



Emergency preparedness, people, and capability.

The drive behind ANSTO CORIS360 technology to
find a lost radioactive capsule

Australia Nuclear Association

October 2023

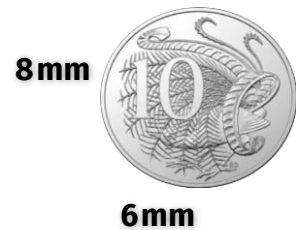
Science. Ingenuity. Sustainability.

WA State Response

- An 8 mm by 6 mm radioactive capsule went missing somewhere along a 1400 kilometre journey from Rio Tinto's Gudai-Darri iron ore mine to its final destination in Perth, Western Australia.
- Capsule misplaced by Rio Tinto and third party transportation company.



Mining radiation gauge



^{137}Cs Capsule was the size of a ten cent piece

Request for Support through NEMA

COMDIS Plan Activation

Department of Fire and Emergency Services
Government of Western Australia

ARPANSA
Australian Radiation Protection and Nuclear Safety Agency

Department of Defence
Australian Government

ANSTO
Australian Nuclear Science and Technology Organisation

Timeline 2023

Package left mine site near Newman, WA	Jan 12
Package arrived at depot in Perth, WA	Jan 16
Unpackaged, ¹³⁷ Cs source missing	Jan 25
WA authorities announcement	Jan 27
CORIS360® modifications and testing onsite at ANSTO	Jan 29
ANSTO response team arrives in WA	Jan 30
Capsule located 74 km south of Newman	Feb 1

48hr window to confirm, test, & prepare to deploy



Reporting and Interoperability

Reporting

1.
ANSTO Incident controller
2.
ANSTO Team leader
3.
Mobile units' leaders

Interoperability

1.
Safety Liaison in EOC
2.
Training AIIMS
3.
ANSTO RNEPR training

Agencies



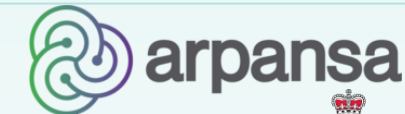
Government of
Western Australia
Department of **Health**

The regulator

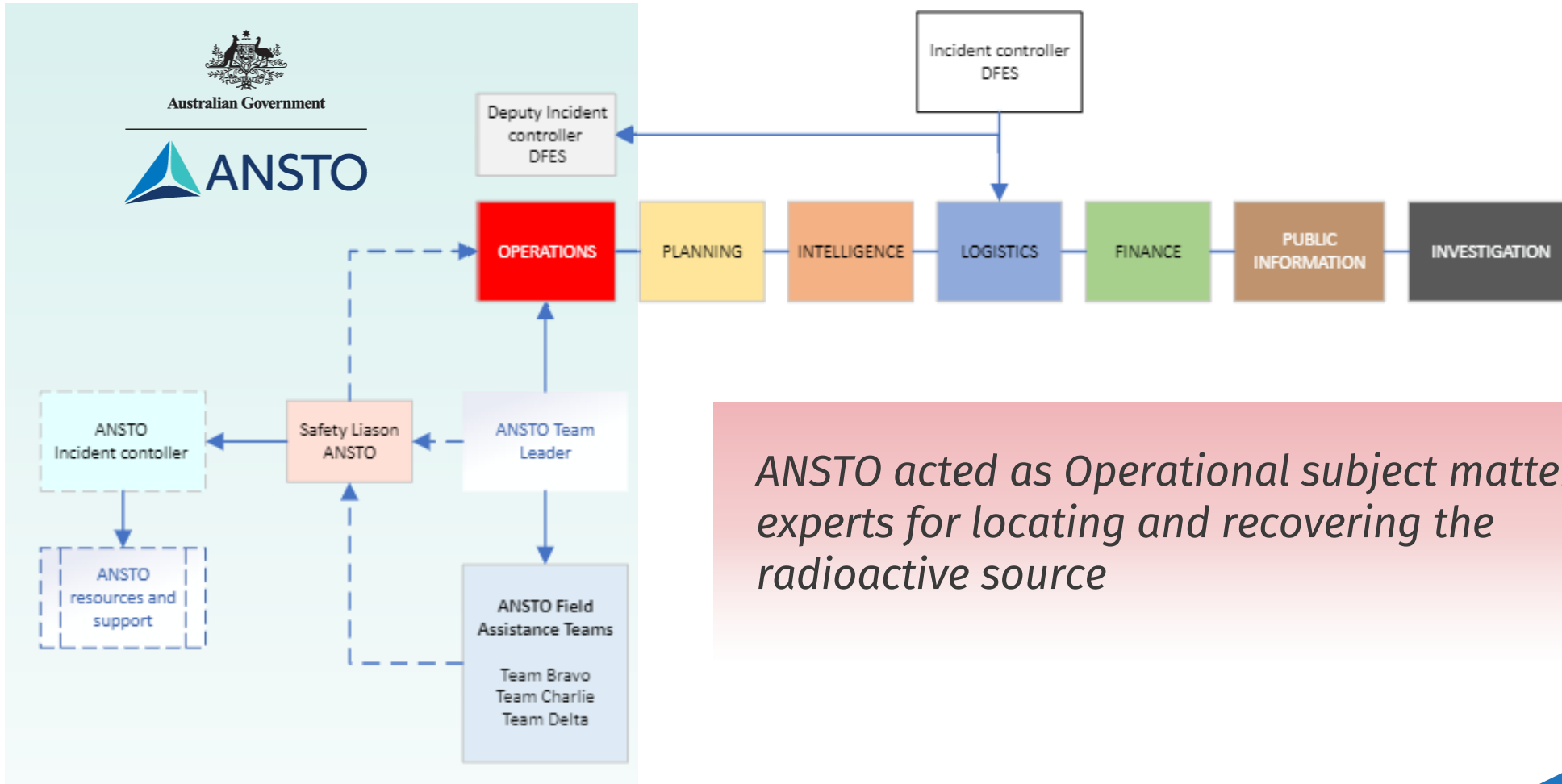


DFES
Department of Fire &
Emergency Services

Incident control



Supporting agencies



ANSTO acted as Operational subject matter experts for locating and recovering the radioactive source

Maintaining safety

The challenges

- Isolation
- Extreme heat
- Road trains
- Fatigue

Control

- Satellite phones
- Check-ins
- Debriefs
- Tracking
- Scheduling
- Escort vehicles w emergency equipment
- Condition forecasts
- Buddy systems

100 km/hr





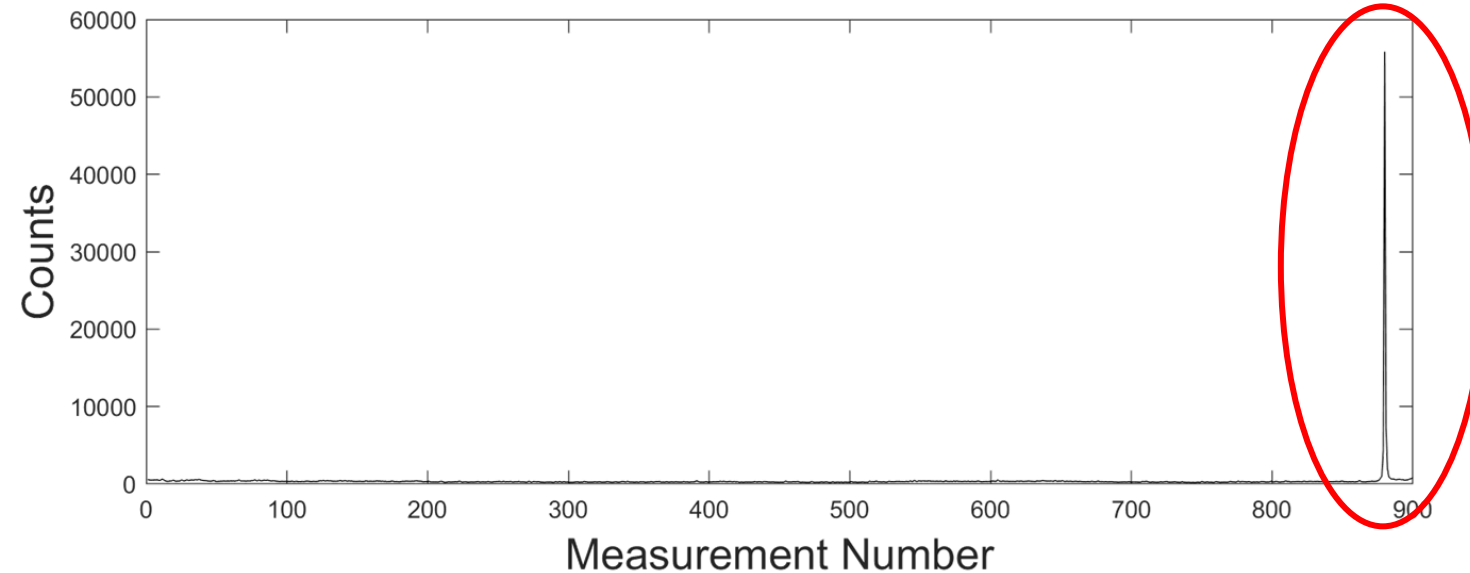
NAVA

ANSTO
FIRE & RESCUE

ANSTO FIELD
ASSISTANCE TEAM (FAT)

BRIDG

Finding lost WA source

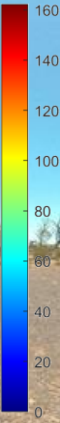


- Modified CORIS360[®] system in “search mode” (pictured) is secured in back of van
- Suite of equipment (such as NaI Detectors) was utilized for holistic identification and redundancy
- Device spikes as van drives past source at 70 km/hour (circled)
- Multiple devices began to alarm indicating significant nearby source

Source recovery



Counts per second



ANSTO's CORIS360® image locating the radioactive capsule

Planning

- Site secured and perimeter established → include readings
- Standard CORIS360® device then used to pinpoint exact location of source in ~1 min
- Calculate dose constraints
- Plan recovery methodology

People

- Local IC takes over
- Report into head IC and EOC
- Establish resourcing needed for post recovery and transport.
- Practice recovery until confident!



Key Learnings



Capability & preparedness

1.

Know your equipment capabilities before an event occurs

2.

Use a range of tools

3.

Identify early gaps & opportunities to improve

People

1.

Practice scenarios regularly

2.

Understand & utilize people's strengths

3.

Define roles and responsibilities early to enable dynamic & positive team relationships



Questions

Thank you



Australian Government



ANSTO