



Australian Government

Australian Radiation Protection
and Nuclear Safety Agency



Recovery of the missing source in Western Australia

Dr Fiona Charalambous and Ms Chennell Allan



ARPANSA is an independent regulator

We are the independent regulator of Commonwealth entities that use or produce radiation.

Using a risk-informed regulatory approach, we ensure that licensees take responsibility for protection of people and the environment from the harmful effects of radiation.



ARPANSA's role in emergency response

Radiological and nuclear emergency preparedness:

- medical preparedness & health physics response
- Australasian Radioanalytical Laboratory Network
- environmental / food / water monitoring
- IAEA Response Assistance Network capabilities
- WHO Radiation Emergency Medical Preparedness and Assistance Network
- support visiting nuclear powered warships, CTBTO RN labs

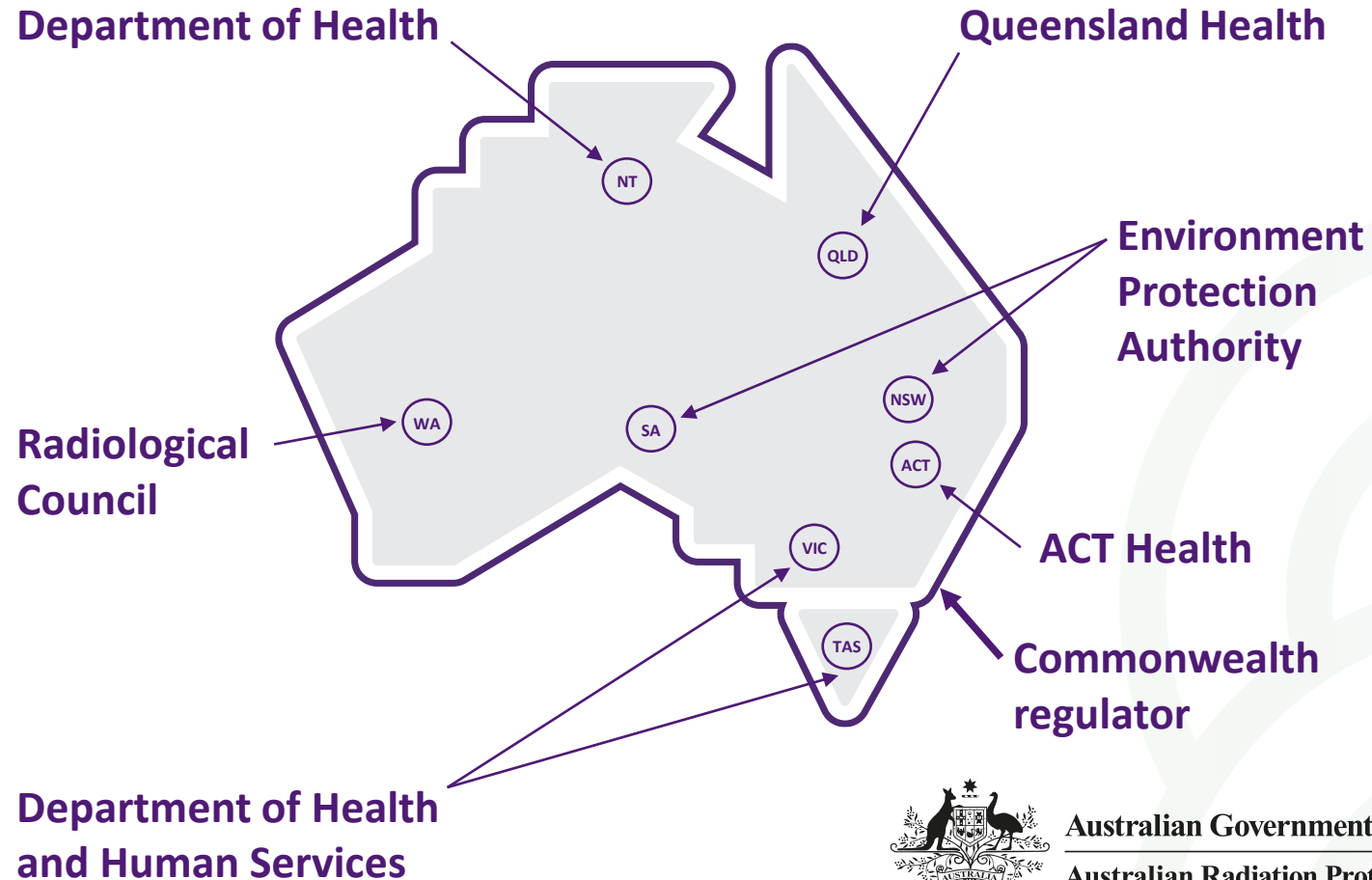


ARPANSA's role in emergency response

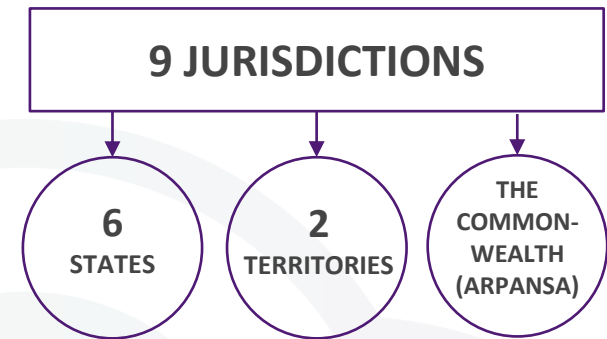
Nuclear/radiological incident:

- Operational planning support
- Deployment of technical assets
- Provision of geospatial products
- Event response and recovery
- IAEA national competent authority for radiation emergencies, domestic and overseas

Australian regulatory framework for nuclear and radiological safety



Australia has:



All have regulatory regimes for radiation protection.

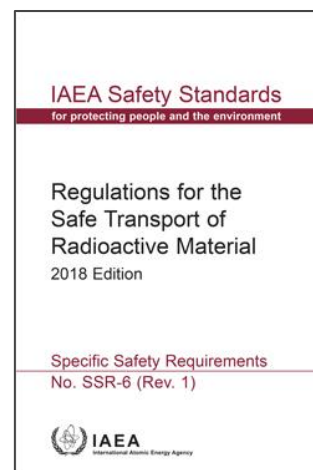
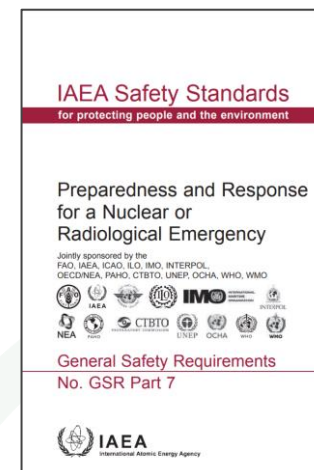
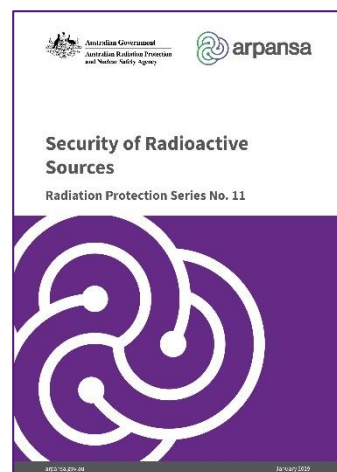
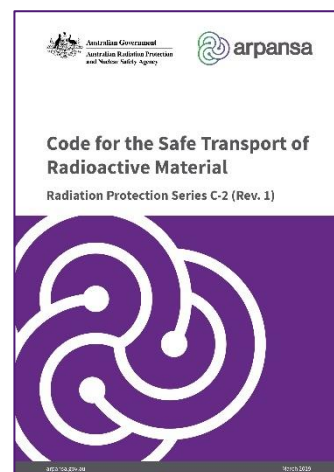
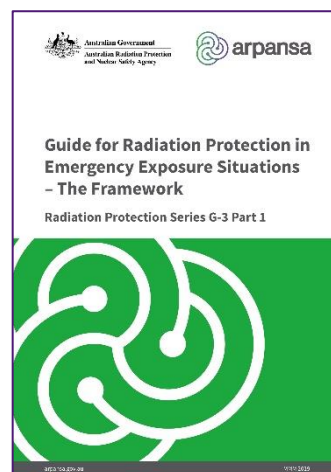
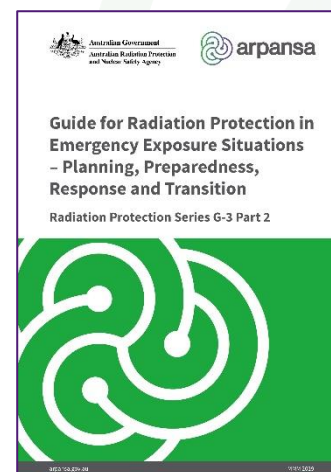
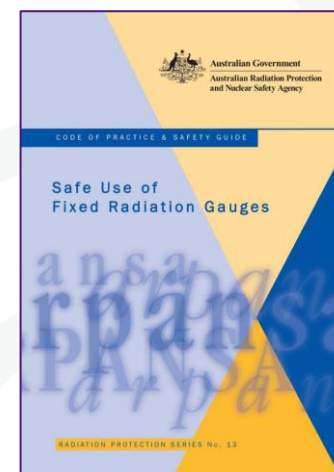
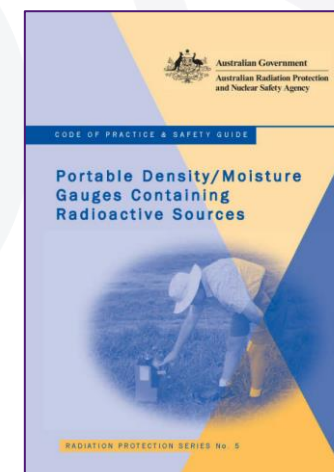
The states and territories regulate radiation use for non-commonwealth entities.



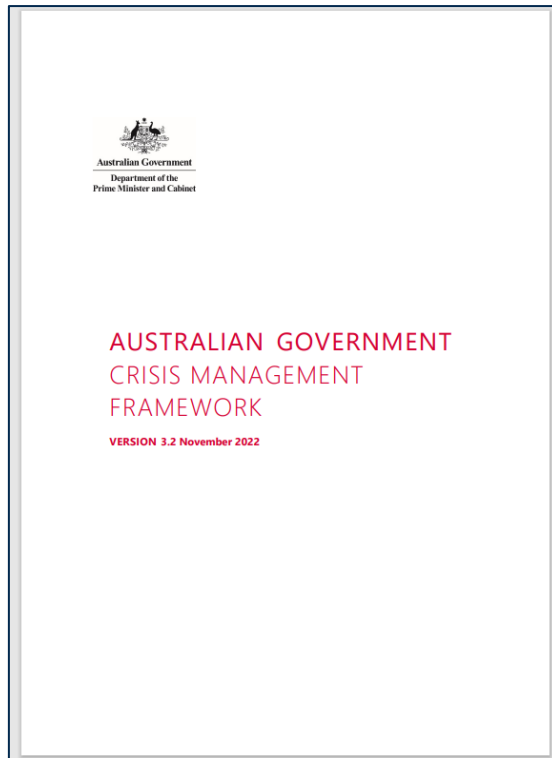
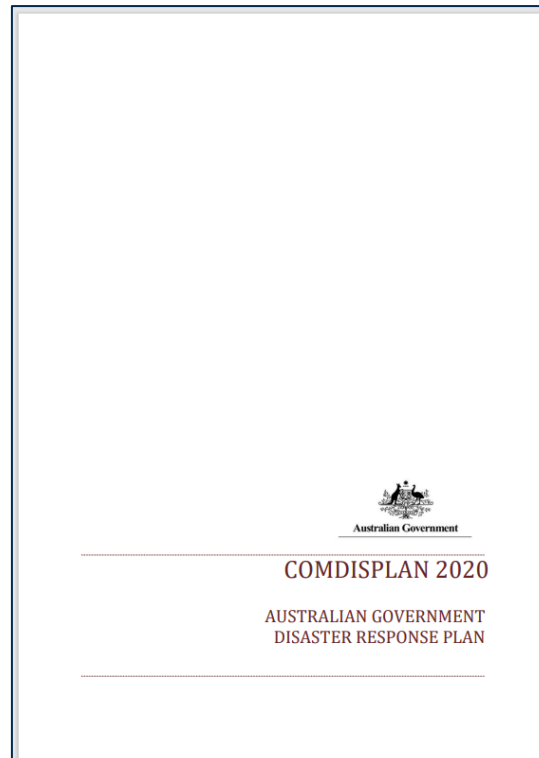
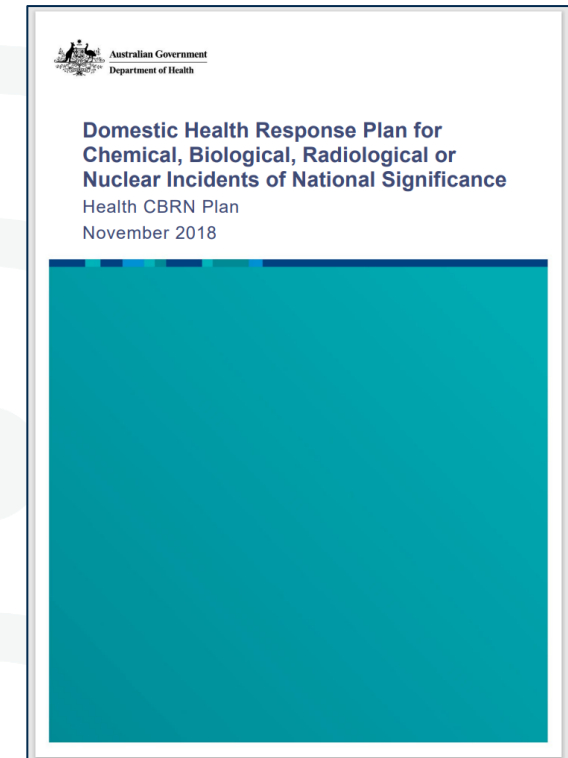
Australian Government
Australian Radiation Protection
and Nuclear Safety Agency

An established national framework; relevant Codes and Guides

2004
**AUSTRALIAN
COMMITMENT**



National Deployment Mechanisms for RN



Timeline of events



12 Dec 2022 to
25 Jan 2023



25–27 Jan 2023



28–31 Jan 2023



31 Jan to
1 Feb 2023



1 Feb 2023



Ongoing

Event - Losing the source
Incident and how it went
missing

**Initial
jurisdictional response**
Initial state-level efforts
in recovery

Commonwealth response
Preparing the team and
equipment

Mission execution
Commonwealth agencies
start looking

Recovery
Identifying and
recovering the source,
and stepping down the
response

After action review
What can we learn from
this?

EVENT

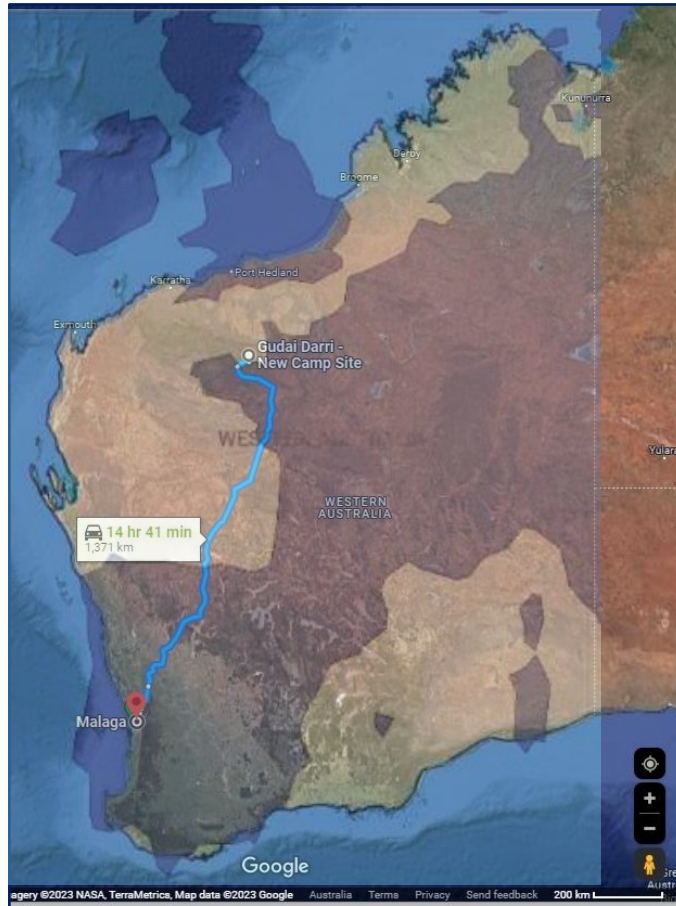
RESPONSE

RECOVERY

PREVENTION

PREPAREDNESS

The incident – Source lost during long-distance transport



Gudai Darri - New Camp Site Newman WA 6753

- Continue to National Highway 95
1 hr 13 min (73.2 km)
- Follow National Highway 95 to Hepburn Ave/State Route 82 in Whiteman. Take the exit from Tonkin Hwy/State Route 4
13 hr 24 min (1,294 km)
- Turn left onto National Highway 95
1,186 km
- Continue onto National Highway 95
73.6 km
- Continue straight onto Great Northern Hwy/Tonkin Hwy
Continue to follow Tonkin Hwy
10.3 km
- Keep right to stay on Tonkin Hwy
10.5 km
- Continue onto Tonkin Hwy/State Route 4
13.2 km
- Take the exit towards Hepburn Ave/State Route 82
500 m
- Keep right to continue towards Hepburn Ave/State Route 82
150 m
- Take Bellefin Dr to Marshall Rd in Malaga
5 min (4.1 km)

Malaga
Western Australia 6090



Keep right to stay on Tonkin Hwy



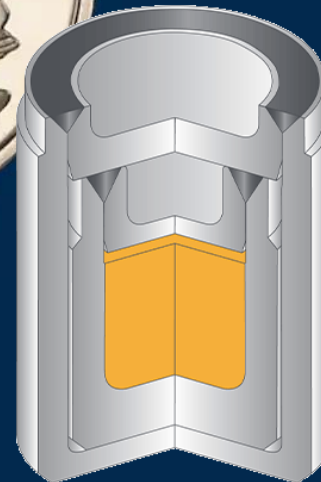
1,133 km

Challenge #1:
A large search
distance

The incident – Source lost from a density gauge



20 GBq Cs-137
density gauge source
1.5 mSv/h @ 1m



Challenge #2:
A small
source



12 Dec 2022 to 25 Jan 2023

Event - Losing the source

Incident and how it went missing

12 Dec 2022

Gauge damaged, contractor engaged to transport to Perth

10–11 Jan 2023

Source packed for transport

12–15 Jan 2023

Package transported

25 Jan 2023

Overpack opened, contractor informs regulator and mine that source is missing



25–27 Jan 2023

Initial jurisdictional response

Initial state-level efforts in recovery

25 Jan 2022

DFES establishes local Incident Management Team (DFES, WA Police, Dep. of Health/Rad. Council)

26 Jan 2023

Search starts at mine, Perth depot, limited other areas. Slow due to available equipment!

27 Jan 2023

Wider announcements:

- WA Government requests Commonwealth assistance
- WA Dept. of Health informs ARPANSA duty officer
- press conferences to inform/guide public.



DFES Acting Superintendent and Incident Controller Darryl Ray (left) and Western Australia's Chief Health Officer, Andy Robertson, have warned people not to handle the capsule if they find it. (ABC News: Herlyn Kaur)

Stakeholders in a radiological emergency response

Commonwealth



Australian Government

Australian Radiation Protection
and Nuclear Safety Agency



Australian Government

National Emergency Management Agency



Australian Government

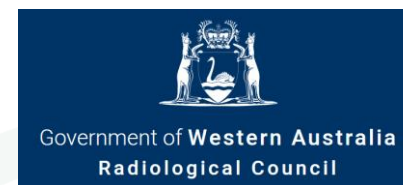
Defence



COMDISPLAN 2020

AUSTRALIAN GOVERNMENT
DISASTER RESPONSE PLAN

Western Australia

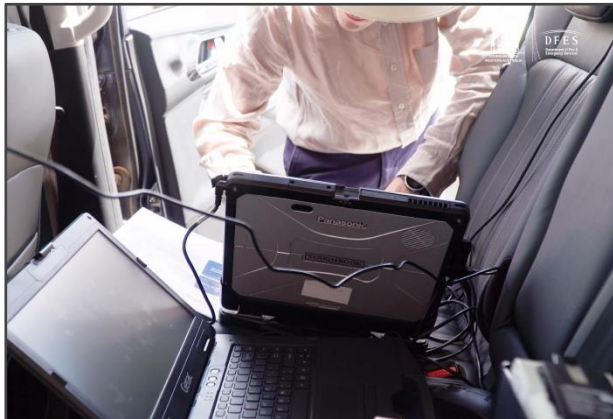


GOVERNMENT OF
WESTERN AUSTRALIA

DFES
Department of Fire &
Emergency Services

FOR A SAFER STATE





28–31 Jan 2023

Commonwealth response

Preparing the team and equipment

28 Jan 2022

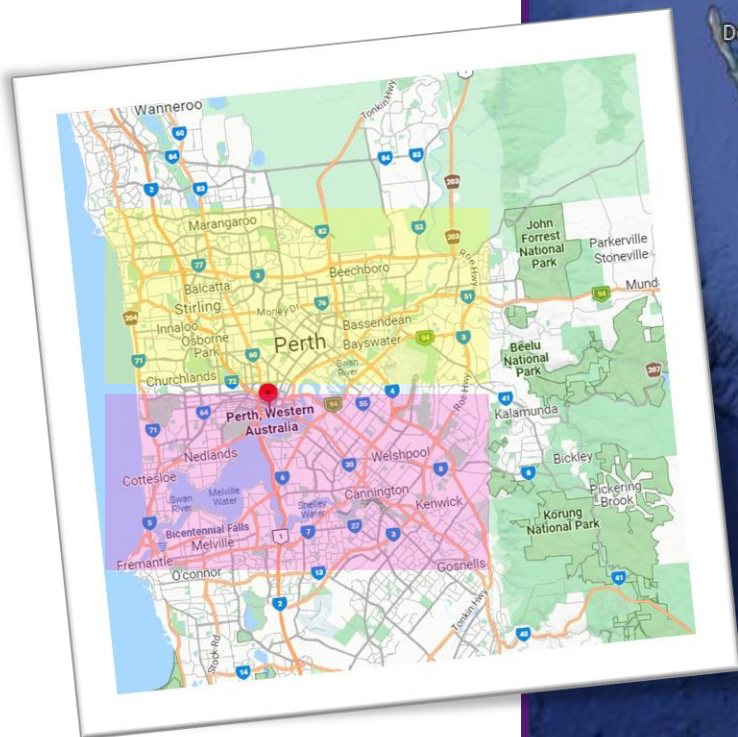
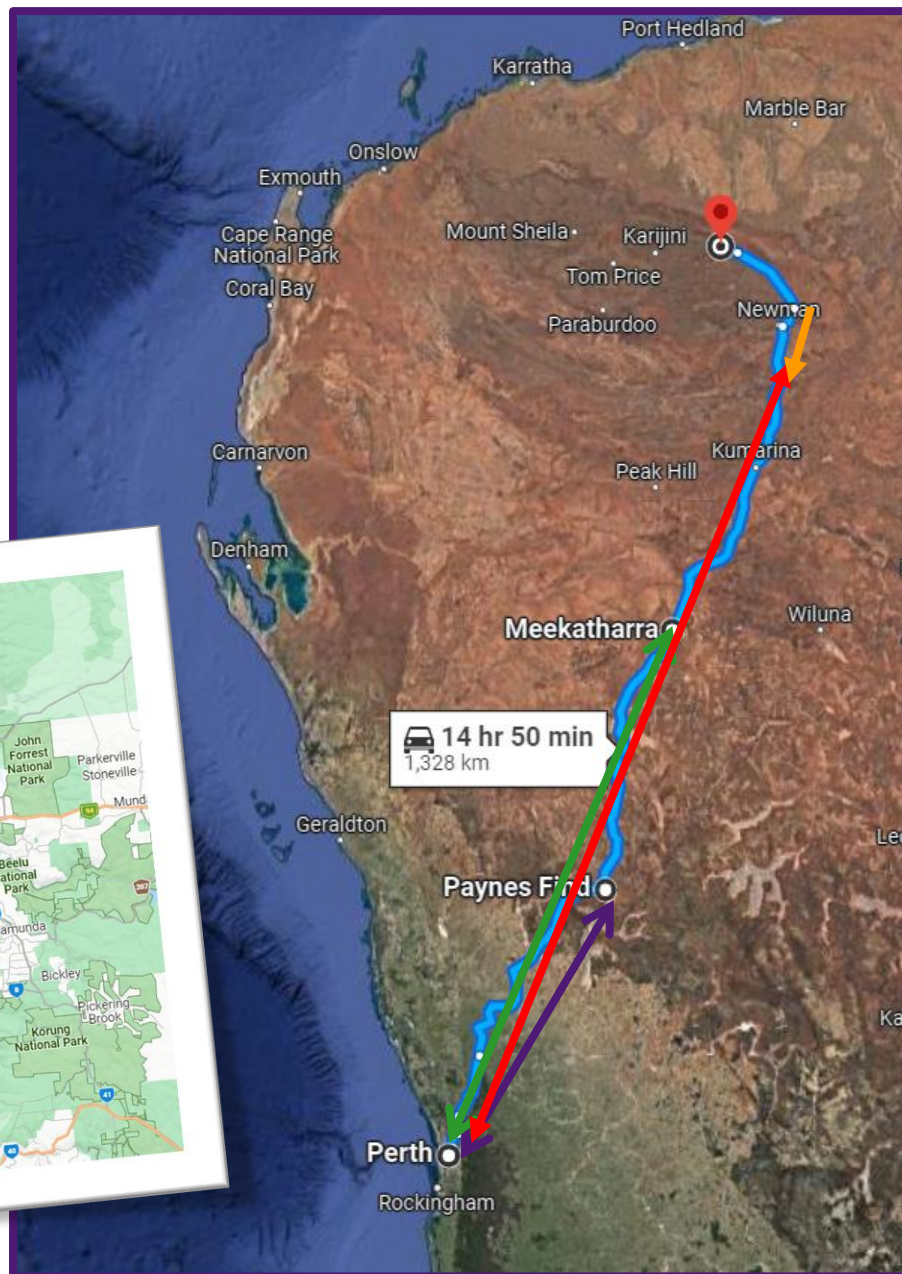
Australian Government activates COMDISPLAN
Engages Defence, ARPANSA and ANSTO, to
assist state agencies

29–30 Jan 2023

Team formation; organising for deployment /
validating / packing equipment

31 Jan 2023

Teams fly to Perth!



31 Jan – 1 Feb 2023

Mission execution

Commonwealth agencies start looking

6 Commonwealth Teams join search:

Team ALPHA Defence

Team BRAVO ANSTO

Team CHARLIE ANSTO

Team DELTA ANSTO

Team ECHO ARPANSA

Team FOXTROT ARPANSA

All teams drove between 50 – 70 km/h



Incident Management Team, including Incident Controller Darryl Ray.



Author

Department of Fire and Emergency Services WA

As with everything we do, this has been a massive team effort - here's the very team who located the capsule, all smiles once it was verified by the serial number as being the radioactive capsule we were searching for.

DFES Bravo team



Love Reply 16w

Most Relevant is selected, so some replies may have been filtered out.

274





1 Feb 2023

Recovery

Identifying and recovering the source,
and stepping down the response

Found by Bravo Team 160 km from mine site
2 m off side of road

Verified by serial number

Capsule intact - no leakage of radiological
material

Source returned to Perth



Media attention

The incident raised significant media attention with local, national and international press, TV and internet attention for a period of over a week

Concern at all levels – Council, State, Commonwealth and International

Strong government cooperation involving multiple agencies

Although some public concern no incidents of panic or inappropriate responses occurred

A radioactive capsule is missing in Australia. It's tiny and potentially deadly



Ongoing

After action review

What can we learn from this?

Post-incident investigation and review

Investigation from the jurisdiction's regulator is still ongoing

Appropriateness and effectiveness of available and deployed equipment

Ongoing training, drills and exercises is paramount to maintain a response capability

Compliance with and appropriateness of applicable codes and guidance

Ongoing reach back provided by ARPANSA experts



Thank you

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ARPANSANews



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