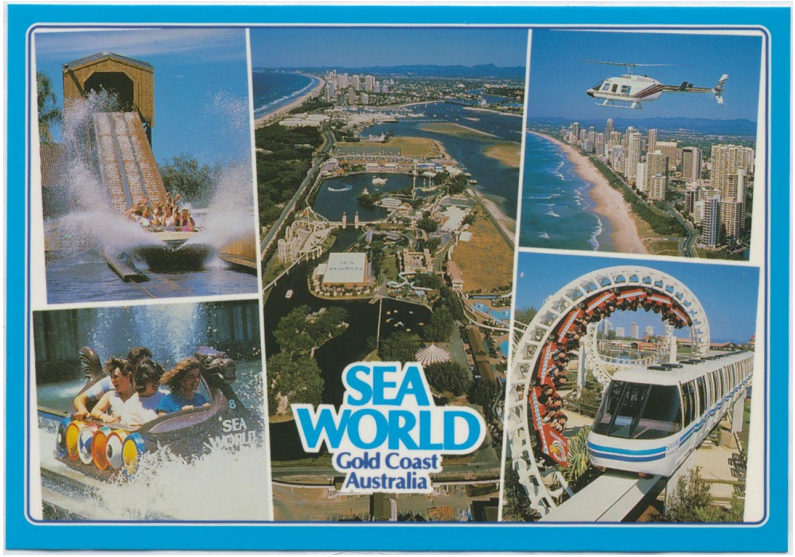
Approach to SMS in AO-2023-001

Peter Ayre
Senior Transport Safety Investigator

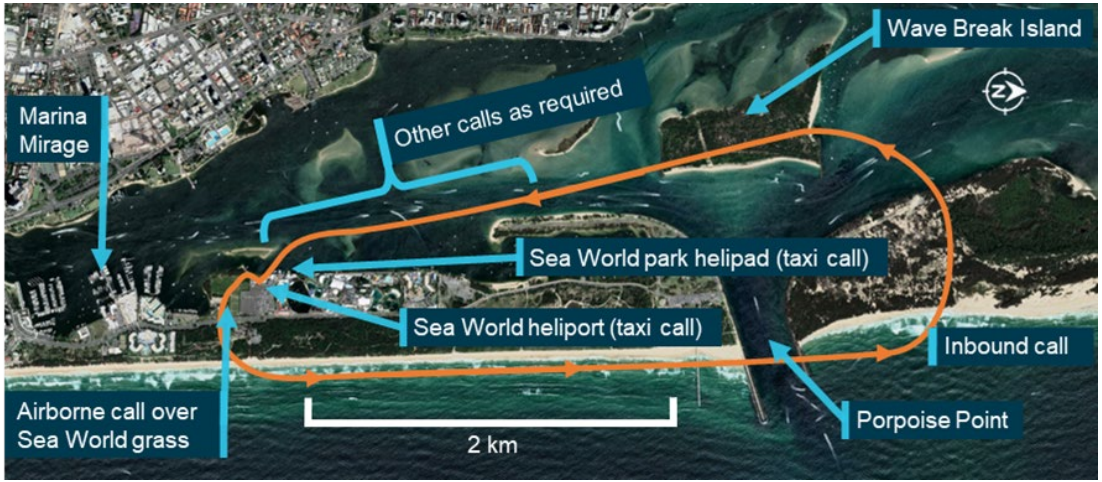
- Sea World Midair collision
  - Occurrence overview
  - Risk controls
  - Org influence
- Questions

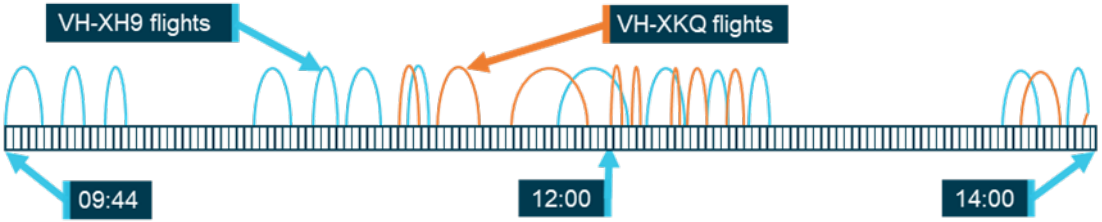
AO-2023-001

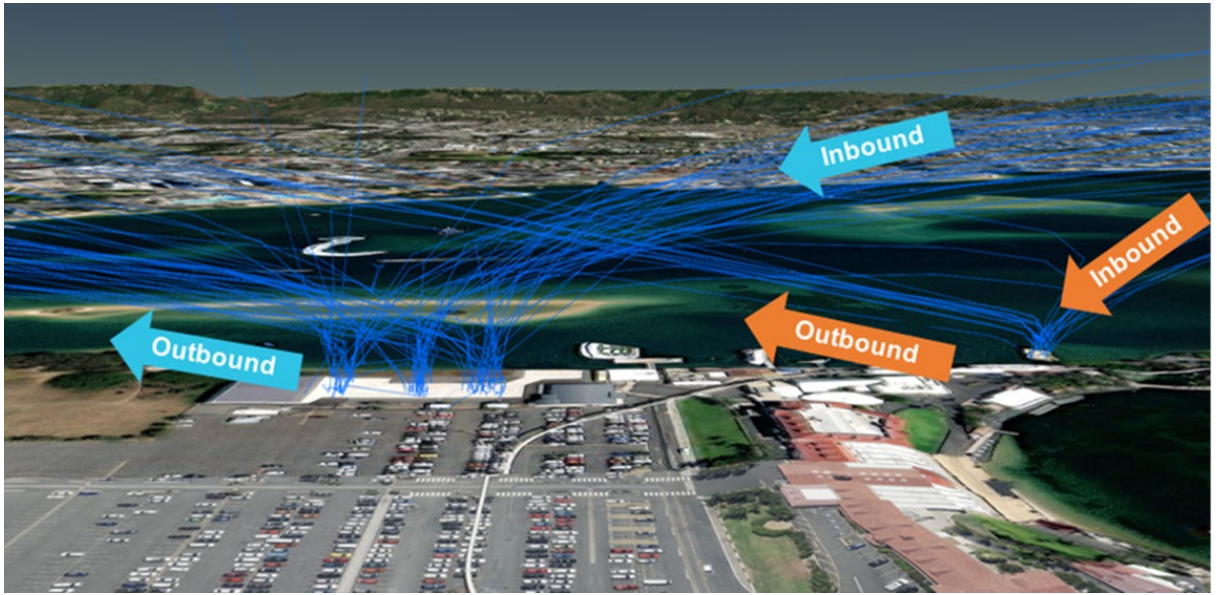
Midair collision involving Eurocopter EC130B4, VH-XH9, and Eurocopter EC130B4, VH-XKQ, near Main Beach, Gold Coast, Queensland, on 2 January 2023

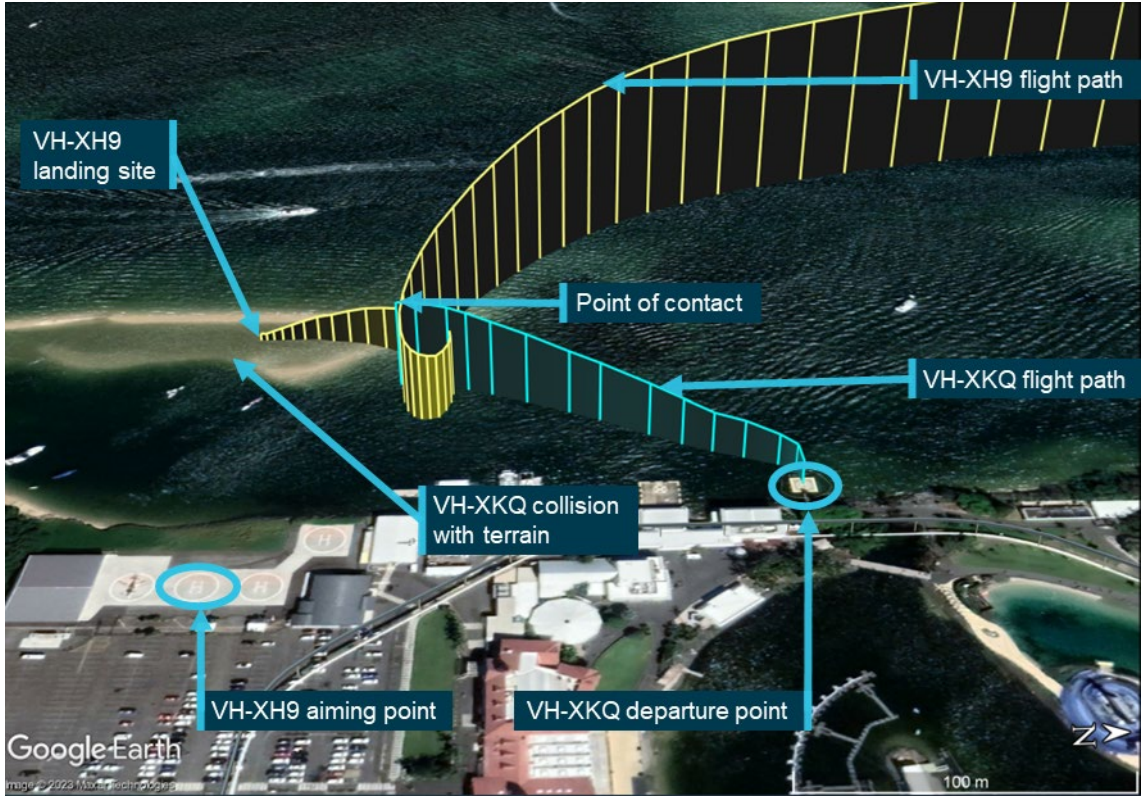


4 fatalities including 2 overseas citizens
6 serious injuries
3 minor
Extensive Media Attention
100+ witnesses
Coronial interest
Political interest


Wave Break Island
Marina Mirage
Other calls as required
Sea World park helipad (taxi call)
Sea World heliport (taxi call)
Inbound call
Airborne call over Sea World grass
Porpoise Point
2 km


VH-XH9 flights
VH-XKQ flights
09:44
12:00
14:00


Inbound
Inbound
Outbound
Outbound


VH-XH9 flight path
VH-XH9 landing site
Point of contact
VH-XKQ flight path
VH-XKQ collision with terrain
VH-XH9 aiming point
VH-XKQ departure point
Google Earth
100 m

Onsite phase

- 4-hour response
- 5 days
- 7 investigators
- Chief Commissioner + media team

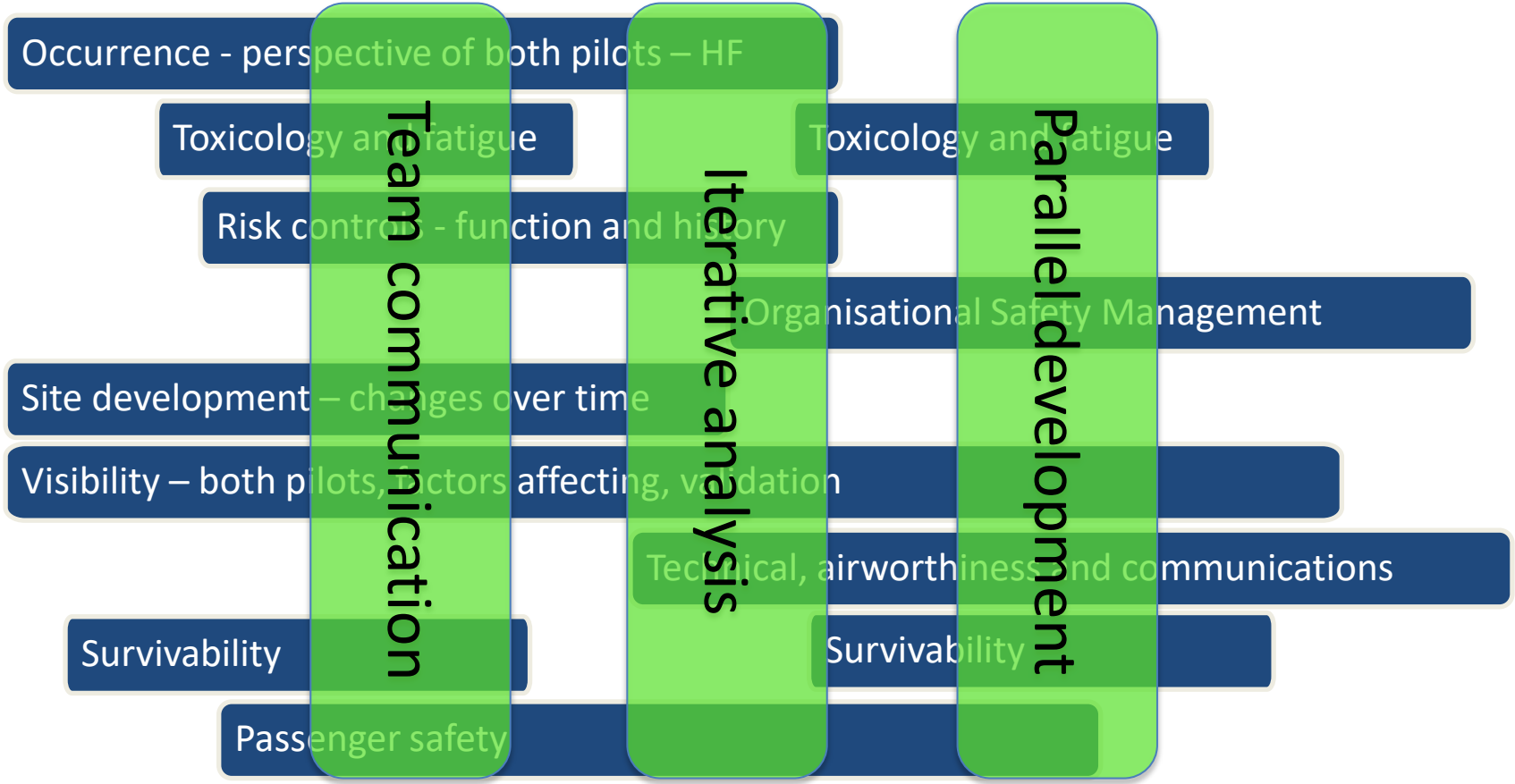
Questions

- Exposition
- What were hazards?
- How were they mitigated?
- Risk management plans?
- Hazard/incident registers?
- Oversight?

Investigation streams

- Occurrence - perspective of both pilots – HF
- Toxicology and fatigue
- Risk controls - function and history
- Organisational Safety Management
- Site development – changes over time
- Visibility – both pilots, factors affecting, validation
- Technical, airworthiness and communications
- Survivability
- Passenger safety

Investigation streams

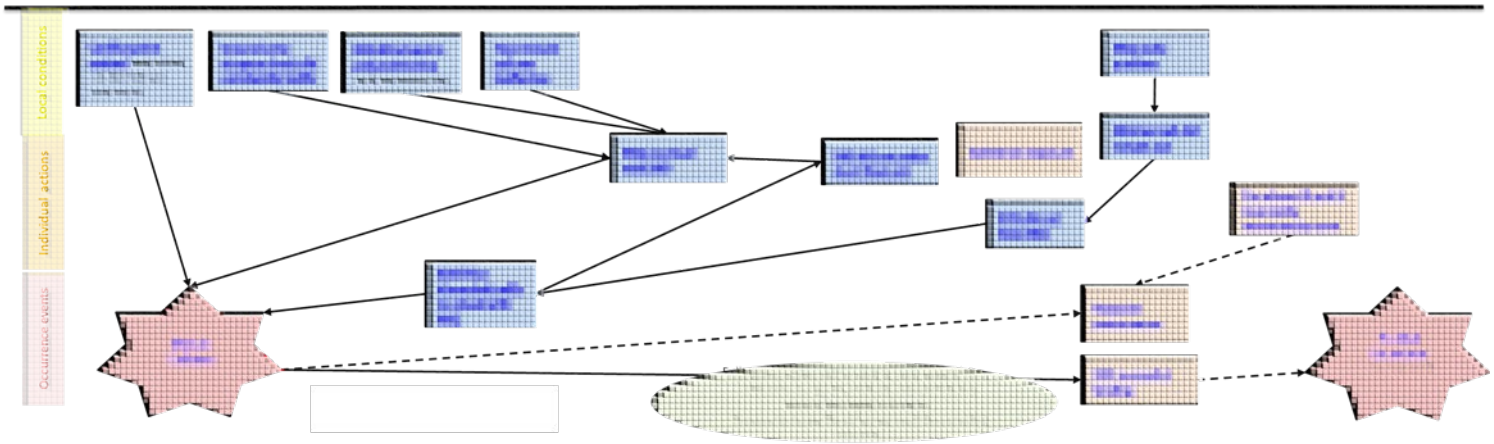


Bed down below the line

- Potential indicators of safety issues
- Must demonstrate that these things exist

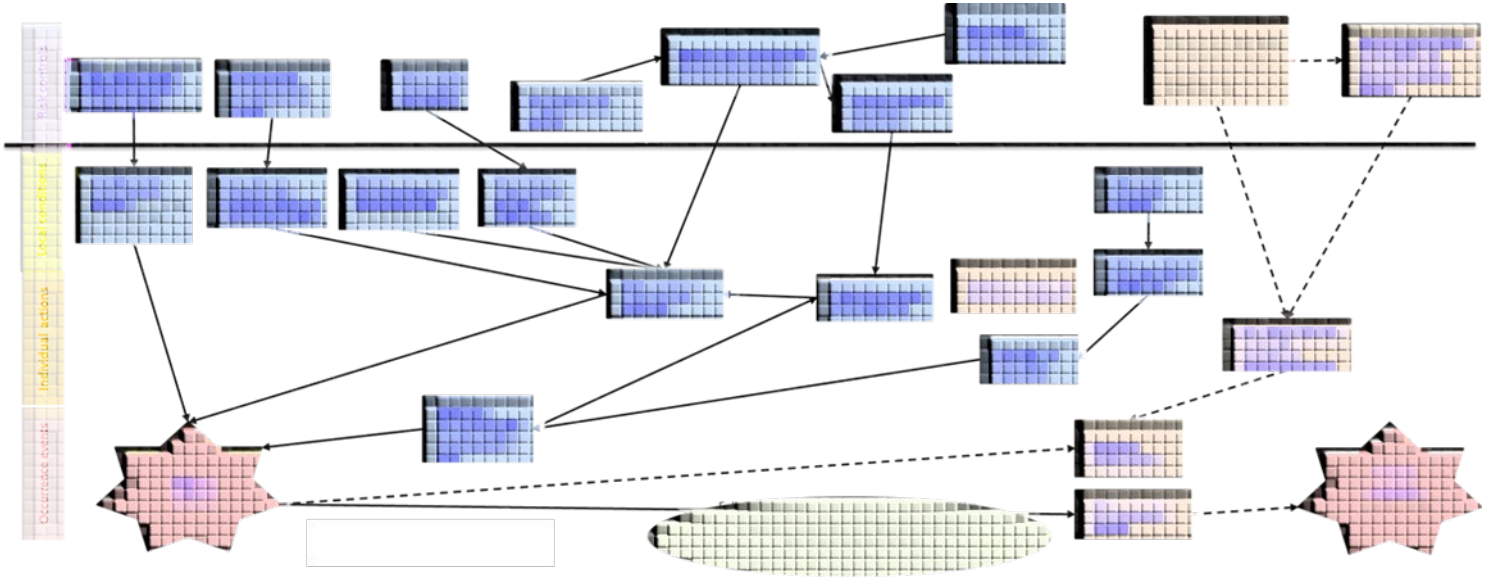
Evidence collection

- Witness statements
- Next of kin / survivors
- Video / CCTV
- Interviews
- Wreckage examination
- Records



Examine and establish risk control level

- How were risk controls developed?
- What was there to protect the controls?
- Were they breached, circumvented, or absent?



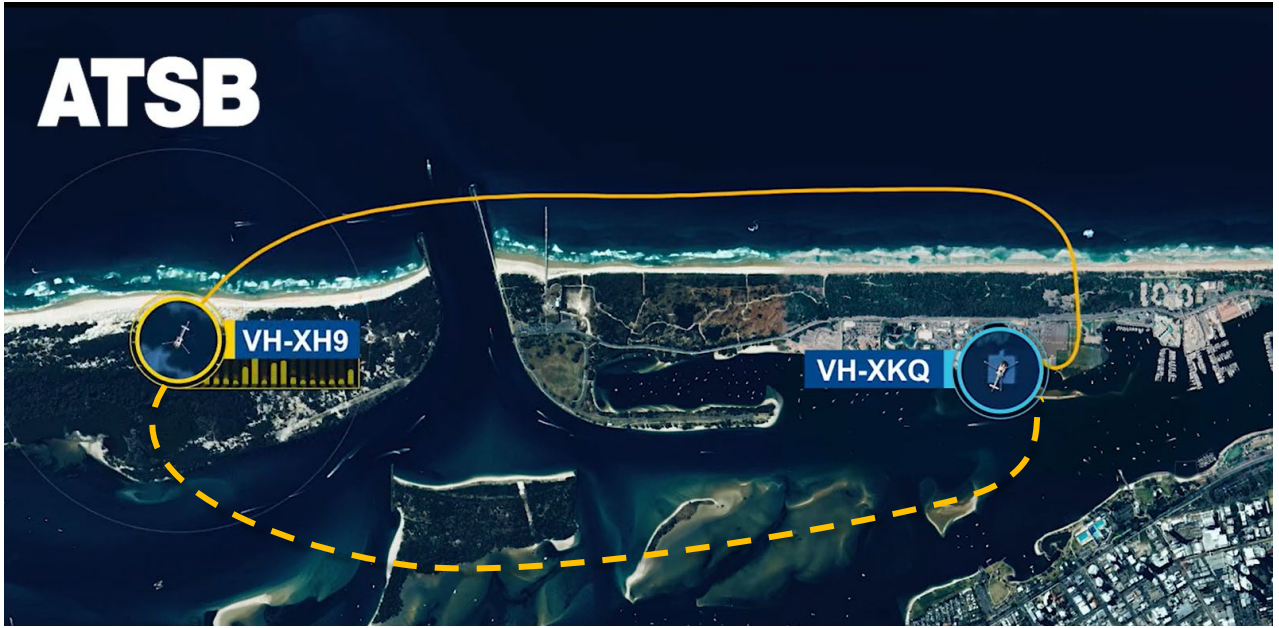
Breached
- assumptions
- testing

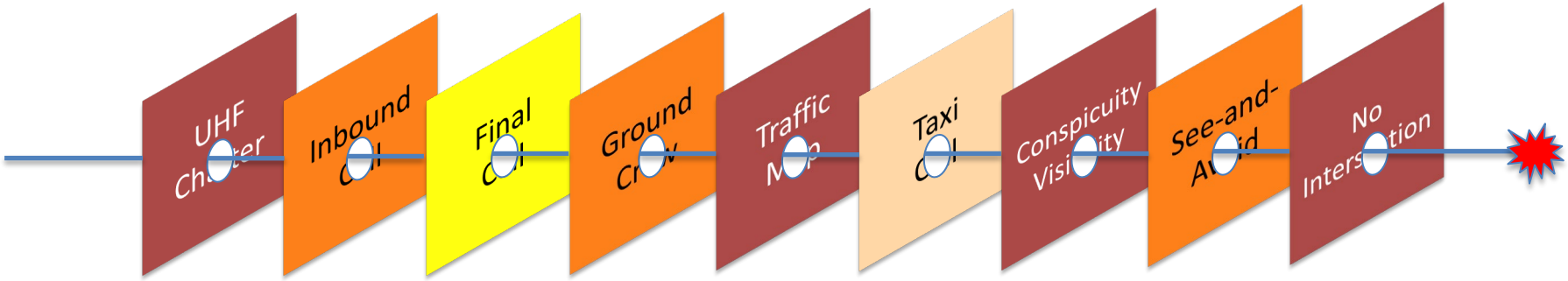
Circumvented
- violation
- optional
- inadequate control
- impractical control

Absent
- changed
- never existed

Evidence
- procedures
- interviews
  - current actors
  - past actors
- records

- Breached
- Circumvented
- Absent
- Tech fail





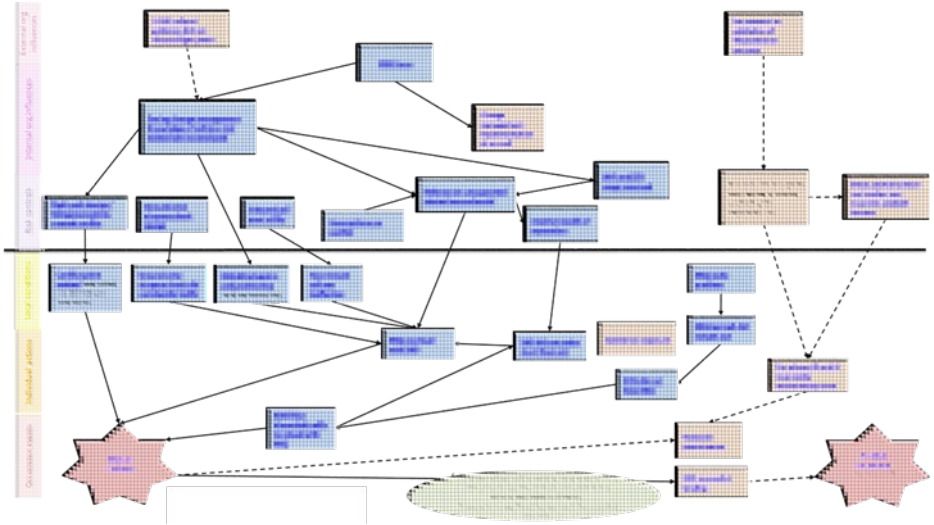
Describe Org - McKinsey 7s

- **Strategy**
  - What are they focussed on?
  - How are they enacting their aims?
  - What are senior managers expectations?
    - Of each other and crew
- **Structure (organisation)**
  - Departments
  - Chain of command
  - Decision making
  - Reporting requirements
- **Systems (processes)**
  - Processes and procedures
  - What are the issues?
  - What works what doesn't?
- **Style (Culture)**
  - What markers are there?
    - Reporting
    - Employee outlook
    - Senior manager involvement / focus
- **Staff**
  - Who is everyone?
  - Where are they?
  - What do they do?
- **Skills**
  - Experience in aspects of operation?
  - Experience in SMS?
  - Gaps?
- **Shared Values**
  - What drives them?

- **Style (Culture)**
  - customer service focus
  - CEO safety 6-1 mindset
  - low reporting
  - happy crew
- **Skills**
  - External business consultant to reconfigure functions
  - Experienced pilots
  - Experienced TAO
  - SMS implementation crew left
  - AGPO and CEO low apparent SMS involvement
  - New SM experience from different industry
    - DHS over AGR
  - Mixed experience in ground crew
- **Systems (processes)**
  - Focus on pax handling and product
    - At expense of aviation operations?
  - Minimised comms
  - Independent operation of pads (no coordination)
  - Rudimentary risk management
  - No site-specific separation procedures
  - Non-compliance with complacency procedures
- **Structure (organisation)**
  - Owner and CEO mainly off site
  - External (PHS) Quality support
  - AGPO managed whole company (time)
  - AGPO managed whole company (simple)
  - CEO owned all aviation decisions
  - Owner / CEO not involved in safety meetings
- **Staff**
  - 18 Staff – 5 pilots (+contractors)
  - 5 helicopters
  - PHS AGM - Audits
  - SM recently appointed
- **Strategy**
  - Quality cues in facility and helicopter
  - Compliance
    - Rewrite of exposition (time sink)
  - High volume, smooth handling
  - Maximise passenger spending
- **Shared Values**
  - Profit motivated
  - Tight ship

Describe oranisational influence in risk controls

- Detail assumptions in overall risk picture
- Detail assumptions in controls
- Identify inadequate / impractical controls
- Show absent controls
- Identify impact of changes
- Separate from individual actions

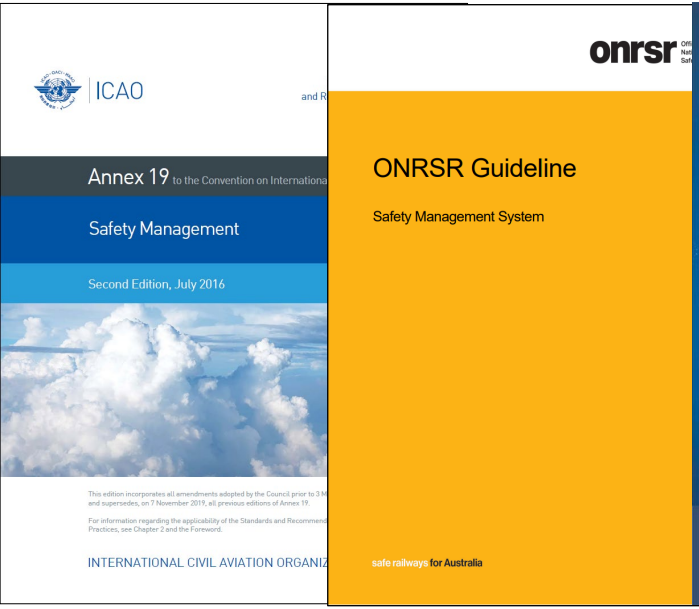


Have a framework

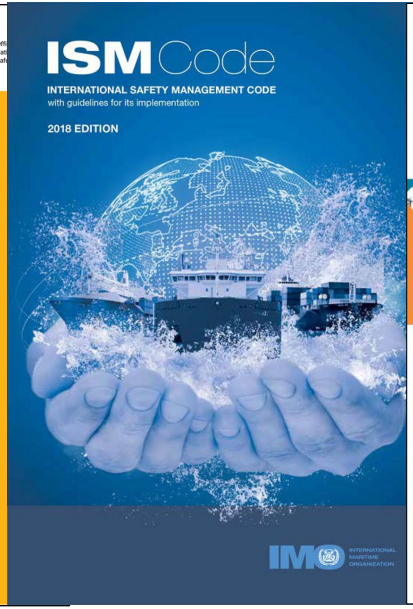
- What should happen?
- What did happen?
- How does it stack up?
- Must be able to communicate it
  - describe activities as per guidance
- Provide theoretical consistency

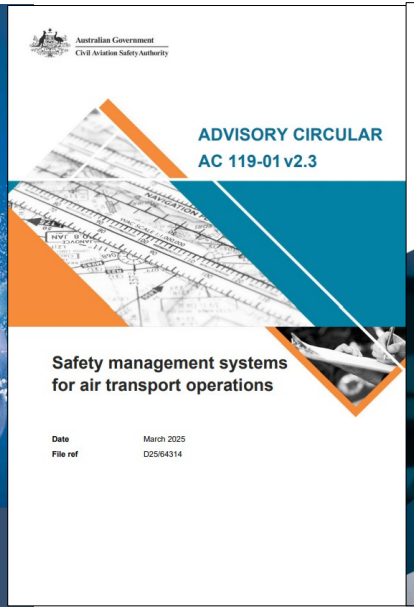
1. Safety policy and objectives
2. Safety risk management
3. Safety assurance
4. Safety promotion

Guidance


ICAO
Annex 19 to the Convention on International
Safety Management
Second Edition, July 2016
INTERNATIONAL CIVIL AVIATION ORGANIZ

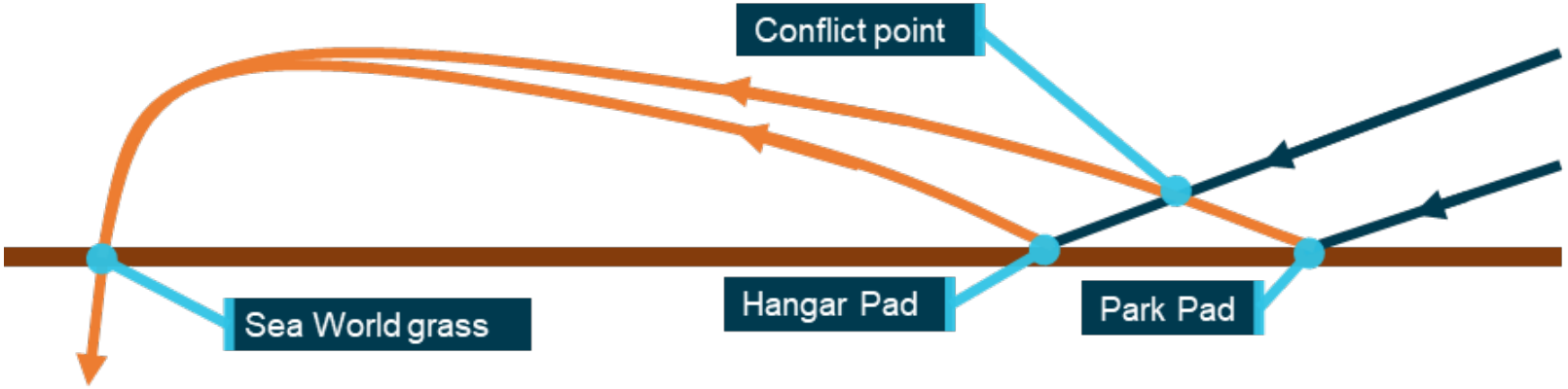
onrsr
ONRSR Guideline
Safety Management System
safe railways for Australia


ISM Code
INTERNATIONAL SAFETY MANAGEMENT CODE
with guidelines for its implementation
2018 EDITION
IMO


Australian Government
Civil Aviation Safety Authority
ADVISORY CIRCULAR
AC 119-01 v2.3
Safety management systems
for air transport operations
Date March 2025
File ref D25/64314


Australian Government
Civil Aviation Safety Authority
Safety Management Systems
for aviation: a practical guide
SMS 1
Safety
management
system basics
3rd Edition

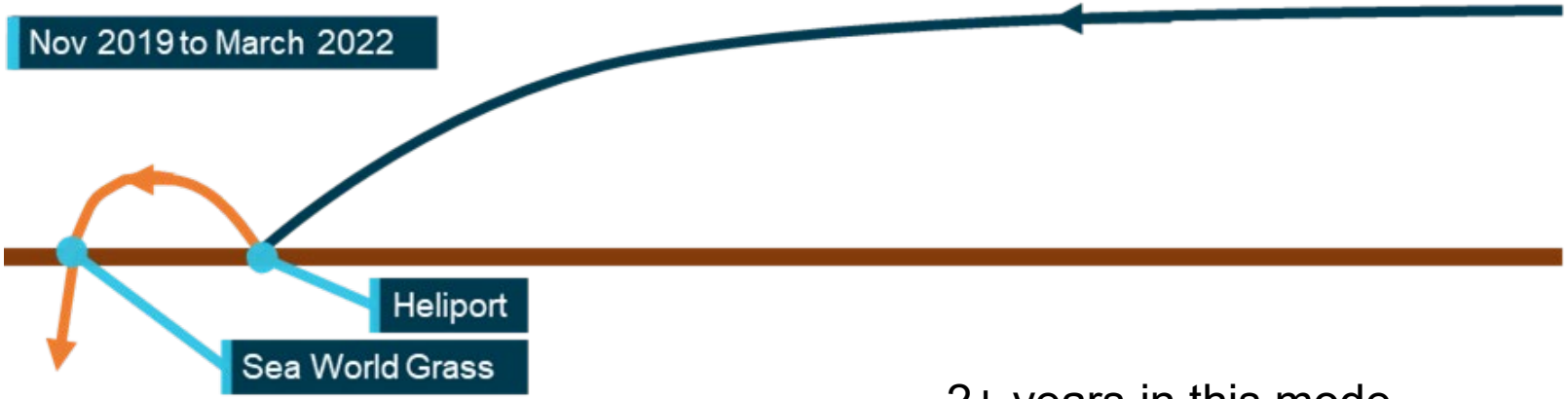
Change in location



Decades in this mode

Good visibility
UHF Chatter
Moving map traffic

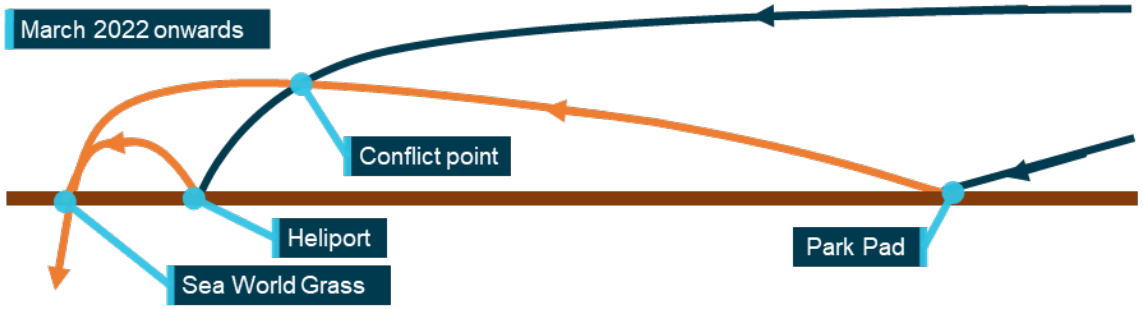
Change in location

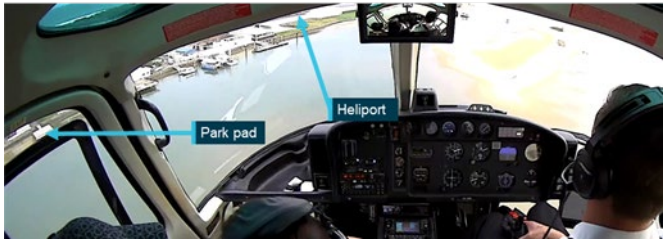


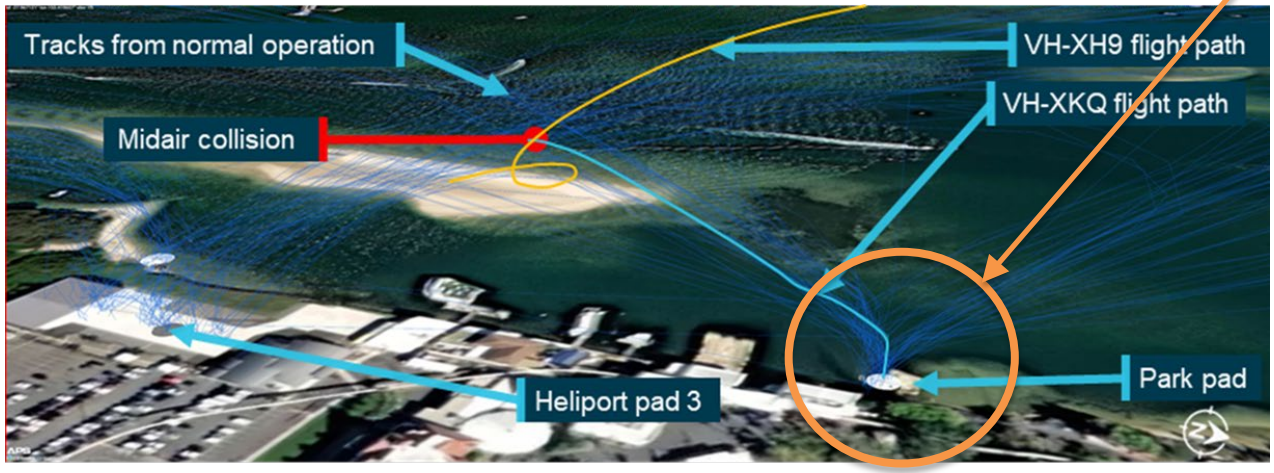
2+ years in this mode

Great visibility
Less need to talk
No conflict point
Controls ‘forgotten’
UHF radio chatter relegated

Existence







Change process only covered park pad

Conflict point created

Applicable controls to be found elsewhere

Previously risk control documents not used

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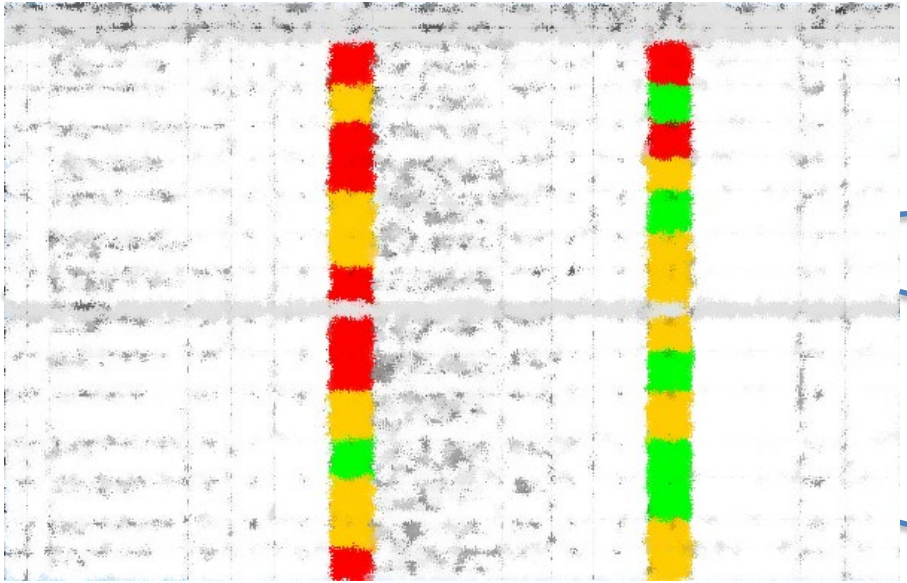
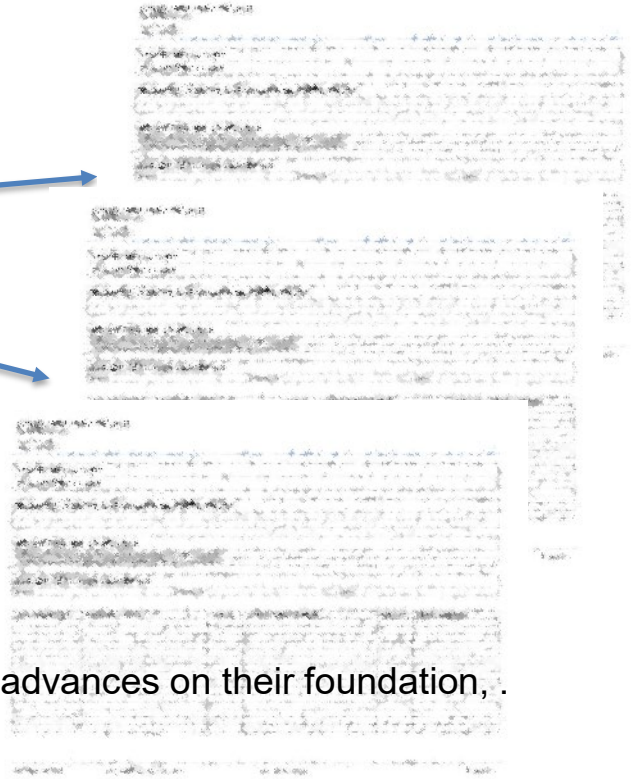
Risk Management Plan v Job Hazard Analysis





Aven, T. (2016). Risk assessment and risk management: Review of recent advances on their foundation, . European Journal of Operational Research,, 253(1), 1-13.

Aven, T. (2019). The science of risk analysis: Foundation and practice. Routledge.

Table 17: CASA guidance and operator's apparent process

Guidance from CASA SMS 4: Safety Assurance	Operator's change management process as derived from the SMS and park pad change management
Step 1: Understand and define the change; This includes a description of the change and why it's being implemented. At this step you should be identifying if the change is occurring due to internal or external factors and what the overall objective for the change is.	*1 – identify the change / describe the change* No advice existed in the SMS. At this stage the change was named "Recommence flights overwater helipad" and described as "Overwater helipad continued use after almost 2 years." Details were listed as "Rectification of overwater helipad and resume of joy flight operations"

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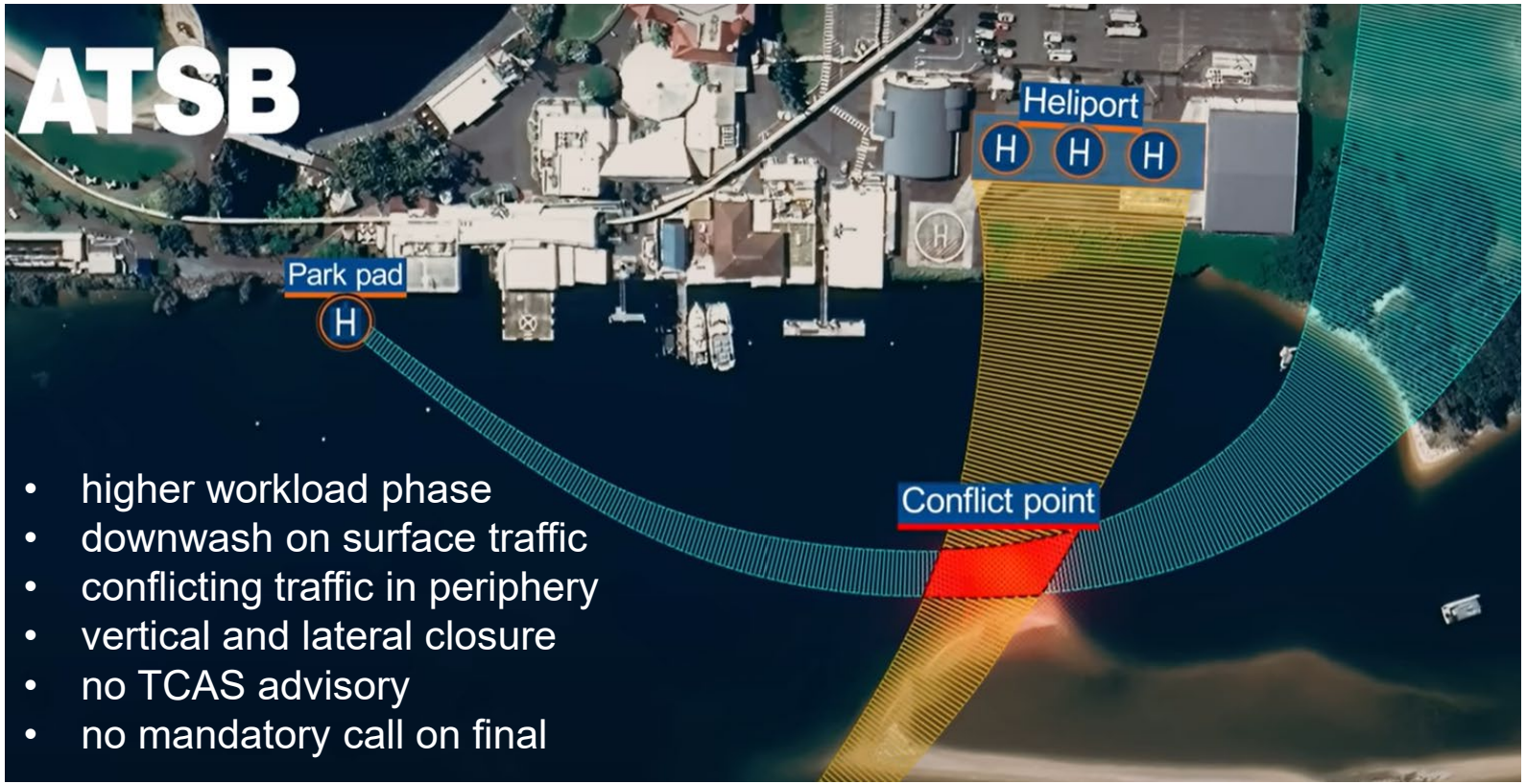
Interviews showed that there was an intent to refurbish the park pad from the inception of the contract following the sale of the helicopter business. It was also apparent through analysis of flights that the park pad, having easy access to park patrons, provided 27.6% of the scenic flight volume conducted by the operator. **The intent of the change could be reasonably inferred to be to increase the number of flights conducted at the Sea World location.**

Influence – risk remaining



Hypothesis testing

The operator's **change management process**, **conducted** prior to reopening the park pad, **did not encompass** the impact of the change on the operator's **existing scenic flight operations**. Crucially, the flight paths and the **conflict point** they created were **not formally examined**, therefore **limitations** of the operator's controls for that location **were not identified**.

Existence	and	Influence
Work as planned		Result if followed
Manuals		Past controls
Records		Current controls
Work as done		System design
Interviews		Integration of operations
Guidance		Risk remaining

Thanks for listening

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Questions?