Regulating Unmanned and Autonomous Vessels

Grant Judson
Principal Advisor Navigation
Systems Safety
Email: grant.judson@amsa.gov.au
Scope

• What does AMSA do
• Autonomous and unmanned vessels
• The Law in Australia, and how it applies
• AMSAs regulatory approach
• Some take-away points
Safe and clean seas, savings lives
Unmanned and Autonomous Vessels

Unmanned
- Always monitored and under positive control

Autonomous
- capable of independent decision making without involvement of a human operator

Unmanned Underwater Vessel (UUV)
Unmanned Surface Vessel (USV)
Autonomous Underwater Vessel (AUV)
Autonomous Surface Vessel (ASV)
Marine Autonomous Surface Ship (MASS)

Regulated by Domestic and/ or International Law
Internationally

MSC 98- New Work Proposal (June 2017)

- Scoping exercise
- IMO Instruments
  - Preclude Autonomous Operations
  - Don’t apply
  - What needs amendment
- 4 x sessions of MSC (approx. 3-4 years)
- Retained at MSC level, all encompassing
The National Law and Standards


National Law Regulations

Marine Orders

MO501 Admin
MO502 Vessel ID
MO503 CoS
MO504 CoO
MO505 CoC
MO507 LoadLine

Part B General
Part C Design/Constrc
Part D Crew Comp
Part E Operation
Part F Special Vessel Fast Craft
Part G Non-Surv

Definitions Meanings Exclusions etc

National Standards for Commercial Vessels (NSCV)

National Standard for the Admin of Marine Safety (NSAMS) S4- Survey of Vessels
The National Law, marine orders and exemptions:

National Standards for Commercial Vessels (NSCV):
• **Vessel** - means a craft for use, or that is capable of being used, in navigation by water, however propelled or moved, and includes an air-cushion vehicle, a barge, a lighter, a submersible, a ferry in chains and a wing-in-ground effect craft.

(Marine Safety (Domestic Commercial Vessel) National Law Act 2012. Section 8)

• **Domestic Commercial Vessel** - [a vessel as above]
  ……conjunction with a commercial, research or government activity

(Marine Safety (Domestic Commercial Vessel) National Law Act 2012. Section 7)
• **Owner**
  – a person who has a legal or beneficial interest in the vessel, other than as a mortgagee; and
  – a person with overall general control and management of the vessel *(but not the master or pilot)*
  

• **Master**
  – the person who has command or charge of the vessel, but does not include a pilot.
  
Applying the Law

- unique identifier (UI) (MO 502)
- certificate of survey (MO 503)
- certificate of operation (MO 504)
- crewed by persons holding the required National Law certificate of competency (MO 505)
- General safety duties must be complied with (National Law)
- Safety Management System (SMS) (National Law)
  - Owner must implement and maintain an SMS
  - Master must maintain and comply with a SMS

*all a bit impractical for an “AUV”*
Exemptions

• General Exemptions
  – 39 of them
  – Scenario based
  – Initiated by AMSA
  – Size, area, type, operation, etc

• Specific Exemptions
  – By Application
  – Specific requirements under the national law
  – Specific requirements related to design, operation, competency, systems and equipment,
  – Type and nature of operations.

AMSA cannot grant an exemption unless it is satisfied that doing so will not jeopardize the safety of a vessel or a person on board a vessel.

More Information

More information
Exemption

• Required outcome:
  – Compliance with COLREGS

• Design and Construction standards
  – Fixed guardrails
  – Comms equipment
  – Alternate power source
  – Rudder construction
  – Anchoring system

Conditions

• Vessel is unmanned when underway
• Support vessel available, with anchoring system
• Under control of a master
• Automatic fire fighting system
• Non slip deck surfaces
• Proper lookout, using cameras, microphone and sensors
Case by Case
Current regulatory framework works
Exemption processes
  – Specific
  – General
We can regulate unmanned and autonomous vessels under the National Law Act…… it’s just a bit clunky……..

**Safety of vessels and people, and protection of the environment is our priority**
AMSA’s Regulatory Working Group
What’s AMSA doing?

- Autonomous Vessels Regulatory Working Group
- Education, monitoring, learning……
- Benchmarking
- Contributing to IMO work
- Progressing towards a risk based, practical, regulatory solution
Our approach

Is a thing a vessel, and a DCV?

What are the risks?

Exemptions

Determine regulatory approach

- Legal checklist
- In progress

- Type of operation
- Nature of operation
- Area of operation
- Redundancies
- Communications
- Confidence
- Specifications
- Competencies

- General - can we use any existing exemptions?
- Do we need different ones?
- Are specific exemptions appropriate?

- Unique Identifier
- Cert of Survey
- Cert of Operation
- Crewing
- General Safety Duties
- Anything else?
- A better process?

Education and Information

Potential regulatory change
• General Safety Duties and Responsibilities
  – (owner, master)
• Safety Management System
• As the operator and expert……
• Consider the next steps…..
  – Unique Identifier
  – Cert of Survey
  – Cert of Operation
• AMSA Liaison Officers, and AMSA Connect
Questions.....?

You can find information on the following topics at the links provided below:
