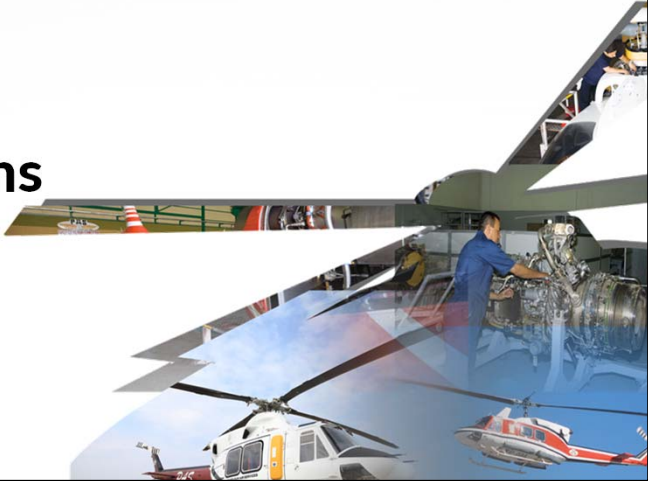




PETROLEUM AIR SERVICES
www.pas.com.eg



Helicopter Operations In Hazardous Environments

Capt. Hesham El-Hamahmy



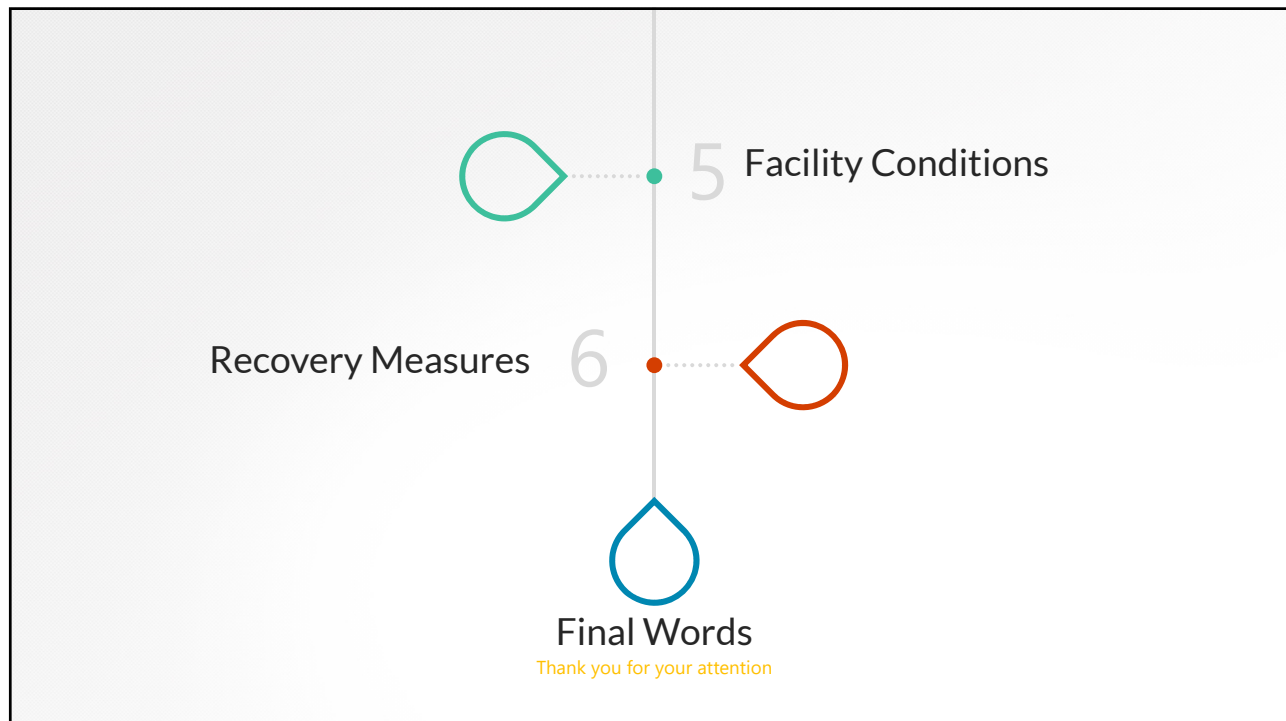
WELCOME MESSAGE

“ Great work will always be done to improve safety and will continue to be achieved for the many generations to come.

No doubt we owe it our clients, our staff and our families to provide the best service and quality. This will be remembered by many people after us “

Captain Hesham El-Hamahmy MSc (Aviation Safety),
Uni Newcastle (Australia)
Corporate Safety General Manager

Let's start!



Corporate Overview



PAS is Egypt's leading provider of Helicopter Offshore Services

Established in 1983

Under Egyptian Investment Law
8 Aircraft

Egyptian Joint Stock Company

- Egyptian General Petroleum Corporation (75%)
- Bristow Group (25%) - PAS and Bristow have a Joint venture agreement for search and rescue services



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PAS Services

National and International Services

Helicopters and Fixed Wing Aircraft for Oil & Gas Companies, National Projects, Governmental Services.

Recently added the mechanical wash for electric towers and power lines to our operations



Transport



Aviation Technical Support / Maintenance



Charter and Scheduled Airline Services

- Medical / Emergency Evacuations
- Sling Load Operations

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Operational Overview



Achievements and Customers

- IATA Operational Safety Audit (IOSA)
- Third Country Operator (EASA)
- Repetitive Local Authority and Customer Audits – Outstanding results
- International Air Safety Investigator
- Kenyon Emergency Services Platinum Membership



International -- National Companies
operating in Egypt such as:

National Companies:

- Gupco (BP)
- PETROBEL (ENI)
- AGIBA (ENI)
- BAPETCO (Shell)
- Burullus (Shell)
- KHALDA (Apache)
- Zeitco (Dana)
- SUCO (Deminex)
- Petrojet
- Gasco
- GPC



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Operations into Hazardous Environments

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**“If you wish to
control the future,
study the past.”**

Confucius (551 B.C. to 479 B.C.)



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Safety is a TOP Priority

UNFORTUNATELY, INCIDENTS AND ACCIDENTS WILL CONTINUE TO HAPPEN

- Basis for all of our decision-making process
- Encourage an open-reporting to Hazards, to keep system proactive
- Constant review of all our SMS processes and determine methods for optimization to suit every operation



Sharing Lessons learnt across the industry – Common Goal / Mission

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Why Helicopters

- ✓ Land in any area with Limited Access
- ✓ The helicopter's evolution, into a routine "workhorse"
- ✓ Harsh operating environment
- ✓ Helicopter Manoeuvrability (Confined area Operation)
- ✓ Payloads can be sling loaded quickly

Alternative Transport Methods

- ✓ Land Transport
- ✓ Marine Transport

Not an efficient means of transport



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Helicopter Hazards

Nature of Helicopter, produces its own hazards...

- ✓ Highest Risks with spinning blades, downwash and recirculation of air
- ✓ Dust, Projectiles (FOD)
- ✓ Static electricity is produced from spinning blades

Minimise by....

- ✓ Loose objects must be secured
- ✓ Control of Passengers and Cargo
- ✓ Wires must be earthed prior to contact
- ✓ Using the appropriate PPEs
- ✓ Briefings and Communication



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The Safer Option

Helicopter operations are vital

- ✓ Perform many tasks efficiently (Medical and Emergency Evacuations, Search and Rescue - immediate response to needs)
- ✓ Highest Risk operations (cause many fatalities) – Many case studies and reviews have been done to mitigate the risks
- ✓ Logistics Support – Deliver needed materials or medical supplies
- ✓ Emergency support – Timely response and direct to Hospitals
- ✓ Operations in much Harsher Weather Environments (within the prescribed limits)



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Helicopters and Humanitarian Aid

Allows reduced response time during any emergency, ensuring that supplies and personnel are rapidly mobilized to areas that are inaccessible to regular aircraft

Day and Night under all Weather Conditions

Natural Disasters

Consequences of natural hazards, for example earthquakes, floods, droughts, hurricanes, etc.

Man-made disasters

The result of things going wrong and include blackouts, hazardous material spills, air pollution, etc.

Primary objective - Save lives, provide material and logistic assistance to people in need.



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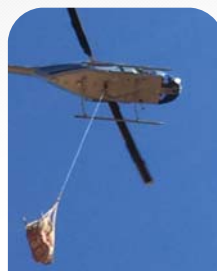
Types of Operations



Passengers /
Cargo



Medical
Evacuation



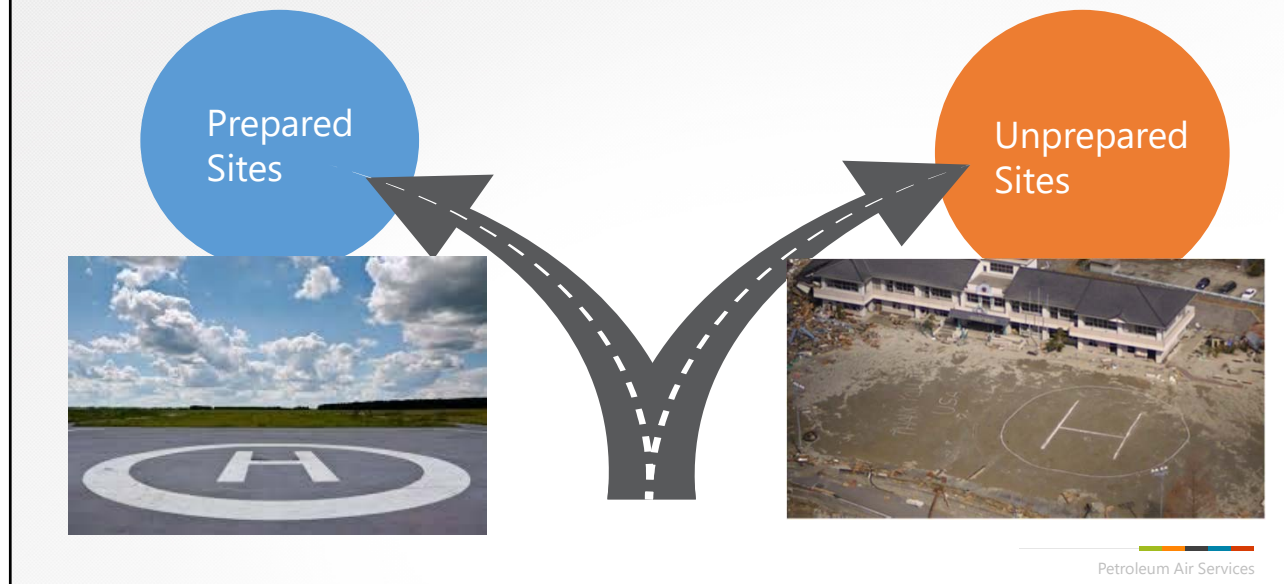
Sling Loads



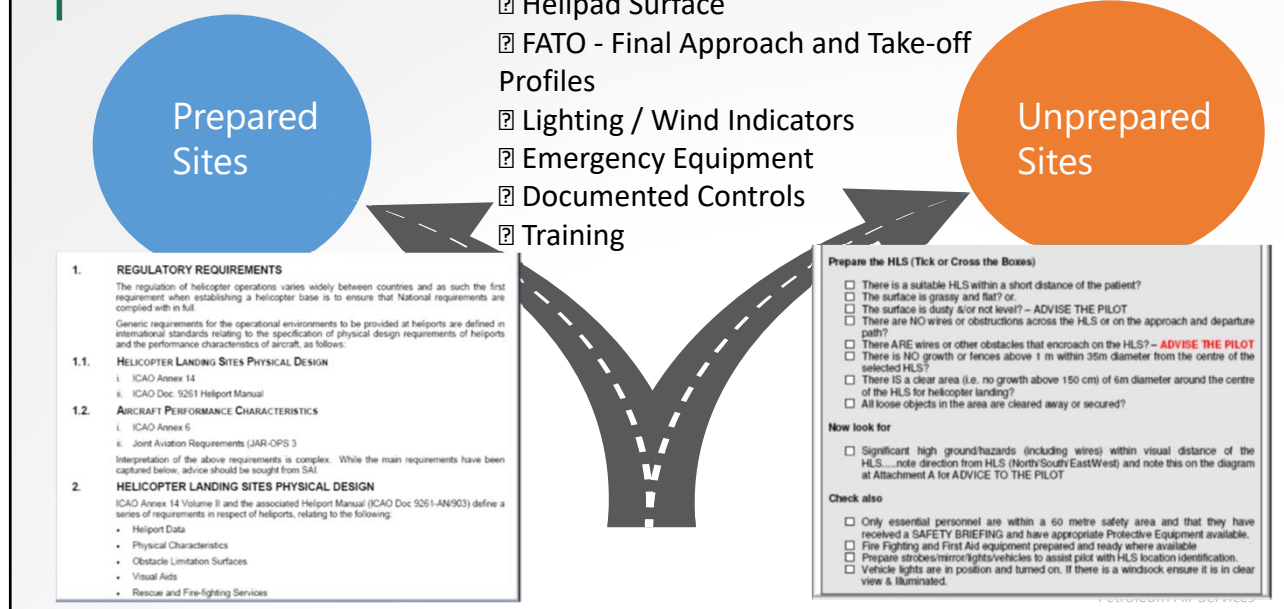
Search and
Rescue

Different types of Operations – Have their Unique Hazards

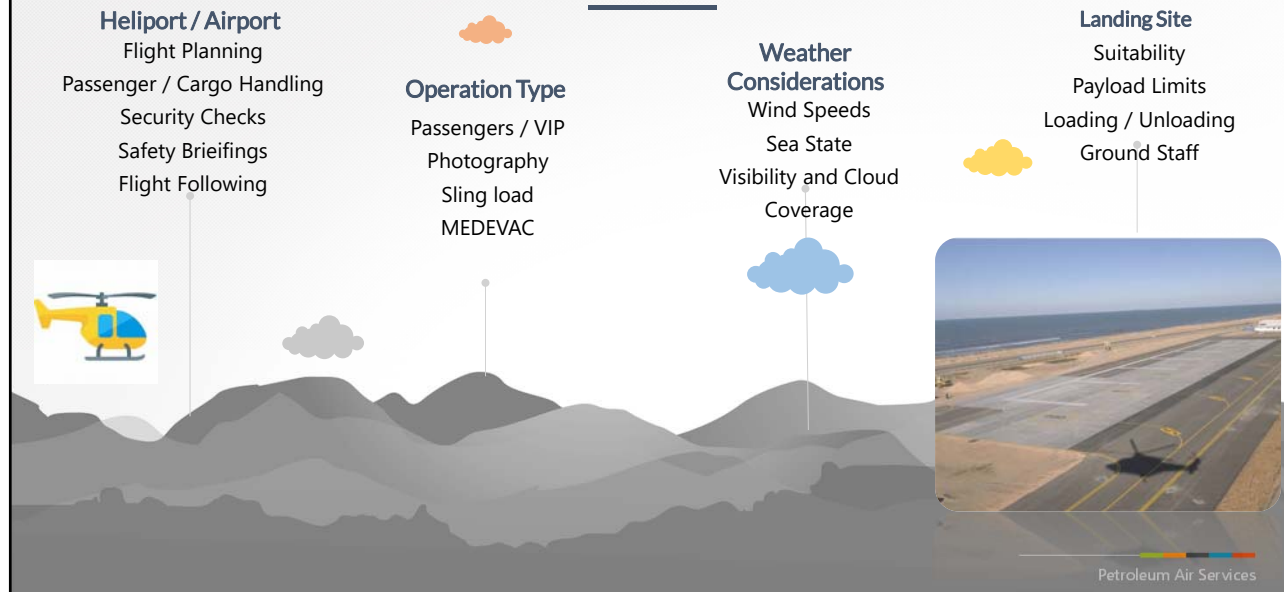
Areas of Operation



Differences



Processes in Helicopter Transport



Operational Hazards

Time Pressure

Operations outside aircraft limits

Hard landings

Additional stress on flight crew and staff (pre-flight planning and mission preparation are compressed)

Can lead to incomplete planning or inappropriate decisions.

Environmental Factors

Operations take place at night and often in poor weather.

Further pressure to carry out the mission regardless of the environmental and geographic conditions.

Accidents are weather related, with most occurring because of reduced visibility and IMC (en-route phase in mission).

Inaccurate or out of date weather forecasts contribute to the risk.

Controlled Flight Into Terrain

Unstable Approaches / Loss of control

The take-off or landing phases of flight, as well as collision with objects (for example wires and towers).

Communications

Lack of communications due to remote locations and terrain can increase the risk.

Lack of Emergency Services

Technical Difficulties

Limited Maintenance capabilities

Mitigation / Defences



Specific Regulations

Minimum safe operating standards
Risk reduction techniques for specific operations

Technical

Accurate navigation systems
Night Vision Imagery
Enhanced Ground Proximity Warning Systems

Meteorology

Accurate means of observing, recording, and reporting timely local weather conditions, including cloud base and visibility.

Ground Support

Portable Lighting, Passenger control, Fire fighting equipment, etc

Risk Management

Risk assessment must include, but not be limited to, terrain and obstacle awareness, location, aircraft type and type and conditions of operations, pilot fatigue, etc.



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Flight Tracking / Following

24/7 Flight Watch

Up-to-date Information
Decision Making Processes

Satellite Communications

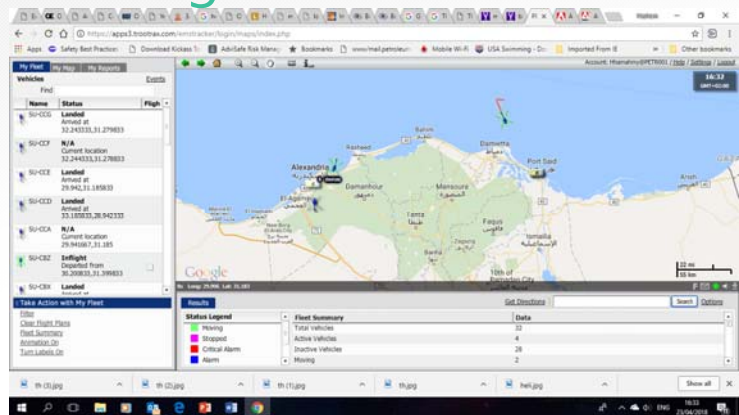
Iridium
Phone and Text Messaging

Trend Monitoring

Aircraft Performance and Quality
Live Aircraft Data available

Monitor Routes

Provide alternate routes for safer operations



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Safety Improvements

Future improvements in helicopter safety are most likely to be achieved through continuous improvements to:

- ✓ Helicopter Design and Crash Survivability by aircraft manufacturers
- ✓ Increased use of helicopter onboard monitoring systems such as HUMS and FDM
- ✓ Improved maintenance of aircraft
- ✓ Influencing human factors that affect the behaviour of flight crew, ground staff, radio operators, logistics staff and others.
- ✓ Designing and operating heliports to take full account of operations on an installation.

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Facility Conditions

- Restricted Approach / Departure Profiles
- Prior familiarity with Landing Site
- Lack of compliance by heliport owners
- Lack of Security / Passenger Control

Remedy

- Reconnaissance Flights
- Conduct Periodic Inspections
- Suitable Aircraft type for operation
- Limitations set and communicated
- Security measures addressed ahead of operations



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Costs of a Inadequate Facility Management

Inadequate Safety can be extremely costly



Increase in Incidents or possible Accident
Injuries, fatalities, property damage



Loss of Business / Reputation
Loss of current or future stakeholders



Staff Security or Stability
Lack of commitment and high turn over

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Physical / Surface Characteristics

- ✓ Landing Area size / Diameter-Values
- ✓ Elevations
- ✓ Obstructions
 - ✓ Wires / Towers
 - ✓ Trees
- ✓ Confined Area
- ✓ Loose Objects / Dust / Sand
 - ✓ Brownout

Remedy

- ✓ Operational Limitations
- ✓ Payload
- ✓ Wind limits
- ✓ Aircraft type change



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Environmental Characteristics

- ✓ High Winds
 - ✓ Loose items
- ✓ Turbulence
 - ✓ Existing Buildings (Hangar/ Terminal/ Structures)
- ✓ Lack /Incorrect Weather Reporting



Remedy

- ✓ Operational Limitations
- ✓ Payload
- ✓ Wind limits
- ✓ Housekeeping
- ✓ Automatic Weather Systems

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Visual Aids

- ✓ Lack /Unclear marking
- ✓ Non-standard marking
- ✓ Non-standard lights



Remedy

- ✓ Standard marking
- ✓ Temporary Marking
- ✓ Portable lighting Specs



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Recovery Measures

- ✓ Unfamiliarity with Landing Site
- ✓ Inadequate Fire fighting equipment
- ✓ Lack of rescue equipment
- ✓ No Emergency plan or practised drills



Remedy

- ✓ Emergency response drills
- ✓ Personnel training and awareness
- ✓ Improved design specifications
- ✓ Crashworthy and Survivability Issues

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Competence / Training



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Final Word.....

Requires tremendous planning and management

- ✓ Minimise the risks involved with such sensitive operations
- ✓ Helicopters are a safe, effective and efficient means of transport
- ✓ Facilities are constructed to industry standards
- ✓ Sound and Robust SMS – Keep the system live and adding value
- ✓ Look outside for global industry best practice
- ✓ Assess the risks honestly and openly
- ✓ New technologies are introducing safer solutions to operations:
 - ✓ Facility Management
 - ✓ Helicopters
 - ✓ **Drones**



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Thank you for your Time