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**Capability Threat from 'unfriendly drones'**



# Agenda

- **Introduction**
- **Capabilities Of Drones**
  - Fixed Wing
  - Multi Rotor
- **Ways of Targeting Through Drones**
- **Threat**
- **Recent Incidents**
- **Conclusion**

# Introduction – Military Weapons



# Capabilities – Fixed-Wing Drone



## Advantages:



- Fly significantly longer
- Map larger areas & expand into remote mapping.
- Spend less time on-site.
- Can fly in heavy weather conditions.
- Increase your project capacity.
- Gain flexibility with modular payloads.
- Expand your corridor mapping capabilities.
- Increase your flight safety.

## Disadvantages:



- Fixed wing drones can be expensive.
- Training is usually required to fly them
- launcher is needed to get a fixed wing drone into the air.
- They are more difficult to land than the two other categories of drones.
- And they can only move forward and can't hover in the air.



# Capabilities – Multi Rotor Drone



## Advantages:



- Multi-rotor drones are easy control and maneuver
- Easy take-off and landing no need for space
- They have the ability to hover
- They can take off and land vertically
- And are very stable.

## Disadvantages:



- limited flying time (usually 15-30 minutes)
- They only have small payload capabilities
- And most of the drone's energy is spent on fighting gravity and stabilizing in the air
- Vulnerability to weather conditions
- Altitude limitations

# Threat – Commercial Drones





# Threat – Drones Operating In Our AOO



Wing Loong II



Bayraktar TB2



CH-4B Rainbow



# Threat – Drones Operating In Our AOO



Mohajer	
Crew	2
Length/wing span	7.5m/10m
Payload	100Kg/150Kg
M speed/C speed	200Km/130km
Endurance	12 hours
Weapons can be added	



Shaheed - 136	
Crew	1
Length/wing span	3.5m/2.5m
Payload	40Kg/55Kg
M speed/C speed	185Km/100km
Endurance	40 Mins
The nose section contains the warhead (Kamikaze)	



Gazza	
Crew	2
Length/wing span	10 m/21.5m
Payload	500Kg
Cruise speed	350 km
Endurance	35 hours
13 bombs and 500 kg of electronic equipment	



Karrar	
Crew	1
Length/wing span	4 m/2.5m
Payload	227Kg
Max speed	900 Km
Endurance	50 Mins
Can carry missiles or bombs	



Kaman 12	
Crew	1
Length/wing span	2.8m/3.25m
Payload	40Kg
M speed/C speed	250Km/305km
Endurance	1 – 1.5 hours
explosives can be added	



Kian	
Crew	1
Length/wing span	4.5m/4 m
Payload	40Kg
Max speed	500Km
Endurance	1.5 – 2 hours
Long range ISR + (Kamikaze)	



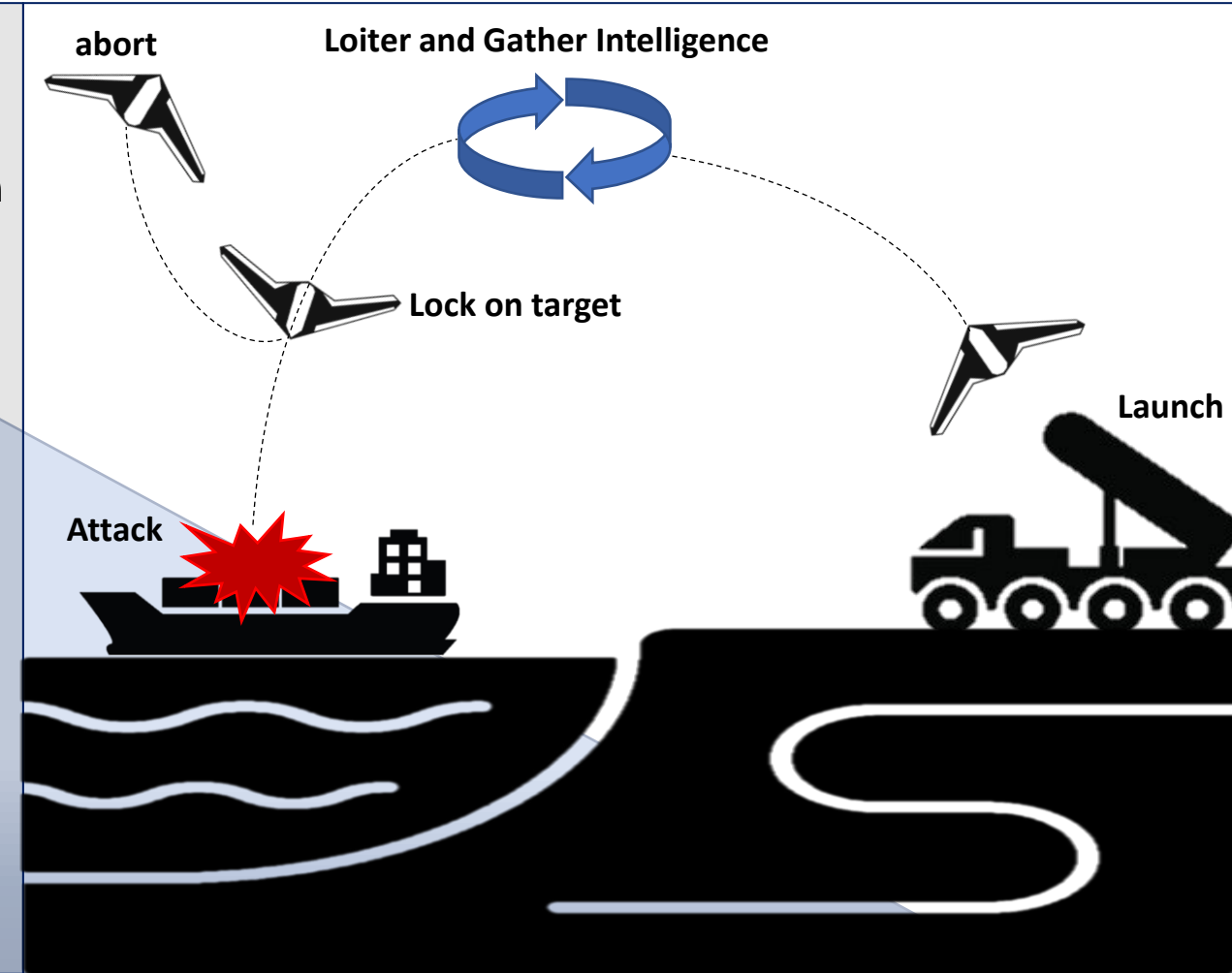
# Targeting Process By Aerial Drones

## GPS Methods Through Way Points

- This method can be used against static Ships standing on port or mooring. The GPS location is fed into the drone.

## Operator Control Drones

- Drones like the Shaheed's are called loitering munitions by the military because when used at short range, they can hover over an area and then hit a target on an operator's command.
- The operator can possibly control drones from a floating platform or another boat or ship.
- The platform from where they are operating the drones will likely be position within the visual range of the target.



# Recent Incidents



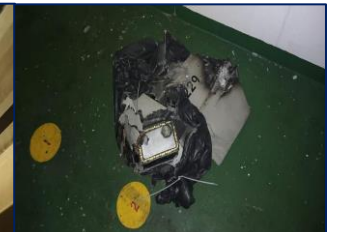
The Abqaiq facility



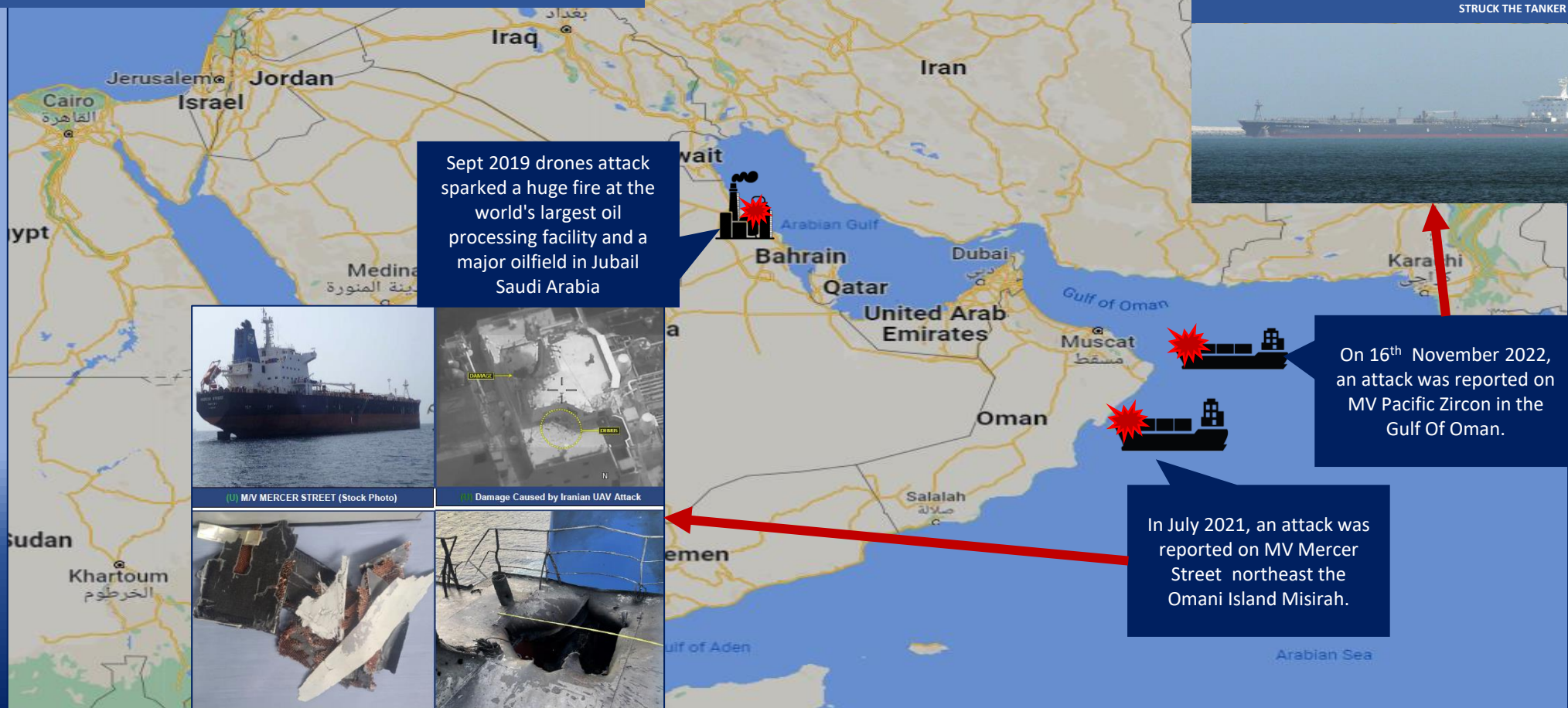
Saudi Arabia displayed drone and missile debris



Damage to the tanker ship Pacific Zircon



THE REMAINS OF A DRONE THAT STRUCK THE TANKER PACIFIC ZIRCON



Sept 2019 drones attack sparked a huge fire at the world's largest oil processing facility and a major oilfield in Jubail Saudi Arabia



(U) M/V MERCER STREET (Stock Photo)



(U) Damage Caused by Iranian UAV Attack



(U) Debris From Failed Iranian UAV Attack



(U) Iranian UAV Impact Location

On 16<sup>th</sup> November 2022, an attack was reported on MV Pacific Zircon in the Gulf Of Oman.

In July 2021, an attack was reported on MV Mercer Street northeast the Omani Island Misirah.





# Conclusion

- One way attack drones can carry up to a 40-kilogram (88-pound) explosive charge which is may not enough to destroy the MV, but a real threat to the crew
- Attacks on MVs are being conducted due to their any kind of link with the state in a conflict with another country.
- With the advent in technology and easy availability or access to these systems, we will likely to see an increase threat of these systems from both state and non-state actors.
- Countries have developed multiple anti-drone systems, and despite these multiple capabilities, the technology of anti-drone air systems does not in any way provide a complete response to the threats
- Situation demands a careful examination of the threat and formulation of its remedies for the merchant community
- Although multiple options are available in the form of onboard jammers or some hard kill measures, however there is a need of a proper study and research for the adoption of anti-drones measures by the merchant vessel community.



**Q & A**