injury?
- ❖ Are the grandfather rights acceptable?
- ❖ What is missing when it comes to the regulation?
- ❖ Is the regulation properly enforced?
- ❖ What is your view on ISO 799?
- ❖ Does the poster help?

### **Training**

Are seafarers properly trained in setting up pilot transfer arrangements?

Are pilots properly trained in setting up pilot transfer arrangements?

### **Culture**

With culture in mind, what factors are preventing correctly set-up pilot transfer arrangements?

Are pilots subject to commercial pressure?

Do pilots receive feedback when they report a NCBA?

Are the vessels accountable for NCBA's?

### **Vessel Design**

Are vessels designed with pilot transfer in mind?

Is the vessels draught taken into account?

### **Accident and Incidents**

Are accidents and incidents involving pilot boarding and landing properly investigated?

Would International statistics be of benefit regarding accidents, NCBA's, and near-miss incidents?

### **Resolution**

What can be done to resolve NCBA's?

### **Conclusion**

Are there any other pertinent issues you would like to raise?

Can you describe why you decided to participate in this Focus Group?

Do you feel the Focus Group met the overall aim?





# How Does the Brain of a Maritime Pilot Work?



**Amitava Chakrabarty**

Amitava Chakrabarty is a Dock Pilot of Shyama Prasad Mukherjee Port Trust, Kolkata and a writer and a poet. He has contributed articles, travelogues, letters, stories and poems in leading newspapers and magazines in India, has penned two anthologies of poetry (*Solitude / So I Used Gray And Other Poems*) and has co-authored a children's story book – *Inspirational stories for Children Vol-3*

Rene Descartes, in the 17th century, described animals as machines who reacted predictably according to external stimuli in their immediate environment in order to attain equilibrium or more practically to survive.

Three centuries later Ivan Pavlov, the famous Russian physiologist, went further.

In his famous “Dog experiment” he tried different stimuli on a dog to provoke its saliva secretion using a metronome, buzzer, bells, bubbling etc. and after each of such sounds, the dog was given food.

Now, the dog's brain was conditioned in such a fashion that as soon as it heard the sounds, it would salivate. Its brain remembered the earlier experience and reacted accordingly so that the ingested food got the required digestive juice. The dog knew that it was time that the bowl is served. Thus its brain was conditioned to salivate, which was a natural process, without the sight of food.

Surprisingly, humans also respond to the same stimuli. Most of us can look up at the sky and decide whether it will rain on a particular day and if to carry an umbrella along. Humans have conditioned themselves to decide this.

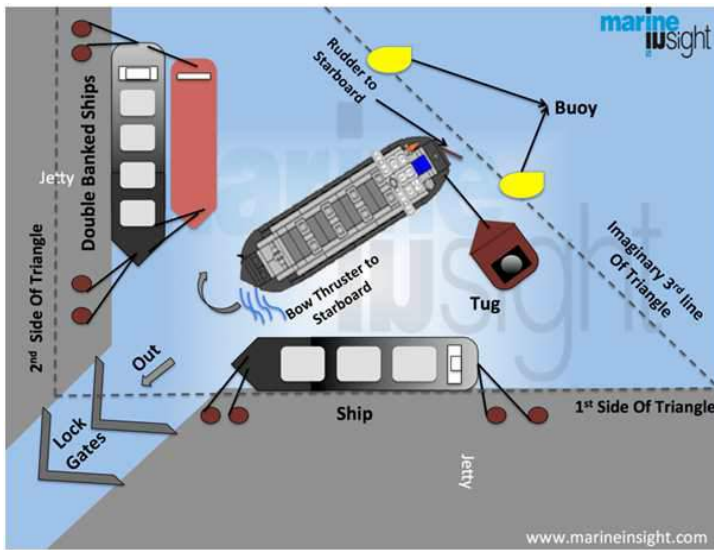
Similarly, a maritime pilot during his/her training and throughout the career, gathers information from different situations and the biological neural network inside his/her brain records it, triggering the neural pathways once an identical situation arises. The brain automatically responds to this somewhat identical external stimulus. Counteractive measures pour out automatically and sometimes even unknowingly as there is hardly any time to think and respond.

Ship handling in an enclosed space like an impounded dock system entails a lot of nerve to overcome the fear of proximity or collision.

Suppose a 150m ship is being turned in a somewhat triangular space of a basin where any two arms are not more than 400m in length. The basin is cramped by doubly banked ships berthed on the arms, leaving the maritime pilot with a tricky situation.

Suppose the third arm is an imaginary line where you have the floating buoys (Refer Figure). The situation is palpably challenging.

While the ship is being turned with the chief and second officers giving fore and aft clearance to



as quickly as possible to the varied situations s/he encounters day in and day out.

Thus, a pilot who is piloting in restricted space relies on his/her adaptability and with time his/her response becomes more accurate as s/he



the bridge, the pilot always uses this information along with those which she/he gathers from following the shore transits.

The maritime pilot gives instantaneous orders determining the rudder-angle, the engine thrust and its direction, and the bow-thrusters or the stern-thrusters. S/he orders the assisting tugs as well from time to time and does all of these without spending much time to think. Sometimes s/he is facing the stern, but s/he has clear idea of his/her port and starboard sides and s/he gives orders flawlessly. The brain is conditioned to such situations so that s/he can anticipate the impending danger well in advance and the neurons of his/her cortex churn out the right order at the right time to avoid the ship hitting anything.

With time the maritime pilot learns how to counter the effects of wind on the ship's hull. With a high freeboard it will always be bodily adrift from the course. In an enclosed harbour the pilot may not always take the help of charts or other tools. Rather s/he follows shore objects as transit points and judges position. A trained eye can even judge the SOG (Speed Over Ground) by seeing the reference points (be it a fixed crane, a light post, a tree, etc.).

Image Credits : Photograph by Nasser Daefy

Moreover, each vessel has her own peculiarity. The pilot either remembers them if the vessel is on a regular line and visits the port occasionally, or else s/he acquaints himself with her behaviour as fast as s/he can. The brain adapts to her peculiarities and ingrains them in its consciousness. S/he applies them almost immediately till the vessel is berthed. Though s/he has very little time, s/he has trained himself to adapt

foresees a situation in advance. The synapses (a structure that allows a neuron to pass a chemical or electrical signal from one cell to the other) are more active in an adult brain than previously thought, and they rewire themselves in response to stimuli from the outside world.

Almost a decade ago a team of researchers from Cold Spring Harbor Laboratory led by neurobiologist Professor Karel Svoboda found that "The brain operates with circuitry that is constantly changing in response to new demands." Prof. Svoboda recently said to the BBC that "However, we think that the plasticity in the adult is quite different, and much more limited, than that observed in the developing brain. Whereas in the developing brain the large-scale structure of neurons changes in response to experience, in the adult brain these structural changes are primarily local", reported BBC. The research came out in the famous Nature magazine sometime in 2002.

Thus, as long as the maritime pilot keeps himself/herself mentally agile and physically fit, s/he can earn his/her bread without considerable stress. Unknowingly, his/her brain stands guard throughout the pilotage act, clearing obstructions and ensuring a safe passage.

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**SAMIPTA**



## SAFE AND MODERN IDEAS FOR PILOT TRANSFER ARRANGEMENT

### Paper Title

## DRONE-TECHNOLOGY

*This was the paper which won the runner up prize in SAMIPTA-the largest single subject competition in the world and was written by Cadets of AMET University Chennai. Cadet V. Jayaram, R Dharani Dharan and Ignatious Anthony. They were guided by Capt Karthik, Principal Amet Nautical studies and Dr S Kalpana, asso professor, dept of Nautical Science.*

### Abstract:

In this modern era, we are developing in a very high rate. The main agenda of this is safety of humans i.e., in place of human forces machines are used. Professional drones are nothing but unmanned helicopters. There is no need of any special skills or any other training programmes to operate this type of drones. Professional drones can carry a weight up to 220kgs. The diagonal motion of drone can cause x-angular motions which helps to stably fly. Using these ideas and some minor alterations we can make this project a practically successful one.

**Keywords: machines, Professional drones-220kgs**

#### 1. Introduction

In today's modern world mainly, when land is considered, it is developing in a faster rate, but in merchant navy we are not advancing that much. Because of this slow development, death rate and casualties are increasing. Apart from piracy and worse happening at sea, shipping works like mooring operation, Anchorage, getting into closed spaces, etc., cause many deaths. Similarly boarding a pilot has been a very risky job, that too using a rope ladder to climb a moving object is very dangerous. In spite of all these risks, we the seafarers are risking our life for the betterment of the people, but our life has also got its own value. So obviously we need to protect it. Technology can improve safety and reduce work load. It paves a way to live a happy and ache free life which is loved by humans. Today's technology is mind-blowing in the sense we are in a range of operating a toy from earth to mars, hence we are implementing drones.

Using drones, we are going to board pilots from one ship to another.





**General: -**

- ❖ Ship motion plays a major role while boarding a pilot. In fact, the risk increases when the ship shows too much motion while boarding a pilot.
- ❖ Poor maintenance of places or equipment in bad condition causes casualties.



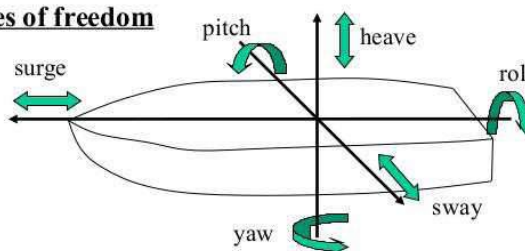
**Types of motion in ships:-**

- |      |       |
|------|-------|
| I.   | Heave |
| II.  | Sway  |
| III. | Surge |
| IV.  | Roll  |
| V.   | Pitch |
| VI.  | Yaw   |

**Ship Motion**

Rigid Body Motion of a Ship

6 degrees of freedom



- **Translational motion:** surge, sway, heave
- **Rotational motion:** roll, pitch, yaw
- **Simple harmonic motion:** heave, pitch, roll

**HEAVE:**

Heave is a linear vertical (up/down) motion; excessive downward heave can swamp a ship.

**SWAY:**

The linear transverse (side-to-side or port-starboard) motion. This motion is generated directly either by the water and wind currents exerting forces against the hull or by the ship's own propulsion; or indirectly by the inertia of the ship while turning. This movement can be compared to the vessel's drift from its course

**SURGE:**

The linear longitudinal (front/back or bow/stern) motion imparted by maritime conditions.

**Roll:**

The tilting rotation of a vessel about its longitudinal/X (front-back or bow-stern) axis. An offset or deviation from normal on this axis is referred to as list or heel. Heel refers to an offset that is intentional or expected, as caused by wind pressure on sails, turning, or other crew actions. The rolling motion towards a steady state (or list) angle due to the ship's own weight distribution is referred in marine engineering as heel. List normally



refers to an unintentional or unexpected offset, as caused by flooding, battle damage, shifting cargo, etc

**Pitch:**

The up/down rotation of a vessel about its transverse/Y (side-to-side or port-starboard) axis. An offset or deviation from normal on this axis is referred to as trim or out of trim.

**Yaw:**

The turning rotation of a vessel about its vertical/Z axis. An offset or deviation from normal on this axis is referred to as deviation or set. This is referred to as the heading of the boat relative to a magnetic compass (or true heading if referenced to the true north pole); it also affects the bearing.

**ABOUT DRONES:**

An American Engineer Abraham Karem invented the UAV (unmanned aerial vehicle) is also known as drone. Drones are designed for military purpose, on later days it plays role in many important fields.

It is an aircraft without human pilot, which have additionally ground based controller and a system of communications.

Drones use their rotors-which consist of propeller attached to a motor-to hover, meaning the downward thrust of the drone is equal to the gravitational pull working against it.

**TYPES: -**

There are nearly 14 types drones are using in the world. Depending upon the usage of number of rotors and specific design for the specific purpose they have divided.

- 1) Single-Rotor drones
- 2) Multi-Rotor drones
- 3) Fixed –Wing drones
- 4) Fixed-Wing Hybrid drones
- 5) Small drones
- 6) Micro drones
- 7) Tactical drone
- 8) Reconnaissance drone
- 9) Large combat drones
- 10) Non-Combat Large drones
- 11) Target and Decoy drones
- 12) GPS Drones
- 13) Photography drones
- 14) Racing drone

**2. Designing: -**

While using a drone we must make sure the stability and centre of gravity of the drone.

Providing a space in the middle area can allow the pilot to sit on it and then we can add a seat to it.

Use of dur-aluminium on all solid metal can reduce the weight.

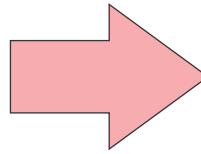
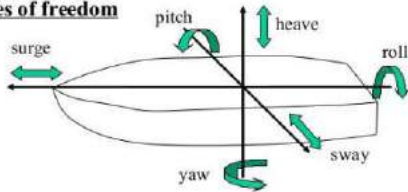
The main thing in here is motors. As the rpm is high the flight of drone is maximum.



### Ship Motion

#### Rigid Body Motion of a Ship

#### 6 degrees of freedom



The drone motors consist of two clockwise and two counter clockwise at a rate of 2205-2300kv.

The motor should be extremely powerful and capable of carrying 300kg.

The lifespan of the motor should be increased such a way that it last longer and work even better.

As usual this is also operated through remote control.[as far as 14km]

The battery should be in an advanced way such that the charge last longer.

NOTE; {We are moving in a age where nuclear batteries are getting into business, so may be we can use it}

The main thing is comfort of pilots and safety of him.

#### ADDITIONAL: -

When the drones fail in the air we are implementing the technique of auto eject option in the drone.

While welding the seats itself we must set a rod and fix with a button, when it is pressed, the seat falls off. As the pilots are wearing life jackets they will float even when the pilot falls down in sea.

#### Procedure: -

Move the small boat that is used to board a pilot at a safe distance from the big ship. Since both the boats are moving, they must maintain a safe distance from each other. In the meantime, the pilots should make their arrangements like wearing a life jacket getting on the drone. The drone driver must hold a licence to drive the drone. Getting to the safest distance we can make the pilot to drive from small boat to big ship or vice versa. One of the most important things is PPE equipment in this. While flying we need to make sure that the pilot stays still and does not make any unwanted movements. And we hope the projects becomes a success.



#### FOR SAFETY: -

We need make a toy human just as we do for death sentence criminals. The weight must be more than 70kgs in a sitting position and try the experiments, thus no deaths occur.

#### CASE HISTORY: -

Unexpected death of pilot from ladder while boarding the ship

A bulk carrier in ballast was making way at 7 knots in a traffic separation scheme (TSS). The pilot ladder was being prepared on the port (lee) side by the Chief Officer along with the bosun and three other crew. As the vessel exceeded the 9m height criterion, the pilot ladder had to be rigged in conjunction with the accommodation ladder, located abreast of cargo hold no. 4.

It was dark, the overside floodlight was switched on to permit the crew on deck to work safely. The pilot ladder was lowered over the ship's side and the accommodation ladder was swung out and rigged. The bosun went down the accommodation ladder to the lower platform to lash the pilot ladder to the ship's hull. The vessel was experiencing rough seas with winds gusting at 50 knots and a wave height of between 2m and 3m. There





was reportedly no rolling or pitching, but the bosun was not wearing a lifejacket nor was he secured by a safety line. He then returned to the main deck, collected another rope and again descended the accommodation ladder to fasten the ladder platform to the pilot ladder. Soon after, a loud yell was heard from below. The bosun was seen in the water and the man overboard (MOB) alarm was raised. It was now 01.45. A lifebuoy with a self-igniting light was thrown overboard immediately. A second lifebuoy with light was also released. Upon hearing the MOB alert, the OOW rushed to the port bridge wing and released the bridge wing lifebuoy. He then pressed the event key on the ECDIS as a reference point (MOB) on the chart. Meanwhile, the Master reduced speed informed local VTS on the VHF and requested permission to turn the vessel back for rescue operations. The general alarm was sounded and a MOB was announced through the public address system. Lookouts were posted on each side of the vessel and the rest of the crew members were mustered at the muster station. By 02.00, the vessel was on a reciprocal course of the TSS. Three lighted buoys were sighted but the crew members could not find the victim. After some searching, the Master made a request to VTS to arrange for local search and rescue units on scene and their vessel to return to an anchorage area so as not to hamper navigation of other vessels in the TSS. At 03.15, the local Coast Guard began to search and rescue operations at the site of the MOB position. However, despite the rescue efforts of the Coast Guard, the victim was not found. {on board the ships all the casualties mostly due to not following the rules or preventive measures}

#### **Advantages:**

- There no need to make two boats closer.
- No need for special training or skills to sit and fly.
- Safety is 90% sure.
- The seat is made up of foam board and even when the pilot falls from that height (20m) into the water, it is safe.
- The rod used are made of dur-aluminum an alloy of aluminum, that is used in flights, for less weight and increased efficiency.
- During casualties, getting a pilot out of the ship is a challenging job, but using this in place of seat we can add stretcher just by increasing the efficiency.
- Cost efficient when compared to the insurance amount.
- Nominal amount of drones must be placed at each port.
- When transferring a pilot from moving bodies we can except almost safety.
- The rolling motion and sea roughness will not affect the boarding of ships.

#### **Disadvantages:**

- During heavy storms and cyclones drone cannot be operated.
- An area of 5x5 flat surface must be available while boarding and also landing.
- The operator must be license holder, alcoholic must not do the remote-control job.
- Always the belts and other stuffs like, rod and drone wings must be in good condition.
- All the companies must afford for this, they should not think on investing money for the safety of the crew.
- Since many scientific equipment are developed so advance, the range of the drones must be improved more efficiently.
- All the person who flies in drones should be in normal condition, and should not be drunken{drowsy} while flying.
- Few of the features are yet to be designed and its in the hands of our engineers.
- The charging must be taken care of at all times.
- The time of fly depends on the motors.



# Maritime Pilot ambassadors and cadets with Trophies



## ALL INDIA MARITIME PILOTS' ASSOCIATION

Team of Meri Mumbai with Trophies and campus Director Rear Admiral Sameer Saran Lal and Deputy registrar Mr. Harish Upadhyay



CONGRATULATIONS TO TEAM MERI MUMBAI FOR PARTICIPATION ON SAMIPTA AND BRINGING TO FORE THE CAPABILITIES OF CADETS TO THINK OUT OF BOX ON PILOT TRANSFER RISK MITIGATION.



## ALL INDIA MARITIME PILOTS' ASSOCIATION

IMU kolkata team with AIMPA - SAMIPTA - IMU innovation award on Risk Mitigation on pilot ladder.



SAMIPTA (THE COMPETITION) SAW 350+ PARTICIPANTS, 113 RESEARCH PAPERS FROM MTIS ACROSS INDIA. OUR PAPER TITLED "RETROFITTABLE SCISSOR PILOT BRIDGE WITH ELECTROMAGNETIC HULL CLINGING ARRANGEMENT" WON THE **Prime Innovation Award** AND FINISHED IN TOP 4.



## ALL INDIA MARITIME PILOTS' ASSOCIATION

SAMIPTA- Team RLINS, winner of top category innovation trophy.



THESE GREAT YOUNG MINDS OF INDIA ARE THE FUTURE OF SHIPPING. THESE CADETS DID LOT OF OUT OF BOX THINKING FOR PILOT TRANSFER RISK MITIGATION. THE AWARENESS SAMIPTA BROUGHT IN CADETS ABOUT PILOT SAFETY IS GREAT.



## ALL INDIA MARITIME PILOTS' ASSOCIATION

SAMIPTA- Proud cadets of MANET Pune of top 10 Innovation Category award



WE ARE PROUD OF THE BEST MINDS IN THE INDUSTRY AND LOOKING AT FUTURE OF THE SHIPPING THESE MINDS WOULD BE LEADING. IMU- AIMPA ORGANISED SAMIPTA TO FIND YOUNG MINDS TO DO RISK MITIGATION ON PILOT TRANSFER.





 **IMU CHENNAI CAMPUS**   
**ALL INDIA MARITIME PILOTS' ASSOCIATION**



PROUD PARTICIPANTS OF SAMIPTA TOP 10 OF IMU CHENNAI WITH INNOVATION AWARD TROPHIES AND MEMENTOS. KUDOS TO IMU CHENNAI CAMPUS FOR THIS FEAT AND MAKING CADETS THINK OUT OF BOX FOR A FANTASTIC COMPETITION WHICH HIGHLIGHTED SO MANY RISKS FACTORS IN PILOT TRANSFER AMONG STUDENTS. TOP 10 PARTICIPANTS WITH HOD DR K SIVASWAMI.

 **ALL INDIA MARITIME PILOTS' ASSOCIATION** 



Honouring Capt. Shailendra Kholi (Ex DC MBPT) for his selfless service as a Judge for the SAMIPTA Competition





# All India Maritime Pilots' Association AIMPA



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