



Australian Government
Bureau of Meteorology

Western Australia Regional Office
Bureau of Meteorology
PO Box 1370 West Perth WA 6872 Australia

In reply please quote

11 December 2014

Dr Loraine Abernethie
Principal Research Officer
Economics and Industry Standing Committee
Parliament House
PERTH WA 6000

Dear Dr Abernethie,

Transcript of Evidence

Please find enclosed corrections to the Bureau of Meteorology's transcript of oral evidence.

Please also find enclosed supplementary material to clarify aspects of our evidence.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'M Bergin', with a horizontal line extending to the right.

Mike Bergin
REGIONAL DIRECTOR (WESTERN AUSTRALIA)

Supplementary Material

Further to the information provided to the hearing, the Bureau would like to submit the following information for the committee's consideration:

1. During the hearing there was discussion about the Prelude FLNG, its design for a one-in-10,000 year event, and the Bureau was asked whether it had been contacted by Shell or the Maritime Research Institute Netherlands in relation to that design.

The Bureau offered to take the question on notice and follow up with a reply. The question has now been explored and the Bureau found no record or recollection of any interaction with Shell or the Maritime Research Institute Netherlands on this topic.

2. Towards the end of the hearing there was discussion about collection of weather data. The discussion focused on collaboration between the Bureau and offshore operators and hence concentrated on surface observing systems. It may assist the committee to have the following information about the value of data collected from weather satellites.

The single most important source of observations in relation to tropical cyclones is weather satellites. These observations provide systematic coverage of the remote ocean areas where tropical cyclones develop and from where other types of data are very sparse. Satellite observations are the primary means for tracking cyclones and determining their intensity and structure. Satellite observations also provide key data for numerical weather prediction models. On site information then helps to confirm features of the tropical cyclone more accurately, such as the intensity and size, and wave heights.

Australia does not operate any weather satellites but does collaborate with relevant international bodies. Australia is a member of the United Nations World Meteorological Organisation, which coordinates arrangements amongst satellite operating countries and other countries for sharing this important data for the good of the world's population.

3. Australian Tropical Cyclone Category Scale

Category	Average Maximum Wind (km/h)	Strongest Gust (km/h)
1	62-88	<125
2	89-117	125-164
3	118-159	165-224
4	160-199	225-279
5	>200	>280



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TCM-7/Doc. 4.10.2, APPENDIX D

Tropical Cyclone Classifications

Wind Speeds (kt)	N Indian Ocean	SW Indian Ocean	SW Pacific & SE Indian Ocean	NW Pacific	N Atlantic & NE Pacific
<28	Depression	Tropical Disturbance	Tropical Depression	Tropical Depression	Tropical Depression
28-33	Deep Depression	Tropical Depression			
34-47	Cyclonic Storm	Moderate Tropical Storm	Tropical Cyclone (1)*	Tropical Storm	Tropical Storm
48-63	Severe Cyclonic Storm	Severe Tropical Storm	Tropical Cyclone (2)*	Severe Tropical Storm	
≥ 64 kt	Very Severe Cyclonic Storm	Tropical Cyclone	Sever Tropical Cyclone (3)*	Typhoon	Hurricane (1)**
		Intense Tropical Cyclone	87 Severe Tropical Cyclopane (4)*		83 Hurricane (2)**
			108 Severe Tropical Cyclone (5)*		96 Hurricane (3)**
	120 Super Cycloninic Storm	115 Very Intense Tropical Cyclone			113 Hurricane (4)**
					137 Hurricane (5)**

*TC Category System in Australia **Saffir-Simpson Hurricane Wind Scale (US)

Please note that the wind speeds referred to are average maximum winds not strongest gusts and the units are knots.

Australia's National Meteorological Service