

Critiques on Stress Test Reports

Chia-Wei Chao

Green Citizens' Action Alliance

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Design Basis Flood (1)

■ Wrong methodology pointed out by ENSREG peer-review team

“CS: How is the PMP of 297 mm/h justified at the background of a record of 325 mm/h for a historical storm? ”

“LM: The PMP is lower than the values recorded near CS NPP (up to 325 mm/h). How is this discrepancy justified?”

(quote from TOPIC 1b2 AEC Responses to Preliminary Questions-2)

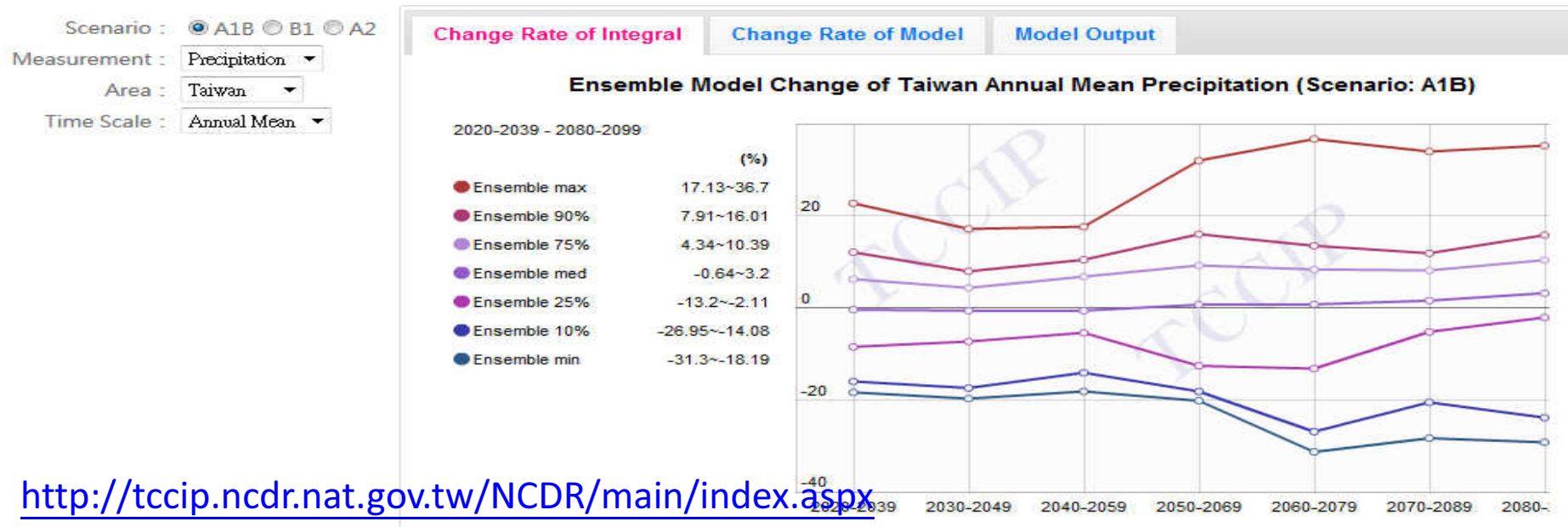
- ***GCAA urge that the potential consequence of above miscalculation shouldn't be overlooked and needed to be highlighted in the final review report.***



Design Basis Flood (2)

■ The effect of climate change

- Including in the EU Stress Test (ex UK: Sizewell B)
- Taiwan Climate Change Projection and Information Platform Project already provided the information about change of annual precipitation under different climate change scenario.
- This issue is missing in the national report and licensee reports.



<http://tccip.ncdr.nat.gov.tw/NCDR/main/index.aspx>

- ***GCAA urge that climate change factor should be incorporate in the DBF evaluation.***



Design Basis Flood (3)

■ Estimation of Maximum Tsunami Runup

- OECD peer review team : AEC has stated that it will delete from the National stress test report, NSC's prediction of the (lower) tsunami run-ups.
- ENSREG expert team : It appears that the maximum tsunami runup height equals the largest recorded event (150 years observation period), which is clearly not equal to an event with a probability of 10^{-4} .
- But Taipower still use the information from FSAR and NSC to mislead public about the suitability of existing DBF.

單位:公尺

項目	核一廠	核二廠	核三廠	核四廠(龍門廠)
廠房高程	11.20	12.00	15.00	12.00
FSAR海嘯湖上設計高程 (註一)	10.73	10.28	12.03	8.07
NSC湖上 (註二)	2.80	2.50	10.00	3.40

http://www.taipower.com.tw/content/new_info/new_info-b55.aspx?LinkID=10

- ***GCAA: The peer-review team should ask for deletion of those inappropriate descriptions in the National Report.***



Design Basis Flood (4)

- Rodriguez-Vidal et al. 2012. Civil nuclear power at risk of tsunamis. Natural Hazard. 63:1273–1278.
 - All NPPs in Taiwan located in tsunami risk areas.

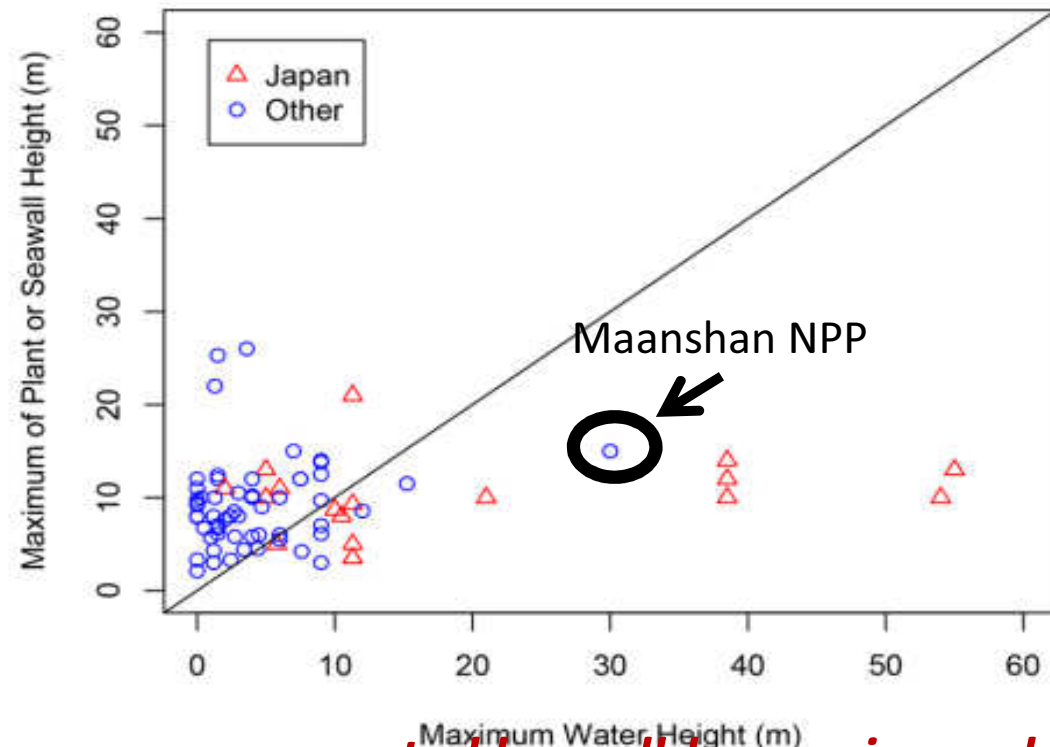




Design Basis Flood (5)

- Lipsy et al. 2013. The Fukushima Disaster and Japan's Nuclear Plant Vulnerability in Comparative Perspective. Environ. Sci. Technol., 47 (12), pp 6082–6088.

- Taiwan is one of the countries that own NPPs with elevation and sea walls below the highest recorded wave run-up.
- Taiwan's Maanshan NPP (核三) lie in regions where tsunami height has exceeded 20 m.



- **GCAA: The observation of above papers accepted by well-known journals should be included in the section of general data in the National Report, to make public aware the tsunami risk of NPPs.**



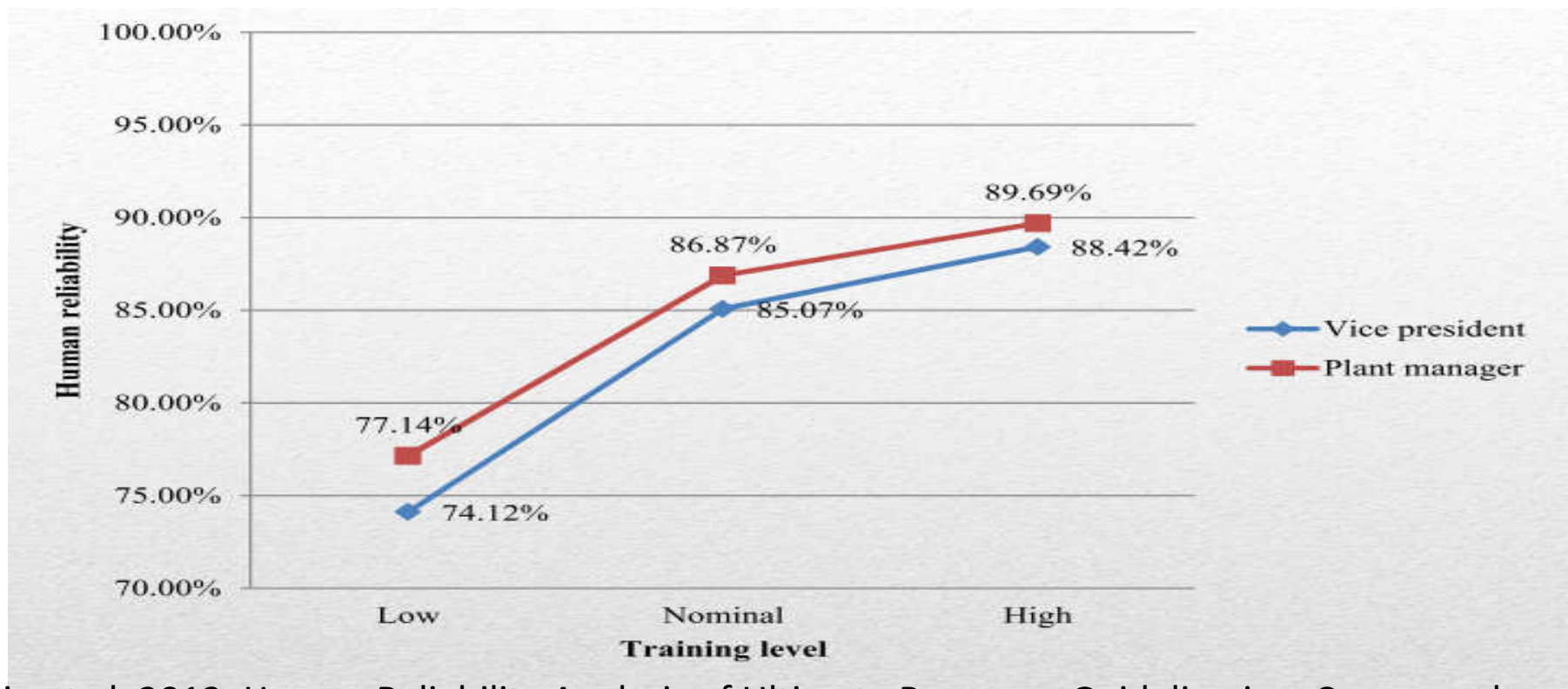
Ultimate Response Guideline (1)

- Taipower stated that : “URG can be completed in 46 minutes” in the media, and this estimation even quoted by President Ma.
- However, we can’t find this estimation in all licensee report.
- Questions raised by ENSREG peer review team:
 - The turbine driven pumps (RCIC) will be – if necessary operated manually. How will this be achieved technically (eg: issues with governor, actuator,..)
 - URGs: For all units, the document states that early RPV and containment venting will happen in a relatively short time frame. What will be the radiological consequences? Has the allowed activity of primary coolant been revised in the technical specifications? Have all personnel been evacuated to secure areas in this short time?
- ***GCAA: The peer-review team should ask for deletion of those inappropriate descriptions to support the effectiveness of URG in the National Report.***



Ultimate Response Guideline (2)

- URG relied on mobile devices and manual action.
- Liu et al. (2013): the human reliability of URG procedures analysed by SPAR-H is about 85%~86%.

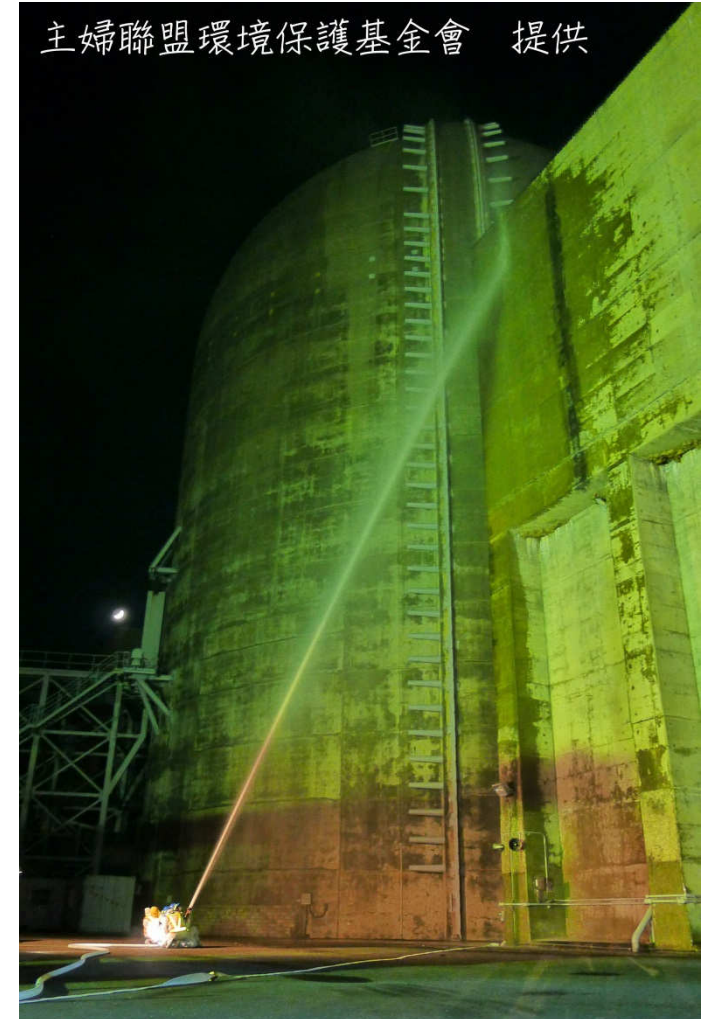


Liu et al. 2013. Human Reliability Analysis of Ultimate Response Guideline in a Compound Disaster. PSAM 2013 Topical Conference.



Ultimate Response Guideline (3)

- Exercise and Drill on URG in Maanshan NPP (核三)
 - “Business as Usual” Assumption
 - Contradicting the possible scenario



Exercise in NPP3 <http://www.youtube.com/watch?v=9L4-Dhz09ZI>



Ultimate Response Guideline (4)

■ Exercise and Drill over URG

- AEC and Taipower cannot provide specific time frame for each procedure of URG during the exercise and drill.



- ***GCAA: The reliability of URG should be discussed systematically, and implication of reliability analysis on residual risk should be highlighted.***



Poor Safety Culture exposed during Stress Test (1)

- GCAA and Greenpeace release a report called “Critical review on the stress tests of the Lungmen nuclear power plant (NPP4)” at September 10th, which is authored by Oda Becker.
- Some observations from the report is similar to the preliminary questions raised by EU expert team.
 - The insufficient scientific information to support DBE and DBF.
 - The feasibility of URG implementation.



Poor Safety Culture exposed during Stress Test (2)

■ The responses from Taipower were:

- The observations from the critical review report are against the facts, and peer-review should be done by the professional team.
 - NPP4 project can counter all existing natural hazard effectively.
 - Core catcher is only used in EU, we have Lower Drywell Flooding (LDF) System to prevent the melt through effect.
 - URG have repeatedly received positive recognition in the relevant international forums.
- ***GCAA: The poor safety culture implies there will be a lot of cover-up, denial and reluctant to change that will make this stress test procedure useless.***