

---

**From:** LIA10 Hoc  
**Sent:** Friday, March 25, 2011 2:08 PM  
**To:** LIA02 Hoc; LIA03 Hoc  
**Subject:** FW: TEPCO-Rad Data at Plant-March 25 0600 with corrections in columns K-L.xlsx  
**Attachments:** TEPCO-Rad Data at Plant-March 25 0600 with corrections in columns K-L.xlsx

Please note columns K and L, which show corrections to the original translations. In particular, some 28 wind readings had been either missing or mistranslated, as well as a few measurement locations.

【別紙】福島第一原子力発電所モニタリングカーによる計測状況  
Radaitaion data around Fukushima No.1 NPP by monitoring vehicle

Date	Time	Location	Location	y-ray (μSv/h)
3/11	P.M. 5:30	体育館付近	around Gym	49 nG y/h
3/11	P.M. 5:40	正門付近	around Front Gate	56 nG y/h
3/11	P.M. 5:50	管理棟	admin. Bldg.	64 nG y/h
3/11	P.M. 6:45	MP - 6		56 nG y/h
3/11	P.M. 7:00	MP - 7		57 nG y/h
3/11	P.M. 7:10	MP - 5		55 nG y/h
3/11	P.M. 7:15	MP - 4		59 nG y/h
3/11	P.M. 7:20	MP - 3		59 nG y/h
3/11	P.M. 7:52	MP - 6		57 nG y/h
3/11	P.M. 8:00	MP - 6		60 nG y/h
3/11	P.M. 8:10	MP - 6		59 nG y/h
3/11	P.M. 8:20	MP - 6		67 nG y/h
3/11	P.M. 9:30	正門付近	around Front Gate	62 nG y/h
3/11	P.M. 9:40	正門付近	around Front Gate	61 nG y/h
3/11	P.M. 9:50	正門付近	around Front Gate	61 nG y/h
3/11	P.M. 10:00	正門付近	around Front Gate	59 nG y/h
3/11	P.M. 10:10	正門付近	around Front Gate	60 nG y/h
3/11	P.M. 10:20	正門付近	around Front Gate	62 nG y/h
3/11	P.M. 10:30	正門付近	around Front Gate	60 nG y/h
3/11	P.M. 10:40	正門付近	around Front Gate	60 nG y/h
3/11	P.M. 10:50	正門付近	around Front Gate	59 nG y/h
3/11	P.M. 11:00	正門付近	around Front Gate	60 nG y/h
3/11	P.M. 11:10	正門付近	around Front Gate	63 nG y/h
3/11	P.M. 11:20	正門付近	around Front Gate	60 nG y/h
3/11	P.M. 11:40	正門付近	around Front Gate	63 nG y/h
3/11	P.M. 11:50	正門付近	around Front Gate	59 nG y/h
3/12	A.M.0:00	正門付近	around Front Gate	60 nG y/h
3/12	A.M. 0:10	正門	Front Gate	62 nG y/h
3/12	A.M. 0:20	正門	Front Gate	65 nG y/h
3/12	A.M. 0:30	正門	Front Gate	64 nG y/h
3/12	A.M. 0:40	正門	Front Gate	63 nG y/h
3/12	A.M. 1:40	正門	Front Gate	68 nG y/h
3/12	A.M. 1:50	正門	Front Gate	66 nG y/h
3/12	A.M. 2:00	正門	Front Gate	68 nG y/h
3/12	A.M. 2:10	正門	Front Gate	64 nG y/h
3/12	A.M. 2:20	正門	Front Gate	67 nG y/h
3/12	A.M. 2:30	正門	Front Gate	65 nG y/h
3/12	A.M. 2:40	正門	Front Gate	66 nG y/h
3/12	A.M. 2:50	正門	Front Gate	65 nG y/h



3/12	A.M. 3:00	正門	Front Gate	69 nG y/h
3/12	A.M. 3:10	正門	Front Gate	66 nG y/h
3/12	A.M. 3:20	正門	Front Gate	69 nG y/h
3/12	A.M. 3:30	正門	Front Gate	68 nG y/h
3/12	A.M. 3:40	正門	Front Gate	66 nG y/h
3/12	A.M. 3:50	正門	Front Gate	64 nG y/h
3/12	A.M. 4:00	正門	Front Gate	69 nG y/h
3/12	A.M. 4:40	正門	Front Gate	866 nGy/h
3/12	A.M. 4:50	正門	Front Gate	1002 nGy/h
3/12	A.M. 5:00	正門	Front Gate	1307 nGy/h
3/12	A.M. 5:10	正門	Front Gate	1590 nGy/h
3/12	A.M.6:25	MP－8 付	around MP-8	1.21μSv/h
3/12	A.M. 6:30	正門	Front Gate	3.29μSv/h
3/12	A.M.6:30	MP－8 付	around MP-8	1.53μSv/h
3/12	A.M. 6:40	正門	Front Gate	4.92μSv/h
3/12	A.M.7:35	MP－8 付	around MP-8	2.47μSv/h
3/12	A.M.7:40	MP－8 付	around MP-8	2.56μSv/h
3/12	A.M.7:45	MP－8 付	around MP-8	2.53μSv/h
3/12	A.M. 7:50	正門	Front Gate	4.97μSv/h
3/12	A.M.7:50	MP－8 付	around MP-8	2.50μSv/h
3/12	A.M.7:55	MP－8 付	around MP-8	2.50μSv/h
3/12	A.M.8:00	MP－8 付	around MP-8	2.42μSv/h
3/12	A.M. 8:00	正門	Front Gate	4.89μSv/h
3/12	A.M.8:05	MP－8 付	around MP-8	2.43μSv/h
3/12	A.M. 8:10	正門	Front Gate	5.08μSv/h
3/12	A.M.8:15	MP－8 付	around MP-8	2.40μSv/h
3/12	A.M. 8:20	正門	Front Gate	4.77μSv/h
3/12	A.M.8:20	MP－8 付	around MP-8	2.37μSv/h
3/12	A.M.8:25	MP－8 付	around MP-8	2.38μSv/h
3/12	A.M.8:30	MP－8 付	around MP-8	2.36μSv/h
3/12	A.M.8:35	MP－8 付	around MP-8	2.40μSv/h
3/12	A.M. 8:40	正門	Front Gate	4.56μSv/h
3/12	A.M.8:40	MP－8 付	around MP-8	2.34μSv/h
3/12	A.M.8:45	MP－8 付	around MP-8	2.51μSv/h
3/12	A.M. 8:50	正門	Front Gate	4.87μSv/h
3/12	A.M.9:10	MP－8 付	around MP-8	2.68μSv/h
3/12	A.M.9:15	MP－8 付	around MP-8	2.77μSv/h
3/12	A.M.9:20	MP－8 付	around MP-8	2.55μSv/h
3/12	A.M.9:25	MP－8 付	around MP-8	2.59μSv/h
3/12	A.M. 9:30	正門	Front Gate	5.16μSv/h
3/12	A.M.9:30	MP－8 付	around MP-8	2.61μSv/h
3/12	A.M.9:35	MP－8 付	around MP-8	2.59μSv/h
3/12	A.M.9:40	MP－8 付	around MP-8	2.62μSv/h
3/12	A.M.9:45	MP－8 付	around MP-8	2.64μSv/h
3/12	A.M. 9:50	正門	Front Gate	5.03μSv/h
3/12	A.M.9:50	MP－8 付	around MP-8	2.61μSv/h
3/12	A.M.9:55	MP－8 付	around MP-8	2.62μSv/h

3/12	A.M.10:00	正門	Front Gate	5.28 $\mu$ Sv/h
3/12	A.M.10:00	MP－8 付	around MP-8	4.50 $\mu$ Sv/h
3/12	A.M.10:05	MP－8 付	around MP-8	4.56 $\mu$ Sv/h
3/12	A.M.10:10	正門	Front Gate	6.65 $\mu$ Sv/h
3/12	A.M.10:10	MP－8 付	around MP-8	4.61 $\mu$ Sv/h
3/12	A.M.10:15	MP－8 付	around MP-8	4.25 $\mu$ Sv/h
3/12	A.M.10:20	正門	Front Gate	180.2 $\mu$ Sv/h
3/12	A.M.10:20	MP－8 付	around MP-8	3.85 $\mu$ Sv/h
3/12	A.M.10:25	MP－8 付	around MP-8	4.75 $\mu$ Sv/h
3/12	A.M.10:30	正門	Front Gate	385.5 $\mu$ Sv/h
3/12	A.M.10:30	MP－8 付	around MP-8	9.14 $\mu$ Sv/h
3/12	A.M.10:35	MP－8 付	around MP-8	24.1 $\mu$ Sv/h
3/12	A.M.10:40	正門	Front Gate	162.9 $\mu$ Sv/h
3/12	A.M.10:45	MP－8 付	around MP-8	16.9 $\mu$ Sv/h
3/12	P.M. 10:50	正門	Front Gate	7.04 $\mu$ Sv/h
3/12	P.M. 10:50	MP－8 付	around MP-8	6.65 $\mu$ Sv/h
3/12	A.M.11:00	正門	Front Gate	6.69 $\mu$ Sv/h
3/12	A.M.11:00	MP－8 付	around MP-8	5.16 $\mu$ Sv/h
3/12	A.M.11:10	正門	Front Gate	6.32 $\mu$ Sv/h
3/12	A.M.11:10	MP－8 付	around MP-8	4.86 $\mu$ Sv/h
3/12	A.M.11:20	正門	Front Gate	9.43 $\mu$ Sv/h
3/12	A.M.11:20	MP－8 付	around MP-8	5.22 $\mu$ Sv/h
3/12	A.M.11:30	正門	Front Gate	35.77 $\mu$ Sv/h
3/12	A.M.11:30	MP－8 付	around MP-8	5.03 $\mu$ Sv/h
3/12	A.M.11:40	正門	Front Gate	12.53 $\mu$ Sv/h
3/12	A.M.11:40	MP－8 付	around MP-8	3.80 $\mu$ Sv/h
3/12	A.M.11:50	正門	Front Gate	17.10 $\mu$ Sv/h
3/12	A.M.11:50	MP－8 付	around MP-8	4.05 $\mu$ Sv/h
3/12	P.M. 0:00	正門	Front Gate	23.21 $\mu$ Sv/h
3/12	P.M. 0:00	MP－8 付	around MP-8	5.32 $\mu$ Sv/h
3/12	P.M. 0:05	MP－8 付	around MP-8	8.80 $\mu$ Sv/h
3/12	P.M. 0:10	正門	Front Gate	48.23 $\mu$ Sv/h
3/12	A.M.0:10	MP－8 付	around MP-8	13.5 $\mu$ Sv/h
3/12	P.M. 0:15	MP－8 付	around MP-8	11.7 $\mu$ Sv/h
3/12	P.M. 0:20	正門	Front Gate	11.56 $\mu$ Sv/h
3/12	P.M. 0:20	MP－8 付	around MP-8	4.13 $\mu$ Sv/h
3/12	P.M. 0:25	MP－8 付	around MP-8	3.83 $\mu$ Sv/h
3/12	P.M. 0:30	正門	Front Gate	5.78 $\mu$ Sv/h
3/12	P.M. 0:30	MP－8 付	around MP-8	3.58 $\mu$ Sv/h
3/12	P.M. 0:40	正門	Front Gate	5.62 $\mu$ Sv/h
3/12	P.M. 0:40	MP－8 付	around MP-8	3.60 $\mu$ Sv/h
3/12	P.M. 0:50	正門	Front Gate	5.48 $\mu$ Sv/h
3/12	P.M. 0:50	MP－8 付	around MP-8	3.52 $\mu$ Sv/h
3/12	P.M. 1:00	正門	Front Gate	5.39 $\mu$ Sv/h
3/12	P.M. 1:00	MP－8 付	around MP-8	3.66 $\mu$ Sv/h
3/12	P.M. 1:10	正門	Front Gate	5.31 $\mu$ Sv/h
3/12	P.M. 1:10	MP－8 付	around MP-8	3.74 $\mu$ Sv/h

3/12	P.M. 1:20	正門	Front Gate	10.90 $\mu$ Sv/h
3/12	P.M. 1:30	MP - 8 付	around MP-8	2.33 $\mu$ Sv/h
3/12	P.M. 1:40	正門	Front Gate	4.782 $\mu$ Sv/h
3/12	P.M. 1:40	MP - 8 付	around MP-8	2.31 $\mu$ Sv/h
3/12	P.M. 1:50	MP - 8 付	around MP-8	2.81 $\mu$ Sv/h
3/12	P.M. 1:50	正門	Front Gate	4.82 $\mu$ Sv/h
3/12	P.M. 1:55	MP - 8 付	around MP-8	3.13 $\mu$ Sv/h
3/12	P.M. 2:00	正門	Front Gate	4.60 $\mu$ Sv/h
3/12	P.M. 2:00	MP - 8 付	around MP-8	2.11 $\mu$ Sv/h
3/12	P.M. 2:10	正門	Front Gate	7.30 $\mu$ Sv/h
3/12	P.M. 2:10	MP - 8 付	around MP-8	3.02 $\mu$ Sv/h
3/12	P.M. 2:20	正門	Front Gate	10.90 $\mu$ Sv/h
3/12	P.M. 2:20	MP - 8 付	around MP-8	3.80 $\mu$ Sv/h
3/12	P.M. 2:30	正門	Front Gate	9.98 $\mu$ Sv/h
3/12	P.M. 2:30	MP - 8 付	around MP-8	3.49 $\mu$ Sv/h
3/12	P.M. 2:40	正門	Front Gate	8.86 $\mu$ Sv/h
3/12	P.M. 2:40	MP - 8 付	around MP-8	3.33 $\mu$ Sv/h
3/12	P.M. 2:50	正門	Front Gate	7.72 $\mu$ Sv/h
3/12	P.M. 2:50	MP - 8 付	around MP-8	3.50 $\mu$ Sv/h
3/12	P.M. 3:00	正門	Front Gate	6.95 $\mu$ Sv/h
3/12	P.M. 3:00	MP - 8 付	around MP-8	3.50 $\mu$ Sv/h
3/12	P.M. 3:10	正門	Front Gate	6.99 $\mu$ Sv/h
3/12	P.M. 3:10	MP - 8 付	around MP-8	3.33 $\mu$ Sv/h
3/12	P.M. 3:20	正門	Front Gate	5.59 $\mu$ Sv/h
3/12	P.M. 3:20	MP - 8 付	around MP-8	3.23 $\mu$ Sv/h
3/12	P.M. 3:30	正門	Front Gate	5.49 $\mu$ Sv/h
3/12	P.M. 3:30	MP - 8 付	around MP-8	3.21 $\mu$ Sv/h
3/12	P.M. 3:40	正門	Front Gate	8.23 $\mu$ Sv/h
3/12	P.M. 3:40	MP - 8 付	around MP-8	3.33 $\mu$ Sv/h
3/12	P.M. 3:50	正門	Front Gate	5.311 $\mu$ Sv/h
3/12	P.M. 3:50	MP - 8 付	around MP-8	2.19 $\mu$ Sv/h
3/12	P.M. 4:00	正門	Front Gate	5.29 $\mu$ Sv/h
3/12	P.M. 4:00	MP - 8 付	around MP-8	2.22 $\mu$ Sv/h
3/12	P.M. 4:10	正門	Front Gate	3.64 $\mu$ Sv/h
3/12	P.M. 4:10	MP - 8 付	around MP-8	2.20 $\mu$ Sv/h
3/12	P.M. 4:20	正門	Front Gate	3.43 $\mu$ Sv/h
3/12	P.M. 4:20	MP - 8 付	around MP-8	2.18 $\mu$ Sv/h
3/12	P.M. 4:30	正門	Front Gate	3.32 $\mu$ Sv/h
3/12	P.M. 4:30	MP - 8 付	around MP-8	2.12 $\mu$ Sv/h
3/12	P.M. 4:40	正門	Front Gate	3.25 $\mu$ Sv/h
3/12	P.M. 4:40	MP - 8 付	around MP-8	2.06 $\mu$ Sv/h
3/12	P.M. 4:50	正門	Front Gate	3.25 $\mu$ Sv/h
3/12	P.M. 4:50	MP - 8 付	around MP-8	3.78 $\mu$ Sv/h
3/12	P.M. 7:25	MP - 8 付	around MP-8	80.0 $\mu$ Sv/h
3/12	P.M. 7:50	正門	Front Gate	23.9 $\mu$ Sv/h
3/12	P.M. 8:00	正門	Front Gate	2.74 $\mu$ Sv/h
3/12	P.M. 8:00	MP - 8 付	around MP-8	10.0 $\mu$ Sv/h



3/12	P.M. 8:10	正門	Front Gate	3.21μSv/h
3/12	P.M. 8:10	MP - 8 付	around MP-8	10.0μSv/h
3/12	P.M. 8:20	正門	Front Gate	3.19μSv/h
3/12	P.M. 8:20	MP - 8 付	around MP-8	10.0μSv/h
3/12	P.M. 8:30	正門	Front Gate	3.16μSv/h
3/12	P.M. 8:40	MP - 8 付	around MP-8	5.0μSv/h
3/12	P.M. 8:50	MP - 8 付	around MP-8	6.0μSv/h
3/12	P.M. 9:00	MP - 8 付	around MP-8	80.0μSv/h
3/12	P.M. 9:10	MP - 8 付	around MP-8	80.0μSv/h
3/12	P.M. 9:20	MP - 8 付	around MP-8	70.0μSv/h
3/12	P.M. 9:30	MP - 8 付	around MP-8	80.0μSv/h
3/12	P.M. 9:40	MP - 8 付	around MP-8	50.0μSv/h
3/12	P.M. 9:50	正門	Front Gate	2.958μSv/h
3/12	P.M. 9:50	MP - 8 付	around MP-8	70.0μSv/h
3/12	P.M. 10:00	正門	Front Gate	2.985μSv/h
3/12	P.M. 10:00	MP - 8 付	around MP-8	70.0μSv/h
3/12	P.M. 10:10	正門	Front Gate	21.620μSv/h
3/12	P.M. 10:20	正門	Front Gate	2.91μSv/h
3/12	P.M. 10:30	正門	Front Gate	2.92μSv/h
3/12	P.M. 10:30	MP - 8 付	around MP-8	4.87μSv/h
3/12	P.M. 10:35	MP - 8 付	around MP-8	4.70μSv/h
3/12	P.M. 10:40	正門	Front Gate	2.85μSv/h
3/12	P.M. 10:40	MP - 8 付	around MP-8	4.12μSv/h
3/12	P.M. 10:50	正門	Front Gate	3.14μSv/h
3/12	P.M. 10:50	MP - 8 付	around MP-8	4.35μSv/h
3/12	P.M. 11:00	正門	Front Gate	3.33μSv/h
3/12	P.M. 11:00	MP - 8 付	around MP-8	4.30μSv/h
3/12	P.M. 11:10	正門	Front Gate	3.29μSv/h
3/12	P.M. 11:20	正門	Front Gate	3.27μSv/h
3/12	P.M. 11:30	正門	Front Gate	3.09μSv/h
3/12	P.M. 11:30	MP - 8 付	around MP-8	4.50μSv/h
3/12	P.M. 11:40	正門	Front Gate	3.21μSv/h
3/12	P.M. 11:50	正門	Front Gate	3.07μSv/h
3/13	A.M. 0:00	正門	Front Gate	3.16μSv/h
3/13	A.M.0:00	MP - 8 付	around MP-8	5.0μSv/h
3/13	A.M. 0:10	正門	Front Gate	3.291μSv/h
3/13	A.M.0:10	MP - 8 付	around MP-8	4.7μSv/h
3/13	A.M. 0:20	正門	Front Gate	3.016μSv/h
3/13	A.M.0:20	MP - 8 付	around MP-8	4.5μSv/h
3/13	A.M. 0:30	正門	Front Gate	3.146μSv/h
3/13	A.M.0:30	MP - 8 付	around MP-8	4.5μSv/h
3/13	A.M. 0:40	正門	Front Gate	3.181μSv/h
3/13	A.M.0:40	MP - 8 付	around MP-8	5.0μSv/h
3/13	A.M. 0:50	正門	Front Gate	3.177μSv/h
3/13	A.M.0:50	MP - 8 付	around MP-8	4.5μSv/h
3/13	A.M. 1:00	正門	Front Gate	3.201μSv/h
3/13	A.M.1:00	MP - 8 付	around MP-8	5.5μSv/h

3/13	A.M. 1:10	正門	Front Gate	3.207 $\mu$ Sv/h
3/13	A.M.1:10	M P - 8 付	around MP-8	4.5 $\mu$ Sv/h
3/13	A.M. 1:20	正門	Front Gate	3.163 $\mu$ Sv/h
3/13	A.M.1:20	M P - 8 付	around MP-8	5.0 $\mu$ Sv/h
3/13	A.M. 1:30	正門	Front Gate	3.127 $\mu$ Sv/h
3/13	A.M.1:30	M P - 8 付	around MP-8	5.5 $\mu$ Sv/h
3/13	A.M. 1:40	正門	Front Gate	3.329 $\mu$ Sv/h
3/13	A.M.1:40	M P - 8 付	around MP-8	5.0 $\mu$ Sv/h
3/13	A.M. 1:50	正門	Front Gate	3.125 $\mu$ Sv/h
3/13	A.M.1:50	M P - 8 付	around MP-8	5.0 $\mu$ Sv/h
3/13	A.M. 2:00	正門	Front Gate	3.186 $\mu$ Sv/h
3/13	A.M.2:00	M P - 8 付	around MP-8	5.5 $\mu$ Sv/h
3/13	A.M. 2:10	正門	Front Gate	3.116 $\mu$ Sv/h
3/13	A.M.2:10	M P - 8 付	around MP-8	5.0 $\mu$ Sv/h
3/13	A.M. 2:20	正門	Front Gate	3.214 $\mu$ Sv/h
3/13	A.M.2:20	M P - 8 付	around MP-8	4.5 $\mu$ Sv/h
3/13	A.M. 2:30	正門	Front Gate	3.164 $\mu$ Sv/h
3/13	A.M.2:30	M P - 8 付	around MP-8	4.5 $\mu$ Sv/h
3/13	A.M. 2:40	正門	Front Gate	3.129 $\mu$ Sv/h
3/13	A.M.2:40	M P - 8 付	around MP-8	4.5 $\mu$ Sv/h
3/13	A.M. 2:50	正門	Front Gate	3.104 $\mu$ Sv/h
3/13	A.M.2:50	M P - 8 付	around MP-8	4.5 $\mu$ Sv/h
3/13	A.M. 3:00	正門	Front Gate	3.574 $\mu$ Sv/h
3/13	A.M. 3:10	正門	Front Gate	3.978 $\mu$ Sv/h
3/13	A.M. 3:20	正門	Front Gate	3.236 $\mu$ Sv/h
3/13	A.M. 3:30	正門	Front Gate	3.103 $\mu$ Sv/h
3/13	A.M. 3:40	正門	Front Gate	3.392 $\mu$ Sv/h
3/13	A.M.3:40	M P - 8 付	around MP-8	5.0 $\mu$ Sv/h
3/13	A.M. 3:50	正門	Front Gate	3.186 $\mu$ Sv/h
3/13	A.M.3:50	M P - 8 付	around MP-8	5.1 $\mu$ Sv/h
3/13	A.M. 4:00	正門	Front Gate	3.039 $\mu$ Sv/h
3/13	A.M.4:00	M P - 8 付	around MP-8	5.2 $\mu$ Sv/h
3/13	A.M. 4:10	正門	Front Gate	3.564 $\mu$ Sv/h
3/13	A.M.4:10	M P - 8 付	around MP-8	5.0 $\mu$ Sv/h
3/13	A.M. 4:20	正門	Front Gate	3.150 $\mu$ Sv/h
3/13	A.M.4:20	M P - 8 付	around MP-8	5.5 $\mu$ Sv/h
3/13	A.M. 4:30	正門	Front Gate	3.122 $\mu$ Sv/h
3/13	A.M.4:30	M P - 8 付	around MP-8	5.0 $\mu$ Sv/h
3/13	A.M. 4:40	正門	Front Gate	3.256 $\mu$ Sv/h
3/13	A.M.4:40	M P - 8 付	around MP-8	5.0 $\mu$ Sv/h
3/13	A.M.4:50	正門		3.104 $\mu$ Sv/h
3/13	A.M.4:50	M P - 8 付	around MP-8	4.5 $\mu$ Sv/h
3/13	A.M. 5:00	正門	Front Gate	3.204 $\mu$ Sv/h
3/13	A.M.5:00	M P - 8 付	around MP-8	5.0 $\mu$ Sv/h
3/13	A.M. 5:10	正門	Front Gate	3.360 $\mu$ Sv/h
3/13	A.M.5:10	M P - 8 付	around MP-8	5.0 $\mu$ Sv/h
3/13	A.M. 5:20	正門	Front Gate	3.472 $\mu$ Sv/h

3/13	A.M.5:20	M P - 8 付	around MP-8	4.6 $\mu$ Sv/h
3/13	A.M. 5:30	正門	Front Gate	3.817 $\mu$ Sv/h
3/13	A.M.5:30	M P - 8 付	around MP-8	5.0 $\mu$ Sv/h
3/13	A.M. 5:40	正門	Front Gate	3.224 $\mu$ Sv/h
3/13	A.M.5:40	M P - 8 付	around MP-8	4.5 $\mu$ Sv/h
3/13	A.M. 5:50	正門	Front Gate	3.192 $\mu$ Sv/h
3/13	A.M.5:50	M P - 8 付	around MP-8	5.2 $\mu$ Sv/h
3/13	A.M. 6:00	正門	Front Gate	3.467 $\mu$ Sv/h
3/13	A.M.6:00	M P - 8 付	around MP-8	5.6 $\mu$ Sv/h
3/13	A.M. 6:10	正門	Front Gate	3.188 $\mu$ Sv/h
3/13	A.M.6:10	M P - 8 付	around MP-8	5.9 $\mu$ Sv/h
3/13	A.M. 6:20	正門	Front Gate	3.160 $\mu$ Sv/h
3/13	A.M.6:20	M P - 8 付	around MP-8	5.7 $\mu$ Sv/h
3/13	A.M. 6:30	正門	Front Gate	3.625 $\mu$ Sv/h
3/13	A.M.6:30	M P - 8 付	around MP-8	5.7 $\mu$ Sv/h
3/13	A.M. 6:40	正門	Front Gate	3.092 $\mu$ Sv/h
3/13	A.M.6:40	M P - 8 付	around MP-8	5.7 $\mu$ Sv/h
3/13	A.M. 6:50	正門	Front Gate	3.006 $\mu$ Sv/h
3/13	A.M.6:50	M P - 8 付	around MP-8	5.7 $\mu$ Sv/h
3/13	A.M. 7:00	正門	Front Gate	3.652 $\mu$ Sv/h
3/13	A.M.7:00	M P - 8 付	around MP-8	7.7 $\mu$ Sv/h
3/13	A.M. 7:10	正門	Front Gate	3.415 $\mu$ Sv/h
3/13	A.M.7:10	M P - 8 付	around MP-8	8.5 $\mu$ Sv/h
3/13	A.M. 7:20	正門	Front Gate	3.325 $\mu$ Sv/h
3/13	A.M.7:20	M P - 8 付	around MP-8	6.0 $\mu$ Sv/h
3/13	A.M. 7:30	正門	Front Gate	3.530 $\mu$ Sv/h
3/13	A.M.7:30	M P - 8 付	around MP-8	5.6 $\mu$ Sv/h
3/13	A.M. 7:40	正門	Front Gate	3.413 $\mu$ Sv/h
3/13	A.M. 7:50	正門	Front Gate	7.227 $\mu$ Sv/h
3/13	A.M. 8:00	正門	Front Gate	3.510 $\mu$ Sv/h
3/13	A.M. 8:10	正門	Front Gate	3.166 $\mu$ Sv/h
3/13	A.M.8:10	M P - 1 付	around MP-1	100 $\mu$ Sv/h
3/13	A.M. 8:20	正門	Front Gate	3.166 $\mu$ Sv/h
3/13	A.M.8:20	M P - 1 付	around MP-1	100 $\mu$ Sv/h
3/13	A.M. 8:30	正門	Front Gate	14.730 $\mu$ Sv/h
3/13	A.M.8:30	M P - 1 付	around MP-1	80 $\mu$ Sv/h
3/13	A.M. 8:40	正門	Front Gate	16.030 $\mu$ Sv/h
3/13	A.M.8:40	M P - 1 付	around MP-1	80 $\mu$ Sv/h
3/13	A.M. 8:50	正門	Front Gate	15.900 $\mu$ Sv/h
3/13	A.M.8:50	M P - 1 付	around MP-1	90 $\mu$ Sv/h
3/13	A.M. 9:00	正門	Front Gate	10.240 $\mu$ Sv/h
3/13	A.M.9:00	M P - 1 付	around MP-1	37 $\mu$ Sv/h
3/13	A.M.9:00	M P - 4 付	around MP-4	143.5 $\mu$ Sv/h
3/13	A.M. 9:10	正門	Front Gate	175.000 $\mu$ Sv/h
3/13	A.M.9:10	M P - 1 付	around MP-1	30 $\mu$ Sv/h
3/13	A.M.9:10	M P - 4 付	around MP-4	137.8 $\mu$ Sv/h
3/13	A.M. 9:20	正門	Front Gate	281.700 $\mu$ Sv/h



3/13	A.M.9:20	MP - 1 付	around MP-1	27 $\mu$ Sv/h
3/13	A.M.9:20	MP - 4 付	around MP-4	76.9 $\mu$ Sv/h
3/13	A.M. 9:30	正門	Front Gate	26.000 $\mu$ Sv/h
3/13	A.M.9:30	MP - 1 付	around MP-1	25 $\mu$ Sv/h
3/13	A.M.9:30	MP - 4 付	around MP-4	70.3 $\mu$ Sv/h
3/13	A.M.9:40	MP - 1 付	around MP-1	25 $\mu$ Sv/h
3/13	A.M.9:40	MP - 4 付	around MP-4	66.8 $\mu$ Sv/h
3/13	A.M.9:50	MP - 1 付	around MP-1	23 $\mu$ Sv/h
3/13	A.M.9:50	MP - 4 付	around MP-4	64.7 $\mu$ Sv/h
3/13	A.M.10:00	正門	Front Gate	6.512 $\mu$ Sv/h
3/13	A.M.10:00	MP - 1 付	around MP-1	23 $\mu$ Sv/h
3/13	A.M.10:00	MP - 4 付	around MP-4	62.9 $\mu$ Sv/h
3/13	A.M.10:10	正門	Front Gate	6.372 $\mu$ Sv/h
3/13	A.M.10:10	MP - 1 付	around MP-1	23 $\mu$ Sv/h
3/13	A.M.10:10	MP - 4 付	around MP-4	61.1 $\mu$ Sv/h
3/13	A.M.10:20	正門	Front Gate	8.265 $\mu$ Sv/h
3/13	A.M.10:20	MP - 1 付	around MP-1	20 $\mu$ Sv/h
3/13	A.M.10:20	MP - 4 付	around MP-4	61.8 $\mu$ Sv/h
3/13	A.M.10:30	正門	Front Gate	6.755 $\mu$ Sv/h
3/13	A.M.10:30	MP - 1 付	around MP-1	19 $\mu$ Sv/h
3/13	A.M.10:30	MP - 4 付	around MP-4	58.0 $\mu$ Sv/h
3/13	A.M.10:40	正門	Front Gate	6.020 $\mu$ Sv/h
3/13	A.M.10:40	MP - 1 付	around MP-1	19 $\mu$ Sv/h
3/13	A.M.10:40	MP - 4 付	around MP-4	56.8 $\mu$ Sv/h
3/13	A.M.10:50	正門	Front Gate	6.038 $\mu$ Sv/h
3/13	A.M.10:50	MP - 1 付	around MP-1	19 $\mu$ Sv/h
3/13	A.M.10:50	MP - 4 付	around MP-4	55.4 $\mu$ Sv/h
3/13	A.M.11:00	正門	Front Gate	5.766 $\mu$ Sv/h
3/13	A.M.11:00	MP - 1 付	around MP-1	18 $\mu$ Sv/h
3/13	A.M.11:00	MP - 4 付	around MP-4	54.3 $\mu$ Sv/h
3/13	A.M.11:10	正門	Front Gate	5.610 $\mu$ Sv/h
3/13	A.M.11:10	MP - 1 付	around MP-1	18 $\mu$ Sv/h
3/13	A.M.11:10	MP - 4 付	around MP-4	53.3 $\mu$ Sv/h
3/13	A.M.11:20	正門	Front Gate	5.998 $\mu$ Sv/h
3/13	A.M.11:20	MP - 1 付	around MP-1	18 $\mu$ Sv/h
3/13	A.M.11:20	MP - 4 付	around MP-4	53.7 $\mu$ Sv/h
3/13	A.M.11:30	正門	Front Gate	7.888 $\mu$ Sv/h
3/13	A.M.11:30	MP - 1 付	around MP-1	17 $\mu$ Sv/h
3/13	A.M.11:30	MP - 4 付	around MP-4	51.3 $\mu$ Sv/h
3/13	A.M.11:40	正門	Front Gate	6.837 $\mu$ Sv/h
3/13	A.M.11:40	MP - 1 付	around MP-1	17 $\mu$ Sv/h
3/13	A.M.11:40	MP - 4 付	around MP-4	50.0 $\mu$ Sv/h
3/13	A.M.11:50	正門	Front Gate	6.617 $\mu$ Sv/h
3/13	A.M.11:50	MP - 1 付	around MP-1	17 $\mu$ Sv/h
3/13	A.M.11:50	MP - 4 付	around MP-4	49.4 $\mu$ Sv/h
3/13	P.M. 0:00	正門	Front Gate	5.545 $\mu$ Sv/h
3/13	P.M. 0:00	MP - 1 付	around MP-1	17 $\mu$ Sv/h

3/13	P.M. 0:00	MP - 4 付	aournd MP-4	48.7μSv/h
3/13	P.M. 0:10	正門	Front Gate	5.537μSv/h
3/13	P.M. 0:10	MP - 1 付	around MP-1	18μSv/h
3/13	P.M. 0:10	MP - 4 付	aournd MP-4	47.8μSv/h
3/13	P.M. 0:20	正門	Front Gate	5.316μSv/h
3/13	P.M. 0:20	MP - 1 付	around MP-1	18μSv/h
3/13	P.M. 0:20	MP - 4 付	aournd MP-4	47.1μSv/h
3/13	P.M. 0:30	正門	Front Gate	5.495μSv/h
3/13	P.M. 0:30	MP - 1 付	around MP-1	17μSv/h
3/13	P.M. 0:30	MP - 4 付	aournd MP-4	46.3μSv/h
3/13	P.M. 0:40	正門	Front Gate	5.266μSv/h
3/13	P.M. 0:40	MP - 1 付	around MP-1	17μSv/h
3/13	P.M. 0:40	MP - 4 付	aournd MP-4	49.7Sv/h
3/13	P.M. 0:50	正門	Front Gate	5.369μSv/h
3/13	P.M. 0:50	MP - 1 付	around MP-1	17μSv/h
3/13	P.M. 0:50	MP - 4 付	aournd MP-4	45.2μSv/h
3/13	P.M. 1:00	正門	Front Gate	4.953μSv/h
3/13	P.M. 1:00	MP - 1 付	around MP-1	17μSv/h
3/13	P.M. 1:00	MP - 4 付	aournd MP-4	44.6μSv/h
3/13	P.M. 1:10	正門	Front Gate	4.794μSv/h
3/13	P.M. 1:10	MP - 1 付	around MP-1	17μSv/h
3/13	P.M. 1:10	MP - 4 付	aournd MP-4	44.0μSv/h
3/13	P.M. 1:20	正門	Front Gate	4.907μSv/h
3/13	P.M. 1:20	MP - 1 付	around MP-1	17μSv/h
3/13	P.M. 1:20	MP - 4 付	aournd MP-4	43.5μSv/h
3/13	P.M. 1:30	正門	Front Gate	4.852μSv/h
3/13	P.M. 1:30	MP - 1 付	around MP-1	16μSv/h
3/13	P.M. 1:30	MP - 4 付	aournd MP-4	42.9μSv/h
3/13	P.M. 1:40	正門	Front Gate	4.883μSv/h
3/13	P.M. 1:40	MP - 1 付	around MP-1	16μSv/h
3/13	P.M. 1:40	MP - 4 付	aournd MP-4	44.0μSv/h
3/13	P.M. 1:50	正門	Front Gate	4.965μSv/h
3/13	P.M. 1:50	MP - 1 付	around MP-1	24μSv/h
3/13	P.M. 1:50	MP - 4 付	aournd MP-4	905.1μSv/h
3/13	P.M. 2:00	正門	Front Gate	21.880μSv/h
3/13	P.M. 2:00	MP - 1 付	around MP-1	21μSv/h
3/13	P.M. 2:00	MP - 4 付	aournd MP-4	499.3μSv/h
3/13	P.M. 2:10	正門	Front Gate	39.710μSv/h
3/13	P.M. 2:10	MP - 1 付	around MP-1	21μSv/h
3/13	P.M. 2:10	MP - 4 付	aournd MP-4	646.0μSv/h
3/13	P.M. 2:20	正門	Front Gate	57.630μSv/h
3/13	P.M. 2:20	MP - 1 付	around MP-1	21μSv/h
3/13	P.M. 2:20	MP - 4 付	aournd MP-4	135.4μSv/h
3/13	P.M. 2:30	正門	Front Gate	17.610μSv/h
3/13	P.M. 2:30	MP - 1 付	around MP-1	32μSv/h
3/13	P.M. 2:30	MP - 4 付	aournd MP-4	129.9μSv/h
3/13	P.M. 2:40	正門	Front Gate	10.050μSv/h

3/13	P.M. 2:40	MP - 1 付	around MP-1	52 $\mu$ Sv/h
3/13	P.M. 2:40	MP - 4 付	aournd MP-4	133.0 $\mu$ Sv/h
3/13	P.M. 2:50	正門	Front Gate	10.850 $\mu$ Sv/h
3/13	P.M. 2:50	MP - 1 付	around MP-1	35 $\mu$ Sv/h
3/13	P.M. 2:50	MP - 4 付	aournd MP-4	169.0 $\mu$ Sv/h
3/13	P.M. 3:00	正門	Front Gate	8.311 $\mu$ Sv/h
3/13	P.M. 3:00	MP - 1 付	around MP-1	52 $\mu$ Sv/h
3/13	P.M. 3:00	MP - 4 付	aournd MP-4	58.7 $\mu$ Sv/h
3/13	P.M. 3:10	正門	Front Gate	5.717 $\mu$ Sv/h
3/13	P.M. 3:10	MP - 1 付	around MP-1	100 $\mu$ Sv/h
3/13	P.M. 3:10	MP - 4 付	aournd MP-4	54.3 $\mu$ Sv/h
3/13	P.M. 3:20	正門	Front Gate	4.717 $\mu$ Sv/h
3/13	P.M. 3:20	MP - 1 付	around MP-1	24 $\mu$ Sv/h
3/13	P.M. 3:20	MP - 4 付	aournd MP-4	54.0 $\mu$ Sv/h
3/13	P.M. 3:30	正門	Front Gate	4.461 $\mu$ Sv/h
3/13	P.M. 3:30	MP - 1 付	around MP-1	34 $\mu$ Sv/h
3/13	P.M. 3:30	MP - 4 付	aournd MP-4	51.8 $\mu$ Sv/h
3/13	P.M. 3:40	正門	Front Gate	4.360 $\mu$ Sv/h
3/13	P.M. 3:40	MP - 1 付	around MP-1	24 $\mu$ Sv/h
3/13	P.M. 3:40	MP - 4 付	aournd MP-4	56.5 $\mu$ Sv/h
3/13	P.M. 3:50	正門	Front Gate	5.469 $\mu$ Sv/h
3/13	P.M. 3:50	MP - 1 付	around MP-1	30 $\mu$ Sv/h
3/13	P.M. 3:50	MP - 4 付	aournd MP-4	76.1 $\mu$ Sv/h
3/13	P.M. 4:00	正門	Front Gate	5.154 $\mu$ Sv/h
3/13	P.M. 4:00	MP - 1 付	around MP-1	31 $\mu$ Sv/h
3/13	P.M. 4:00	MP - 4 付	aournd MP-4	107.1 $\mu$ Sv/h
3/13	P.M. 4:10	正門	Front Gate	4.555 $\mu$ Sv/h
3/13	P.M. 4:10	MP - 1 付	around MP-1	45 $\mu$ Sv/h
3/13	P.M. 4:10	MP - 4 付	aournd MP-4	58.0 $\mu$ Sv/h
3/13	P.M. 4:20	正門	Front Gate	4.336 $\mu$ Sv/h
3/13	P.M. 4:20	MP - 1 付	around MP-1	150 $\mu$ Sv/h
3/13	P.M. 4:20	MP - 4 付	aournd MP-4	57.6 $\mu$ Sv/h
3/13	P.M. 4:30	正門	Front Gate	4.277 $\mu$ Sv/h
3/13	P.M. 4:30	MP - 1 付	around MP-1	46 $\mu$ Sv/h
3/13	P.M. 4:30	MP - 4 付	aournd MP-4	71.5 $\mu$ Sv/h
3/13	P.M. 4:40	正門	Front Gate	4.235 $\mu$ Sv/h
3/13	P.M. 4:40	MP - 1 付	around MP-1	60 $\mu$ Sv/h
3/13	P.M. 4:40	MP - 4 付	aournd MP-4	57.2 $\mu$ Sv/h
3/13	P.M. 4:50	正門	Front Gate	4.224 $\mu$ Sv/h
3/13	P.M. 4:50	MP - 1 付	around MP-1	30 $\mu$ Sv/h
3/13	P.M. 4:50	MP - 4 付	aournd MP-4	100.1 $\mu$ Sv/h
3/13	P.M. 5:00	正門	Front Gate	4.301 $\mu$ Sv/h
3/13	P.M. 5:00	MP - 1 付	around MP-1	120 $\mu$ Sv/h
3/13	P.M. 5:00	MP - 4 付	aournd MP-4	79.4 $\mu$ Sv/h
3/13	P.M. 5:10	正門	Front Gate	4.213 $\mu$ Sv/h
3/13	P.M. 5:10	MP - 1 付	around MP-1	62 $\mu$ Sv/h
3/13	P.M. 5:10	MP - 4 付	aournd MP-4	60.8 $\mu$ Sv/h



3/13	P.M. 5:20	正門	Front Gate	4.640μSv/h
3/13	P.M. 5:20	MP - 1 付	around MP-1	45μSv/h
3/13	P.M. 5:20	MP - 4 付	around MP-4	57.0μSv/h
3/13	P.M. 5:30	正門	Front Gate	5.171μSv/h
3/13	P.M. 5:30	MP - 1 付	around MP-1	36μSv/h
3/13	P.M. 5:30	MP - 4 付	around MP-4	52.3μSv/h
3/13	P.M. 5:40	正門	Front Gate	5.898μSv/h
3/13	P.M. 5:40	MP - 1 付	around MP-1	40μSv/h
3/13	P.M. 5:40	MP - 4 付	around MP-4	56.8μSv/h
3/13	P.M. 5:50	正門	Front Gate	5.953μSv/h
3/13	P.M. 5:50	MP - 1 付	around MP-1	35μSv/h
3/13	P.M. 5:50	MP - 4 付	around MP-4	52.3μSv/h
3/13	P.M. 6:00	正門	Front Gate	5.382μSv/h
3/13	P.M. 6:00	MP - 1 付	around MP-1	35μSv/h
3/13	P.M. 6:00	MP - 4 付	around MP-4	50.1μSv/h
3/13	P.M. 6:10	正門	Front Gate	5.168μSv/h
3/13	P.M. 6:10	MP - 1 付	around MP-1	30μSv/h
3/13	P.M. 6:10	MP - 4 付	around MP-4	49.4μSv/h
3/13	P.M. 6:20	正門	Front Gate	5.250μSv/h
3/13	P.M. 6:20	MP - 1 付	around MP-1	27μSv/h
3/13	P.M. 6:20	MP - 4 付	around MP-4	48.6μSv/h
3/13	P.M. 6:30	正門	Front Gate	4.883μSv/h
3/13	P.M. 6:30	MP - 1 付	around MP-1	26μSv/h
3/13	P.M. 6:30	MP - 4 付	around MP-4	47.9μSv/h
3/13	P.M. 6:40	正門	Front Gate	4.980μSv/h
3/13	P.M. 6:40	MP - 1 付	around MP-1	25μSv/h
3/13	P.M. 6:40	MP - 4 付	around MP-4	47.3μSv/h
3/13	P.M. 6:50	正門	Front Gate	4.831μSv/h
3/13	P.M. 6:50	MP - 1 付	around MP-1	25μSv/h
3/13	P.M. 6:50	MP - 4 付	around MP-4	46.7μSv/h
3/13	P.M. 7:00	正門	Front Gate	5.224μSv/h
3/13	P.M. 7:00	MP - 1 付	around MP-1	25μSv/h
3/13	P.M. 7:00	MP - 4 付	around MP-4	46.1μSv/h
3/13	P.M. 7:10	正門	Front Gate	5.077μSv/h
3/13	P.M. 7:10	MP - 1 付	around MP-1	23μSv/h
3/13	P.M. 7:10	MP - 4 付	around MP-4	46.3μSv/h
3/13	P.M. 7:20	正門	Front Gate	4.709μSv/h
3/13	P.M. 7:20	MP - 1 付	around MP-1	22μSv/h
3/13	P.M. 7:23	MP - 4 付	around MP-4	44.8μSv/h
3/13	P.M. 7:30	正門	Front Gate	4.622μSv/h
3/13	P.M. 7:30	MP - 1 付	around MP-1	20μSv/h
3/13	P.M. 7:31	MP - 4 付	around MP-4	44.4μSv/h
3/13	P.M. 7:40	正門	Front Gate	4.844μSv/h
3/13	P.M. 7:40	MP - 1 付	around MP-1	26μSv/h
3/13	P.M. 7:41	MP - 4 付	around MP-4	44.0μSv/h
3/13	P.M. 7:50	正門	Front Gate	5.577μSv/h
3/13	P.M. 7:50	MP - 1 付	around MP-1	24μSv/h



3/13	P.M. 7:51	MP - 4 付	around MP-4	43.8 $\mu$ Sv/h
3/13	P.M. 8:00	正門	Front Gate	5.721 $\mu$ Sv/h
3/13	P.M. 8:00	MP - 1 付	around MP-1	24 $\mu$ Sv/h
3/13	P.M. 8:01	MP - 4 付	around MP-4	43.2 $\mu$ Sv/h
3/13	P.M. 8:10	正門	Front Gate	4.471 $\mu$ Sv/h
3/13	P.M. 8:10	MP - 2 付	around MP-1	450 $\mu$ Sv/h
3/13	P.M. 8:11	MP - 4 付	around MP-4	42.8 $\mu$ Sv/h
3/13	P.M. 8:20	正門	Front Gate	4.521 $\mu$ Sv/h
3/13	P.M. 8:20	MP - 2 付	around MP-1	450 $\mu$ Sv/h
3/13	P.M. 8:21	MP - 4 付	around MP-4	42.5 $\mu$ Sv/h
3/13	P.M. 8:30	正門	Front Gate	4.427 $\mu$ Sv/h
3/13	P.M. 8:30	MP - 2 付	around MP-2	440 $\mu$ Sv/h
3/13	P.M. 8:31	MP - 4 付	around MP-4	42.6 $\mu$ Sv/h
3/13	P.M. 8:40	正門	Front Gate	4.454 $\mu$ Sv/h
3/13	P.M. 8:40	MP - 2 付	around MP-2	440 $\mu$ Sv/h
3/13	P.M. 8:41	MP - 4 付	around MP-4	42.0 $\mu$ Sv/h
3/13	P.M. 8:50	正門	Front Gate	4.377 $\mu$ Sv/h
3/13	P.M. 8:50	MP - 2 付	around MP-2	440 $\mu$ Sv/h
3/13	P.M. 8:51	MP - 4 付	around MP-4	41.7 $\mu$ Sv/h
3/13	P.M. 9:00	正門	Front Gate	4.371 $\mu$ Sv/h
3/13	P.M. 9:00	MP - 2 付	around MP-2	440 $\mu$ Sv/h
3/13	P.M. 9:01	MP - 4 付	around MP-4	41.3 $\mu$ Sv/h
3/13	P.M. 9:10	正門	Front Gate	4.480 $\mu$ Sv/h
3/13	P.M. 9:10	MP - 2 付	around MP-2	440 $\mu$ Sv/h
3/13	P.M. 9:11	MP - 4 付	around MP-4	41.0 $\mu$ Sv/h
3/13	P.M. 9:20	正門	Front Gate	4.463 $\mu$ Sv/h
3/13	P.M. 9:20	MP - 2 付	around MP-2	440 $\mu$ Sv/h
3/13	P.M. 9:21	MP - 4 付	around MP-4	40.8 $\mu$ Sv/h
3/13	P.M. 9:30	正門	Front Gate	4.552 $\mu$ Sv/h
3/13	P.M. 9:30	MP - 2 付	around MP-2	440 $\mu$ Sv/h
3/13	P.M. 9:31	MP - 4 付	around MP-4	40.6 $\mu$ Sv/h
3/13	P.M. 9:40	正門	Front Gate	4.785 $\mu$ Sv/h
3/13	P.M. 9:40	MP - 2 付	around MP-2	440 $\mu$ Sv/h
3/13	P.M. 9:41	MP - 4 付	around MP-4	40.3 $\mu$ Sv/h
3/13	P.M. 9:50	正門	Front Gate	4.626 $\mu$ Sv/h
3/13	P.M. 9:50	MP - 2 付	around MP-2	440 $\mu$ Sv/h
3/13	P.M. 9:51	MP - 4 付	around MP-4	40.1 $\mu$ Sv/h
3/13	P.M. 10:00	正門	Front Gate	4.636 $\mu$ Sv/h
3/13	P.M. 10:00	MP - 2 付	around MP-2	430 $\mu$ Sv/h
3/13	P.M. 10:01	MP - 4 付	around MP-4	39.8 $\mu$ Sv/h
3/13	P.M. 10:10	正門	Front Gate	4.622 $\mu$ Sv/h
3/13	P.M. 10:10	MP - 2 付	around MP-2	430 $\mu$ Sv/h
3/13	P.M. 10:11	MP - 4 付	around MP-4	39.7 $\mu$ Sv/h
3/13	P.M. 10:20	正門	Front Gate	5.417 $\mu$ Sv/h
3/13	P.M. 10:20	MP - 2 付	around MP-2	430 $\mu$ Sv/h
3/13	P.M. 10:21	MP - 4 付	around MP-4	40.4 $\mu$ Sv/h
3/13	P.M. 10:30	正門	Front Gate	4.645 $\mu$ Sv/h

3/13	P.M. 10:30	MP - 2 付	around MP-2	430 $\mu$ Sv/h
3/13	P.M. 10:31	MP - 4 付	around MP-4	39.3 $\mu$ Sv/h
3/13	P.M. 10:40	正門	Front Gate	4.622 $\mu$ Sv/h
3/13	P.M. 10:40	MP - 2 付	around MP-2	430 $\mu$ Sv/h
3/13	P.M. 10:41	MP - 4 付	around MP-4	39.1 $\mu$ Sv/h
3/13	P.M. 10:50	正門	Front Gate	4.632 $\mu$ Sv/h
3/13	P.M. 10:50	MP - 2 付	around MP-2	420 $\mu$ Sv/h
3/13	P.M. 10:51	MP - 4 付	around MP-4	38.9 $\mu$ Sv/h
3/13	P.M. 11:00	正門	Front Gate	4.668 $\mu$ Sv/h
3/13	P.M. 11:00	MP - 2 付	around MP-2	420 $\mu$ Sv/h
3/13	P.M. 11:01	MP - 4 付	around MP-4	38.7 $\mu$ Sv/h
3/13	P.M. 11:10	正門	Front Gate	4.700 $\mu$ Sv/h
3/13	P.M. 11:10	MP - 2 付	around MP-2	420 $\mu$ Sv/h
3/13	P.M. 11:11	MP - 4 付	around MP-4	39.0 $\mu$ Sv/h
3/13	P.M. 11:20	正門	Front Gate	4.647 $\mu$ Sv/h
3/13	P.M. 11:20	MP - 2 付	around MP-2	420 $\mu$ Sv/h
3/13	P.M. 11:21	MP - 4 付	around MP-4	38.3 $\mu$ Sv/h
3/13	P.M. 11:30	正門	Front Gate	4.610 $\mu$ Sv/h
3/13	P.M. 11:30	MP - 2 付	around MP-2	410 $\mu$ Sv/h
3/13	P.M. 11:31	MP - 4 付	around MP-4	38.2 $\mu$ Sv/h
3/13	P.M. 11:40	正門	Front Gate	4.828 $\mu$ Sv/h
3/13	P.M. 11:40	MP - 2 付	around MP-2	420 $\mu$ Sv/h
3/13	P.M. 11:41	MP - 4 付	around MP-4	38.1 $\mu$ Sv/h
3/13	P.M. 11:50	正門	Front Gate	4.868 $\mu$ Sv/h
3/13	P.M. 11:50	MP - 2 付	around MP-2	410 $\mu$ Sv/h
3/13	P.M. 11:51	MP - 4 付	around MP-4	37.9 $\mu$ Sv/h
3/14	A.M. 0:00	正門	Front Gate	4.855 $\mu$ Sv/h
3/14	A.M.0:00	MP - 2 付	around MP-2	410 $\mu$ Sv/h
3/14	A.M.0:01	MP - 4 付	around MP-4	38.2 $\mu$ Sv/h
3/14	A.M. 0:10	正門	Front Gate	4.529 $\mu$ Sv/h
3/14	A.M.0:10	MP - 2 付	around MP-2	410 $\mu$ Sv/h
3/14	A.M.0:11	MP - 4 付	around MP-4	38.4 $\mu$ Sv/h
3/14	A.M. 0:20	正門	Front Gate	4.582 $\mu$ Sv/h
3/14	A.M.0:20	MP - 2 付	around MP-2	410 $\mu$ Sv/h
3/14	A.M.0:21	MP - 4 付	around MP-4	37.7 $\mu$ Sv/h
3/14	A.M. 0:30	正門	Front Gate	4.469 $\mu$ Sv/h
3/14	A.M.0:30	MP - 2 付	around MP-2	410 $\mu$ Sv/h
3/14	A.M.0:31	MP - 4 付	around MP-4	37.5 $\mu$ Sv/h
3/14	A.M. 0:40	正門	Front Gate	4.450 $\mu$ Sv/h
3/14	A.M.0:40	MP - 2 付	around MP-2	410 $\mu$ Sv/h
3/14	A.M.0:41	MP - 4 付	around MP-4	37.3 $\mu$ Sv/h
3/14	A.M. 0:50	正門	Front Gate	4.442 $\mu$ Sv/h
3/14	A.M.0:50	MP - 2 付	around MP-2	410 $\mu$ Sv/h
3/14	A.M.0:51	MP - 4 付	around MP-4	37.0 $\mu$ Sv/h
3/14	A.M. 1:00	正門	Front Gate	4.447 $\mu$ Sv/h
3/14	A.M.1:00	MP - 2 付	around MP-2	410 $\mu$ Sv/h
3/14	A.M.1:01	MP - 4 付	around MP-4	38.0 $\mu$ Sv/h



3/14	A.M. 1:10	正門	Front Gate	4.426μSv/h
3/14	A.M.1:10	MP - 2 付	around MP-2	410μSv/h
3/14	A.M.1:11	MP - 4 付	aournd MP-4	36.9μSv/h
3/14	A.M. 1:20	正門	Front Gate	4.281μSv/h
3/14	A.M.1:20	MP - 2 付	around MP-2	410μSv/h
3/14	A.M.1:21	MP - 4 付	aournd MP-4	36.7μSv/h
3/14	A.M. 1:30	正門	Front Gate	4.321μSv/h
3/14	A.M.1:30	MP - 2 付	around MP-2	410μSv/h
3/14	A.M.1:31	MP - 4 付	aournd MP-4	36.5μSv/h
3/14	A.M. 1:40	正門	Front Gate	4.322μSv/h
3/14	A.M.1:40	MP - 2 付	around MP-2	410μSv/h
3/14	A.M.1:41	MP - 4 付	aournd MP-4	36.4μSv/h
3/14	A.M. 1:50	正門	Front Gate	4.371μSv/h
3/14	A.M.1:50	MP - 2 付	around MP-2	410μSv/h
3/14	A.M.1:51	MP - 4 付	aournd MP-4	38.3μSv/h
3/14	A.M. 2:00	正門	Front Gate	4.356μSv/h
3/14	A.M.2:00	MP - 2 付	around MP-2	410μSv/h
3/14	A.M.2:00	MP - 4 付	aournd MP-4	36.4μSv/h
3/14	A.M. 2:10	正門	Front Gate	4.594μSv/h
3/14	A.M.2:10	MP - 2 付	around MP-2	410μSv/h
3/14	A.M.2:10	MP - 4 付	aournd MP-4	36.5μSv/h
3/14	A.M. 2:20	正門	Front Gate	751.2μSv/h
3/14	A.M.2:20	MP - 2 付	around MP-2	410μSv/h
3/14	A.M.2:20	MP - 4 付	aournd MP-4	44.6μSv/h
3/14	A.M. 2:30	正門	Front Gate	433.0μSv/h
3/14	A.M.2:30	MP - 2 付	around MP-2	440μSv/h
3/14	A.M.2:30	MP - 4 付	aournd MP-4	319.3μSv/h
3/14	A.M. 2:40	正門	Front Gate	420.0μSv/h
3/14	A.M.2:40	MP - 2 付	around MP-2	650μSv/h
3/14	A.M.2:40	MP - 4 付	aournd MP-4	189.7μSv/h
3/14	A.M. 2:50	正門	Front Gate	66.27μSv/h
3/14	A.M.2:50	MP - 2 付	around MP-2	490μSv/h
3/14	A.M.2:50	MP - 4 付	aournd MP-4	86.9μSv/h
3/14	A.M. 3:00	正門	Front Gate	65.520μSv/h
3/14	A.M.3:00	MP - 2 付	around MP-2	480μSv/h
3/14	A.M.3:00	MP - 4 付	aournd MP-4	144.2μSv/h
3/14	A.M. 3:10	正門	Front Gate	45.5μSv/h
3/14	A.M.3:10	MP - 2 付	around MP-2	650μSv/h
3/14	A.M.3:10	MP - 4 付	aournd MP-4	129.8μSv/h
3/14	A.M. 3:20	正門	Front Gate	15.43μSv/h
3/14	A.M.3:20	MP - 2 付	around MP-2	650μSv/h
3/14	A.M.3:20	MP - 4 付	aournd MP-4	123.9μSv/h
3/14	A.M. 3:30	正門	Front Gate	18.99μSv/h
3/14	A.M.3:30	MP - 2 付	around MP-2	720μSv/h
3/14	A.M.3:30	MP - 4 付	aournd MP-4	112.9μSv/h
3/14	A.M. 3:40	正門	Front Gate	14.99μSv/h
3/14	A.M.3:40	MP - 2 付	around MP-2	600μSv/h

3/14	A.M.3:40	MP - 4 付	around MP-4	73.6 $\mu$ Sv/h
3/14	A.M. 3:50	正門	Front Gate	10.32 $\mu$ Sv/h
3/14	A.M.3:50	MP - 2 付	around MP-2	680 $\mu$ Sv/h
3/14	A.M.3:50	MP - 4 付	around MP-4	70.0 $\mu$ Sv/h
3/14	A.M. 4:00	正門	Front Gate	10.07 $\mu$ Sv/h
3/14	A.M.4:00	MP - 2 付	around MP-2	820 $\mu$ Sv/h
3/14	A.M.4:00	MP - 4 付	around MP-4	68.8 $\mu$ Sv/h
3/14	A.M. 4:10	正門	Front Gate	6.706 $\mu$ Sv/h
3/14	A.M.4:10	MP - 2 付	around MP-2	450 $\mu$ Sv/h
3/14	A.M.4:10	MP - 4 付	around MP-4	54.7 $\mu$ Sv/h
3/14	A.M. 4:20	正門	Front Gate	7.748 $\mu$ Sv/h
3/14	A.M.4:20	MP - 2 付	around MP-2	430 $\mu$ Sv/h
3/14	A.M.4:20	MP - 4 付	around MP-4	47.6 $\mu$ Sv/h
3/14	A.M. 4:30	正門	Front Gate	7.710 $\mu$ Sv/h
3/14	A.M.4:30	MP - 2 付	around MP-2	420 $\mu$ Sv/h
3/14	A.M.4:30	MP - 4 付	around MP-4	50.0 $\mu$ Sv/h
3/14	A.M. 4:40	正門	Front Gate	7.045 $\mu$ Sv/h
3/14	A.M.4:40	MP - 2 付	around MP-2	420 $\mu$ Sv/h
3/14	A.M.4:40	MP - 4 付	around MP-4	42.9 $\mu$ Sv/h
3/14	A.M. 4:50	正門	Front Gate	6.900 $\mu$ Sv/h
3/14	A.M.4:50	MP - 2 付	around MP-2	420 $\mu$ Sv/h
3/14	A.M.4:51	MP - 4 付	around MP-4	40.6 $\mu$ Sv/h
3/14	A.M. 5:00	正門	Front Gate	6.65 $\mu$ Sv/h
3/14	A.M.5:00	MP - 2 付	around MP-2	400 $\mu$ Sv/h
3/14	A.M.5:01	MP - 4 付	around MP-4	39.9 $\mu$ Sv/h
3/14	A.M. 5:10	正門	Front Gate	6.516 $\mu$ Sv/h
3/14	A.M.5:10	MP - 2 付	around MP-2	420 $\mu$ Sv/h
3/14	A.M.5:11	MP - 4 付	around MP-4	39.0 $\mu$ Sv/h
3/14	A.M. 5:20	正門	Front Gate	6.735 $\mu$ Sv/h
3/14	A.M.5:20	MP - 2 付	around MP-2	420 $\mu$ Sv/h
3/14	A.M.5:21	MP - 4 付	around MP-4	41.3 $\mu$ Sv/h
3/14	A.M. 5:29	MP - 4 付	Front Gate	41.3 $\mu$ Sv/h
3/14	A.M.5:30	正門	around MP-2	6.494 $\mu$ Sv/h
3/14	A.M.5:30	MP - 2 付	around MP-4	400 $\mu$ Sv/h
3/14	A.M. 5:40	正門	Front Gate	6.410 $\mu$ Sv/h
3/14	A.M.5:40	MP - 2 付	around MP-2	420 $\mu$ Sv/h
3/14	A.M.5:41	MP - 4 付	around MP-4	38.3 $\mu$ Sv/h
3/14	A.M. 5:50	正門	Front Gate	6.340 $\mu$ Sv/h
3/14	A.M.5:50	MP - 2 付	around MP-2	400 $\mu$ Sv/h
3/14	A.M.5:51	MP - 4 付	around MP-4	38.1 $\mu$ Sv/h
3/14	A.M. 6:00	正門	Front Gate	5.144 $\mu$ Sv/h
3/14	A.M.6:00	MP - 2 付	around MP-2	400 $\mu$ Sv/h
3/14	A.M.6:01	MP - 4 付	around MP-4	37.9 $\mu$ Sv/h
3/14	A.M. 6:10	正門	Front Gate	5.021 $\mu$ Sv/h
3/14	A.M.6:11	MP - 4 付	around MP-4	37.8 $\mu$ Sv/h
3/14	A.M. 6:20	正門	Front Gate	5.032 $\mu$ Sv/h
3/14	A.M.6:21	MP - 4 付	around MP-4	37.4 $\mu$ Sv/h

3/14	A.M. 6:30	正門	Front Gate	4.920 $\mu$ Sv/h
3/14	A.M.7:53	MP - 4 付	arournd MP-4	69 $\mu$ Sv/h
3/14	A.M.8:07	MP - 4 付	arournd MP-4	40 $\mu$ Sv/h
3/14	A.M.8:19	MP - 4 付	arournd MP-4	39 $\mu$ Sv/h
3/14	A.M.8:30	MP - 3 付	arournd MP-3	287.2 $\mu$ Sv/h
3/14	A.M.8:31	MP - 4 付	arournd MP-4	75 $\mu$ Sv/h
3/14	A.M.8:40	MP - 3 付	arournd MP-3	274 $\mu$ Sv/h
3/14	A.M.8:41	MP - 4 付	arournd MP-4	40 $\mu$ Sv/h
3/14	A.M.8:50	MP - 3 付	arournd MP-3	268 $\mu$ Sv/h
3/14	A.M.9:00	MP - 3 付	arournd MP-3	304.8 $\mu$ Sv/h
3/14	A.M.9:10	MP - 3 付	arournd MP-3	443.7 $\mu$ Sv/h
3/14	A.M.9:12	MP - 3 付	arournd MP-3	518.7 $\mu$ Sv/h
3/14	A.M.9:20	MP - 3 付	arournd MP-3	481.0 $\mu$ Sv/h
3/14	A.M.9:25	MP - 4 付	arournd MP-4	87.083 $\mu$ Sv/h
3/14	A.M.9:30	MP - 3 付	arournd MP-3	339.4 $\mu$ Sv/h
3/14	A.M.9:40	MP - 3 付	arournd MP-3	293.7 $\mu$ Sv/h
3/14	A.M.9:43	MP - 4 付	arournd MP-4	48.899 $\mu$ Sv/h
3/14	A.M.9:50	MP - 3 付	arournd MP-3	274.9 $\mu$ Sv/h
3/14	A.M.9:53	MP - 4 付	arournd MP-4	43.256 $\mu$ Sv/h
3/14	A.M.10:00	MP - 3 付	arournd MP-3	269.4 $\mu$ Sv/h
3/14	A.M.10:05	MP - 4 付	arournd MP-4	41.998 $\mu$ Sv/h
3/14	A.M.10:10	MP - 3 付	arournd MP-3	266.8 $\mu$ Sv/h
3/14	A.M.10:11	MP - 4 付	arournd MP-4	41.533 $\mu$ Sv/h
3/14	A.M.10:20	MP - 3 付	arournd MP-3	265.4 $\mu$ Sv/h
3/14	A.M.10:27	MP - 4 付	arournd MP-4	40.694 $\mu$ Sv/h
3/14	A.M.10:30	MP - 3 付	arournd MP-3	261.6 $\mu$ Sv/h
3/14	A.M.10:35	MP - 4 付	arournd MP-4	40.155 $\mu$ Sv/h
3/14	A.M.10:40	MP - 3 付	arournd MP-3	261.900 $\mu$ Sv/h
3/14	A.M.10:41	MP - 4 付	arournd MP-4	39.716 $\mu$ Sv/h
3/14	A.M.10:50	MP - 3 付	arournd MP-3	261.0 $\mu$ Sv/h
3/14	A.M.10:51	MP - 4 付	arournd MP-4	39.406 $\mu$ Sv/h
3/14	A.M. 11:37	正門	Front Gate	50.387 $\mu$ Sv/h
3/14	A.M. 11:44	正門	Front Gate	19.6 $\mu$ Sv/h
3/14	P.M. 0:06	正門	Front Gate	10.816 $\mu$ Sv/h
3/14	P.M. 0:21	正門	Front Gate	10.65 $\mu$ Sv/h
3/14	P.M. 0:34	MP - 6 付	around MP-6	4.226 $\mu$ Sv/h
3/14	P.M. 0:46	MP - 5 付	around MP-5	6.86 $\mu$ Sv/h
3/14	P.M. 0:52	MP - 4 付	around MP-4	31.53 $\mu$ Sv/h
3/14	P.M. 1:04	MP - 3 付	around MP-3	229.7 $\mu$ Sv/h
3/14	P.M. 1:10	正門	Front Gate	12.0 $\mu$ Sv/h
3/14	P.M. 1:12	MP - 4 付	around MP-4	34.2 $\mu$ Sv/h
3/14	P.M. 1:15	正門	Front Gate	13.0 $\mu$ Sv/h
3/14	P.M. 1:20	正門	Front Gate	15.0 $\mu$ Sv/h
3/14	P.M. 1:25	正門	Front Gate	14.0 $\mu$ Sv/h
3/14	P.M. 1:28	MP - 5 付	around MP-5	6.377 $\mu$ Sv/h
3/14	P.M. 1:30	正門	Front Gate	13.0 $\mu$ Sv/h
3/14	P.M. 1:35	正門	Front Gate	13.0 $\mu$ Sv/h



3/14	P.M. 1:40	正門	Front Gate	11.0 $\mu$ Sv/h
3/14	P.M. 1:40	MP - 6 付	around MP-6	3.65 $\mu$ Sv/h
3/14	P.M. 1:45	正門	Front Gate	12.0 $\mu$ Sv/h
3/14	P.M. 1:50	正門	Front Gate	13.0 $\mu$ Sv/h
3/14	P.M. 1:55	正門	Front Gate	15.0 $\mu$ Sv/h
3/14	P.M. 2:02	MP - 5 付	around MP-5	6.088 $\mu$ Sv/h
3/14	P.M. 2:14	MP - 4 付	around MP-4	29.8 $\mu$ Sv/h
3/14	P.M. 2:30	MP - 3 付	around MP-3	231.1 $\mu$ Sv/h
3/14	P.M. 2:46	MP - 4 付	around MP-4	31.3 $\mu$ Sv/h
3/14	P.M. 2:58	MP - 5 付	around MP-4	6.2 $\mu$ Sv/h
3/14	P.M. 3:09	MP - 6 付	around MP-4	3.9 $\mu$ Sv/h
3/14	P.M. 2:16	MP - 5 付	around MP-5	6.0 $\mu$ Sv/h
3/14	P.M. 3:23	MP - 4 付	around MP-4	29.6 $\mu$ Sv/h
3/14	P.M. 3:30	MP - 3 付	around MP-3	226.2 $\mu$ Sv/h
3/14	P.M. 3:38	MP - 4 付	around MP-4	30.4 $\mu$ Sv/h
3/14	P.M. 4:02	MP - 5 付	around MP-5	5.9 $\mu$ Sv/h
3/14	P.M. 4:10	MP - 6 付	around MP-6	3.7 $\mu$ Sv/h
3/14	P.M. 5:00	正門	Front Gate	8.1 $\mu$ Sv/h
3/14	P.M. 5:10	正門	Front Gate	8.1 $\mu$ Sv/h
3/14	P.M. 5:20	正門	Front Gate	7.275 $\mu$ Sv/h
3/14	P.M. 5:30	正門	Front Gate	7.605 $\mu$ Sv/h
3/14	P.M. 5:40	正門	Front Gate	7.620 $\mu$ Sv/h
3/14	P.M. 5:50	正門	Front Gate	8.044 $\mu$ Sv/h
3/14	P.M. 6:00	正門	Front Gate	7.637 $\mu$ Sv/h
3/14	P.M. 6:10	正門	Front Gate	7.037 $\mu$ Sv/h
3/14	P.M. 6:20	正門	Front Gate	7.177 $\mu$ Sv/h
3/14	P.M. 6:30	正門	Front Gate	8.047 $\mu$ Sv/h
3/14	P.M. 6:40	正門	Front Gate	10.4 $\mu$ Sv/h
3/14	P.M. 6:46	正門	Front Gate	10.1 $\mu$ Sv/h
3/14	P.M. 7:00	正門	Front Gate	7.7 $\mu$ Sv/h
3/14	P.M. 7:10	正門	Front Gate	7.8 $\mu$ Sv/h
3/14	P.M. 7:20	正門	Front Gate	7.7 $\mu$ Sv/h
3/14	P.M. 7:30	正門	Front Gate	8.9 $\mu$ Sv/h
3/14	P.M. 7:40	正門	Front Gate	7.6 $\mu$ Sv/h
3/14	P.M. 7:50	正門	Front Gate	5.5 $\mu$ Sv/h
3/14	P.M. 8:00	正門	Front Gate	5.4 $\mu$ Sv/h
3/14	P.M. 8:10	正門	Front Gate	5.4 $\mu$ Sv/h
3/14	P.M. 8:20	正門	Front Gate	5.4 $\mu$ Sv/h
3/14	P.M. 8:30	正門	Front Gate	5.4 $\mu$ Sv/h
3/14	P.M. 8:40	正門	Front Gate	5.4 $\mu$ Sv/h
3/14	P.M. 8:50	正門	Front Gate	5.8 $\mu$ Sv/h
3/14	P.M. 8:55	正門	Front Gate	5.0 $\mu$ Sv/h
3/14	P.M. 9:00	正門	Front Gate	5.8 $\mu$ Sv/h
3/14	P.M. 9:05	正門	Front Gate	5.8 $\mu$ Sv/h
3/14	P.M. 9:10	正門	Front Gate	6.0 $\mu$ Sv/h
3/14	P.M. 9:15	正門	Front Gate	5.8 $\mu$ Sv/h
3/14	P.M. 9:20	正門	Front Gate	6.0 $\mu$ Sv/h

3/14	P.M. 9:25	正門	Front Gate	6.8μSv/h
3/14	P.M. 9:30	正門	Front Gate	29.7μSv/h
3/14	P.M. 9:35	正門	Front Gate	760.0μSv/h
3/14	P.M. 9:37	正門	Front Gate	3130.0μSv/h
3/14	P.M. 10:15	正門	Front Gate	431.7μSv/h
3/14	P.M. 10:20	正門	Front Gate	336.6μSv/h
3/14	P.M. 10:25	正門	Front Gate	301.9μSv/h
3/14	P.M. 10:35	正門	Front Gate	326.2μSv/h
3/14	P.M. 10:40	正門	Front Gate	293.7μSv/h
3/14	P.M. 10:45	正門	Front Gate	271.7μSv/h
3/14	P.M. 10:50	正門	Front Gate	267.0μSv/h
3/14	P.M. 10:55	正門	Front Gate	263.0μSv/h
3/14	P.M. 11:00	正門	Front Gate	252.7μSv/h
3/14	P.M. 11:05	正門	Front Gate	242.8μSv/h
3/14	P.M. 11:10	正門	Front Gate	235.3μSv/h
3/14	P.M. 11:15	正門	Front Gate	231.5μSv/h
3/14	P.M. 11:20	正門	Front Gate	227.0μSv/h
3/14	P.M. 11:25	正門	Front Gate	216.0μSv/h
3/14	P.M. 11:30	正門	Front Gate	216.0μSv/h
3/14	P.M. 11:35	正門	Front Gate	211.3μSv/h
3/14	P.M. 11:40	正門	Front Gate	205.6μSv/h
3/14	P.M. 11:45	正門	Front Gate	201.7μSv/h
3/14	P.M. 11:50	正門	Front Gate	196.2μSv/h
3/14	P.M. 11:55	正門	Front Gate	192.3μSv/h
3/15	A.M. 0:00	正門	Front Gate	188.9μSv/h
3/15	A.M. 0:05	正門	Front Gate	185.0μSv/h
3/15	A.M. 0:10	正門	Front Gate	181.0μSv/h
3/15	A.M. 0:15	正門	Front Gate	177.3μSv/h
3/15	A.M. 0:20	正門	Front Gate	175.8μSv/h
3/15	A.M. 0:25	正門	Front Gate	173.3μSv/h
3/15	A.M. 0:30	正門	Front Gate	168.0μSv/h
3/15	A.M. 0:35	正門	Front Gate	164.9μSv/h
3/15	A.M. 0:40	正門	Front Gate	164.4μSv/h
3/15	A.M. 0:45	正門	Front Gate	167.6μSv/h
3/15	A.M. 0:50	正門	Front Gate	164.3μSv/h
3/15	A.M. 0:55	正門	Front Gate	151.7μSv/h
3/15	A.M. 1:00	正門	Front Gate	150.3μSv/h
3/15	A.M. 1:05	正門	Front Gate	147.1μSv/h
3/15	A.M. 1:20	正門	Front Gate	137.8μSv/h
3/15	A.M. 1:30	正門	Front Gate	135.5μSv/h
3/15	A.M. 1:40	正門	Front Gate	130.4μSv/h
3/15	A.M. 1:50	正門	Front Gate	123.3μSv/h
3/15	A.M. 2:00	正門	Front Gate	120.2μSv/h
3/15	A.M. 2:10	正門	Front Gate	114.1μSv/h
3/15	A.M. 2:20	正門	Front Gate	111.4μSv/h
3/15	A.M. 2:30	正門	Front Gate	109.6μSv/h
3/15	A.M. 2:40	正門	Front Gate	105.4μSv/h

3/15	A.M. 3:10	正門	Front Gate	94.3μSv/h
3/15	A.M. 3:20	正門	Front Gate	92.8μSv/h
3/15	A.M. 3:40	正門	Front Gate	87.0μSv/h
3/15	A.M. 4:00	正門	Front Gate	81.9μSv/h
3/15	A.M. 4:20	正門	Front Gate	77.6μSv/h
3/15	A.M. 4:40	正門	Front Gate	73.6μSv/h
3/15	A.M. 5:00	正門	Front Gate	70.0μSv/h
3/15	A.M. 5:20	正門	Front Gate	67.4μSv/h
3/15	A.M. 5:40	正門	Front Gate	65.7μSv/h
3/15	A.M. 6:00	正門	Front Gate	73.2μSv/h
3/15	A.M. 8:20	正門	Front Gate	807.7μSv/h
3/15	A.M. 8:31	正門	Front Gate	8217.0μSv/h
3/15	A.M. 8:40	正門	Front Gate	1726.0μSv/h
3/15	A.M. 8:50	正門	Front Gate	2208.0μSv/h
3/15	A.M. 9:00	正門	Front Gate	11930.0μSv/h
3/15	A.M. 9:15	MP - 4 付	around MP-4	58.0μSv/h
3/15	A.M. 9:20	MP - 4 付	around MP-4	50.0μSv/h
3/15	A.M. 9:35	正門	Front Gate	7241.0μSv/h
3/15	A.M.10:15	正門	Front Gate	8837.0μSv/h
3/15	A.M.11:40	西門	West Gate	253.8μSv/h
3/15	A.M.11:45	西門	West Gate	162.4μSv/h
3/15	P.M. 0:05	西門	West Gate	2431.0μSv/h
3/15	P.M. 0:15	西門	West Gate	2434.0μSv/h
3/15	P.M. 0:25	正門	Front Gate	1407.0μSv/h
3/15	P.M. 0:35	正門	Front Gate	1325.0μSv/h
3/15	P.M. 0:45	正門	Front Gate	1267.0μSv/h
3/15	P.M. 0:55	正門	Front Gate	1216.0μSv/h
3/15	P.M. 1:00	正門	Front Gate	1191.0μSv/h
3/15	P.M. 1:10	正門	Front Gate	1148.0μSv/h
3/15	P.M. 1:20	正門	Front Gate	1100.0μSv/h
3/15	P.M. 1:30	正門	Front Gate	1068.0μSv/h
3/15	P.M. 1:40	正門	Front Gate	1014.0μSv/h
3/15	P.M. 1:50	正門	Front Gate	969.9μSv/h
3/15	P.M. 2:00	正門	Front Gate	928.2μSv/h
3/15	P.M. 2:10	正門	Front Gate	903.9μSv/h
3/15	P.M. 2:20	正門	Front Gate	874.4μSv/h
3/15	P.M. 2:30	正門	Front Gate	855.5μSv/h
3/15	P.M. 2:40	正門	Front Gate	821.3μSv/h
3/15	P.M. 2:50	正門	Front Gate	673.8μSv/h
3/15	P.M. 3:00	正門	Front Gate	649.0μSv/h
3/15	P.M. 3:10	正門	Front Gate	628.5μSv/h
3/15	P.M. 3:20	正門	Front Gate	613.8μSv/h
3/15	P.M. 3:30	正門	Front Gate	596.4μSv/h
3/15	P.M. 3:40	正門	Front Gate	566.9μSv/h
3/15	P.M. 3:50	正門	Front Gate	544.9μSv/h
3/15	P.M. 4:00	正門	Front Gate	531.6μSv/h
3/15	P.M. 4:10	正門	Front Gate	513.2μSv/h



3/15	P.M. 4:20	正門	Front Gate	502.6μSv/h
3/15	P.M. 4:30	正門	Front Gate	489.8μSv/h
3/15	P.M. 4:40	正門	Front Gate	473.0μSv/h
3/15	P.M. 4:50	正門	Front Gate	460.3μSv/h
3/15	P.M. 5:00	正門	Front Gate	449.4μSv/h
3/15	P.M. 5:10	正門	Front Gate	437.5μSv/h
3/15	P.M. 5:30	正門	Front Gate	423.5μSv/h
3/15	P.M. 6:00	正門	Front Gate	401.7μSv/h
3/15	P.M. 6:30	正門	Front Gate	403.0μSv/h
3/15	P.M. 7:00	正門	Front Gate	353.8μSv/h
3/15	P.M. 7:30	正門	Front Gate	343.3μSv/h
3/15	P.M. 8:00	正門	Front Gate	347.0μSv/h
3/15	P.M. 8:30	正門	Front Gate	311.3μSv/h
3/15	P.M. 9:00	正門	Front Gate	298.8μSv/h
3/15	P.M. 9:30	正門	Front Gate	282.6μSv/h
3/15	P.M. 10:00	正門	Front Gate	313.2μSv/h
3/15	P.M. 10:30	正門	Front Gate	431.8μSv/h
3/15	P.M. 11:00	正門	Front Gate	4548.0μSv/h
3/15	P.M. 11:10	正門	Front Gate	6960.0μSv/h
3/15	P.M. 11:15	正門	Front Gate	2761.0μSv/h
3/15	P.M. 11:20	正門	Front Gate	3648.0μSv/h
3/15	P.M. 11:25	正門	Front Gate	4976.0μSv/h
3/15	P.M. 11:30	正門	Front Gate	8080.0μSv/h
3/15	P.M. 11:35	正門	Front Gate	6308.0μSv/h
3/15	P.M. 11:40	正門	Front Gate	6592.0μSv/h
3/15	P.M. 11:45	正門	Front Gate	6847.0μSv/h
3/15	P.M. 11:50	正門	Front Gate	6066.0μSv/h
3/15	P.M. 11:55	正門	Front Gate	7966.0μSv/h
3/16	A.M. 0:00	正門	Front Gate	4351.0μSv/h
3/16	A.M. 0:10	正門	Front Gate	3504.0μSv/h
3/16	A.M. 0:20	正門	Front Gate	3108.0μSv/h
3/16	A.M. 0:30	正門	Front Gate	2609.0μSv/h
3/16	A.M. 1:00	正門	Front Gate	2159.0μSv/h
3/16	A.M. 1:10	正門	Front Gate	2021.0μSv/h
3/16	A.M. 1:20	正門	Front Gate	1937.0μSv/h
3/16	A.M. 1:30	正門	Front Gate	1805.0μSv/h
3/16	A.M. 1:40	正門	Front Gate	1708.0μSv/h
3/16	A.M. 1:50	正門	Front Gate	1628.0μSv/h
3/16	A.M. 2:00	正門	Front Gate	1552.0μSv/h
3/16	A.M. 2:10	正門	Front Gate	1522.0μSv/h
3/16	A.M. 2:20	正門	Front Gate	1453.0μSv/h
3/16	A.M. 2:30	正門	Front Gate	1386.0μSv/h
3/16	A.M. 2:40	正門	Front Gate	1357.0μSv/h
3/16	A.M. 2:50	正門	Front Gate	1316.0μSv/h
3/16	A.M. 3:00	正門	Front Gate	1267.0μSv/h
3/16	A.M. 3:30	正門	Front Gate	1159.0μSv/h
3/16	A.M. 4:00	正門	Front Gate	1047.0μSv/h



3/16	A.M. 4:30	正門	Front Gate	975.3μSv/h
3/16	A.M. 5:00	正門	Front Gate	918.2μSv/h
3/16	A.M. 5:30	正門	Front Gate	868.0μSv/h
3/16	A.M. 6:00	正門	Front Gate	884.0μSv/h
3/16	A.M. 6:30	正門	Front Gate	848.4μSv/h
3/16	A.M. 6:40	正門	Front Gate	837.0μSv/h
3/16	A.M. 6:50	正門	Front Gate	815.9μSv/h
3/16	A.M. 7:00	正門	Front Gate	808.8μSv/h
3/16	A.M. 7:10	正門	Front Gate	670.3μSv/h
3/16	A.M. 7:20	正門	Front Gate	661.8μSv/h
3/16	A.M. 7:30	正門	Front Gate	651.1μSv/h
3/16	A.M. 7:40	正門	Front Gate	644.0μSv/h
3/16	A.M. 7:50	正門	Front Gate	636.8μSv/h
3/16	A.M. 8:00	正門	Front Gate	627.5μSv/h
3/16	A.M. 8:10	正門	Front Gate	620.6μSv/h
3/16	A.M. 8:20	正門	Front Gate	613.9μSv/h
3/16	A.M. 8:30	正門	Front Gate	606.6μSv/h
3/16	A.M. 8:40	正門	Front Gate	600.4μSv/h
3/16	A.M. 8:50	正門	Front Gate	593.4μSv/h
3/16	A.M. 9:00	正門	Front Gate	587.6μSv/h
3/16	A.M. 9:10	正門	Front Gate	582.2μSv/h
3/16	A.M. 9:20	正門	Front Gate	582.4μSv/h
3/16	A.M. 9:30	正門	Front Gate	582.3μSv/h
3/16	A.M. 9:40	正門	Front Gate	641.8μSv/h
3/16	A.M. 9:50	正門	Front Gate	700.6μSv/h
3/16	A.M.10:00	正門	Front Gate	810.3μSv/h
3/16	A.M.10:10	正門	Front Gate	908.5μSv/h
3/16	A.M.10:20	正門	Front Gate	2399.0μSv/h
3/16	A.M.10:30	正門	Front Gate	1361.0μSv/h
3/16	A.M.10:45	正門	Front Gate	6400.0μSv/h
3/16	A.M.10:54	正門	Front Gate	2300.0μSv/h
3/16	A.M.10:55	正門	Front Gate	2900.0μSv/h
3/16	A.M.11:00	正門	Front Gate	3391.0μSv/h
3/16	A.M.11:10	正門	Front Gate	2720.0μSv/h
3/16	A.M.11:20	正門	Front Gate	1900.0μSv/h
3/16	A.M.11:30	正門	Front Gate	5350.0μSv/h
3/16	A.M.11:40	正門	Front Gate	2633.0μSv/h
3/16	A.M.11:50	正門	Front Gate	2578.0μSv/h
3/16	A.M. 0:00	正門	Front Gate	4418.0μSv/h
3/16	P.M. 0:10	正門	Front Gate	3138.0μSv/h
3/16	P.M. 0:20	正門	Front Gate	3261.0μSv/h
3/16	P.M. 0:30	正門	Front Gate	10850.0μSv/h
3/16	P.M. 0:40	正門	Front Gate	8234.0μSv/h
3/16	P.M. 0:50	正門	Front Gate	2851.0μSv/h
3/16	P.M. 1:00	正門	Front Gate	2672.0μSv/h
3/16	P.M. 1:10	正門	Front Gate	2538.0μSv/h
3/16	P.M. 1:20	正門	Front Gate	2430.0μSv/h



3/16	P.M. 1:30	正門	Front Gate	2331.0μSv/h
3/16	P.M. 1:40	正門	Front Gate	2257.0μSv/h
3/16	P.M. 1:50	正門	Front Gate	2182.0μSv/h
3/16	P.M. 2:00	正門	Front Gate	2122.0μSv/h
3/16	P.M. 2:10	正門	Front Gate	2059.0μSv/h
3/16	P.M. 2:20	正門	Front Gate	2002.0μSv/h
3/16	P.M. 2:30	正門	Front Gate	1937.0μSv/h
3/16	P.M. 2:40	正門	Front Gate	1888.0μSv/h
3/16	P.M. 2:50	正門	Front Gate	1835.0μSv/h
3/16	P.M. 3:00	正門	Front Gate	1788.0μSv/h
3/16	P.M. 3:10	正門	Front Gate	1752.0μSv/h
3/16	P.M. 3:20	正門	Front Gate	1697.0μSv/h
3/16	P.M. 3:30	正門	Front Gate	1664.0μSv/h
3/16	P.M. 3:40	正門	Front Gate	1629.0μSv/h
3/16	P.M. 3:50	正門	Front Gate	1591.0μSv/h
3/17	A.M. 0:30	西門	West Gate	351.4 μSv/h
3/17	A.M. 0:50	西門	West Gate	350.1 μSv/h
3/17	A.M. 1:00	西門	West Gate	350.0 μSv/h
3/17	A.M. 1:30	西門	West Gate	348.2 μSv/h
3/17	A.M. 2:00	西門	West Gate	345.9 μSv/h
3/17	A.M. 2:30	西門	West Gate	344.8 μSv/h
3/17	A.M. 3:00	西門	West Gate	344.6 μSv/h
3/17	A.M. 3:30	西門	West Gate	341.7 μSv/h
3/17	A.M. 4:00	西門	West Gate	340.8 μSv/h
3/17	A.M. 4:30	西門	West Gate	339.4 μSv/h
3/17	A.M. 5:00	西門	West Gate	338.3 μSv/h
3/17	A.M. 5:30	西門	West Gate	336.1 μSv/h
3/17	A.M. 6:00	西門	West Gate	334.7 μSv/h
3/17	A.M. 6:30	西門	West Gate	333.8 μSv/h
3/17	A.M. 7:30	西門	West Gate	314.5 μSv/h
3/17	A.M. 7:30	西門	West Gate	313.5 μSv/h
3/17	A.M. 7:50	體育館脇	a side of Gym	381.3 μSv/h
3/17	A.M. 8:00	體育館脇	a side of Gym	379.0 μSv/h
3/17	A.M. 8:30	體育館脇	a side of Gym	373.0 μSv/h
3/17	A.M. 8:40	體育館脇	a side of Gym	372.5 μSv/h
3/17	A.M. 8:50	體育館脇	a side of Gym	372.7 μSv/h
3/17	A.M. 9:00	體育館脇	a side of Gym	373.7 μSv/h
3/17	A.M. 9:10	體育館脇	a side of Gym	371.9 μSv/h
3/17	A.M. 9:30	事務本館北	North of Main Admin. Bldg.	3786.0 μSv/h
3/17	A.M. 9:40	事務本館北	North of Main Admin. Bldg.	3782.0 μSv/h
3/17	A.M. 9:50	事務本館北	North of Main Admin. Bldg.	3763.0 μSv/h
3/17	A.M. 10:00	事務本館北	North of Main Admin. Bldg.	3759.0 μSv/h
3/17	A.M. 10:10	事務本館北	North of Main Admin. Bldg.	3755.0 μSv/h
3/17	A.M. 10:20	事務本館北	North of Main Admin. Bldg.	3754.0 μSv/h
3/17	A.M. 10:30	事務本館北	North of Main Admin. Bldg.	3750.0 μSv/h
3/17	A.M. 10:40	事務本館北	North of Main Admin. Bldg.	3753.0 μSv/h
3/17	A.M. 10:50	事務本館北	North of Main Admin. Bldg.	3743.0 μSv/h
3/17	A.M. 11:00	正門	Front Gate	647.3 μSv/h



3/17	A.M. 11:10	正門	Front Gate	646.2 $\mu$ Sv/h
3/17	A.M. 11:15	西門	West Gate	313.1 $\mu$ Sv/h
3/17	A.M. 11:20	西門	west Gate	312.5 $\mu$ Sv/h
3/17	A.M. 11:30	西門	West Gate	312.3 $\mu$ Sv/h
3/17	P.M. 0:00	西門	West Gate	311.0 $\mu$ Sv/h
3/17	P.M. 0:30	西門	West Gate	310.7 $\mu$ Sv/h
3/17	P.M. 1:00	西門	West Gate	309.7 $\mu$ Sv/h
3/17	P.M. 1:10	西門	West Gate	309.3 $\mu$ Sv/h
3/17	P.M. 1:20	西門	West Gate	309.1 $\mu$ Sv/h
3/17	P.M. 1:30	事務本館北	North of Main Admin. Bldg.	4175.0 $\mu$ Sv/h
3/17	P.M. 1:40	事務本館北	North of Main Adnmin. Bldg.	4165.0 $\mu$ Sv/h
3/17	P.M. 2:00	事務本館北	North of Main Adnmin. Bldg.	3810.0 $\mu$ Sv/h
3/17	P.M. 2:10	西門	West Gate	311.1 $\mu$ Sv/h
3/17	P.M. 2:30	西門	West Gate	310.3 $\mu$ Sv/h
3/17	P.M. 3:00	西門	West Gate	309.1 $\mu$ Sv/h
3/17	P.M. 3:30	西門	West Gate	309.7 $\mu$ Sv/h
3/17	P.M. 3:50	事務本館北	North of Main Admin. Bldg.	3700.0 $\mu$ Sv/h
3/17	P.M. 4:00	事務本館北	North of Main Adnmin. Bldg.	3698.0 $\mu$ Sv/h
3/17	P.M. 4:10	事務本館北	North of Main Adnmin. Bldg.	3695.0 $\mu$ Sv/h
3/17	P.M. 4:15	事務本館北	North of Main Adnmin. Bldg.	3691.0 $\mu$ Sv/h
3/17	P.M. 5:00	事務本館北	North of Main Adnmin. Bldg.	3676.0 $\mu$ Sv/h
3/17	P.M. 5:10	事務本館北	North of Main Adnmin. Bldg.	3675.0 $\mu$ Sv/h
3/17	P.M. 5:20	事務本館北	North of Main Adnmin. Bldg.	3672.0 $\mu$ Sv/h
3/17	P.M. 5:30	事務本館北	North of Main Adnmin. Bldg.	3667.0 $\mu$ Sv/h
3/17	P.M. 5:40	事務本館北	North of Main Adnmin. Bldg.	3639.0 $\mu$ Sv/h
3/17	P.M. 5:50	事務本館北	North of Main Adnmin. Bldg.	3650.0 $\mu$ Sv/h
3/17	P.M. 6:00	事務本館北	North of Main Adnmin. Bldg.	3649.0 $\mu$ Sv/h
3/17	P.M. 6:10	事務本館北	North of Main Adnmin. Bldg.	3641.0 $\mu$ Sv/h
3/17	P.M. 6:20	事務本館北	North of Main Adnmin. Bldg.	3645.0 $\mu$ Sv/h
3/17	P.M. 6:30	事務本館北	North of Main Adnmin. Bldg.	3643.0 $\mu$ Sv/h
3/17	P.M. 6:40	事務本館北	North of Main Adnmin. Bldg.	3638.0 $\mu$ Sv/h
3/17	P.M. 5:50	事務本館北	North of Main Adnmin. Bldg.	3638.0 $\mu$ Sv/h
3/17	P.M. 7:00	事務本館北	North of Main Adnmin. Bldg.	3630.0 $\mu$ Sv/h
3/17	P.M. 7:10	事務本館北	North of Main Adnmin. Bldg.	3626.0 $\mu$ Sv/h
3/17	P.M. 8:40	西門	West Gate	292.2 $\mu$ Sv/h
3/17	P.M. 9:00	西門	West Gate	291.9 $\mu$ Sv/h
3/17	P.M. 9:10	西門	West Gate	291.7 $\mu$ Sv/h
3/17	P.M. 9:20	西門	West Gate	291.3 $\mu$ Sv/h
3/17	P.M. 9:30	西門	West Gate	291.2 $\mu$ Sv/h
3/17	P.M. 9:40	西門	West Gate	291.1 $\mu$ Sv/h
3/17	P.M. 9:50	西門	West Gate	290.9 $\mu$ Sv/h
3/17	P.M. 10:00	西門	West Gate	290.4 $\mu$ Sv/h
3/17	P.M. 10:10	西門	West Gate	290.4 $\mu$ Sv/h
3/17	P.M. 10:20	西門	West Gate	289.9 $\mu$ Sv/h
3/17	P.M. 10:30	西門	West Gate	289.7 $\mu$ Sv/h
3/17	P.M. 10:40	西門	West Gate	289.6 $\mu$ Sv/h
3/17	P.M. 10:50	西門	West Gate	289.5 $\mu$ Sv/h
3/17	P.M. 11:00	西門	West Gate	289.0 $\mu$ Sv/h

3/17	P.M. 11:10	西門	West Gate	289.0 $\mu$ Sv/h
3/17	P.M. 11:20	西門	West Gate	288.8 $\mu$ Sv/h
3/17	P.M. 11:30	西門	West Gate	288.7 $\mu$ Sv/h
3/17	P.M. 11:40	西門	West Gate	287.8 $\mu$ Sv/h
3/17	P.M. 11:50	西門	West Gate	288.9 $\mu$ Sv/h
3/18	A.M. 0:00	西門	West Gate	287.0 $\mu$ Sv/h
3/18	A.M. 0:10	西門	West Gate	287.3 $\mu$ Sv/h
3/18	A.M. 0:20	西門	West Gate	286.6 $\mu$ Sv/h
3/18	A.M. 0:30	西門	West Gate	286.4 $\mu$ Sv/h
3/18	A.M. 0:40	西門	West Gate	286.3 $\mu$ Sv/h
3/18	A.M. 0:50	西門	West Gate	286.0 $\mu$ Sv/h
3/18	A.M. 1:00	西門	West Gate	285.6 $\mu$ Sv/h
3/18	A.M. 1:10	西門	West Gate	285.5 $\mu$ Sv/h
3/18	A.M. 1:20	西門	West Gate	285.2 $\mu$ Sv/h
3/18	A.M. 1:30	西門	West Gate	284.9 $\mu$ Sv/h
3/18	A.M. 1:40	西門	West Gate	284.6 $\mu$ Sv/h
3/18	A.M. 1:50	西門	West Gate	284.4 $\mu$ Sv/h
3/18	A.M. 2:00	西門	West Gate	284.0 $\mu$ Sv/h
3/18	A.M. 2:10	西門	West Gate	283.7 $\mu$ Sv/h
3/18	A.M. 2:20	西門	West Gate	283.7 $\mu$ Sv/h
3/18	A.M. 2:30	西門	West Gate	283.5 $\mu$ Sv/h
3/18	A.M. 2:40	西門	West Gate	283.0 $\mu$ Sv/h
3/18	A.M. 2:50	西門	West Gate	282.9 $\mu$ Sv/h
3/18	A.M. 3:00	西門	West Gate	282.6 $\mu$ Sv/h
3/18	A.M. 3:10	西門	West Gate	282.0 $\mu$ Sv/h
3/18	A.M. 3:20	西門	West Gate	282.0 $\mu$ Sv/h
3/18	A.M. 3:30	西門	West Gate	281.6 $\mu$ Sv/h
3/18	A.M. 3:40	西門	West Gate	281.5 $\mu$ Sv/h
3/18	A.M. 3:50	西門	West Gate	281.2 $\mu$ Sv/h
3/18	A.M. 4:00	西門	West Gate	281.1 $\mu$ Sv/h
3/18	A.M. 4:10	西門	West Gate	280.9 $\mu$ Sv/h
3/18	A.M. 4:20	西門	West Gate	280.7 $\mu$ Sv/h
3/18	A.M. 4:30	西門	West Gate	280.2 $\mu$ Sv/h
3/18	A.M. 4:40	西門	West Gate	280.0 $\mu$ Sv/h
3/18	A.M. 4:50	西門	West Gate	279.8 $\mu$ Sv/h
3/18	A.M. 5:00	西門	West Gate	279.4 $\mu$ Sv/h
3/18	A.M. 5:10	西門	West Gate	279.3 $\mu$ Sv/h
3/18	A.M. 5:20	西門	West Gate	279.0 $\mu$ Sv/h
3/18	A.M. 5:30	西門	West Gate	278.9 $\mu$ Sv/h
3/18	A.M. 5:40	西門	West Gate	278.9 $\mu$ Sv/h
3/18	A.M. 5:50	西門	West Gate	277.1 $\mu$ Sv/h
3/18	A.M. 6:00	西門	West Gate	274.0 $\mu$ Sv/h
3/18	A.M. 6:10	西門	West Gate	274.0 $\mu$ Sv/h
3/18	A.M. 6:20	西門	West Gate	273.8 $\mu$ Sv/h
3/18	A.M. 6:30	西門	West Gate	274.1 $\mu$ Sv/h
3/18	A.M. 6:40	西門	West Gate	272.7 $\mu$ Sv/h
3/18	A.M. 6:50	西門	West Gate	273.4 $\mu$ Sv/h
3/18	A.M. 7:00	西門	West Gate	272.4 $\mu$ Sv/h

3/18	A.M. 7:10	西門	West Gate	271.7 $\mu$ Sv/h
3/18	A.M. 7:20	西門	West Gate	271.6 $\mu$ Sv/h
3/18	A.M. 7:30	西門	West Gate	271.4 $\mu$ Sv/h
3/18	A.M. 7:40	西門	West Gate	271.1 $\mu$ Sv/h
3/18	A.M. 7:50	西門	West Gate	271.2 $\mu$ Sv/h
3/18	A.M. 8:00	西門	West Gate	270.5 $\mu$ Sv/h
3/18	A.M. 8:10	西門	West Gate	270.3 $\mu$ Sv/h
3/18	A.M. 8:20	西門	West Gate	269.9 $\mu$ Sv/h
3/18	A.M. 8:30	西門	West Gate	269.9 $\mu$ Sv/h
3/18	A.M. 8:40	西門	West Gate	269.8 $\mu$ Sv/h
3/18	A.M. 8:50	西門	West Gate	269.2 $\mu$ Sv/h
3/18	A.M. 9:00	西門	West Gate	268.7 $\mu$ Sv/h
3/18	A.M. 9:10	西門	West Gate	267.6 $\mu$ Sv/h
3/18	A.M. 9:20	西門	West Gate	268.9 $\mu$ Sv/h
3/18	A.M. 9:30	西門	West Gate	267.5 $\mu$ Sv/h
3/18	A.M. 9:40	西門	West Gate	267.0 $\mu$ Sv/h
3/18	A.M. 9:50	西門	West Gate	266.9 $\mu$ Sv/h
3/18	A.M. 10:00	西門	West Gate	266.7 $\mu$ Sv/h
3/18	A.M. 10:10	西門	West Gate	266.4 $\mu$ Sv/h
3/18	A.M. 10:20	西門	West Gate	266.1 $\mu$ Sv/h
3/18	A.M. 10:30	西門	West Gate	265.7 $\mu$ Sv/h
3/18	A.M. 10:40	西門	West Gate	265.4 $\mu$ Sv/h
3/18	A.M. 10:50	西門	West Gate	264.8 $\mu$ Sv/h
3/18	A.M. 11:00	西門	West Gate	265.0 $\mu$ Sv/h
3/18	A.M. 11:10	西門	West Gate	264.4 $\mu$ Sv/h
3/18	A.M. 11:20	西門	West Gate	264.5 $\mu$ Sv/h
3/18	A.M. 11:30	西門	West Gate	264.1 $\mu$ Sv/h
3/18	A.M. 11:40	西門	West Gate	264.4 $\mu$ Sv/h
3/18	A.M. 11:50	西門	West Gate	263.4 $\mu$ Sv/h
3/18	P.M. 0:00	西門	West Gate	263.5 $\mu$ Sv/h
3/18	P.M. 0:10	西門	West Gate	263.1 $\mu$ Sv/h
3/18	P.M. 0:20	西門	West Gate	262.9 $\mu$ Sv/h
3/18	P.M. 0:30	西門	West Gate	263.3 $\mu$ Sv/h
3/18	P.M. 0:40	西門	West Gate	264.3 $\mu$ Sv/h
3/18	P.M. 0:50	西門	West Gate	261.3 $\mu$ Sv/h
3/18	P.M. 1:00	西門	West Gate	262.0 $\mu$ Sv/h
3/18	P.M. 1:10	西門	West Gate	261.9 $\mu$ Sv/h
3/18	P.M. 1:20	西門	West Gate	262.7 $\mu$ Sv/h
3/18	P.M. 1:30	西門	West Gate	264.1 $\mu$ Sv/h
3/18	P.M. 1:50	事務本館北	North of Main Admin. Bldg.	3484.0 $\mu$ Sv/h
3/18	P.M. 2:00	事務本館北	North of Main Admin. Bldg.	3414.0 $\mu$ Sv/h
3/18	P.M. 2:10	事務本館北	North of Main Admin. Bldg.	3382.0 $\mu$ Sv/h
3/18	P.M. 2:15	事務本館北	North of Main Admin. Bldg.	3371 $\mu$ Sv/h
3/18	P.M. 2:20	事務本館北	North of Main Admin. Bldg.	3362 $\mu$ Sv/h
3/18	P.M. 2:25	事務本館北	North of Main Admin. Bldg.	3357 $\mu$ Sv/h
3/18	P.M. 2:30	事務本館北	North of Main Admin. Bldg.	3352 $\mu$ Sv/h
3/18	P.M. 2:35	事務本館北	North of Main Admin. Bldg.	3342 $\mu$ Sv/h
3/18	P.M. 2:40	事務本館北	North of Main Admin. Bldg.	3348 $\mu$ Sv/h



3/18	P.M. 2:45	事務本館北	North of Main Admin. Bldg.	3357 $\mu$ Sv/h
3/18	P.M. 2:50	事務本館北	North of Main Admin. Bldg.	3339 $\mu$ Sv/h
3/18	P.M. 2:55	事務本館北	North of Main Admin. Bldg.	3346 $\mu$ Sv/h
3/18	P.M. 3:00	事務本館北	North of Main Admin. Bldg.	3345 $\mu$ Sv/h
3/18	P.M. 3:10	事務本館北	North of Main Admin. Bldg.	3368 $\mu$ Sv/h
3/18	P.M. 3:20	事務本館北	North of Main Admin. Bldg.	3582 $\mu$ Sv/h
3/18	P.M. 3:30	事務本館北	North of Main Admin. Bldg.	4075 $\mu$ Sv/h
3/18	P.M. 3:40	事務本館北	North of Main Admin. Bldg.	3823 $\mu$ Sv/h
3/18	P.M. 3:50	事務本館北	North of Main Admin. Bldg.	4396 $\mu$ Sv/h
3/18	P.M. 4:00	事務本館北	North of Main Admin. Bldg.	4485 $\mu$ Sv/h
3/18	P.M. 4:10	事務本館北	North of Main Admin. Bldg.	4352 $\mu$ Sv/h
3/18	P.M. 4:20	事務本館北	North of Main Admin. Bldg.	4535 $\mu$ Sv/h
3/18	P.M. 4:30	事務本館北	North of Main Admin. Bldg.	4419 $\mu$ Sv/h
3/18	P.M. 4:40	事務本館北	North of Main Admin. Bldg.	4277 $\mu$ Sv/h
3/18	P.M. 4:50	事務本館北	North of Main Admin. Bldg.	4735 $\mu$ Sv/h
3/18	P.M. 5:00	事務本館北	North of Main Admin. Bldg.	5055 $\mu$ Sv/h
3/18	P.M. 5:10	事務本館北	North of Main Admin. Bldg.	5033 $\mu$ Sv/h
3/18	P.M. 5:20	事務本館北	North of Main Admin. Bldg.	4952 $\mu$ Sv/h
3/18	P.M. 5:30	事務本館北	North of Main Admin. Bldg.	4251 $\mu$ Sv/h
3/18	P.M. 5:40	事務本館北	North of Main Admin. Bldg.	4182 $\mu$ Sv/h
3/18	P.M. 5:50	事務本館北	North of Main Admin. Bldg.	4090 $\mu$ Sv/h
3/18	P.M. 6:00	事務本館北	North of Main Admin. Bldg.	4084 $\mu$ Sv/h
3/18	P.M. 6:10	事務本館北	North of Main Admin. Bldg.	4069 $\mu$ Sv/h
3/18	P.M. 6:20	事務本館北	North of Main Admin. Bldg.	4069 $\mu$ Sv/h
3/18	P.M. 6:30	事務本館北	North of Main Admin. Bldg.	3922 $\mu$ Sv/h
3/18	P.M. 6:40	事務本館北	North of Main Admin. Bldg.	3885 $\mu$ Sv/h
3/18	P.M. 6:50	事務本館北	North of Main Admin. Bldg.	3832 $\mu$ Sv/h
3/18	P.M. 7:00	事務本館北	North of Main Admin. Bldg.	3788 $\mu$ Sv/h
3/18	P.M. 7:10	事務本館北	North of Main Admin. Bldg.	3745 $\mu$ Sv/h
3/18	P.M. 7:20	事務本館北	North of Main Admin. Bldg.	3728 $\mu$ Sv/h
3/18	P.M. 7:30	事務本館北	North of Main Admin. Bldg.	3699 $\mu$ Sv/h
3/18	P.M. 7:40	事務本館北	North of Main Admin. Bldg.	3669 $\mu$ Sv/h
3/18	P.M. 7:50	事務本館北	North of Main Admin. Bldg.	3634 $\mu$ Sv/h
3/18	P.M. 8:00	事務本館北	North of Main Admin. Bldg.	3611 $\mu$ Sv/h
3/18	P.M. 8:10	西門	West Gate	447.6 $\mu$ Sv/h
3/18	P.M. 8:20	西門	West Gate	441.2 $\mu$ Sv/h
3/18	P.M. 8:30	西門	West Gate	434.5 $\mu$ Sv/h
3/18	P.M. 8:40	西門	West Gate	429.2 $\mu$ Sv/h
3/18	P.M. 8:50	西門	West Gate	423.9 $\mu$ Sv/h
3/18	P.M. 9:00	西門	West Gate	419.1 $\mu$ Sv/h
3/18	P.M. 9:10	西門	West Gate	414.2 $\mu$ Sv/h
3/18	P.M. 9:20	西門	West Gate	409.4 $\mu$ Sv/h
3/18	P.M. 9:30	西門	West Gate	405.2 $\mu$ Sv/h
3/18	P.M. 9:40	西門	West Gate	401.6 $\mu$ Sv/h
3/18	P.M. 9:50	西門	West Gate	397.8 $\mu$ Sv/h
3/18	P.M. 10:00	西門	West Gate	393.9 $\mu$ Sv/h
3/18	P.M. 10:10	西門	West Gate	389.2 $\mu$ Sv/h
3/18	P.M. 10:20	西門	West Gate	385.9 $\mu$ Sv/h

3/18	P.M. 10:30	西門	West Gate	382.9μSv/h
3/18	P.M. 10:40	西門	West Gate	379.6μSv/h
3/18	P.M. 10:50	西門	West Gate	375.9μSv/h
3/18	P.M. 11:00	西門	West Gate	373.6μSv/h
3/18	P.M. 11:10	西門	West Gate	371.2μSv/h
3/18	P.M. 11:20	西門	West Gate	368.9μSv/h
3/18	P.M. 11:30	事務本館北	North of Main Admin. Bldg.	3254μSv/h
3/18	P.M. 11:40	事務本館北	North of Main Admin. Bldg.	3256μSv/h
3/18	P.M. 11:50	事務本館北	North of Main Admin. Bldg.	3244μSv/h
3/19	A.M. 0:00	事務本館北	North of Main Admin. Bldg.	3229μSv/h
3/19	A.M. 0:10	事務本館北	North of Main Admin. Bldg.	3224μSv/h
3/19	A.M. 0:20	事務本館北	North of Main Admin. Bldg.	3219μSv/h
3/19	A.M. 0:30	事務本館北	North of Main Admin. Bldg.	3231μSv/h
3/19	A.M. 0:40	事務本館北	North of Main Admin. Bldg.	3342μSv/h
3/19	A.M. 0:50	事務本館北	North of Main Admin. Bldg.	3284μSv/h
3/19	A.M. 1:00	事務本館北	North of Main Admin. Bldg.	3248μSv/h
3/19	A.M. 1:10	事務本館北	North of Main Admin. Bldg.	3279μSv/h
3/19	A.M. 1:20	事務本館北	North of Main Admin. Bldg.	3247μSv/h
3/19	A.M. 1:30	事務本館北	North of Main Admin. Bldg.	3195μSv/h
3/19	A.M. 1:40	事務本館北	North of Main Admin. Bldg.	3188μSv/h
3/19	A.M. 1:50	事務本館北	North of Main Admin. Bldg.	3181μSv/h
3/19	A.M. 2:00	西門	West Gate	313.7μSv/h
3/19	A.M. 2:10	西門	West Gate	312.2μSv/h
3/19	A.M. 2:20	西門	West Gate	311.1μSv/h
3/19	A.M. 2:30	西門	West Gate	310μSv/h
3/19	A.M. 2:40	西門	West Gate	309.1μSv/h
3/19	A.M. 2:50	西門	West Gate	308.6μSv/h
3/19	A.M. 3:00	西門	West Gate	306.9μSv/h
3/19	A.M. 3:10	西門	West Gate	306μSv/h
3/19	A.M. 3:20	西門	West Gate	305.1μSv/h
3/19	A.M. 3:30	西門	West Gate	304.3μSv/h
3/19	A.M. 3:40	西門	West Gate	303.6μSv/h
3/19	A.M. 3:50	西門	West Gate	303.1μSv/h
3/19	A.M. 4:00	西門	West Gate	301.7μSv/h
3/19	A.M. 4:10	西門	West Gate	301.3μSv/h
3/19	A.M. 4:20	西門	West Gate	300.5μSv/h
3/19	A.M. 4:30	西門	West Gate	299.2μSv/h
3/19	A.M. 4:40	西門	West Gate	299.2μSv/h
3/19	A.M. 4:50	西門	West Gate	298.5μSv/h
3/19	A.M. 5:00	西門	West Gate	297.5μSv/h
3/19	A.M. 5:10	西門	West Gate	296.4μSv/h
3/19	A.M. 5:20	西門	West Gate	295.8μSv/h
3/19	A.M. 5:30	西門	West Gate	295.1μSv/h
3/19	A.M. 5:40	西門	West Gate	295.4μSv/h
3/19	A.M. 5:50	西門	West Gate	294.3μSv/h
3/19	A.M. 6:00	西門	West Gate	293.8μSv/h
3/19	A.M. 6:10	西門	West Gate	293.6μSv/h
3/19	A.M. 6:20	西門	West Gate	292.6μSv/h

3/19	A.M. 6:30	西門	West Gate	292.3μSv/h
3/19	A.M. 6:40	西門	West Gate	291.5μSv/h
3/19	A.M. 6:50	西門	West Gate	290.9μSv/h
3/19	A.M. 7:00	西門	West Gate	290.6μSv/h
3/19	A.M. 7:10	西門	West Gate	289.8μSv/h
3/19	A.M. 7:20	西門	West Gate	289.1μSv/h
3/19	A.M. 7:30	西門	West Gate	288.9μSv/h
3/19	A.M. 7:40	西門	West Gate	288.6μSv/h
3/19	A.M. 7:50	西門	West Gate	287.2μSv/h
3/19	A.M. 8:00	西門	West Gate	399μSv/h
3/19	A.M. 8:10	西門	West Gate	830.8μSv/h
3/19	A.M. 8:20	西門	West Gate	670.6μSv/h
3/19	A.M. 8:30	西門	West Gate	431.9μSv/h
3/19	A.M. 8:40	西門	West Gate	390.5μSv/h
3/19	A.M. 8:50	西門	West Gate	522.5μSv/h
3/19	A.M. 9:00	西門	West Gate	364.5μSv/h
3/19	A.M. 9:10	西門	West Gate	336.5μSv/h
3/19	A.M. 9:20	西門	West Gate	323.8μSv/h
3/19	A.M. 9:30	西門	West Gate	425.2μSv/h
3/19	A.M. 9:40	西門	West Gate	657.3μSv/h
3/19	A.M. 9:50	西門	West Gate	358.3μSv/h
3/19	A.M. 10:00	西門	West Gate	346.1μSv/h
3/19	A.M. 10:10	西門	West Gate	341.2μSv/h
3/19	A.M. 10:20	西門	West Gate	338.4μSv/h
3/19	A.M. 10:30	西門	West Gate	334.3μSv/h
3/19	A.M. 10:40	西門	West Gate	330.2μSv/h
3/19	A.M. 10:50	西門	West Gate	327.1μSv/h
3/19	A.M. 11:00	西門	West Gate	322.6μSv/h
3/19	A.M. 11:10	西門	West Gate	319.8μSv/h
3/19	A.M. 11:20	西門	West Gate	315.1μSv/h
3/19	A.M. 11:30	西門	West Gate	313.1μSv/h
3/19	A.M. 11:40	事務本館北	North of Main Admin. Bldg.	3954μSv/h
3/19	A.M. 11:50	事務本館北	North of Main Admin. Bldg.	3901μSv/h
3/19	P.M. 0:00	事務本館北	North of Main Admin. Bldg.	3882μSv/h
3/19	P.M. 0:10	事務本館北	North of Main Admin. Bldg.	3828μSv/h
3/19	P.M. 0:20	事務本館北	North of Main Admin. Bldg.	3802μSv/h
3/19	P.M. 0:30	事務本館北	North of Main Admin. Bldg.	3749μSv/h
3/19	A.M. 0:40	事務本館北	North of Main Admin. Bldg.	3704μSv/h
3/19	P.M. 0:50	事務本館北	North of Main Admin. Bldg.	3655μSv/h
3/19	P.M. 1:00	事務本館北	North of Main Admin. Bldg.	3629μSv/h
3/19	P.M. 1:10	事務本館北	North of Main Admin. Bldg.	3594μSv/h
3/19	P.M. 1:20	事務本館北	North of Main Admin. Bldg.	3565μSv/h
3/19	P.M. 1:30	事務本館北	North of Main Admin. Bldg.	3529μSv/h
3/19	P.M. 1:50	事務本館北	North of Main Admin. Bldg.	3491μSv/h
3/19	P.M. 2:00	事務本館北	North of Main Admin. Bldg.	3473μSv/h
3/19	P.M. 2:10	事務本館北	North of Main Admin. Bldg.	3443μSv/h
3/19	P.M. 2:15	事務本館北	North of Main Admin. Bldg.	3417μSv/h
3/19	P.M. 2:20	事務本館北	North of Main Admin. Bldg.	3396μSv/h



3/19	P.M. 2:30	事務本館北	North of Main Admin. Bldg.	3375μSv/h
3/19	P.M. 2:40	事務本館北	North of Main Admin. Bldg.	3348μSv/h
3/19	P.M. 2:50	事務本館北	North of Main Admin. Bldg.	3340μSv/h
3/19	P.M. 3:00	事務本館北	North of Main Admin. Bldg.	3279μSv/h
3/19	P.M. 3:10	事務本館北	North of Main Admin. Bldg.	3281μSv/h
3/19	P.M. 3:20	事務本館北	North of Main Admin. Bldg.	3229μSv/h
3/19	P.M. 3:30	事務本館北	North of Main Admin. Bldg.	3194μSv/h
3/19	P.M. 3:40	事務本館北	North of Main Admin. Bldg.	3474μSv/h
3/19	P.M. 3:50	事務本館北	North of Main Admin. Bldg.	3167μSv/h
3/19	P.M. 4:00	事務本館北	North of Main Admin. Bldg.	3165μSv/h
3/19	P.M. 4:10	事務本館北	North of Main Admin. Bldg.	3137μSv/h
3/19	P.M. 4:20	事務本館北	North of Main Admin. Bldg.	3135μSv/h
3/19	P.M. 4:30	事務本館北	North of Main Admin. Bldg.	3126μSv/h
3/19	P.M. 4:40	事務本館北	North of Main Admin. Bldg.	3111μSv/h
3/19	P.M. 4:50	事務本館北	North of Main Admin. Bldg.	3089μSv/h
3/19	P.M. 5:00	事務本館北	North of Main Admin. Bldg.	3078μSv/h
3/19	P.M. 5:10	事務本館北	North of Main Admin. Bldg.	3071μSv/h
3/19	P.M. 5:20	事務本館北	North of Main Admin. Bldg.	3058μSv/h
3/19	P.M. 5:30	事務本館北	North of Main Admin. Bldg.	3051μSv/h
3/19	P.M. 5:40	事務本館北	North of Main Admin. Bldg.	3033μSv/h
3/19	P.M. 5:50	事務本館北	North of Main Admin. Bldg.	3024μSv/h
3/19	P.M. 6:00	事務本館北	North of Main Admin. Bldg.	3020μSv/h
3/19	P.M. 6:10	事務本館北	North of Main Admin. Bldg.	3007μSv/h
3/19	P.M. 6:20	事務本館北	North of Main Admin. Bldg.	3002μSv/h
3/19	P.M. 6:30	事務本館北	North of Main Admin. Bldg.	2998μSv/h
3/19	P.M. 6:40	事務本館北	North of Main Admin. Bldg.	2992μSv/h
3/19	P.M. 6:50	事務本館北	North of Main Admin. Bldg.	2978μSv/h
3/19	P.M. 7:00	事務本館北	North of Main Admin. Bldg.	2972μSv/h
3/19	P.M. 7:10	事務本館北	North of Main Admin. Bldg.	2965μSv/h
3/19	P.M. 7:20	事務本館北	North of Main Admin. Bldg.	2961μSv/h
3/19	P.M. 7:30	事務本館北	North of Main Admin. Bldg.	2957μSv/h
3/19	P.M. 7:40	事務本館北	North of Main Admin. Bldg.	2946μSv/h
3/19	P.M. 7:50	事務本館北	North of Main Admin. Bldg.	2941μSv/h
3/19	P.M. 8:00	事務本館北	North of Main Admin. Bldg.	2937μSv/h
3/19	P.M. 8:10	事務本館北	North of Main Admin. Bldg.	2931μSv/h
3/19	P.M. 8:20	事務本館北	North of Main Admin. Bldg.	2924μSv/h
3/19	P.M. 8:30	事務本館北	North of Main Admin. Bldg.	2917μSv/h
3/19	P.M. 8:40	事務本館北	North of Main Admin. Bldg.	2912μSv/h
3/19	P.M. 8:50	事務本館北	North of Main Admin. Bldg.	2909μSv/h
3/19	P.M. 9:00	事務本館北	North of Main Admin. Bldg.	2906μSv/h
3/19	P.M. 9:10	事務本館北	North of Main Admin. Bldg.	2900μSv/h
3/19	P.M. 9:20	事務本館北	North of Main Admin. Bldg.	2895μSv/h
3/19	P.M. 9:30	事務本館北	North of Main Admin. Bldg.	2891μSv/h
3/19	P.M. 9:40	事務本館北	North of Main Admin. Bldg.	2883μSv/h
3/19	P.M. 9:50	事務本館北	North of Main Admin. Bldg.	2880μSv/h
3/19	P.M. 10:00	事務本館北	North of Main Admin. Bldg.	2880μSv/h
3/19	P.M. 10:10	事務本館北	North of Main Admin. Bldg.	2876μSv/h
3/19	P.M. 10:20	事務本館北	North of Main Admin. Bldg.	2855μSv/h

3/19	P.M. 10:30	事務本館北	North of Main Admin. Bldg.	2854μSv/h
3/19	P.M. 10:40	事務本館北	North of Main Admin. Bldg.	2847μSv/h
3/19	P.M. 10:50	事務本館北	North of Main Admin. Bldg.	2844μSv/h
3/19	P.M. 11:00	事務本館北	North of Main Admin. Bldg.	2841μSv/h
3/19	P.M. 11:10	事務本館北	North of Main Admin. Bldg.	2836μSv/h
3/19	P.M. 11:20	事務本館北	North of Main Admin. Bldg.	2828μSv/h
3/19	P.M. 11:30	事務本館北	North of Main Admin. Bldg.	2828μSv/h
3/20	A.M. 0:00	事務本館北	North of Main Admin. Bldg.	2821.0 μSv/h
3/20	A.M. 0:10	事務本館北	North of Main Admin. Bldg.	2814.0 μSv/h
3/20	A.M. 0:20	事務本館北	North of Main Admin. Bldg.	2808.0 μSv/h
3/20	A.M. 0:30	事務本館北	North of Main Admin. Bldg.	2805.0 μSv/h
3/20	A.M. 0:40	事務本館北	North of Main Admin. Bldg.	2803.0 μSv/h
3/20	A.M. 0:50	事務本館北	North of Main Admin. Bldg.	2791.0 μSv/h
3/20	A.M. 1:00	事務本館北	North of Main Admin. Bldg.	2797.0 μSv/h
3/20	A.M. 1:10	事務本館北	North of Main Admin. Bldg.	2794.0 μSv/h
3/20	A.M. 1:20	事務本館北	North of Main Admin. Bldg.	2793.0 μSv/h
3/20	A.M. 1:30	事務本館北	North of Main Admin. Bldg.	2788.0 μSv/h
3/20	A.M. 1:40	事務本館北	North of Main Admin. Bldg.	2785.0 μSv/h
3/20	A.M. 1:50	事務本館北	North of Main Admin. Bldg.	2781.0 μSv/h
3/20	A.M. 2:00	事務本館北	North of Main Admin. Bldg.	2778.0 μSv/h
3/20	A.M. 2:10	事務本館北	North of Main Admin. Bldg.	2773.0 μSv/h
3/20	A.M. 2:20	事務本館北	North of Main Admin. Bldg.	2771.0 μSv/h
3/20	A.M. 2:30	事務本館北	North of Main Admin. Bldg.	2767.0 μSv/h
3/20	A.M. 2:40	事務本館北	North of Main Admin. Bldg.	2764.0 μSv/h
3/20	A.M. 2:50	事務本館北	North of Main Admin. Bldg.	2761.0 μSv/h
3/20	A.M. 3:00	事務本館北	North of Main Admin. Bldg.	2759.0 μSv/h
3/20	A.M. 3:10	事務本館北	North of Main Admin. Bldg.	2745.0 μSv/h
3/20	A.M. 3:20	事務本館北	North of Main Admin. Bldg.	2745.0 μSv/h
3/20	A.M. 3:30	事務本館北	North of Main Admin. Bldg.	2741.0 μSv/h
3/20	A.M. 3:40	事務本館北	North of Main Admin. Bldg.	2758.0 μSv/h
3/20	A.M. 3:50	事務本館北	North of Main Admin. Bldg.	3185.0 μSv/h
3/20	A.M. 4:00	事務本館北	North of Main Admin. Bldg.	2939.0 μSv/h
3/20	A.M. 4:10	事務本館北	North of Main Admin. Bldg.	2771.0 μSv/h
3/20	A.M. 4:20	事務本館北	North of Main Admin. Bldg.	2743.0 μSv/h
3/20	A.M. 4:30	事務本館北	North of Main Admin. Bldg.	2739.0 μSv/h
3/20	A.M. 4:40	西門	West Gate	273.2 μSv/h
3/20	A.M. 4:50	西門	West Gate	271.8 μSv/h
3/20	A.M. 5:00	西門	West Gate	271.2 μSv/h
3/20	A.M. 5:10	西門	West Gate	270.9 μSv/h
3/20	A.M. 5:20	西門	West Gate	270.4 μSv/h
3/20	A.M. 5:30	西門	West Gate	269.8 μSv/h
3/20	A.M. 5:40	西門	West Gate	269.5 μSv/h
3/20	A.M. 5:50	事務本館北	North of Main Admin. Bldg.	2683.0 μSv/h
3/20	A.M. 6:00	事務本館北	North of Main Admin. Bldg.	2679.0 μSv/h
3/20	A.M. 6:10	事務本館北	North of Main Admin. Bldg.	2679.0 μSv/h
3/20	A.M. 6:20	事務本館北	North of Main Admin. Bldg.	2677.0 μSv/h
3/20	A.M. 6:30	事務本館北	North of Main Admin. Bldg.	2670.0 μSv/h
3/20	A.M. 6:40	事務本館北	North of Main Admin. Bldg.	2654.0 μSv/h

3/20	A.M. 6:50	事務本館北	North of Main Admin. Bldg.	2664.0 $\mu$ Sv/h
3/20	A.M. 7:00	事務本館北	North of Main Admin. Bldg.	2661.0 $\mu$ Sv/h
3/20	A.M. 7:10	事務本館北	North of Main Admin. Bldg.	2661.0 $\mu$ Sv/h
3/20	A.M. 7:20	事務本館北	North of Main Admin. Bldg.	2659.0 $\mu$ Sv/h
3/20	A.M. 7:30	事務本館北	North of Main Admin. Bldg.	2652.0 $\mu$ Sv/h
3/20	A.M. 7:40	事務本館北	North of Main Admin. Bldg.	2653.0 $\mu$ Sv/h
3/20	A.M. 7:50	事務本館北	North of Main Admin. Bldg.	2637.0 $\mu$ Sv/h
3/20	A.M. 8:00	事務本館北	North of Main Admin. Bldg.	2630.0 $\mu$ Sv/h
3/20	A.M. 8:10	事務本館北	North of Main Admin. Bldg.	2629.0 $\mu$ Sv/h
3/20	A.M. 8:20	事務本館北	North of Main Admin. Bldg.	2627.0 $\mu$ Sv/h
3/20	A.M. 8:30	事務本館北	North of Main Admin. Bldg.	2625.0 $\mu$ Sv/h
3/20	A.M. 8:40	事務本館北	North of Main Admin. Bldg.	2619.0 $\mu$ Sv/h
3/20	A.M. 8:50	事務本館北	North of Main Admin. Bldg.	2617.0 $\mu$ Sv/h
3/20	A.M. 9:00	事務本館北	North of Main Admin. Bldg.	2614.0 $\mu$ Sv/h
3/20	A.M. 9:10	事務本館北	North of Main Admin. Bldg.	2614.0 $\mu$ Sv/h
3/20	A.M. 9:20	事務本館北	North of Main Admin. Bldg.	2608.0 $\mu$ Sv/h
3/20	A.M. 9:30	事務本館北	North of Main Admin. Bldg.	2623.0 $\mu$ Sv/h
3/20	A.M. 9:40	事務本館北	North of Main Admin. Bldg.	2661.0 $\mu$ Sv/h
3/20	A.M. 9:50	事務本館北	North of Main Admin. Bldg.	2742.0 $\mu$ Sv/h
3/20	A.M. 10:00	事務本館北	North of Main Admin. Bldg.	2726.0 $\mu$ Sv/h
3/20	A.M. 10:10	事務本館北	North of Main Admin. Bldg.	2608.8 $\mu$ Sv/h
3/20	A.M. 10:20	事務本館北	North of Main Admin. Bldg.	2605.0 $\mu$ Sv/h
3/20	A.M. 10:30	事務本館北	North of Main Admin. Bldg.	2596.0 $\mu$ Sv/h
3/20	A.M. 10:40	事務本館北	North of Main Admin. Bldg.	2589.0 $\mu$ Sv/h
3/20	A.M. 10:50	事務本館北	North of Main Admin. Bldg.	2583.0 $\mu$ Sv/h
3/20	A.M. 11:00	事務本館北	North of Main Admin. Bldg.	2579.0 $\mu$ Sv/h
3/20	A.M. 11:10	事務本館北	North of Main Admin. Bldg.	2578.0 $\mu$ Sv/h
3/20	A.M. 11:20	事務本館北	North of Main Admin. Bldg.	2569.0 $\mu$ Sv/h
3/20	A.M. 11:30	事務本館北	North of Main Admin. Bldg.	2571.0 $\mu$ Sv/h
3/20	A.M. 11:40	事務本館北	North of Main Admin. Bldg.	2562.0 $\mu$ Sv/h
3/20	A.M. 11:50	事務本館北	North of Main Admin. Bldg.	2564.0 $\mu$ Sv/h
3/20	P.M. 0:00	事務本館北	North of Main Admin. Bldg.	2559.0 $\mu$ Sv/h
3/20	P.M. 0:10	事務本館北	North of Main Admin. Bldg.	2558.0 $\mu$ Sv/h
3/20	P.M. 0:20	事務本館北	North of Main Admin. Bldg.	2552.0 $\mu$ Sv/h
3/20	P.M. 0:30	事務本館北	North of Main Admin. Bldg.	2551.0 $\mu$ Sv/h
3/20	A.M. 0:40	事務本館北	North of Main Admin. Bldg.	2551.0 $\mu$ Sv/h
3/20	P.M. 0:50	事務本館北	North of Main Admin. Bldg.	2550.0 $\mu$ Sv/h
3/20	P.M. 1:00	事務本館北	North of Main Admin. Bldg.	2567.0 $\mu$ Sv/h
3/20	P.M. 1:10	事務本館北	North of Main Admin. Bldg.	2588.0 $\mu$ Sv/h
3/20	P.M. 1:20	事務本館北	North of Main Admin. Bldg.	2660.0 $\mu$ Sv/h
3/20	P.M. 1:30	事務本館北	North of Main Admin. Bldg.	2593.0 $\mu$ Sv/h
3/20	P.M. 1:40	事務本館北	North of Main Admin. Bldg.	2654.0 $\mu$ Sv/h
3/20	P.M. 1:50	事務本館北	North of Main Admin. Bldg.	2741.0 $\mu$ Sv/h
3/20	P.M. 2:00	事務本館北	North of Main Admin. Bldg.	2768.0 $\mu$ Sv/h
3/20	P.M. 2:10	事務本館北	North of Main Admin. Bldg.	2999.0 $\mu$ Sv/h
3/20	P.M. 2:20	事務本館北	North of Main Admin. Bldg.	2923.0 $\mu$ Sv/h
3/20	P.M. 2:30	事務本館北	North of Main Admin. Bldg.	3056.0 $\mu$ Sv/h
3/20	P.M. 2:40	事務本館北	North of Main Admin. Bldg.	3202.0 $\mu$ Sv/h



3/20	P.M. 2:50	事務本館北	North of Main Admin. Bldg.	3346.0 $\mu$ Sv/h
3/20	P.M. 3:00	事務本館北	North of Main Admin. Bldg.	3054.0 $\mu$ Sv/h
3/20	P.M. 3:10	事務本館北	North of Main Admin. Bldg.	3071.0 $\mu$ Sv/h
3/20	P.M. 3:20	事務本館北	North of Main Admin. Bldg.	3342.0 $\mu$ Sv/h
3/20	P.M. 3:30	事務本館北	North of Main Admin. Bldg.	3337.0 $\mu$ Sv/h
3/20	P.M. 3:40	事務本館北	North of Main Admin. Bldg.	3003.0 $\mu$ Sv/h
3/20	P.M. 3:50	事務本館北	North of Main Admin. Bldg.	3046.0 $\mu$ Sv/h
3/20	P.M. 4:00	事務本館北	North of Main Admin. Bldg.	3171.0 $\mu$ Sv/h
3/20	P.M. 4:10	事務本館北	North of Main Admin. Bldg.	2940.0 $\mu$ Sv/h
3/20	P.M. 4:20	事務本館北	North of Main Admin. Bldg.	2851.0 $\mu$ Sv/h
3/20	P.M. 4:30	事務本館北	North of Main Admin. Bldg.	2830.0 $\mu$ Sv/h
3/20	P.M. 4:40	事務本館北	North of Main Admin. Bldg.	2960.0 $\mu$ Sv/h
3/20	P.M. 4:50	事務本館北	North of Main Admin. Bldg.	2839.0 $\mu$ Sv/h
3/20	P.M. 5:00	事務本館北	North of Main Admin. Bldg.	2773.0 $\mu$ Sv/h
3/20	P.M. 5:10	事務本館北	North of Main Admin. Bldg.	2763.0 $\mu$ Sv/h
3/20	P.M. 5:20	事務本館北	North of Main Admin. Bldg.	2758.0 $\mu$ Sv/h
3/20	P.M. 5:30	事務本館北	North of Main Admin. Bldg.	2729.0 $\mu$ Sv/h
3/20	P.M. 5:40	事務本館北	North of Main Admin. Bldg.	2715.0 $\mu$ Sv/h
3/20	P.M. 5:50	事務本館北	North of Main Admin. Bldg.	2707.0 $\mu$ Sv/h
3/20	P.M. 6:00	事務本館北	North of Main Admin. Bldg.	2693.0 $\mu$ Sv/h
3/20	P.M. 6:10	事務本館北	North of Main Admin. Bldg.	2680.0 $\mu$ Sv/h
3/20	P.M. 6:20	事務本館北	North of Main Admin. Bldg.	2673.0 $\mu$ Sv/h
3/20	P.M. 6:30	事務本館北	North of Main Admin. Bldg.	2658.0 $\mu$ Sv/h
3/20	P.M. 6:40	事務本館北	North of Main Admin. Bldg.	2651.0 $\mu$ Sv/h
3/20	P.M. 6:50	事務本館北	North of Main Admin. Bldg.	2658.0 $\mu$ Sv/h
3/20	P.M. 7:00	事務本館北	North of Main Admin. Bldg.	2623.0 $\mu$ Sv/h
3/20	P.M. 7:10	事務本館北	North of Main Admin. Bldg.	2683.0 $\mu$ Sv/h
3/20	P.M. 7:20	事務本館北	North of Main Admin. Bldg.	2614.0 $\mu$ Sv/h
3/20	P.M. 7:30	事務本館北	North of Main Admin. Bldg.	2602.0 $\mu$ Sv/h
3/20	P.M. 7:40	事務本館北	North of Main Admin. Bldg.	2595.0 $\mu$ Sv/h
3/20	P.M. 7:50	事務本館北	North of Main Admin. Bldg.	2632.0 $\mu$ Sv/h
3/20	P.M. 8:00	事務本館北	North of Main Admin. Bldg.	2828.0 $\mu$ Sv/h
3/20	P.M. 8:10	事務本館北	North of Main Admin. Bldg.	2704.0 $\mu$ Sv/h
3/20	P.M. 8:20	事務本館北	North of Main Admin. Bldg.	2682.0 $\mu$ Sv/h
3/20	P.M. 8:30	事務本館北	North of Main Admin. Bldg.	2586.0 $\mu$ Sv/h
3/20	P.M. 8:40	事務本館北	North of Main Admin. Bldg.	2552.0 $\mu$ Sv/h
3/20	P.M. 8:50	事務本館北	North of Main Admin. Bldg.	2550.0 $\mu$ Sv/h
3/20	P.M. 9:00	事務本館北	North of Main Admin. Bldg.	2542.0 $\mu$ Sv/h
3/20	P.M. 9:10	事務本館北	North of Main Admin. Bldg.	2537.0 $\mu$ Sv/h
3/20	P.M. 9:20	事務本館北	North of Main Admin. Bldg.	2532.0 $\mu$ Sv/h
3/20	P.M. 9:30	事務本館北	North of Main Admin. Bldg.	2518.0 $\mu$ Sv/h
3/20	P.M. 9:40	事務本館北	North of Main Admin. Bldg.	2517.0 $\mu$ Sv/h
3/20	P.M. 9:50	事務本館北	North of Main Admin. Bldg.	2510.0 $\mu$ Sv/h
3/20	P.M. 10:00	事務本館北	North of Main Admin. Bldg.	2506.0 $\mu$ Sv/h
3/20	P.M. 10:10	事務本館北	North of Main Admin. Bldg.	2503.0 $\mu$ Sv/h
3/20	P.M. 10:20	事務本館北	North of Main Admin. Bldg.	2492.0 $\mu$ Sv/h
3/20	P.M. 10:30	事務本館北	North of Main Admin. Bldg.	2487.0 $\mu$ Sv/h
3/20	P.M. 10:40	事務本館北	North of Main Admin. Bldg.	2485.0 $\mu$ Sv/h

3/20	P.M. 10:50	事務本館北	North of Main Admin. Bldg.	2483.0 $\mu$ Sv/h
3/20	P.M. 11:00	事務本館北	North of Main Admin. Bldg.	2475.0 $\mu$ Sv/h
3/20	P.M. 11:10	事務本館北	North of Main Admin. Bldg.	2469.0 $\mu$ Sv/h
3/20	P.M. 11:20	事務本館北	North of Main Admin. Bldg.	2462.0 $\mu$ Sv/h
3/20	P.M. 11:30	事務本館北	North of Main Admin. Bldg.	2455.0 $\mu$ Sv/h
3/20	P.M. 11:40	事務本館北	North of Main Admin. Bldg.	2457.0 $\mu$ Sv/h
3/20	P.M. 11:50	事務本館北	North of Main Admin. Bldg.	2453.0 $\mu$ Sv/h
3/21	A.M. 0:00	事務本館北	North of Main Admin. Bldg.	2452.0 $\mu$ Sv/h
3/21	A.M. 0:10	事務本館北	North of Main Admin. Bldg.	2449.0 $\mu$ Sv/h
3/21	A.M. 0:20	事務本館北	North of Main Admin. Bldg.	2444.0 $\mu$ Sv/h
3/21	A.M. 0:30	事務本館北	North of Main Admin. Bldg.	2439.0 $\mu$ Sv/h
3/21	A.M. 0:40	事務本館北	North of Main Admin. Bldg.	2438.0 $\mu$ Sv/h
3/21	A.M. 0:50	事務本館北	North of Main Admin. Bldg.	2433.0 $\mu$ Sv/h
3/21	A.M. 1:00	事務本館北	North of Main Admin. Bldg.	2396.0 $\mu$ Sv/h
3/21	A.M. 1:10	事務本館北	North of Main Admin. Bldg.	2392.0 $\mu$ Sv/h
3/21	A.M. 1:20	事務本館北	North of Main Admin. Bldg.	2389.0 $\mu$ Sv/h
3/21	A.M. 1:30	事務本館北	North of Main Admin. Bldg.	2385.0 $\mu$ Sv/h
3/21	A.M. 1:40	事務本館北	North of Main Admin. Bldg.	2383.0 $\mu$ Sv/h
3/21	A.M. 1:50	事務本館北	North of Main Admin. Bldg.	2380.0 $\mu$ Sv/h
3/21	A.M. 2:00	事務本館北	North of Main Admin. Bldg.	2396.0 $\mu$ Sv/h
3/21	A.M. 2:10	事務本館北	North of Main Admin. Bldg.	2392.0 $\mu$ Sv/h
3/21	A.M. 2:20	事務本館北	North of Main Admin. Bldg.	2389.0 $\mu$ Sv/h
3/21	A.M. 2:30	事務本館北	North of Main Admin. Bldg.	2385.0 $\mu$ Sv/h
3/21	A.M. 2:40	事務本館北	North of Main Admin. Bldg.	2383.0 $\mu$ Sv/h
3/21	A.M. 2:50	事務本館北	North of Main Admin. Bldg.	2380.0 $\mu$ Sv/h
3/21	A.M. 3:00	事務本館北	North of Main Admin. Bldg.	2378.0 $\mu$ Sv/h
3/21	A.M. 3:10	事務本館北	North of Main Admin. Bldg.	2375.0 $\mu$ Sv/h
3/21	A.M. 3:20	事務本館北	North of Main Admin. Bldg.	2372.0 $\mu$ Sv/h
3/21	A.M. 3:30	事務本館北	North of Main Admin. Bldg.	2370.0 $\mu$ Sv/h
3/21	A.M. 3:40	事務本館北	North of Main Admin. Bldg.	2366.0 $\mu$ Sv/h
3/21	A.M. 3:50	事務本館北	North of Main Admin. Bldg.	2364.0 $\mu$ Sv/h
3/21	A.M. 4:00	事務本館北	North of Main Admin. Bldg.	2362.0 $\mu$ Sv/h
3/21	A.M. 4:10	事務本館北	North of Main Admin. Bldg.	2356.0 $\mu$ Sv/h
3/21	A.M. 4:20	事務本館北	North of Main Admin. Bldg.	2351.0 $\mu$ Sv/h
3/21	A.M. 4:30	事務本館北	North of Main Admin. Bldg.	2350.0 $\mu$ Sv/h
3/21	A.M. 4:40	事務本館北	North of Main Admin. Bldg.	2347.0 $\mu$ Sv/h
3/21	A.M. 4:50	正門	Front Gate	2345.0 $\mu$ Sv/h
3/21	A.M. 5:00	正門	Front Gate	2343.0 $\mu$ Sv/h
3/21	A.M. 5:10	MP - 7 付	around MP-7	2341.0 $\mu$ Sv/h
3/21	A.M. 5:20	正門	Front Gate	2339.0 $\mu$ Sv/h
3/21	A.M. 5:30	正門	Front Gate	2336.0 $\mu$ Sv/h
3/21	A.M. 5:40	正門	Front Gate	2333.0 $\mu$ Sv/h
3/21	A.M. 5:50	正門	Front Gate	2330.0 $\mu$ Sv/h
3/21	A.M. 6:00	正門	Front Gate	2324.0 $\mu$ Sv/h
3/21	A.M. 6:10	正門	Front Gate	2326.0 $\mu$ Sv/h
3/21	A.M. 6:20	正門	Front Gate	2325.0 $\mu$ Sv/h
3/21	A.M. 6:30	正門	Front Gate	2319.0 $\mu$ Sv/h
3/21	A.M. 6:40	正門	Front Gate	2312.0 $\mu$ Sv/h

3/21	A.M. 6:50	正門	Front Gate	2293.0 $\mu$ Sv/h
3/21	A.M. 7:00	正門	Front Gate	2283.0 $\mu$ Sv/h
3/21	A.M. 7:10	正門	Front Gate	2271.0 $\mu$ Sv/h
3/21	A.M. 7:20	正門	Front Gate	2251.0 $\mu$ Sv/h
3/21	A.M. 7:30	正門	Front Gate	2232.0 $\mu$ Sv/h
3/21	A.M. 7:40	正門	Front Gate	2215.0 $\mu$ Sv/h
3/21	A.M. 7:50	正門	Front Gate	2200.0 $\mu$ Sv/h
3/21	A.M. 8:00	正門	Front Gate	2168.0 $\mu$ Sv/h
3/21	A.M. 8:10	正門	Front Gate	2161.0 $\mu$ Sv/h
3/21	A.M. 8:20	正門	Front Gate	2147.0 $\mu$ Sv/h
3/21	A.M. 8:30	正門	Front Gate	2140.0 $\mu$ Sv/h
3/21	A.M. 8:40	正門	Front Gate	2128.0 $\mu$ Sv/h
3/21	A.M. 8:50	正門	Front Gate	2126.0 $\mu$ Sv/h
3/21	A.M. 9:00	正門	Front Gate	2122.0 $\mu$ Sv/h
3/21	A.M. 9:10	正門	Front Gate	2120.0 $\mu$ Sv/h
3/21	A.M. 9:20	正門	Front Gate	2127.0 $\mu$ Sv/h
3/21	A.M. 9:30	正門	Front Gate	2114.0 $\mu$ Sv/h
3/21	A.M. 9:40	正門	Front Gate	2111.0 $\mu$ Sv/h
3/21	A.M. 9:50	正門	Front Gate	2108.0 $\mu$ Sv/h
3/21	A.M. 10:00	正門	Front Gate	2098.0 $\mu$ Sv/h
3/21	A.M. 10:10	正門	Front Gate	2100.0 $\mu$ Sv/h
3/21	A.M. 10:20	正門	Front Gate	2100.0 $\mu$ Sv/h
3/21	A.M. 10:30	正門	Front Gate	2100.0 $\mu$ Sv/h
3/21	A.M. 10:40	正門	Front Gate	2102.0 $\mu$ Sv/h
3/21	A.M. 10:50	正門	Front Gate	2105.0 $\mu$ Sv/h
3/21	A.M. 11:00	正門	Front Gate	2107.0 $\mu$ Sv/h
3/21	A.M. 11:10	正門	Front Gate	2107.0 $\mu$ Sv/h
3/21	A.M. 11:20	正門	Front Gate	2108.0 $\mu$ Sv/h
3/21	A.M. 11:30	正門	Front Gate	2110.0 $\mu$ Sv/h
3/21	A.M. 11:40	正門	Front Gate	2112.0 $\mu$ Sv/h
3/21	A.M. 11:50	正門	Front Gate	2113.0 $\mu$ Sv/h
3/21	P.M. 0:00	正門	Front Gate	2108.0 $\mu$ Sv/h
3/21	P.M. 0:10	正門	Front Gate	2112.0 $\mu$ Sv/h
3/21	P.M. 0:20	正門	Front Gate	2107.0 $\mu$ Sv/h
3/21	P.M. 0:30	正門	Front Gate	2111.0 $\mu$ Sv/h
3/21	P.M. 0:40	正門	Front Gate	2112.0 $\mu$ Sv/h
3/21	P.M. 0:50	正門	Front Gate	2110.0 $\mu$ Sv/h
3/21	P.M. 1:00	正門	Front Gate	2105.0 $\mu$ Sv/h
3/21	P.M. 1:10	正門	Front Gate	2103.0 $\mu$ Sv/h
3/21	P.M. 1:20	正門	Front Gate	2098.0 $\mu$ Sv/h
3/21	P.M. 1:30	正門	Front Gate	2092.0 $\mu$ Sv/h
3/21	P.M. 1:40	正門	Front Gate	2089.0 $\mu$ Sv/h
3/21	P.M. 1:50	正門	Front Gate	2068.0 $\mu$ Sv/h
3/21	P.M. 2:00	正門	Front Gate	2064.0 $\mu$ Sv/h
3/21	P.M. 2:10	正門	Front Gate	2053.0 $\mu$ Sv/h
3/21	P.M. 2:20	正門	Front Gate	2043.0 $\mu$ Sv/h
3/21	P.M. 2:30	正門	Front Gate	2039.0 $\mu$ Sv/h
3/21	P.M. 2:40	正門	Front Gate	2035.0 $\mu$ Sv/h



3/21	P.M. 2:50	正門	Front Gate	2029.0 $\mu$ Sv/h
3/21	P.M. 3:00	正門	Front Gate	2019.0 $\mu$ Sv/h
3/21	P.M. 3:10	正門	Front Gate	2019.0 $\mu$ Sv/h
3/21	P.M. 3:20	正門	Front Gate	2013.0 $\mu$ Sv/h
3/21	P.M. 3:30	正門	Front Gate	2013.0 $\mu$ Sv/h
3/21	P.M. 3:40	正門	Front Gate	2012.0 $\mu$ Sv/h
3/21	P.M. 3:50	正門	Front Gate	2013.0 $\mu$ Sv/h
3/21	P.M. 4:00	正門	Front Gate	2016.0 $\mu$ Sv/h
3/21	P.M. 4:10	正門	Front Gate	2013.0 $\mu$ Sv/h
3/21	P.M. 4:20	正門	Front Gate	2011.0 $\mu$ Sv/h
3/21	P.M. 4:30	正門	Front Gate	2015.0 $\mu$ Sv/h
3/21	P.M. 4:42	正門	Front Gate	1140.0 $\mu$ Sv/h
3/21	P.M. 4:50	正門	Front Gate	508.0 $\mu$ Sv/h
3/21	P.M. 5:06	正門	Front Gate	1292.0 $\mu$ Sv/h
3/21	P.M. 5:30	正門	Front Gate	729.0 $\mu$ Sv/h
3/21	P.M. 5:40	正門	Front Gate	494.3 $\mu$ Sv/h
3/21	P.M. 5:50	正門	Front Gate	1383.0 $\mu$ Sv/h
3/21	P.M. 6:00	正門	Front Gate	1757.0 $\mu$ Sv/h
3/21	P.M. 6:10	正門	Front Gate	1256.0 $\mu$ Sv/h
3/21	P.M. 6:20	正門	Front Gate	1428.0 $\mu$ Sv/h
3/21	P.M. 6:30	正門	Front Gate	1932.0 $\mu$ Sv/h
3/21	P.M. 6:40	正門	Front Gate	1499.0 $\mu$ Sv/h
3/21	P.M. 6:50	正門	Front Gate	1105.0 $\mu$ Sv/h
3/21	P.M. 7:00	正門	Front Gate	1201.0 $\mu$ Sv/h
3/21	P.M. 7:10	正門	Front Gate	823.6 $\mu$ Sv/h
3/21	P.M. 7:20	正門	Front Gate	700.1 $\mu$ Sv/h
3/21	P.M. 7:30	正門	Front Gate	587.3 $\mu$ Sv/h
3/21	P.M. 7:40	正門	Front Gate	503.9 $\mu$ Sv/h
3/21	P.M. 7:50	正門	Front Gate	496.2 $\mu$ Sv/h
3/21	P.M. 8:00	正門	Front Gate	493.5 $\mu$ Sv/h
3/21	P.M. 8:10	正門	Front Gate	529.3 $\mu$ Sv/h
3/21	P.M. 8:20	正門	Front Gate	471.2 $\mu$ Sv/h
3/21	P.M. 8:30	正門	Front Gate	442.2 $\mu$ Sv/h
3/21	P.M. 8:40	正門	Front Gate	432.4 $\mu$ Sv/h
3/21	P.M. 8:50	正門	Front Gate	424.5 $\mu$ Sv/h
3/21	P.M. 9:00	正門	Front Gate	417.1 $\mu$ Sv/h
3/21	P.M. 9:10	正門	Front Gate	410.4 $\mu$ Sv/h
3/21	P.M. 9:20	正門	Front Gate	403.8 $\mu$ Sv/h
3/21	P.M. 9:30	正門	Front Gate	398.0 $\mu$ Sv/h
3/21	P.M. 9:40	正門	Front Gate	390.6 $\mu$ Sv/h
3/21	P.M. 9:50	正門	Front Gate	384.9 $\mu$ Sv/h
3/21	P.M. 10:00	正門	Front Gate	380.0 $\mu$ Sv/h
3/21	P.M. 10:10	正門	Front Gate	374.5 $\mu$ Sv/h
3/21	P.M. 10:20	正門	Front Gate	369.6 $\mu$ Sv/h
3/21	P.M. 10:30	正門	Front Gate	365.0 $\mu$ Sv/h
3/21	P.M. 10:40	正門	Front Gate	360.9 $\mu$ Sv/h
3/21	P.M. 10:50	正門	Front Gate	356.0 $\mu$ Sv/h
3/21	P.M. 11:00	正門	Front Gate	352.7 $\mu$ Sv/h

3/21	P.M. 11:10	正門	Front Gate	348.5 $\mu$ Sv/h
3/21	P.M. 11:20	正門	Front Gate	344.6 $\mu$ Sv/h
3/21	P.M. 11:30	正門	Front Gate	341.5 $\mu$ Sv/h
3/21	P.M. 11:40	正門	Front Gate	338.5 $\mu$ Sv/h
3/21	P.M. 11:50	正門	Front Gate	334.1 $\mu$ Sv/h
3/22	A.M. 0:00	正門	Front Gate	331.8 $\mu$ Sv/h
3/22	A.M. 0:10	正門	Front Gate	329.3 $\mu$ Sv/h
3/22	A.M. 0:20	正門	Front Gate	327.5 $\mu$ Sv/h
3/22	A.M. 0:30	正門	Front Gate	325.8 $\mu$ Sv/h
3/22	A.M. 0:40	正門	Front Gate	323.9 $\mu$ Sv/h
3/22	A.M. 0:50	正門	Front Gate	320.8 $\mu$ Sv/h
3/22	A.M. 1:00	正門	Front Gate	314.8 $\mu$ Sv/h
3/22	A.M. 1:10	正門	Front Gate	313.0 $\mu$ Sv/h
3/22	A.M. 1:20	正門	Front Gate	311.3 $\mu$ Sv/h
3/22	A.M. 1:30	正門	Front Gate	308.9 $\mu$ Sv/h
3/22	A.M. 1:40	正門	Front Gate	308.4 $\mu$ Sv/h
3/22	A.M. 1:50	正門	Front Gate	305.9 $\mu$ Sv/h
3/22	A.M. 2:00	正門	Front Gate	304.5 $\mu$ Sv/h
3/22	A.M. 2:10	正門	Front Gate	303.2 $\mu$ Sv/h
3/22	A.M. 2:20	正門	Front Gate	301.3 $\mu$ Sv/h
3/22	A.M. 2:30	正門	Front Gate	299.7 $\mu$ Sv/h
3/22	A.M. 2:40	正門	Front Gate	298.0 $\mu$ Sv/h
3/22	A.M. 2:50	正門	Front Gate	296.2 $\mu$ Sv/h
3/22	A.M. 3:00	正門	Front Gate	294.9 $\mu$ Sv/h
3/22	A.M. 3:10	正門	Front Gate	293.8 $\mu$ Sv/h
3/22	A.M. 3:20	正門	Front Gate	293.6 $\mu$ Sv/h
3/22	A.M. 3:30	正門	Front Gate	291.6 $\mu$ Sv/h
3/22	A.M. 3:40	正門	Front Gate	291.1 $\mu$ Sv/h
3/22	A.M. 3:50	正門	Front Gate	290.0 $\mu$ Sv/h
3/22	A.M. 4:00	正門	Front Gate	288.9 $\mu$ Sv/h
3/22	A.M. 4:10	正門	Front Gate	288.1 $\mu$ Sv/h
3/22	A.M. 4:20	正門	Front Gate	287.0 $\mu$ Sv/h
3/22	A.M. 4:30	正門	Front Gate	286.0 $\mu$ Sv/h
3/22	A.M. 4:40	正門	Front Gate	283.6 $\mu$ Sv/h
3/22	A.M. 4:50	正門	Front Gate	280.1 $\mu$ Sv/h
3/22	A.M. 5:00	正門	Front Gate	273.9 $\mu$ Sv/h
3/22	A.M. 5:10	正門	Front Gate	271.0 $\mu$ Sv/h
3/22	A.M. 5:20	正門	Front Gate	268.0 $\mu$ Sv/h
3/22	A.M. 5:30	正門	Front Gate	267.4 $\mu$ Sv/h
3/22	A.M. 5:40	正門	Front Gate	265.8 $\mu$ Sv/h
3/22	A.M. 5:50	正門	Front Gate	265.3 $\mu$ Sv/h
3/22	A.M. 6:00	正門	Front Gate	264.6 $\mu$ Sv/h
3/22	A.M. 6:10	正門	Front Gate	264.3 $\mu$ Sv/h
3/22	A.M. 6:20	正門	Front Gate	265.5 $\mu$ Sv/h
3/22	A.M. 6:30	正門	Front Gate	263.7 $\mu$ Sv/h
3/22	A.M. 6:40	正門	Front Gate	262.6 $\mu$ Sv/h
3/22	A.M. 6:50	正門	Front Gate	262.1 $\mu$ Sv/h
3/22	A.M. 7:00	正門	Front Gate	261.9 $\mu$ Sv/h



3/22	A.M. 7:10	正門	Front Gate	261.8 $\mu$ Sv/h
3/22	A.M. 7:20	正門	Front Gate	261.7 $\mu$ Sv/h
3/22	A.M. 7:30	正門	Front Gate	261.6 $\mu$ Sv/h
3/22	A.M. 7:40	正門	Front Gate	261.2 $\mu$ Sv/h
3/22	A.M. 7:50	正門	Front Gate	261.0 $\mu$ Sv/h
3/22	A.M. 8:00	正門	Front Gate	260.9 $\mu$ Sv/h
3/22	A.M. 8:10	正門	Front Gate	260.8 $\mu$ Sv/h
3/22	A.M. 8:20	正門	Front Gate	260.5 $\mu$ Sv/h
3/22	A.M. 8:30	正門	Front Gate	260.3 $\mu$ Sv/h
3/22	A.M. 8:40	正門	Front Gate	260.4 $\mu$ Sv/h
3/22	A.M. 8:50	正門	Front Gate	260.2 $\mu$ Sv/h
3/22	A.M. 9:00	正門	Front Gate	260.2 $\mu$ Sv/h
3/22	A.M. 9:10	正門	Front Gate	260.1 $\mu$ Sv/h
3/22	A.M. 9:20	正門	Front Gate	260.0 $\mu$ Sv/h
3/22	A.M. 9:30	正門	Front Gate	259.9 $\mu$ Sv/h
3/22	A.M. 9:40	正門	Front Gate	259.4 $\mu$ Sv/h
3/22	A.M. 9:50	正門	Front Gate	259.5 $\mu$ Sv/h
3/22	A.M. 10:00	正門	Front Gate	260.2 $\mu$ Sv/h
3/22	A.M. 10:10	正門	Front Gate	259.4 $\mu$ Sv/h
3/22	A.M. 10:20	正門	Front Gate	258.9 $\mu$ Sv/h
3/22	A.M. 10:30	正門	Front Gate	258.7 $\mu$ Sv/h
3/22	A.M. 10:40	正門	Front Gate	258.4 $\mu$ Sv/h
3/22	A.M. 10:50	正門	Front Gate	257.3 $\mu$ Sv/h
3/22	A.M. 11:00	正門	Front Gate	257.5 $\mu$ Sv/h
3/22	A.M. 11:10	正門	Front Gate	257.1 $\mu$ Sv/h
3/22	A.M. 11:20	正門	Front Gate	256.9 $\mu$ Sv/h
3/22	A.M. 11:30	正門	Front Gate	256.5 $\mu$ Sv/h
3/22	A.M. 11:40	正門	Front Gate	256.5 $\mu$ Sv/h
3/22	A.M.11:50	正門	Front Gate	256.4 $\mu$ Sv/h
3/22	P.M. 0:00	正門	Front Gate	256.3 $\mu$ Sv/h
3/22	P.M. 0:10	正門	Front Gate	256.0 $\mu$ Sv/h
3/22	P.M. 0:20	正門	Front Gate	256.1 $\mu$ Sv/h
3/22	P.M. 0:30	正門	Front Gate	256.3 $\mu$ Sv/h
3/22	A.M. 0:40	正門	Front Gate	255.6 $\mu$ Sv/h
3/22	P.M. 0:50	正門	Front Gate	255.8 $\mu$ Sv/h
3/22	P.M. 1:00	正門	Front Gate	255.6 $\mu$ Sv/h
3/22	P.M. 1:10	正門	Front Gate	255.7 $\mu$ Sv/h
3/22	P.M. 1:20	正門	Front Gate	255.2 $\mu$ Sv/h
3/22	P.M. 1:30	正門	Front Gate	254.8 $\mu$ Sv/h
3/22	P.M. 1:40	正門	Front Gate	254.8 $\mu$ Sv/h
3/22	P.M. 1:50	正門	Front Gate	254.5 $\mu$ Sv/h
3/22	P.M. 2:00	正門	Front Gate	254.6 $\mu$ Sv/h
3/22	P.M. 2:10	正門	Front Gate	254.3 $\mu$ Sv/h
3/22	P.M. 2:20	正門	Front Gate	254.4 $\mu$ Sv/h
3/22	P.M. 2:30	正門	Front Gate	254.3 $\mu$ Sv/h
3/22	P.M. 2:40	正門	Front Gate	244.3 $\mu$ Sv/h
3/22	P.M. 2:50	正門	Front Gate	254.4 $\mu$ Sv/h
3/22	P.M. 3:00	正門	Front Gate	254.1 $\mu$ Sv/h



3/22	P.M. 3:10	正門	Front Gate	255.3 $\mu$ Sv/h
3/22	P.M. 3:20	正門	Front Gate	265.7 $\mu$ Sv/h
3/22	P.M. 3:30	正門	Front Gate	277.5 $\mu$ Sv/h
3/22	P.M. 3:40	正門	Front Gate	265.2 $\mu$ Sv/h
3/22	P.M. 3:50	正門	Front Gate	258.8 $\mu$ Sv/h
3/22	P.M. 4:00	正門	Front Gate	274.0 $\mu$ Sv/h
3/22	P.M. 4:10	正門	Front Gate	280.6 $\mu$ Sv/h
3/22	P.M. 4:20	正門	Front Gate	330.6 $\mu$ Sv/h
3/22	P.M. 4:30	正門	Front Gate	352.3 $\mu$ Sv/h
3/22	P.M. 4:42	正門	Front Gate	384.2 $\mu$ Sv/h
3/22	P.M. 4:50	正門	Front Gate	294.0 $\mu$ Sv/h
3/22	P.M. 5:00	正門	Front Gate	330.8 $\mu$ Sv/h
3/22	P.M. 5:30	正門	Front Gate	351.6 $\mu$ Sv/h
3/22	P.M. 5:40	正門	Front Gate	278.9 $\mu$ Sv/h
3/22	P.M. 5:50	正門	Front Gate	275.2 $\mu$ Sv/h
3/22	P.M. 6:00	正門	Front Gate	265.5 $\mu$ Sv/h
3/22	P.M. 6:10	正門	Front Gate	264.1 $\mu$ Sv/h
3/22	P.M. 6:20	正門	Front Gate	261.5 $\mu$ Sv/h
3/22	P.M. 6:30	正門	Front Gate	324.6 $\mu$ Sv/h
3/22	P.M. 6:40	正門	Front Gate	322.8 $\mu$ Sv/h
3/22	P.M. 6:50	正門	Front Gate	303.8 $\mu$ Sv/h
3/22	P.M. 7:00	正門	Front Gate	367.9 $\mu$ Sv/h
3/22	P.M. 7:10	正門	Front Gate	363.1 $\mu$ Sv/h
3/22	P.M. 7:20	正門	Front Gate	320.9 $\mu$ Sv/h
3/22	P.M. 7:30	正門	Front Gate	472.7 $\mu$ Sv/h
3/22	P.M. 7:40	正門	Front Gate	340.7 $\mu$ Sv/h
3/22	P.M. 7:50	正門	Front Gate	258.0 $\mu$ Sv/h
3/22	P.M. 8:00	正門	Front Gate	254.1 $\mu$ Sv/h
3/22	P.M. 8:10	正門	Front Gate	253.4 $\mu$ Sv/h
3/22	P.M. 8:20	正門	Front Gate	252.5 $\mu$ Sv/h
3/22	P.M. 8:30	正門	Front Gate	251.5 $\mu$ Sv/h
3/22	P.M. 8:40	正門	Front Gate	250.5 $\mu$ Sv/h
3/22	P.M. 8:50	正門	Front Gate	249.1 $\mu$ Sv/h
3/22	P.M. 9:00	正門	Front Gate	246.1 $\mu$ Sv/h
3/22	P.M. 9:10	正門	Front Gate	244.4 $\mu$ Sv/h
3/22	P.M. 9:20	正門	Front Gate	242.8 $\mu$ Sv/h
3/22	P.M. 9:30	正門	Front Gate	241.0 $\mu$ Sv/h
3/22	P.M. 9:40	正門	Front Gate	240.6 $\mu$ Sv/h
3/22	P.M. 9:50	正門	Front Gate	239.5 $\mu$ Sv/h
3/22	P.M. 10:00	正門	Front Gate	239.3 $\mu$ Sv/h
3/22	P.M. 10:10	正門	Front Gate	237.0 $\mu$ Sv/h
3/22	P.M. 10:20	正門	Front Gate	237.4 $\mu$ Sv/h
3/22	P.M. 10:30	正門	Front Gate	236.2 $\mu$ Sv/h
3/22	P.M. 10:40	正門	Front Gate	235.7 $\mu$ Sv/h
3/22	P.M. 10:50	正門	Front Gate	235.8 $\mu$ Sv/h
3/22	P.M. 11:00	正門	Front Gate	235.9 $\mu$ Sv/h
3/23	A.M. 0:00	正門	Front Gate	233.4 $\mu$ Sv/h
3/23	A.M. 0:10	正門	Front Gate	233.3 $\mu$ Sv/h

3/23	A.M. 0:20	正門	Front Gate	232.3 $\mu$ Sv/h
3/23	A.M. 0:30	正門	Front Gate	231.6 $\mu$ Sv/h
3/23	A.M. 0:40	正門	Front Gate	230.1 $\mu$ Sv/h
3/23	A.M. 0:50	正門	Front Gate	229.4 $\mu$ Sv/h
3/23	A.M. 1:00	正門	Front Gate	227.5 $\mu$ Sv/h
3/23	A.M. 1:10	正門	Front Gate	227.4 $\mu$ Sv/h
3/23	A.M. 1:20	正門	Front Gate	227.2 $\mu$ Sv/h
3/23	A.M. 1:30	正門	Front Gate	226.2 $\mu$ Sv/h
3/23	A.M. 1:40	正門	Front Gate	226.8 $\mu$ Sv/h
3/23	A.M. 1:50	正門	Front Gate	226.7 $\mu$ Sv/h
3/23	A.M. 2:00	正門	Front Gate	226.7 $\mu$ Sv/h
3/23	A.M. 2:10	正門	Front Gate	226.9 $\mu$ Sv/h
3/23	A.M. 2:20	正門	Front Gate	227.1 $\mu$ Sv/h
3/23	A.M. 2:30	正門	Front Gate	227.1 $\mu$ Sv/h
3/23	A.M. 2:40	正門	Front Gate	227.2 $\mu$ Sv/h
3/23	A.M. 2:50	正門	Front Gate	227.3 $\mu$ Sv/h
3/23	A.M. 3:00	正門	Front Gate	227.6 $\mu$ Sv/h
3/23	A.M. 3:10	正門	Front Gate	228.5 $\mu$ Sv/h
3/23	A.M. 3:20	正門	Front Gate	228.7 $\mu$ Sv/h
3/23	A.M. 3:30	正門	Front Gate	228.8 $\mu$ Sv/h
3/23	A.M. 3:40	正門	Front Gate	228.8 $\mu$ Sv/h
3/23	A.M. 3:50	正門	Front Gate	229.0 $\mu$ Sv/h
3/23	A.M. 4:00	正門	Front Gate	229.1 $\mu$ Sv/h
3/23	A.M. 4:10	正門	Front Gate	229.1 $\mu$ Sv/h
3/23	A.M. 4:20	正門	Front Gate	229.4 $\mu$ Sv/h
3/23	A.M. 4:30	正門	Front Gate	229.3 $\mu$ Sv/h
3/23	A.M. 4:40	正門	Front Gate	229.5 $\mu$ Sv/h
3/23	A.M. 4:50	正門	Front Gate	229.5 $\mu$ Sv/h
3/23	A.M. 5:00	正門	Front Gate	229.5 $\mu$ Sv/h
3/23	A.M. 5:10	正門	Front Gate	229.3 $\mu$ Sv/h
3/23	A.M. 5:20	正門	Front Gate	229.6 $\mu$ Sv/h
3/23	A.M. 5:30	正門	Front Gate	229.5 $\mu$ Sv/h
3/23	A.M. 5:40	正門	Front Gate	229.5 $\mu$ Sv/h
3/23	A.M. 5:50	正門	Front Gate	229.7 $\mu$ Sv/h
3/23	A.M. 6:00	正門	Front Gate	229.6 $\mu$ Sv/h
3/23	A.M. 6:10	正門	Front Gate	229.6 $\mu$ Sv/h
3/23	A.M. 6:20	正門	Front Gate	229.4 $\mu$ Sv/h
3/23	A.M. 6:30	正門	Front Gate	229.6 $\mu$ Sv/h
3/23	A.M. 6:40	正門	Front Gate	229.5 $\mu$ Sv/h
3/23	A.M. 6:50	正門	Front Gate	229.5 $\mu$ Sv/h
3/23	A.M. 7:00	正門	Front Gate	229.3 $\mu$ Sv/h
3/23	A.M. 7:10	正門	Front Gate	229.5 $\mu$ Sv/h
3/23	A.M. 7:20	正門	Front Gate	229.3 $\mu$ Sv/h
3/23	A.M. 7:30	正門	Front Gate	229.5 $\mu$ Sv/h
3/23	A.M. 7:40	正門	Front Gate	229.0 $\mu$ Sv/h
3/23	A.M. 7:50	正門	Front Gate	229.3 $\mu$ Sv/h
3/23	A.M. 8:00	正門	Front Gate	229.4 $\mu$ Sv/h
3/23	A.M. 8:10	正門	Front Gate	229.5 $\mu$ Sv/h

3/23	A.M. 8:20	正門	Front Gate	229.2 $\mu$ Sv/h
3/23	A.M. 8:30	正門	Front Gate	229.4 $\mu$ Sv/h
3/23	A.M. 8:40	正門	Front Gate	229.1 $\mu$ Sv/h
3/23	A.M. 8:50	正門	Front Gate	229.1 $\mu$ Sv/h
3/23	A.M. 9:00	正門	Front Gate	229.1 $\mu$ Sv/h
3/23	A.M. 9:10	正門	Front Gate	228.7 $\mu$ Sv/h
3/23	A.M. 9:20	正門	Front Gate	227.6 $\mu$ Sv/h
3/23	A.M. 9:30	正門	Front Gate	226.9 $\mu$ Sv/h
3/23	A.M. 9:40	正門	Front Gate	228.6 $\mu$ Sv/h
3/23	A.M. 9:50	正門	Front Gate	227.6 $\mu$ Sv/h
3/23	A.M. 10:00	正門	Front Gate	211.4 $\mu$ Sv/h
3/23	A.M. 10:10	正門	Front Gate	227.7 $\mu$ Sv/h
3/23	A.M. 10:20	正門	Front Gate	227.2 $\mu$ Sv/h
3/23	A.M. 10:30	正門	Front Gate	227.3 $\mu$ Sv/h
3/23	A.M. 10:40	正門	Front Gate	227.1 $\mu$ Sv/h
3/23	A.M. 10:50	正門	Front Gate	227.2 $\mu$ Sv/h
3/23	A.M. 11:00	正門	Front Gate	227.0 $\mu$ Sv/h
3/23	A.M. 11:10	正門	Front Gate	226.8 $\mu$ Sv/h
3/23	A.M. 11:20	正門	Front Gate	226.8 $\mu$ Sv/h
3/23	A.M. 11:30	正門	Front Gate	226.3 $\mu$ Sv/h
3/23	A.M. 11:40	正門	Front Gate	225.7 $\mu$ Sv/h
3/23	A.M. 11:50	正門	Front Gate	226.3 $\mu$ Sv/h
3/23	P.M. 0:00	正門	Front Gate	225.2 $\mu$ Sv/h
3/23	P.M. 0:10	正門	Front Gate	226.0 $\mu$ Sv/h
3/23	P.M. 0:20	正門	Front Gate	224.8 $\mu$ Sv/h
3/23	P.M. 0:30	正門	Front Gate	224.9 $\mu$ Sv/h
3/23	A.M. 0:40	正門	Front Gate	224.7 $\mu$ Sv/h
3/23	P.M. 0:50	正門	Front Gate	224.8 $\mu$ Sv/h
3/23	P.M. 1:00	正門	Front Gate	225.4 $\mu$ Sv/h
3/23	P.M. 1:10	正門	Front Gate	224.8 $\mu$ Sv/h
3/23	P.M. 1:20	正門	Front Gate	225.7 $\mu$ Sv/h
3/23	P.M. 1:30	正門	Front Gate	224.1 $\mu$ Sv/h
3/23	P.M. 1:40	正門	Front Gate	223.7 $\mu$ Sv/h
3/23	P.M. 1:50	正門	Front Gate	222.7 $\mu$ Sv/h
3/23	P.M. 2:00	正門	Front Gate	222.4 $\mu$ Sv/h
3/23	P.M. 2:10	正門	Front Gate	231.1 $\mu$ Sv/h
3/23	P.M. 2:20	正門	Front Gate	435.0 $\mu$ Sv/h
3/23	P.M. 2:30	正門	Front Gate	288.7 $\mu$ Sv/h
3/23	P.M. 2:40	正門	Front Gate	309.7 $\mu$ Sv/h
3/23	P.M. 2:50	正門	Front Gate	267.8 $\mu$ Sv/h
3/23	P.M. 3:00	正門	Front Gate	265.4 $\mu$ Sv/h
3/23	P.M. 3:10	正門	Front Gate	396.0 $\mu$ Sv/h
3/23	P.M. 3:20	正門	Front Gate	415.6 $\mu$ Sv/h
3/23	P.M. 3:30	正門	Front Gate	414.7 $\mu$ Sv/h
3/23	P.M. 3:40	正門	Front Gate	401.6 $\mu$ Sv/h
3/23	P.M. 3:50	正門	Front Gate	318.4 $\mu$ Sv/h
3/23	P.M. 4:00	正門	Front Gate	331.5 $\mu$ Sv/h
3/23	P.M. 4:10	正門	Front Gate	313.4 $\mu$ Sv/h



3/23	P.M. 4:20	正門	Front Gate	280.9 $\mu$ Sv/h
3/23	P.M. 4:30	正門	Front Gate	283.7 $\mu$ Sv/h
3/23	P.M. 4:40	正門	Front Gate	274.4 $\mu$ Sv/h
3/23	P.M. 4:50	正門	Front Gate	269.3 $\mu$ Sv/h
3/23	P.M. 5:00	正門	Front Gate	265.1 $\mu$ Sv/h
3/23	P.M. 5:10	正門	Front Gate	262.1 $\mu$ Sv/h
3/23	P.M. 5:20	正門	Front Gate	259.5 $\mu$ Sv/h
3/23	P.M. 5:30	正門	Front Gate	257.0 $\mu$ Sv/h
3/23	P.M. 5:40	正門	Front Gate	255.8 $\mu$ Sv/h
3/23	P.M. 5:50	正門	Front Gate	254.2 $\mu$ Sv/h
3/23	P.M. 6:00	正門	Front Gate	253.0 $\mu$ Sv/h
3/23	P.M. 6:10	正門	Front Gate	251.3 $\mu$ Sv/h
3/23	P.M. 6:20	正門	Front Gate	241.2 $\mu$ Sv/h
3/23	P.M. 6:30	正門	Front Gate	249.0 $\mu$ Sv/h
3/23	P.M. 6:40	正門	Front Gate	246.9 $\mu$ Sv/h
3/23	P.M. 6:50	正門	Front Gate	245.8 $\mu$ Sv/h
3/23	P.M. 7:00	正門	Front Gate	244.6 $\mu$ Sv/h
3/23	P.M. 7:10	正門	Front Gate	243.5 $\mu$ Sv/h
3/23	P.M. 7:20	正門	Front Gate	242.1 $\mu$ Sv/h
3/23	P.M. 7:30	正門	Front Gate	241.0 $\mu$ Sv/h
3/23	P.M. 7:40	正門	Front Gate	240.2 $\mu$ Sv/h
3/23	P.M. 7:50	正門	Front Gate	237.6 $\mu$ Sv/h
3/23	P.M. 8:00	正門	Front Gate	236.5 $\mu$ Sv/h
3/23	P.M. 8:10	正門	Front Gate	235.8 $\mu$ Sv/h
3/23	P.M. 8:20	正門	Front Gate	235.3 $\mu$ Sv/h
3/23	P.M. 8:30	正門	Front Gate	234.3 $\mu$ Sv/h
3/23	P.M. 8:40	正門	Front Gate	233.2 $\mu$ Sv/h
3/23	P.M. 8:50	正門	Front Gate	232.8 $\mu$ Sv/h
3/23	P.M. 9:00	正門	Front Gate	232.3 $\mu$ Sv/h
3/23	P.M. 9:10	正門	Front Gate	231.5 $\mu$ Sv/h
3/23	P.M. 9:20	正門	Front Gate	230.6 $\mu$ Sv/h
3/23	P.M. 9:30	正門	Front Gate	230.2 $\mu$ Sv/h
3/23	P.M. 9:40	正門	Front Gate	229.5 $\mu$ Sv/h
3/23	P.M. 9:50	正門	Front Gate	228.8 $\mu$ Sv/h
3/23	P.M. 10:00	正門	Front Gate	228.3 $\mu$ Sv/h
3/23	P.M. 10:10	正門	Front Gate	227.3 $\mu$ Sv/h
3/23	P.M. 10:20	正門	Front Gate	226.8 $\mu$ Sv/h
3/23	P.M. 10:30	正門	Front Gate	226.5 $\mu$ Sv/h
3/23	P.M. 10:40	正門	Front Gate	225.8 $\mu$ Sv/h
3/23	P.M. 10:50	正門	Front Gate	225.4 $\mu$ Sv/h
3/23	P.M. 11:00	正門	Front Gate	224.9 $\mu$ Sv/h
3/23	P.M. 11:10	正門	Front Gate	224.7 $\mu$ Sv/h
3/23	P.M. 11:20	正門	Front Gate	224.3 $\mu$ Sv/h
3/23	P.M. 11:30	正門	Front Gate	224.0 $\mu$ Sv/h
3/23	P.M. 11:40	正門	Front Gate	223.0 $\mu$ Sv/h
3/23	P.M. 11:50	正門	Front Gate	223.0 $\mu$ Sv/h
3/24	A.M. 0:00	正門	Front Gate	222.3 $\mu$ Sv/h
3/24	A.M. 0:10	正門	Front Gate	222.0 $\mu$ Sv/h

3/24	A.M. 0:20	正門	Front Gate	221.8 $\mu$ Sv/h
3/24	A.M. 0:30	正門	Front Gate	221.5 $\mu$ Sv/h
3/24	A.M. 0:40	正門	Front Gate	221.7 $\mu$ Sv/h
3/24	A.M. 0:50	正門	Front Gate	221.0 $\mu$ Sv/h
3/24	A.M. 1:00	正門	Front Gate	220.6 $\mu$ Sv/h
3/24	A.M. 1:10	正門	Front Gate	220.4 $\mu$ Sv/h
3/24	A.M. 1:20	正門	Front Gate	220.0 $\mu$ Sv/h
3/24	A.M. 1:30	正門	Front Gate	219.7 $\mu$ Sv/h
3/24	A.M. 1:40	正門	Front Gate	219.2 $\mu$ Sv/h
3/24	A.M. 1:50	正門	Front Gate	219.2 $\mu$ Sv/h
3/24	A.M. 2:00	正門	Front Gate	218.9 $\mu$ Sv/h
3/24	A.M. 2:10	正門	Front Gate	218.7 $\mu$ Sv/h
3/24	A.M. 2:20	正門	Front Gate	217.5 $\mu$ Sv/h
3/24	A.M. 2:30	正門	Front Gate	217.2 $\mu$ Sv/h
3/24	A.M. 2:40	正門	Front Gate	216.8 $\mu$ Sv/h
3/24	A.M. 2:50	正門	Front Gate	216.6 $\mu$ Sv/h
3/24	A.M. 3:00	正門	Front Gate	216.6 $\mu$ Sv/h
3/24	A.M. 3:10	正門	Front Gate	216.5 $\mu$ Sv/h
3/24	A.M. 3:20	正門	Front Gate	216.2 $\mu$ Sv/h
3/24	A.M. 3:30	正門	Front Gate	215.5 $\mu$ Sv/h
3/24	A.M. 3:40	正門	Front Gate	215.7 $\mu$ Sv/h
3/24	A.M. 3:50	正門	Front Gate	215.4 $\mu$ Sv/h
3/24	A.M. 4:00	正門	Front Gate	215.1 $\mu$ Sv/h
3/24	A.M. 4:10	正門	Front Gate	215.0 $\mu$ Sv/h
3/24	A.M. 4:20	正門	Front Gate	214.7 $\mu$ Sv/h
3/24	A.M. 4:30	正門	Front Gate	214.5 $\mu$ Sv/h
3/24	A.M. 4:40	正門	Front Gate	214.7 $\mu$ Sv/h
3/24	A.M. 4:50	正門	Front Gate	214.3 $\mu$ Sv/h
3/24	A.M. 5:00	正門	Front Gate	214.4 $\mu$ Sv/h
3/24	A.M. 5:10	正門	Front Gate	214.0 $\mu$ Sv/h
3/24	A.M. 5:20	正門	Front Gate	213.6 $\mu$ Sv/h
3/24	A.M. 5:30	正門	Front Gate	213.8 $\mu$ Sv/h
3/24	A.M. 5:40	正門	Front Gate	216.2 $\mu$ Sv/h
3/24	A.M. 5:50	正門	Front Gate	213.6 $\mu$ Sv/h
3/24	A.M. 6:00	正門	Front Gate	212.8 $\mu$ Sv/h
3/24	A.M. 6:10	正門	Front Gate	212.8 $\mu$ Sv/h
3/24	A.M. 6:20	正門	Front Gate	214.7 $\mu$ Sv/h
3/24	A.M. 6:30	正門	Front Gate	230.9 $\mu$ Sv/h
3/24	A.M. 6:40	正門	Front Gate	213.7 $\mu$ Sv/h
3/24	A.M. 6:50	正門	Front Gate	212.3 $\mu$ Sv/h
3/24	A.M. 7:00	正門	Front Gate	212.2 $\mu$ Sv/h
3/24	A.M. 7:10	正門	Front Gate	212.0 $\mu$ Sv/h
3/24	A.M. 7:20	正門	Front Gate	211.8 $\mu$ Sv/h
3/24	A.M. 7:30	正門	Front Gate	211.9 $\mu$ Sv/h
3/24	A.M. 7:40	正門	Front Gate	211.9 $\mu$ Sv/h
3/24	A.M. 7:50	正門	Front Gate	211.7 $\mu$ Sv/h
3/24	A.M. 8:00	正門	Front Gate	211.6 $\mu$ Sv/h
3/24	A.M. 8:10	正門	Front Gate	211.6 $\mu$ Sv/h



3/24	A.M. 8:20	正門	Front Gate	21.6 $\mu$ Sv/h
3/24	A.M. 8:30	正門	Front Gate	211.2 $\mu$ Sv/h
3/24	A.M. 8:40	正門	Front Gate	211.5 $\mu$ Sv/h
3/24	A.M. 8:50	正門	Front Gate	211.1 $\mu$ Sv/h
3/24	A.M. 9:00	正門	Front Gate	210.1 $\mu$ Sv/h
3/24	A.M. 9:10	正門	Front Gate	210.8 $\mu$ Sv/h
3/24	A.M. 9:20	正門	Front Gate	210.8 $\mu$ Sv/h
3/24	A.M. 9:30	正門	Front Gate	210.7 $\mu$ Sv/h
3/24	A.M. 9:40	正門	Front Gate	210.6 $\mu$ Sv/h
3/24	A.M. 9:50	正門	Front Gate	210.5 $\mu$ Sv/h
3/24	A.M. 10:00	正門	Front Gate	210.1 $\mu$ Sv/h
3/24	A.M. 10:10	正門	Front Gate	210.0 $\mu$ Sv/h
3/24	A.M. 10:20	正門	Front Gate	209.7 $\mu$ Sv/h
3/24	A.M. 10:30	正門	Front Gate	209.7 $\mu$ Sv/h
3/24	A.M. 10:40	正門	Front Gate	209.5 $\mu$ Sv/h
3/24	A.M. 10:50	正門	Front Gate	209.6 $\mu$ Sv/h
3/24	A.M. 11:00	正門	Front Gate	209.3 $\mu$ Sv/h
3/24	A.M. 11:10	正門	Front Gate	209.2 $\mu$ Sv/h
3/24	A.M. 11:20	正門	Front Gate	209.5 $\mu$ Sv/h
3/24	A.M. 11:30	正門	Front Gate	209.5 $\mu$ Sv/h
3/24	A.M. 11:40	正門	Front Gate	209.6 $\mu$ Sv/h
3/24	A.M. 11:50	正門	Front Gate	209.1 $\mu$ Sv/h
3/24	P.M. 0:00	正門	Front Gate	209.4 $\mu$ Sv/h
3/24	P.M. 0:10	正門	Front Gate	209.4 $\mu$ Sv/h
3/24	P.M. 0:20	正門	Front Gate	209.2 $\mu$ Sv/h
3/24	P.M. 0:30	正門	Front Gate	201.1 $\mu$ Sv/h
3/24	A.M. 0:40	正門	Front Gate	208.8 $\mu$ Sv/h
3/24	P.M. 0:50	正門	Front Gate	208.7 $\mu$ Sv/h
3/24	P.M. 1:00	正門	Front Gate	208.1 $\mu$ Sv/h
3/24	P.M. 1:10	正門	Front Gate	207.9 $\mu$ Sv/h
3/24	P.M. 1:20	正門	Front Gate	207.5 $\mu$ Sv/h
3/24	P.M. 1:30	正門	Front Gate	207.5 $\mu$ Sv/h
3/24	P.M. 1:40	正門	Front Gate	207.2 $\mu$ Sv/h
3/24	P.M. 1:50	正門	Front Gate	209.3 $\mu$ Sv/h
3/24	P.M. 2:00	正門	Front Gate	209.0 $\mu$ Sv/h
3/24	P.M. 2:10	正門	Front Gate	208.5 $\mu$ Sv/h
3/24	P.M. 2:20	免震棟前	Seismic-isolated Building	429.5 $\mu$ Sv/h
3/24	P.M. 2:30	免震棟前	Seismic-isolated Building	427.0 $\mu$ Sv/h
3/24	P.M. 2:50	正門	Front Gate	210.0 $\mu$ Sv/h
3/24	P.M. 3:00	正門	Front Gate	209.8 $\mu$ Sv/h
3/24	P.M. 3:10	正門	Front Gate	209.4 $\mu$ Sv/h
3/24	P.M. 3:20	正門	Front Gate	209.2 $\mu$ Sv/h
3/24	P.M. 3:30	正門	Front Gate	208.8 $\mu$ Sv/h
3/24	P.M. 3:40	正門	Front Gate	208.0 $\mu$ Sv/h
3/24	P.M. 3:50	正門	Front Gate	207.6 $\mu$ Sv/h
3/24	P.M. 4:00	正門	Front Gate	207.4 $\mu$ Sv/h
3/24	P.M. 4:10	正門	Front Gate	207.3 $\mu$ Sv/h
3/24	P.M. 4:20	正門	Front Gate	207.1 $\mu$ Sv/h



3/24	P.M. 4:30	正門	Front Gate	207.0 $\mu$ Sv/h
3/24	P.M. 4:40	正門	Front Gate	206.9 $\mu$ Sv/h
3/24	P.M. 4:50	正門	Front Gate	206.5 $\mu$ Sv/h
3/24	P.M. 5:00	正門	Front Gate	206.4 $\mu$ Sv/h
3/24	P.M. 5:10	正門	Front Gate	206.3 $\mu$ Sv/h
3/24	P.M. 5:20	正門	Front Gate	206.1 $\mu$ Sv/h
3/24	P.M. 5:30	正門	Front Gate	206.0 $\mu$ Sv/h
3/24	P.M. 5:40	正門	Front Gate	205.6 $\mu$ Sv/h
3/24	P.M. 5:50	正門	Front Gate	205.3 $\mu$ Sv/h
3/24	P.M. 6:00	正門	Front Gate	204.6 $\mu$ Sv/h
3/24	P.M. 6:10	正門	Front Gate	204.9 $\mu$ Sv/h
3/24	P.M. 6:20	正門	Front Gate	204.7 $\mu$ Sv/h
3/24	P.M. 6:30	正門	Front Gate	204.5 $\mu$ Sv/h
3/24	P.M. 6:40	正門	Front Gate	204.4 $\mu$ Sv/h
3/24	P.M. 6:50	正門	Front Gate	204.4 $\mu$ Sv/h
3/24	P.M. 7:00	正門	Front Gate	204.3 $\mu$ Sv/h
3/24	P.M. 7:10	正門	Front Gate	204.2 $\mu$ Sv/h
3/24	P.M. 7:20	正門	Front Gate	203.9 $\mu$ Sv/h
3/24	P.M. 7:30	正門	Front Gate	203.5 $\mu$ Sv/h
3/24	P.M. 7:40	正門	Front Gate	203.0 $\mu$ Sv/h
3/24	P.M. 7:50	正門	Front Gate	202.9 $\mu$ Sv/h
3/24	P.M. 8:00	正門	Front Gate	202.9 $\mu$ Sv/h
3/24	P.M. 8:10	正門	Front Gate	202.6 $\mu$ Sv/h
3/24	P.M. 8:20	正門	Front Gate	202.5 $\mu$ Sv/h
3/24	P.M. 8:30	正門	Front Gate	202.4 $\mu$ Sv/h
3/24	P.M. 8:40	正門	Front Gate	202.4 $\mu$ Sv/h
3/24	P.M. 8:50	正門	Front Gate	202.2 $\mu$ Sv/h
3/24	P.M. 9:00	正門	Front Gate	202.0 $\mu$ Sv/h
3/24	P.M. 9:10	正門	Front Gate	202.0 $\mu$ Sv/h
3/24	P.M. 9:20	正門	Front Gate	201.7 $\mu$ Sv/h
3/24	P.M. 9:30	正門	Front Gate	201.4 $\mu$ Sv/h
3/24	P.M. 9:40	正門	Front Gate	201.3 $\mu$ Sv/h
3/24	P.M. 9:50	正門	Front Gate	201.3 $\mu$ Sv/h
3/24	P.M. 10:00	正門	Front Gate	201.2 $\mu$ Sv/h
3/24	P.M. 10:10	正門	Front Gate	201.1 $\mu$ Sv/h
3/24	P.M. 10:20	正門	Front Gate	201.2 $\mu$ Sv/h
3/24	P.M. 10:30	正門	Front Gate	200.5 $\mu$ Sv/h
3/24	P.M. 10:40	正門	Front Gate	200.6 $\mu$ Sv/h
3/24	P.M. 10:50	正門	Front Gate	200.4 $\mu$ Sv/h
3/24	P.M. 11:00	正門	Front Gate	200.2 $\mu$ Sv/h
3/24	P.M. 11:10	正門	Front Gate	199.9 $\mu$ Sv/h
3/24	P.M. 11:20	正門	Front Gate	200.0 $\mu$ Sv/h
3/24	P.M. 11:30	正門	Front Gate	199.8 $\mu$ Sv/h
3/24	P.M. 11:40	正門	Front Gate	199.8 $\mu$ Sv/h
3/24	P.M. 11:50	正門	Front Gate	199.6 $\mu$ Sv/h
3/25	A.M. 0:00	正門	Front Gate	199.5 $\mu$ Sv/h
3/25	A.M. 0:10	正門	Front Gate	199.3 $\mu$ Sv/h
3/25	A.M. 0:20	正門	Front Gate	199.0 $\mu$ Sv/h

3/25	A.M. 0:30	正門	Front Gate	199.0 $\mu$ Sv/h
3/25	A.M. 0:40	正門	Front Gate	198.9 $\mu$ Sv/h
3/25	A.M. 0:50	正門	Front Gate	198.8 $\mu$ Sv/h
3/25	A.M. 1:00	正門	Front Gate	198.6 $\mu$ Sv/h
3/25	A.M. 1:10	正門	Front Gate	197.7 $\mu$ Sv/h
3/25	A.M. 1:20	正門	Front Gate	197.0 $\mu$ Sv/h
3/25	A.M. 1:30	正門	Front Gate	196.9 $\mu$ Sv/h
3/25	A.M. 1:40	正門	Front Gate	196.5 $\mu$ Sv/h
3/25	A.M. 1:50	正門	Front Gate	196.5 $\mu$ Sv/h
3/25	A.M. 2:00	正門	Front Gate	196.5 $\mu$ Sv/h
3/25	A.M. 2:10	正門	Front Gate	196.4 $\mu$ Sv/h
3/25	A.M. 2:20	正門	Front Gate	196.3 $\mu$ Sv/h
3/25	A.M. 2:30	正門	Front Gate	196.1 $\mu$ Sv/h
3/25	A.M. 2:40	正門	Front Gate	195.9 $\mu$ Sv/h
3/25	A.M. 2:50	正門	Front Gate	195.8 $\mu$ Sv/h
3/25	A.M. 3:00	正門	Front Gate	195.7 $\mu$ Sv/h
3/25	A.M. 3:10	正門	Front Gate	195.7 $\mu$ Sv/h
3/25	A.M. 3:20	正門	Front Gate	195.6 $\mu$ Sv/h
3/25	A.M. 3:30	正門	Front Gate	195.6 $\mu$ Sv/h
3/25	A.M. 3:40	正門	Front Gate	195.5 $\mu$ Sv/h
3/25	A.M. 3:50	正門	Front Gate	195.1 $\mu$ Sv/h
3/25	A.M. 4:00	正門	Front Gate	195.1 $\mu$ Sv/h
3/25	A.M. 4:10	正門	Front Gate	195.0 $\mu$ Sv/h
3/25	A.M. 4:20	正門	Front Gate	195.0 $\mu$ Sv/h
3/25	A.M. 4:30	正門	Front Gate	195.0 $\mu$ Sv/h
3/25	A.M. 4:40	正門	Front Gate	194.5 $\mu$ Sv/h
3/25	A.M. 4:50	正門	Front Gate	194.5 $\mu$ Sv/h
3/25	A.M. 5:00	正門	Front Gate	194.4 $\mu$ Sv/h
3/25	A.M. 5:10	正門	Front Gate	194.4 $\mu$ Sv/h
3/25	A.M. 5:20	正門	Front Gate	194.3 $\mu$ Sv/h
3/25	A.M. 5:30	正門	Front Gate	194.2 $\mu$ Sv/h
3/25	A.M. 5:40	正門	Front Gate	194.1 $\mu$ Sv/h
3/25	A.M. 5:50	正門	Front Gate	193.8 $\mu$ Sv/h
3/25	A.M. 6:00	正門	Front Gate	193.8 $\mu$ Sv/h

Neutron ray	Wind direction	Wind direction	Wind speed (m/s)
—	—		—
—	—		—
—	—		—
—	—		—
—	—		—
—	—		—
—	—		—
—	—		—
—	—		—
—	—		—
—	—		—
—	—		—
< 0.001μSv/h	北東	NE	0.4
< 0.001μSv/h	北西	NW	0.5
< 0.001μSv/h	東北東	ENE	0.4
< 0.001μSv/h	北	N	0.4
< 0.001μSv/h	東北東	ENE	0.6
< 0.001μSv/h	北東	NE	0.5
< 0.001μSv/h	北北西	NNW	0.5
< 0.001μSv/h	北	N	0.6
< 0.001μSv/h	西	W	0.7
< 0.001μSv/h	北	N	0.8
< 0.001μSv/h	西北西	WNW	0.4
< 0.001μSv/h	北	N	0.3
< 0.001μSv/h	北	N	0.4
< 0.001μSv/h	北北東	NNE	0.4
< 0.001μSv/h	南東	SE	0.5
< 0.001μSv/h	北東	NE	2.0
< 0.001μSv/h	北東		1.8
< 0.001μSv/h	東北東	ENE	0.9
< 0.001μSv/h	東北東	ENE	1.1
< 0.001μSv/h	北北西	NNW	0.6
< 0.001μSv/h	西南西	WSW	0.8
< 0.001μSv/h	南西	SW	0.7
< 0.001μSv/h	西南西	WSW	0.7
< 0.001μSv/h	北西	NW	1.0
< 0.001μSv/h	北北西	NNW	0.9
< 0.001μSv/h	北北西	NNW	1.4
< 0.001μSv/h	北北西	NNW	2.0



< 0.001μSv/h	北西	NW	1.7
< 0.001μSv/h	西	W	0.9
< 0.001μSv/h	西	W	1.0
< 0.001μSv/h	西	W	0.6
< 0.001μSv/h	西南西	WSW	0.5
< 0.001μSv/h	北北西	NNW	0.4
< 0.001μSv/h	北東	NE	0.5
—	—		—
—	—		—
—	—		—
< 0.001μSv/h	西	W	0.5
—	—		—
< 0.001μSv/h	西南西	WSW	0.2
—	—		—
< 0.001μSv/h	西北西	WNW	0.7
—	—		—
—	—		—
—	—		—
< 0.001μSv/h	南	S	1.1
—	—		—
—	—		—
—	—		—
< 0.001μSv/h	南東	SE	0.9
—	—		—
< 0.001μSv/h	南西	SW	0.9
—	—		—
< 0.001μSv/h	南	S	1.2
—	—		—
—	—		—
—	—		—
—	—		—
< 0.001μSv/h	南	S	2.0
—	—		—
—	—		—
< 0.001μSv/h	南	S	1.6
—	—		—
—	—		—
—	—		—
—	—		—
< 0.001μSv/h	南東	SE	2.5
—	—		—
—	—		—
—	—		—
—	—		—
< 0.001μSv/h	南南東	SSW	2.8
—	—		—
—	—		—

SSE

< 0.001μSv/h	南	S	1.9
—	—	—	—
—	—	—	—
< 0.001μSv/h	南東	SE	2.2
—	—	—	—
—	—	—	—
< 0.001μSv/h	南東	SE	2.0
—	—	—	—
—	—	—	—
< 0.001μSv/h	北	N	1.8
—	—	—	—
—	—	—	—
< 0.001μSv/h	北	N	2.0
—	—	—	—
< 0.001μSv/h	北	N	1.7
—	—	—	—
< 0.001μSv/h	南西	SW	1.6
—	—	—	—
< 0.001μSv/h	南西	SW	2.7
—	—	—	—
< 0.001μSv/h	北東	NE	2.2
—	—	—	—
< 0.001μSv/h	東	E	1.6
—	—	—	—
< 0.001μSv/h	南西	SW	2.0
—	—	—	—
< 0.001μSv/h	北西	NW	2.7
—	—	—	—
< 0.001μSv/h	北	N	2.3
—	—	—	—
—	—	—	—
< 0.001μSv/h	西	W	1.9
—	—	—	—
—	—	—	—
< 0.001μSv/h	北西	NE	2.2
—	—	—	—
—	—	—	—
< 0.001μSv/h	南東	SE	1.8
—	—	—	—
< 0.001μSv/h	南	S	2.0
—	—	—	—
< 0.001μSv/h	南東	SE	1.7
—	—	—	—
< 0.001μSv/h	東	E	1.7
—	—	—	—
< 0.001μSv/h	南	S	2.6
—	—	—	—

< 0.001μSv/h	東	E	2.6
—	—	—	—
< 0.001μSv/h	南東	SE	3.5
—	—	—	—
—	—	—	—
< 0.001μSv/h	東	E	2.9
—	—	—	—
< 0.001μSv/h	南南東	SSE	3.3
—	—	—	—
< 0.001μSv/h	南南東	SSE	3.3
—	—	—	—
< 0.001μSv/h	南南東	SSE	3.3
—	—	—	—
< 0.001μSv/h	南	S	2.7
—	—	—	—
< 0.001μSv/h	南	S	2.7
—	—	—	—
< 0.001μSv/h	南	S	3.4
—	—	—	—
< 0.001μSv/h	南南西	SSW	2.7
—	—	—	—
< 0.001μSv/h	南	S	2.5
—	—	—	—
< 0.001μSv/h	南南西	SSW	3.2
—	—	—	—
< 0.001μSv/h	南	S	2.5
—	—	—	—
< 0.001μSv/h	南	S	3.0
—	—	—	—
< 0.001μSv/h	南	S	2.6
—	—	—	—
< 0.001μSv/h	南南東	SSE	2.3
—	—	—	—
< 0.001μSv/h	南南東	SSE	2.4
—	—	—	—
< 0.001μSv/h	南南東	SSE	2.4
—	—	—	—
< 0.001μSv/h	南	S	2.2
—	—	—	—
< 0.001μSv/h	南南西	SSW	2.4
—	—	—	—
< 0.001μSv/h	南南西	SSW	1.9
—	—	—	—
—	—	—	—
< 0.001μSv/h	西	W	0.5
< 0.001μSv/h	北西	SW	0.4
—	—	—	—

NW



< 0.001μSv/h	西	W	0.3
—	—		—
< 0.001μSv/h	西	S	0.5
—	—		—
< 0.001μSv/h	南西	SW	0.6
—	—		—
—	—		—
—	—		—
—	—		—
—	—		—
—	—		—
< 0.001μSv/h	南西	SW	0.5
—	—		—
< 0.001μSv/h	北西	NW	0.4
—	—		—
< 0.001μSv/h	南西	SW	0.4
< 0.001μSv/h	西	W	0.4
< 0.001μSv/h	西	W	0.4
—	—		—
—	—		—
< 0.001μSv/h	西	W	0.3
—	—		—
< 0.001μSv/h	南	S	0.4
—	—		—
< 0.001μSv/h	北	NW	0.4
—	—		—
< 0.001μSv/h	北西	NW	0.4
< 0.001μSv/h	西	W	0.4
< 0.001μSv/h	西	W	0.5
—	—		—
< 0.001μSv/h	西	W	0.4
< 0.001μSv/h	北西	NW	0.5
< 0.001μSv/h	北東	NE	0.3
—	—		—
< 0.001μSv/h	北北西	NNW	0.4
—	—		—
< 0.001μSv/h	西	W	0.4
—	—		—
< 0.001μSv/h	南	S	0.4
—	—		—
< 0.001μSv/h	西北西	WNW	0.6
—	—		—
< 0.001μSv/h	北西	NW	0.6
—	—		—
< 0.001μSv/h	南東	SE	0.5
—	—		—

W

N

< 0.001μSv/h	北西	NW	0.4
—	—	—	—
< 0.001μSv/h	西	W	0.4
—	—	—	—
< 0.001μSv/h	北東	NE	0.6
—	—	—	—
< 0.001μSv/h	北東	NE	0.5
—	—	—	—
< 0.001μSv/h	西	W	0.5
—	—	—	—
< 0.001μSv/h	西	W	0.5
—	—	—	—
< 0.001μSv/h	西北西	WNW	0.4
—	—	—	—
< 0.001μSv/h	南東	SE	0.5
—	—	—	—
< 0.001μSv/h	南	S	0.6
—	—	—	—
< 0.001μSv/h	南西	SW	0.7
—	—	—	—
< 0.001μSv/h	南	S	0.7
—	—	—	—
< 0.001μSv/h	南	S	1.2
< 0.001μSv/h	南東	SE	1.5
< 0.001μSv/h	南南東	SSE	2.0
< 0.001μSv/h	南	S	1.6
< 0.001μSv/h	南西	SW	1.2
—	—	—	—
< 0.001μSv/h	南	S	0.8
—	—	—	—
< 0.001μSv/h	南西	SW	1.2
—	—	—	—
< 0.001μSv/h	南	S	1.3
—	—	—	—
< 0.001μSv/h	南南西	SSW	1.3
—	—	—	—
< 0.001μSv/h	南	S	0.6
—	—	—	—
< 0.001μSv/h	西	W	1.2
—	—	—	—
< 0.001μSv/h	北北東	NNE	0.7
—	—	—	—
< 0.001μSv/h	北	N	0.8
—	—	—	—
< 0.001μSv/h	北	N	0.7
—	—	—	—
< 0.001μSv/h	西	W	0.3

—	—	—	—
0.002	北西	NW	0.6
—	—	—	—
0.002	西	W	0.6
—	—	—	—
0.001	南東	SE	0.5
—	—	—	—
< 0.001μSv/h	南	S	0.6
—	—	—	—
< 0.001μSv/h	南	S	0.9
—	—	—	—
< 0.001μSv/h	南	S	1.1
—	—	—	—
0.002	南南西	SSW	0.9
—	—	—	—
0.001	西	W	0.8
—	—	—	—
< 0.001μSv/h	南南西	SSW	1.3
—	—	—	—
< 0.001μSv/h	西北西	WNW	1.6
—	—	—	—
0.001	北	N	0.9
—	—	—	—
< 0.001μSv/h	北	N	0.9
—	—	—	—
< 0.001μSv/h	北西	NW	0.9
—	—	—	—
0.001	北西	NW	0.9
< 0.001μSv/h	北西	NW	0.4
0.001	南	S	0.4
< 0.001μSv/h	東	E	0.5
—	—	—	—
< 0.001μSv/h	東	E	0.5
—	—	—	—
< 0.001μSv/h	南南東	SSE	1.6
—	—	—	—
< 0.001μSv/h	南東	SE	1.4
—	—	—	—
< 0.001μSv/h	南東		2.0
—	—	—	—
< 0.001μSv/h	南南東	SSE	2.4
—	—	—	—
—	東北東	ENE	0.5
< 0.001μSv/h	東	E	1.5
—	—	—	—
—	西北西	WNW	0.8
< 0.001μSv/h	南南西	SSE	1.4

SE

|



—	—	—	—
—	西北西	WNW	1.8
0.001	北	N	1.5
—	—	—	—
—	北西	NW	1.8
—	—	—	—
—	北西	NW	2.3
—	—	—	—
—	北西	NW	2.7
< 0.001μSv/h	北西	NW	3.1
—	—	—	—
—	北西	NW	2.6
< 0.001μSv/h	北西	NW	3.2
—	—	—	—
—	北西	NW	2.9
< 0.001μSv/h	北北西	NNW	4.2
—	—	—	—
—	北西	NW	2.3
< 0.001μSv/h	北	N	2.8
—	—	—	—
—	北西	NW	2.4
< 0.001μSv/h	北	N	3.3
—	—	—	—
—	北西	NW	2.8
0.002	北北西	NNW	3.3
—	—	—	—
—	北西	NW	2.7
< 0.001μSv/h	南東	SE	3.3
—	—	—	—
—	北西	NW	2.2
< 0.001μSv/h	南	S	2.4
—	—	—	—
—	北北西	NNW	2.3
< 0.001μSv/h	北西	NW	2.8
—	—	—	—
—	北西	NW	2.5
< 0.001μSv/h	北西	NW	2.7
—	—	—	—
—	北西	NW	2.1
< 0.001μSv/h	西	WNW	2.7
—	—	—	—
—	西北西	WNW	3.1
< 0.001μSv/h	北北西	NNW	2.5
—	—	—	—
—	北西	NW	2.4
< 0.001μSv/h	東	E	2.4
—	—	—	—

W

—	北西	NW	1.6
< 0.001μSv/h	西	W	2.2
—	—		—
—	北西	NW	1.3
< 0.001μSv/h	南	S	2.1
—	—		—
—	北西	NW	2.9
< 0.001μSv/h	北	N	2.0
—	—		—
—	北西	NW	2.3
< 0.001μSv/h	南南西		2.1
—	—		—
—	北西	NW	2.8
< 0.001μSv/h	西		2.1
—	—		—
—	北北西	NNW	1.9
< 0.001μSv/h	北西	NW	2.1
—	—		—
—	北北西	NNW	2.3
< 0.001μSv/h	南南西	SSW	2.6
—	—		—
—	西北西	WNW	2.6
< 0.001μSv/h	南	S	2.7
—	—		—
—	西北西	WNW	2.5
< 0.001μSv/h	南西	SW	1.6
—	—		—
—	西北西	WNW	1.7
< 0.001μSv/h	北北西	NNW	2.2
—	—		—
—	北西	NW	1.6
< 0.001μSv/h	南東	SE	1.7
—	—		—
—	東北東	ENE	1.5
< 0.001μSv/h	南	S	2.6
—	—		—
—	南	S	0.6
< 0.001μSv/h	南南東	SSE	2.1
—	—		—
—	東南東	ESE	0.7
< 0.001μSv/h	南南東	SSE	2.5
—	—		—
—	南	S	0.6
< 0.001μSv/h	南南東	SSE	2.2
—	—		—
—	南南東	SSE	0.5
< 0.001μSv/h	南東	SE	1.6

SSW

W

—	—	—	—	
—	南南東	SSE	0.7	
< 0.001μSv/h	南南東	SSE	2.0	
—	—		—	
—	—		—	
< 0.001μSv/h	南西	SW	1.3	
—	—		—	
—	南南東	SSE	0.8	
< 0.001μSv/h	南南東	SSE	1.6	
—	—		—	
—	西北西		2.3	WNW
< 0.001μSv/h	南南東		1.6	SSE
—	—		—	
—	西北西	WNW	1.1	
< 0.001μSv/h	北西	NW	2.0	
—	—		—	
—	東北東	ENE	2.1	
< 0.001μSv/h	西北西	WNW	1.5	
—	—		—	
—	東北東	ENE	1.1	
< 0.001μSv/h	南東	SE	2.3	
—	—		—	
—	南南東	SSE	0.7	
< 0.001μSv/h	南東	SE	2.2	
—	—		—	
—	南	S	0.7	
< 0.001μSv/h	南	S	1.8	
—	—		—	
—	南	S	0.4	
< 0.001μSv/h	南	S	1.8	
—	—		—	
—	南南東	SSE	0.4	
< 0.001μSv/h	南東	SE	1.1	
—	—		—	
—	南南東	SSE	0.5	
< 0.001μSv/h	南	S	1.0	
—	—		—	
—	南南西	SSW	0.4	
< 0.001μSv/h	南	S	1.0	
—	—		—	
—	南東	SE	0.5	
< 0.001μSv/h	南南西	SSW	1.5	
—	—		—	
—	南西	SW	0.4	
< 0.001μSv/h	南	S	1.8	
—	—		—	
—	南西	SW	0.4	



< 0.001μSv/h	南南東	SSE	0.6
—	—	—	—
—	西南西	WSW	0.5
< 0.001μSv/h	北北西	NNW	0.5
—	—	—	—
—	南東	SE	0.4
< 0.001μSv/h	西	W	0.6
—	—	—	—
—	北北西	NNW	0.5
< 0.001μSv/h	西	W	0.5
—	—	—	—
—	北北西	NNW	0.4
< 0.001μSv/h	北西	NW	0.6
—	—	—	—
—	北西	—	0.6
< 0.001μSv/h	北西	NW	0.8
—	—	—	—
—	北北西	NNW	0.6
< 0.001μSv/h	北西	NW	0.9
—	—	—	—
—	北北東	NNE	0.3
< 0.001μSv/h	北西	NW	1.1
—	—	—	—
—	北北西	NNW	0.3
< 0.001μSv/h	北西	NW	1.3
—	—	—	—
—	北	N	0.3
< 0.001μSv/h	北北西	NNW	1.2
—	—	—	—
—	北西	NW	0.6
0.001μSv/h未滿	北西	NW	1.0
—	—	—	—
—	北北西	NNW	0.5
< 0.001μSv/h	西	W	0.8
—	—	—	—
—	北西	NW	0.3
< 0.001μSv/h	北西	NW	0.8
—	—	—	—
—	北西	NW	0.4
< 0.001μSv/h	南西	SW	0.8
—	—	—	—
—	西北西	WNW	0.4
< 0.001μSv/h	西	W	0.6
—	—	—	—
—	北	N	0.3
< 0.001μSv/h	西	W	0.5
—	—	—	—

NW

|

—	北北西	NNW	0.5
< 0.001μSv/h	北西	NW	0.6
—	—		—
—	北西	NW	0.5
< 0.001μSv/h	南西	SW	0.3
—	—		—
—	北西	NW	0.6
< 0.001μSv/h	北西	NW	0.2
—	—		—
—	北北東	NNE	0.3
< 0.001μSv/h	西	W	0.5
—	—		—
—	西北西	WNW	0.4
< 0.001μSv/h	西北西	WNW	0.7
—	—		—
—	北	N	0.4
< 0.001μSv/h	西北西	WMW	0.6
—	—		—
—	北北東	NNE	0.3
< 0.001μSv/h	北西	NW	0.8
—	—		—
—	北	N	0.4
< 0.001μSv/h	北	N	0.5
—	—		—
—	北	N	0.4
< 0.001μSv/h	北	N	0.5
—	—		—
—	北北西	NNW	0.4
< 0.001μSv/h	西	W	0.5
—	—		—
—	北北西	NNW	0.3
< 0.001μSv/h	南	S	0.3
—	—		—
—	北西	NW	0.4
< 0.001μSv/h	北西	NW	0.3
—	—		—
—	北	N	0.3
< 0.001μSv/h	北	N	0.3
—	—		—
—	北北東	NNE	0.3
< 0.001μSv/h	西	W	0.5
—	—		—
—	北北西	NNW	0.3
< 0.001μSv/h	北	N	0.3
—	—		—
—	北北西	NNE	0.5
< 0.001μSv/h	西北西	WNW	0.4

around MP-2

around MP-2

WNW

NNW

—	—	—	—
—	東南東	ESE	0.3
< 0.001μSv/h	北東	NE	0.5
—	—	—	—
—	北北西	NNW	0.4
< 0.001μSv/h	北西	NW	0.4
—	—	—	—
—	北	N	0.5
< 0.001μSv/h	北	N	0.5
—	—	—	—
—	北北西	NNW	0.3
< 0.001μSv/h	北	N	0.7
—	—	—	—
—	北北西	NNW	0.3
< 0.001μSv/h	北	N	0.3
—	—	—	—
—	北北西	NNW	0.4
< 0.001μSv/h	西南西	WSW	0.6
—	—	—	—
—	東北東	ENE	0.4
< 0.001μSv/h	西	W	0.4
—	—	—	—
—	北北西	NNW	0.3
< 0.001μSv/h	西	E	0.5
—	—	—	—
—	北北西	NNW	0.3
< 0.001μSv/h	西	W	0.5
—	—	—	—
—	北西	NW	0.3
< 0.001μSv/h	西	W	0.5
—	—	—	—
—	北西	NW	0.3
< 0.001μSv/h	西	W	0.4
—	—	—	—
—	北	N	0.3
< 0.001μSv/h	北	N	0.4
—	—	—	—
—	北北西	NNW	0.3
< 0.001μSv/h	西	W	0.4
—	—	—	—
—	北	N	0.5
0.001μSv/h未滿	南	S	0.5
—	—	—	—
—	南西	SW	0.3
< 0.001μSv/h	南	S	0.5
—	—	—	—
—	北北西	NNW	0.3



< 0.001μSv/h	北西	NW	0.4
—	—	—	—
—	北北東	NNE	0.3
< 0.001μSv/h	南	S	0.3
—	—	—	—
—	南東	SE	0.3
< 0.001μSv/h	西北西	WNW	0.6
—	—	—	—
—	北西	NW	0.3
< 0.001μSv/h	西北西	WNW	0.6
—	—	—	—
—	北西	NW	0.6
< 0.001μSv/h	西北西	WNW	0.7
—	—	—	—
—	北北東	NNE	0.5
< 0.001μSv/h	南東	SE	0.7
—	—	—	—
—	東	E	0.4
< 0.001μSv/h	北東	NE	0.7
—	—	—	—
—	東南東	ESE	0.4
< 0.001μSv/h	北西	NE	0.5
—	—	—	—
—	北北西	NNW	0.4
< 0.001μSv/h	南	S	0.4
—	—	—	—
—	北北西	NNW	0.4
< 0.001μSv/h	南西	SW	0.5
—	—	—	—
—	北北西	NNW	0.3
< 0.001μSv/h	東北東	ENE	0.7
—	—	—	—
—	北	N	0.2
< 0.001μSv/h	西	W	0.5
—	—	—	—
—	北	N	0.4
< 0.001μSv/h	西	W	0.5
—	—	—	—
—	西北西	WNW	0.3
< 0.001μSv/h	西	W	0.5
—	—	—	—
—	北北東	NNE	0.4
< 0.001μSv/h	南東	SE	0.4
—	—	—	—
—	西北西	WNW	0.3
< 0.001μSv/h	南	S	0.4
—	—	—	—

NW

|

—	西	W	0.5
< 0.001μSv/h	南	S	0.2
—	—	—	—
—	北西	NW	0.3
< 0.001μSv/h	北	N	0.3
—	—	—	—
—	北北東	NNE	0.4
< 0.001μSv/h	西北西	WNW	0.6
—	—	—	—
—	北北西	NNW	0.5
< 0.001μSv/h	北	N	0.9
—	—	—	—
—	北西	NW	0.5
< 0.001μSv/h	東南東	ESE	0.6
—	—	—	—
—	—	—	—
< 0.001μSv/h	北北西	NNW	0.7
—	—	—	—
—	北北西	NNW	0.4
< 0.001μSv/h	北	N	0.8
—	—	—	—
—	北北西	NNW	0.6
< 0.001μSv/h	南西	SW	0.5
—	—	—	—
—	北北西	NNW	0.5
< 0.001μSv/h	西	W	0.4
—	—	—	—
—	北西	NW	0.3
< 0.001μSv/h	南東	SE	0.5
—	—	—	—
—	東北東	ENE	0.3
< 0.001μSv/h	西北西	WNW	0.4
—	西南西	WSW	0.4
—	—	—	—
< 0.001μSv/h	西	W	0.4
—	—	—	—
—	西北西	WNW	0.5
< 0.001μSv/h	北西	NW	0.3
—	—	—	—
—	北	N	0.5
< 0.001μSv/h	西北西	WNW	0.5
—	—	—	—
—	北	N	0.6
< 0.001μSv/h	西	W	0.5
—	北北西	NNW	0.3
< 0.001μSv/h	南西	SW	0.4
—	西南西	WSW	0.6

around MP-4  
Front Gate  
around MP-2

< 0.001μSv/h	北西	NW	0.4	
—	西	W	0.5	
—	西北西	WNW	1.3	
—	西北西	WNW	1.0	
—	西	W	1.3	
—	西	W	0.8	
—	西	W	0.7	
—	西	W	0.8	
0μSv/h	南南西	SSE	0.8	SSW
0μSv/h	南南西	SSE	1.2	SSW
0μSv/h	西北西	WNW	1.1	
0μSv/h	南東	SE	1.1	
0μSv/h	南	S	0.8	
—	南南西	SSW	0.5	
0μSv/h	南	S	1.0	
0μSv/h	南	S	1.0	
—	南西	SW	0.8	
0μSv/h	南南西	SSW	1.2	
—	西北西	WSW	1.1	
0μSv/h	南西	SW	1.3	
—	北西	NW	1.8	
0μSv/h	南西	SW	1.3	
—	北北西	NNW	2.1	
0μSv/h	南西	SW	1.2	
—	北西	NW	2.5	
0μSv/h	西	W	1.2	
—	北西	NW	3.7	
0μSv/h	西	W	1.1	
—	北西	NW	3.0	
0μSv/h	南南西	SSW	0.8	
—	北北西	NNW	2.9	
0μSv/h	—		—	
0μSv/h	—		—	
0μSv/h	北北東	NNE	1.9	
0μSv/h	西北西	WNW	0.9	
0μSv/h	北西	NW	3.1	
0μSv/h	北		2.3	N
0μSv/h	西南西	WSW	3.2	
0μSv/h	南東	SE	3.1	
—	—		—	
0μSv/h	南西	SW	2.4	
—	—		—	
—	—		—	
—	—		—	
0μSv/h	北	N	2.7	
—	—		—	
—	—		—	



—	—	—	—
0μSv/h	北北西	NNW	1.0
—	—	—	—
—	—	—	—
—	—	—	—
0μSv/h	北	N	2.3
0μSv/h	北西	NW	2.6
0μSv/h	北西	NW	2.6
0μSv/h	北	N	2.2
0μSv/h	北	N	3.6
0μSv/h	北	N	2.2
0μSv/h	北北東	NNE	2.6
0μSv/h	西北西	WNW	3.2
0μSv/h	北北西	NNW	3.8
0μSv/h	西北西	WNW	3.6
0μSv/h	西北西	WNW	3.2
0μSv/h	北北東	NNE	2.1
0μSv/h	西北西	WNW	2.5
0μSv/h	北西	NW	3.1
< 0.001μSv/h	西北西	WNW	2.7
< 0.001μSv/h	西	W	2.8
< 0.001μSv/h	南西	SW	1.7
< 0.001μSv/h	西	W	1.9
< 0.001μSv/h	西	W	1.2
< 0.001μSv/h	南	S	1.3
< 0.001μSv/h	北西	NW	1.1
< 0.001μSv/h	南南東	SSE	1.2
< 0.001μSv/h	東	E	0.8
< 0.001μSv/h	南	S	1.3
< 0.001μSv/h	南東	SE	0.7
< 0.001μSv/h	南東	SE	0.8
< 0.001μSv/h	南	S	0.6
< 0.001μSv/h	北	N	0.6
< 0.001μSv/h	西	W	0.7
< 0.001μSv/h	東	E	0.8
< 0.001μSv/h	北	N	0.7
< 0.001μSv/h	北西	NW	0.8
< 0.001μSv/h	西北西	WNW	1.0
< 0.001μSv/h	北西	NW	—
< 0.001μSv/h	西北西	WNW	—
< 0.001μSv/h	西	W	0.9
< 0.001μSv/h	北東	NE	0.9
< 0.001μSv/h	北	N	0.9
< 0.001μSv/h	南西	SW	1.0
< 0.001μSv/h	南西	SW	1.0
< 0.001μSv/h	北	N	0.9
< 0.001μSv/h	北西	NW	0.7

around MP-5

around MP-6

< 0.001μSv/h	南西	SW	0.9
< 0.001μSv/h	南東	SE	1.0
< 0.001μSv/h	南東	SE	1.6
< 0.001μSv/h	南	S	1.7
< 0.001μSv/h	北	N	1.2
< 0.001μSv/h	北	N	1.2
< 0.001μSv/h	南西	SW	4.6
< 0.001μSv/h	北東	NE	4.2
—	北北東	NNE	4.4
—	北北東	NNE	4.4
—	北北東	NNE	4.4
—	北北東	NNE	4.4
—	北北東	NNE	4.8
—	北東	NE	2.2
—	北東	NE	2.1
—	北	N	2.2
—	北	N	2.2
—	北北西	NNW	1.8
—	北北西	NNW	1.8
—	北北東	NNE	1.8
—	北北西	NNW	1.1
—	北西	NW	1.0
—	西北西	WNW	0.9
—	西	W	0.8
—	西北西	WNW	0.7
—	西北西	WNW	0.7
—	北北東	NNE	0.6
—	北東	NE	0.6
—	北東	NE	0.5
—	北	N	0.5
—	北	N	0.6
—	北	N	0.7
—	北北東	NNE	0.8
—	東北東	ENE	0.8
—	北	N	0.6
—	北西	NW	0.5
—	北北西	NNW	0.5
—	北北東	NNE	0.7
< 0.01μSv/h	北北西	NNW	1.3
0.02μSv/h	北北東	NNE	1.1
0.01μSv/h	北	N	1.0
< 0.01μSv/h	北東	NE	2.8
< 0.01μSv/h	北北東	NNE	3.4
< 0.01μSv/h	北北東	NNE	3.2
< 0.01μSv/h	北	N	3.6
< 0.01μSv/h	北東	NE	3.6
< 0.01μSv/h	北北東	NNE	3.4

< 0.01μSv/h	北	N	3.4
< 0.01μSv/h	北東	NE	4.2
< 0.01μSv/h	北北西	NNW	2.0
< 0.01μSv/h	北	N	2.1
< 0.01μSv/h	北東	NE	1.0
< 0.01μSv/h	北	N	0.8
< 0.01μSv/h	北東	NE	0.9
< 0.01μSv/h	北北西	NNW	0.7
< 0.01μSv/h	北	N	0.7
< 0.01μSv/h	北	N	0.8
< 0.01μSv/h	北東	NE	1.5
< 0.01μSv/h	北東	NE	1.5
< 0.01μSv/h	北	N	1.6
< 0.01μSv/h	北	N	1.8
< 0.01μSv/h	北北東	NNE	1.5
< 0.01μSv/h	—		—
< 0.01μSv/h	—		—
< 0.01μSv/h	北東	NE	5.3
< 0.01μSv/h	—		—
< 0.01μSv/h	—		—
< 0.01μSv/h	—		—
< 0.01μSv/h	南東	SE	1.2
< 0.01μSv/h	東	E	1.3
< 0.01μSv/h	東南東	ESE	3.4
< 0.01μSv/h	南東	SE	1.3
< 0.01μSv/h	南	S	1.4
< 0.01μSv/h	南	S	1.8
< 0.01μSv/h	南	S	1.3
< 0.01μSv/h	南	S	1.3
< 0.01μSv/h	南南東	SSE	1.4
< 0.01μSv/h	南	S	1.0
< 0.01μSv/h	南南東	SSE	1.5
< 0.01μSv/h	南	S	1.9
< 0.01μSv/h	南	S	1.6
< 0.01μSv/h	南	S	1.5
< 0.01μSv/h	東南東	ESE	1.4
< 0.01μSv/h	南	S	1.2
< 0.01μSv/h	南南東	SSE	1.2
< 0.01μSv/h	東	E	1.2
< 0.01μSv/h	南東	SE	1.2
< 0.01μSv/h	南	S	1.0
< 0.01μSv/h	南東	SE	1.1
< 0.01μSv/h	南	S	1.1
< 0.01μSv/h	南東	SE	1.1
< 0.01μSv/h	南南東	SSE	1.3
< 0.01μSv/h	南	S	1.0
< 0.01μSv/h	南南東		1.4

SSE

< 0.01μSv/h	南	S	1.1
< 0.01μSv/h	南南東	SSE	1.1
< 0.01μSv/h	南南東	SSE	1.3
< 0.01μSv/h	南	S	1.3
< 0.01μSv/h	南	S	1.6
< 0.01μSv/h	南東	SE	1.5
< 0.01μSv/h	南	S	1.1
< 0.01μSv/h	南東	SE	1.2
< 0.01μSv/h	南	S	1.1
< 0.01μSv/h	南	S	1.0
< 0.01μSv/h	南	S	1.1
< 0.01μSv/h	南	S	1.0
< 0.01μSv/h	南南東	SSE	1.3
< 0.01μSv/h	東	S	1.4
< 0.01μSv/h	南南東	SSE	1.8
< 0.01μSv/h	南東	SE	1.6
< 0.01μSv/h	南東	SE	1.6
< 0.01μSv/h	西	W	0.7
< 0.01μSv/h	北	N	0.7
< 0.01μSv/h	南	S	0.9
< 0.01μSv/h	東	E	0.9
< 0.01μSv/h	北西	NW	1.0
< 0.01μSv/h	北西	NW	3.7
< 0.01μSv/h	東	E	5.6
< 0.01μSv/h	北北東	NNE	4.0
< 0.01μSv/h	北北東	NNE	4.0
< 0.01μSv/h	東	E	2.2
< 0.01μSv/h	北東	NE	1.7
< 0.01μSv/h	北北東	NNE	2.5
< 0.01μSv/h	北西	NW	2.1
< 0.01μSv/h	北	N	2.4
< 0.01μSv/h	北西	NW	1.0
< 0.01μSv/h	北西	NW	0.6
< 0.01μSv/h	北西	NW	0.6
< 0.01μSv/h	北東	NE	3.8
< 0.01μSv/h	北	N	1.1
< 0.01μSv/h	北西	NW	2.2
< 0.01μSv/h	北西	NW	1.0
< 0.01μSv/h	北西	NW	0.9
< 0.01μSv/h	北北西	NNE	0.9
< 0.01μSv/h	北西	NW	1.1
< 0.01μSv/h	北西	NW	1.0
< 0.01μSv/h	北西	NW	1.0
< 0.01μSv/h	北西	NW	1.0
< 0.01μSv/h	北西	NW	1.0
< 0.01μSv/h	北西	NW	5.0
< 0.01μSv/h	北	N	4.2

NNW



< 0.01μSv/h	北北西	NNW	3.1
< 0.01μSv/h	北西	NW	2.9
< 0.01μSv/h	北北西	NNW	2.6
< 0.01μSv/h	北西	NW	2.0
< 0.01μSv/h	西	W	1.4
< 0.01μSv/h	西北西	WNW	1.4
< 0.01μSv/h	西北西	WNW	1.4
< 0.01μSv/h	北西	NW	1.4
< 0.01μSv/h	北西	NW	1.4
< 0.01μSv/h	北西	NW	1.2
< 0.01μSv/h	北西	NW	1.3
< 0.01μSv/h	西	W	1.2
< 0.01μSv/h	西	W	1.2
< 0.01μSv/h	北北西	NNW	1.2
< 0.01μSv/h	西北西	WNW	1.3
< 0.01μSv/h	北北西	NNW	1.4
< 0.01μSv/h	北北西	NNW	1.4
< 0.01μSv/h	北	N	1.7
< 0.01μSv/h	北北西	NNW	2.2
< 0.01μSv/h	北西	NW	1.7
< 0.01μSv/h	北	N	2.3
< 0.01μSv/h	北西	NW	1.8
< 0.01μSv/h	北西	NW	1.9
< 0.01μSv/h	西	W	1.6
< 0.01μSv/h	北北西	NNW	1.5
< 0.01μSv/h	東北東	ENE	1.8
< 0.01μSv/h	北東	NE	1.5
< 0.01μSv/h	東北東	ENE	1.4
< 0.01μSv/h	東	E	
< 0.01μSv/h	東北東	ENE	4.9
< 0.01μSv/h	北東	NE	—
< 0.01μSv/h	—		—
< 0.01μSv/h	北東	NE	2.0
< 0.01μSv/h	北北東	NNE	1.9
< 0.01μSv/h	東北東	ENE	2.3
< 0.01μSv/h	北東	NE	1.6
< 0.01μSv/h	東	E	1.8
< 0.01μSv/h	北	N	1.8
< 0.01μSv/h	東南東	ESE	1.6
< 0.01μSv/h	東	E	0.9
< 0.01μSv/h	北	N	1.8
< 0.01μSv/h	東北東	ENE	1.4
< 0.01μSv/h	西	W	1.4
< 0.01μSv/h	北西	NW	4.1
< 0.01μSv/h	西南西	WSW	3.0
< 0.01μSv/h	西南西	WSW	1.0
< 0.01μSv/h	西南西	WSW	1.2

< 0.01μSv/h	北	N	2.4
< 0.01μSv/h	北西	NW	2.7
< 0.01μSv/h	北西	NW	2.1
< 0.01μSv/h	東北東	ENE	1.7
< 0.01μSv/h	南南西	SSW	1.9
< 0.01μSv/h	南南東	SSE	2.3
< 0.01μSv/h	西	W	2.1
< 0.01μSv/h	西北西	WNW	2.1
< 0.01μSv/h	西南西	WEW	3.1
< 0.01μSv/h	北西	NW	2.3
< 0.01μSv/h	北西	NW	3.4
< 0.01μSv/h	北北西	NNW	3.0
< 0.01μSv/h	北	N	2.7
< 0.01μSv/h	北北西	NNW	2.6
< 0.01 μSv/h	西	W	2.6
< 0.01 μSv/h	北東	NE	1.1
< 0.01 μSv/h	南南西	SSW	0.4
< 0.01 μSv/h	北北西	NNW	0.6
< 0.01 μSv/h	東	E	0.9
< 0.01 μSv/h	西	W	0.5
< 0.01 μSv/h	北西	NW	1.5
< 0.01 μSv/h	北	N	1.5
< 0.01 μSv/h	西	W	1.8
< 0.01 μSv/h	西	W	1.8
< 0.01 μSv/h	北西	NW	1.0
< 0.01 μSv/h	西	W	1.3
< 0.01 μSv/h	西	W	2.3
< 0.01 μSv/h	西	W	3.1
< 0.01 μSv/h	西	W	3.6
< 0.01 μSv/h	西	W	3.7
< 0.01 μSv/h	西	W	3.8
< 0.01 μSv/h	西	W	3.7
< 0.01 μSv/h	南西	SW	3.7
< 0.01 μSv/h	西南西	WSW	3.2
< 0.01 μSv/h	南西	SW	3.8
< 0.01 μSv/h	南西	SW	3.4
< 0.01 μSv/h	南西	SW	3.7
< 0.01 μSv/h	南西	SW	3.0
< 0.01 μSv/h	西	W	5.1
< 0.01 μSv/h	西南西	WSW	5.0
< 0.01 μSv/h	西	W	6.8
< 0.01 μSv/h	北西	NW	5.2
< 0.01 μSv/h	北西	NW	5.6
< 0.01 μSv/h	西	W	5.2
< 0.01 μSv/h	西	W	7.0
< 0.01 μSv/h	西南西	WSW	4.5
< 0.01 μSv/h	南西	SW	2.2
< 0.01 μSv/h	北西	NW	4.8

WSW

< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.3
< 0.01 $\mu\text{Sv/h}$	北西	NW	4.7
< 0.01 $\mu\text{Sv/h}$	西	W	4.4
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.9
< 0.01 $\mu\text{Sv/h}$	西	W	3.5
< 0.01 $\mu\text{Sv/h}$	西	W	3.5
< 0.01 $\mu\text{Sv/h}$	西	W	3.8
< 0.01 $\mu\text{Sv/h}$	西	W	3.5
< 0.01 $\mu\text{Sv/h}$	西	W	3.1
< 0.01 $\mu\text{Sv/h}$	北西	NW	4.5
< 0.01 $\mu\text{Sv/h}$	西	W	4.7
< 0.01 $\mu\text{Sv/h}$	西	W	5.2
< 0.01 $\mu\text{Sv/h}$	北西	NW	5.8
< 0.01 $\mu\text{Sv/h}$	西	W	3.5
< 0.01 $\mu\text{Sv/h}$	西	W	3.2
< 0.01 $\mu\text{Sv/h}$	西	W	3.1
< 0.01 $\mu\text{Sv/h}$	西	W	5.2
< 0.01 $\mu\text{Sv/h}$	西	W	4.3
< 0.01 $\mu\text{Sv/h}$	西	W	4.3
< 0.01 $\mu\text{Sv/h}$	西	W	4.1
< 0.01 $\mu\text{Sv/h}$	西	W	3.1
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.8
< 0.01 $\mu\text{Sv/h}$	北西	NW	3.3
< 0.01 $\mu\text{Sv/h}$	北西	NW	3.4
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	3.6
< 0.01 $\mu\text{Sv/h}$	西	W	2.7
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.1
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.4
< 0.01 $\mu\text{Sv/h}$	西	W	2.6
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.7
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.9
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.4
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	2.7
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.7
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.2
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.9
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.6
< 0.01 $\mu\text{Sv/h}$	西	W	1.7
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.8
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.5
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.5
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.4
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.5
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.3
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.0
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.3
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	1.2
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.9

< 0.01 $\mu\text{Sv/h}$	北西	NW	0.9
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	0.7
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.2
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.3
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.0
< 0.01 $\mu\text{Sv/h}$	西	W	1.4
< 0.01 $\mu\text{Sv/h}$	西	W	1.0
< 0.01 $\mu\text{Sv/h}$	西	W	1.0
< 0.01 $\mu\text{Sv/h}$	西	W	0.8
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.9
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.0
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.6
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.5
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.7
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.4
< 0.01 $\mu\text{Sv/h}$	北	N	0.9
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.6
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.0
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.5
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.2
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.2
< 0.01 $\mu\text{Sv/h}$	北北東	NNE	0.2
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.2
< 0.01 $\mu\text{Sv/h}$	西	W	0.2
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.3
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.4
< 0.01 $\mu\text{Sv/h}$	西	W	0.7
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.6
< 0.01 $\mu\text{Sv/h}$	東	E	0.4
< 0.01 $\mu\text{Sv/h}$	西	W	0.5
< 0.01 $\mu\text{Sv/h}$	西	W	0.5
< 0.01 $\mu\text{Sv/h}$	北	N	0.4
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.2
< 0.01 $\mu\text{Sv/h}$	北	N	0.6
< 0.01 $\mu\text{Sv/h}$	北東	NE	0.5
< 0.01 $\mu\text{Sv/h}$	北北東	NNE	0.5
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	0.5
< 0.01 $\mu\text{Sv/h}$	北	N	0.6
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.7
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.0
< 0.01 $\mu\text{Sv/h}$	北	N	1.0
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.3
< 0.01 $\mu\text{Sv/h}$	西	W	1.6
< 0.01 $\mu\text{Sv/h}$	北	N	1.4
< 0.01 $\mu\text{Sv/h}$	西	W	1.2
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.5
< 0.01 $\mu\text{Sv/h}$	西	W	1.6
< 0.01 $\mu\text{Sv/h}$	西	W	2.3



< 0.01 $\mu\text{Sv/h}$	北	N	2.1
< 0.01 $\mu\text{Sv/h}$	北	N	1.9
< 0.01 $\mu\text{Sv/h}$	西	W	2.0
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.9
< 0.01 $\mu\text{Sv/h}$	北	N	3.0
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.7
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.9
< 0.01 $\mu\text{Sv/h}$	西	W	3.4
< 0.01 $\mu\text{Sv/h}$	西	W	3.7
< 0.01 $\mu\text{Sv/h}$	西	W	3.3
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.5
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.6
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.8
< 0.01 $\mu\text{Sv/h}$	西	W	2.3
< 0.01 $\mu\text{Sv/h}$	西	W	3.3
< 0.01 $\mu\text{Sv/h}$	西	W	2.9
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	3.1
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.0
< 0.01 $\mu\text{Sv/h}$	西	W	1.8
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.2
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.5
< 0.01 $\mu\text{Sv/h}$	北	N	2.3
< 0.01 $\mu\text{Sv/h}$	南西	SW	1.8
< 0.01 $\mu\text{Sv/h}$	西	W	1.9
< 0.01 $\mu\text{Sv/h}$	北	N	1.5
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.3
< 0.01 $\mu\text{Sv/h}$	南西	SW	1.5
< 0.01 $\mu\text{Sv/h}$	南西	SW	1.7
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.6
< 0.01 $\mu\text{Sv/h}$	北	N	1.7
< 0.01 $\mu\text{Sv/h}$	西	W	1.3
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.2
< 0.01 $\mu\text{Sv/h}$	東	E	1.1
< 0.01 $\mu\text{Sv/h}$	南	S	1.8
< 0.01 $\mu\text{Sv/h}$	南東	SE	2.7
< 0.01 $\mu\text{Sv/h}$	南	S	3.0
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	2.6
< 0.01 $\mu\text{Sv/h}$	南東	SE	2.5
< 0.01 $\mu\text{Sv/h}$	東	E	2.0
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	1.8
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	2.0
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.7
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	1.6
< 0.01 $\mu\text{Sv/h}$	南	S	1.7
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	1.9
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.9
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	1.7
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	1.8

< 0.01 $\mu\text{Sv/h}$	南南東	SSE	1.6
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	1.5
< 0.01 $\mu\text{Sv/h}$	南	S	1.5
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.4
< 0.01 $\mu\text{Sv/h}$	南	S	1.7
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	1.9
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	2.3
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	2.1
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	2.2
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	2.4
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	2.0
< 0.01 $\mu\text{Sv/h}$	南	S	2.1
< 0.01 $\mu\text{Sv/h}$	南南西	SSE	1.8
< 0.01 $\mu\text{Sv/h}$	東	E	2.1
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	2.1
< 0.01 $\mu\text{Sv/h}$	南	S	2.0
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	2.1
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	3.1
< 0.01 $\mu\text{Sv/h}$	南	S	2.3
< 0.01 $\mu\text{Sv/h}$	南	S	1.8
< 0.01 $\mu\text{Sv/h}$	南南西	SSW	1.8
< 0.01 $\mu\text{Sv/h}$	南南西	SSW	1.2
< 0.01 $\mu\text{Sv/h}$	南	S	1.2
< 0.01 $\mu\text{Sv/h}$	南	S	1.2
< 0.01 $\mu\text{Sv/h}$	南南西	SSW	1.5
< 0.01 $\mu\text{Sv/h}$	南南西	SSW	1.5
< 0.01 $\mu\text{Sv/h}$	南南西	SSW	1.4
< 0.01 $\mu\text{Sv/h}$	西	W	1.5
< 0.01 $\mu\text{Sv/h}$	南西	SW	1.3
< 0.01 $\mu\text{Sv/h}$	南西	SW	1.4
< 0.01 $\mu\text{Sv/h}$	南南西	SSW	1.4
< 0.01 $\mu\text{Sv/h}$	南	S	1.3
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	1.5
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	1.3
< 0.01 $\mu\text{Sv/h}$	南	S	3.0
< 0.01 $\mu\text{Sv/h}$	西	W	0.5
< 0.01 $\mu\text{Sv/h}$	西北西	WSW	0.7
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.8
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.6
< 0.01 $\mu\text{Sv/h}$	南南西	SSW	0.5
< 0.01 $\mu\text{Sv/h}$	西	W	0.6
< 0.01 $\mu\text{Sv/h}$	西	W	0.3
< 0.01 $\mu\text{Sv/h}$	西	W	0.3
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	0.4
< 0.01 $\mu\text{Sv/h}$	西	W	0.5
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.5
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.7
< 0.01 $\mu\text{Sv/h}$	西	W	0.5

< 0.01 $\mu\text{Sv/h}$	西	W	0.5
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.4
< 0.01 $\mu\text{Sv/h}$	西	W	0.4
< 0.01 $\mu\text{Sv/h}$	北	S	0.3
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.4
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.3
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.8
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.2
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.2
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	1.4
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	1.4
< 0.01 $\mu\text{Sv/h}$	南西	SW	1.2
< 0.01 $\mu\text{Sv/h}$	南西	SW	1.1
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	0.9
< 0.01 $\mu\text{Sv/h}$	西	W	1.4
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	1.3
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	1.3
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	1.3
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	1.4
< 0.01 $\mu\text{Sv/h}$	南西	SW	1.6
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	1.3
< 0.01 $\mu\text{Sv/h}$	北	N	3.0
< 0.01 $\mu\text{Sv/h}$	北	N	0.3
< 0.01 $\mu\text{Sv/h}$	南	S	0.3
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	0.6
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	0.3
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	0.4
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.6
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.7
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	0.7
< 0.01 $\mu\text{Sv/h}$	東	E	0.7
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	0.9
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.6
< 0.01 $\mu\text{Sv/h}$	東	E	0.6
< 0.01 $\mu\text{Sv/h}$	西	W	0.5
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.4
< 0.01 $\mu\text{Sv/h}$	南東	SE	0.6
< 0.01 $\mu\text{Sv/h}$	西	W	0.6
< 0.01 $\mu\text{Sv/h}$	南	S	0.4
< 0.01 $\mu\text{Sv/h}$	南	S	0.5
< 0.01 $\mu\text{Sv/h}$	南	S	0.5
< 0.01 $\mu\text{Sv/h}$	東	E	0.9
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.9
< 0.01 $\mu\text{Sv/h}$	東	E	0.9
< 0.01 $\mu\text{Sv/h}$	南東	SE	0.9
< 0.01 $\mu\text{Sv/h}$	西	W	0.9
< 0.01 $\mu\text{Sv/h}$	南東	SE	0.7
< 0.01 $\mu\text{Sv/h}$	東北東	ENE	0.5

< 0.01 $\mu\text{Sv/h}$	東南東	ESE	0.4
< 0.01 $\mu\text{Sv/h}$	南南東	NNE	0.3
< 0.01 $\mu\text{Sv/h}$	東	E	0.4
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.7
< 0.01 $\mu\text{Sv/h}$	西	W	0.3
< 0.01 $\mu\text{Sv/h}$	西	W	0.7
< 0.01 $\mu\text{Sv/h}$	西	W	0.8
< 0.01 $\mu\text{Sv/h}$	南西	NW	0.6
< 0.01 $\mu\text{Sv/h}$	南東	SE	0.6
< 0.01 $\mu\text{Sv/h}$	北北東	NNE	0.3
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.5
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	0.3
< 0.01 $\mu\text{Sv/h}$	東	E	0.4
< 0.01 $\mu\text{Sv/h}$	東北東	ENE	0.6
< 0.01 $\mu\text{Sv/h}$	東北東	ENE	0.6
< 0.01 $\mu\text{Sv/h}$	北東	NE	0.9
< 0.01 $\mu\text{Sv/h}$	東	E	1.6
< 0.01 $\mu\text{Sv/h}$	東	E	2.1
< 0.01 $\mu\text{Sv/h}$	東	E	2.0
< 0.01 $\mu\text{Sv/h}$	東	E	1.5
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.8
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.8
< 0.01 $\mu\text{Sv/h}$	南	S	1.9
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.9
< 0.01 $\mu\text{Sv/h}$	東	E	1.7
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	1.5
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	1.5
< 0.01 $\mu\text{Sv/h}$	南西	SW	1.6
< 0.01 $\mu\text{Sv/h}$	西	W	2.2
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.9
< 0.01 $\mu\text{Sv/h}$	南西	SW	3.4
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	4.0
< 0.01 $\mu\text{Sv/h}$	西	W	4.7
< 0.01 $\mu\text{Sv/h}$	西	W	6.8
< 0.01 $\mu\text{Sv/h}$	西	W	5.7
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	5.6
< 0.01 $\mu\text{Sv/h}$	西	W	5.7
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	5.9
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	6.1
< 0.01 $\mu\text{Sv/h}$	北西	NW	4.2
< 0.01 $\mu\text{Sv/h}$	西	W	3.7
< 0.01 $\mu\text{Sv/h}$	北西	NW	5.3
< 0.01 $\mu\text{Sv/h}$	西	W	4.3
< 0.01 $\mu\text{Sv/h}$	西	W	5.1
< 0.01 $\mu\text{Sv/h}$	南南西	SSW	4.9
< 0.01 $\mu\text{Sv/h}$	西	W	5.8
< 0.01 $\mu\text{Sv/h}$	北東	NE	3.4
< 0.01 $\mu\text{Sv/h}$	西	W	4.6



< 0.01 $\mu\text{Sv/h}$	北	N	4.9
< 0.01 $\mu\text{Sv/h}$	南南西	SSW	3.1
< 0.01 $\mu\text{Sv/h}$	南東	SE	2.6
< 0.01 $\mu\text{Sv/h}$	西	W	4.9
< 0.01 $\mu\text{Sv/h}$	西	W	4.6
< 0.01 $\mu\text{Sv/h}$	西	W	3.4
< 0.01 $\mu\text{Sv/h}$	南西	SW	3.8
< 0.01 $\mu\text{Sv/h}$	南西	SW	4.6
< 0.01 $\mu\text{Sv/h}$	南	S	3.9
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.4
< 0.01 $\mu\text{Sv/h}$	西	W	4.8
< 0.01 $\mu\text{Sv/h}$	西	W	5.0
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	4.5
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	6.1
< 0.01 $\mu\text{Sv/h}$	西	W	5.1
< 0.01 $\mu\text{Sv/h}$	西	W	5.7
< 0.01 $\mu\text{Sv/h}$	西	W	4.5
< 0.01 $\mu\text{Sv/h}$	北西	NW	4.1
< 0.01 $\mu\text{Sv/h}$	西	W	3.3
< 0.01 $\mu\text{Sv/h}$	西	W	3.8
< 0.01 $\mu\text{Sv/h}$	西	W	3.5
< 0.01 $\mu\text{Sv/h}$	西	W	3.6
< 0.01 $\mu\text{Sv/h}$	西	W	2.7
< 0.01 $\mu\text{Sv/h}$	西	W	2.8
< 0.01 $\mu\text{Sv/h}$	西	W	4.1
< 0.01 $\mu\text{Sv/h}$	西	W	3.5
< 0.01 $\mu\text{Sv/h}$	西	W	4.4
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	4.1
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	3.2
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	2.7
< 0.01 $\mu\text{Sv/h}$	西	W	2.8
< 0.01 $\mu\text{Sv/h}$	西	W	2.7
< 0.01 $\mu\text{Sv/h}$	西	W	2.2
< 0.01 $\mu\text{Sv/h}$	西	W	2.6
< 0.01 $\mu\text{Sv/h}$	西	W	3.1
< 0.01 $\mu\text{Sv/h}$	西	W	2.6
< 0.01 $\mu\text{Sv/h}$	西	W	2.5
< 0.01 $\mu\text{Sv/h}$	西	W	2.6
< 0.01 $\mu\text{Sv/h}$	西	W	3.1
< 0.01 $\mu\text{Sv/h}$	西	W	3.4
< 0.01 $\mu\text{Sv/h}$	西	W	3.3
< 0.01 $\mu\text{Sv/h}$	西	W	2.3
< 0.01 $\mu\text{Sv/h}$	西	W	1.8
< 0.01 $\mu\text{Sv/h}$	西	W	2.0
< 0.01 $\mu\text{Sv/h}$	西	W	2.2
< 0.01 $\mu\text{Sv/h}$	東北東	ENE	1.2
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	0.8
< 0.01 $\mu\text{Sv/h}$	西	W	1.0

< 0.01 $\mu\text{Sv/h}$	西	W	2.0
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.4
< 0.01 $\mu\text{Sv/h}$	西	W	1.8
< 0.01 $\mu\text{Sv/h}$	西	W	2.5
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.4
< 0.01 $\mu\text{Sv/h}$	西	W	2.4
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.9
< 0.01 $\mu\text{Sv/h}$	南西	SW	4.5
< 0.01 $\mu\text{Sv/h}$	南西	SW	3.7
< 0.01 $\mu\text{Sv/h}$	西	W	2.8
< 0.01 $\mu\text{Sv/h}$	南西	SW	3.5
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	3.0
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	3.4
< 0.01 $\mu\text{Sv/h}$	北西	NW	4.6
< 0.01 $\mu\text{Sv/h}$	北西	NW	3.2
< 0.01 $\mu\text{Sv/h}$	西	W	3.0
< 0.01 $\mu\text{Sv/h}$	北東	NE	2.9
< 0.01 $\mu\text{Sv/h}$	南西	SW	2.1
< 0.01 $\mu\text{Sv/h}$	西	NE	2.5
< 0.01 $\mu\text{Sv/h}$	南西	W	1.8
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.1
< 0.01 $\mu\text{Sv/h}$	西	W	1.6
< 0.01 $\mu\text{Sv/h}$	西	W	1.8
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.5
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.3
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.1
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	1.0
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.1
< 0.01 $\mu\text{Sv/h}$	北北東	NNE	1.9
< 0.01 $\mu\text{Sv/h}$	西	W	1.1
< 0.01 $\mu\text{Sv/h}$	南	S	1.0
< 0.01 $\mu\text{Sv/h}$	西	W	0.9
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.5
< 0.01 $\mu\text{Sv/h}$	南	S	0.8
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.8
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	3.5
< 0.01 $\mu\text{Sv/h}$	北	N	1.6
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	1.5
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.5
< 0.01 $\mu\text{Sv/h}$	北	N	0.7
< 0.01 $\mu\text{Sv/h}$	北北東	NNE	0.6
< 0.01 $\mu\text{Sv/h}$	北東	NE	0.6
< 0.01 $\mu\text{Sv/h}$	北	N	2.2
< 0.01 $\mu\text{Sv/h}$	北東	NE	0.6
< 0.01 $\mu\text{Sv/h}$	北東	NE	0.7
< 0.01 $\mu\text{Sv/h}$	東北東	ENE	0.9
< 0.01 $\mu\text{Sv/h}$	東北東	ENE	0.8
< 0.01 $\mu\text{Sv/h}$	東北東	ENE	0.6

W  
SW

< 0.01 $\mu\text{Sv/h}$	東	ENE	0.9
< 0.01 $\mu\text{Sv/h}$	東北東	ENE	1.1
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	0.6
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	0.6
< 0.01 $\mu\text{Sv/h}$	北東	NE	0.6
< 0.01 $\mu\text{Sv/h}$	北東	NE	0.8
< 0.01 $\mu\text{Sv/h}$	北	N	0.9
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.3
< 0.01 $\mu\text{Sv/h}$	東	E	1.3
< 0.01 $\mu\text{Sv/h}$	東	E	1.5
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.3
< 0.01 $\mu\text{Sv/h}$	東	E	1.5
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.4
< 0.01 $\mu\text{Sv/h}$	東北東	ENE	1.2
< 0.01 $\mu\text{Sv/h}$	東北東	ENE	1.2
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.0
< 0.01 $\mu\text{Sv/h}$	東北東	ENE	1.0
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.5
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.2
< 0.01 $\mu\text{Sv/h}$	東	E	1.2
< 0.01 $\mu\text{Sv/h}$	東	E	1.1
< 0.01 $\mu\text{Sv/h}$	東	E	1.2
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.3
< 0.01 $\mu\text{Sv/h}$	東	E	0.7
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.3
< 0.01 $\mu\text{Sv/h}$	東北東	ENE	1.4
< 0.01 $\mu\text{Sv/h}$	東北東	ENE	1.8
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.5
< 0.01 $\mu\text{Sv/h}$	東北東	ENE	1.4
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.2
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.3
< 0.01 $\mu\text{Sv/h}$	東	E	1.3
< 0.01 $\mu\text{Sv/h}$	南	S	1.1
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.2
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.0
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.1
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.3
< 0.01 $\mu\text{Sv/h}$	東	E	1.5
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.4
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.6
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.7
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.8
< 0.01 $\mu\text{Sv/h}$	南東	SE	2.0
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.6
< 0.01 $\mu\text{Sv/h}$	南	S	1.7
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.8
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.9
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	2.3

< 0.01 $\mu\text{Sv/h}$	南	S	2.1
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	2.0
< 0.01 $\mu\text{Sv/h}$	南	S	1.9
< 0.01 $\mu\text{Sv/h}$	南	S	1.9
< 0.01 $\mu\text{Sv/h}$	南	S	1.7
< 0.01 $\mu\text{Sv/h}$	南	S	1.9
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	2.1
< 0.01 $\mu\text{Sv/h}$	南	S	1.8
< 0.01 $\mu\text{Sv/h}$	南	S	2.0
< 0.01 $\mu\text{Sv/h}$	南	S	1.9
< 0.01 $\mu\text{Sv/h}$	南南西	SSW	2.2
< 0.01 $\mu\text{Sv/h}$	南	S	2.0
< 0.01 $\mu\text{Sv/h}$	南南西	SSW	2.1
< 0.01 $\mu\text{Sv/h}$	南	S	2.1
< 0.01 $\mu\text{Sv/h}$	南西	SW	1.8
< 0.01 $\mu\text{Sv/h}$	南南西	SSW	2.0
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.7
< 0.01 $\mu\text{Sv/h}$	南南西	SSW	2.1
< 0.01 $\mu\text{Sv/h}$	南西	SW	1.7
< 0.01 $\mu\text{Sv/h}$	南南西	SSW	1.6
< 0.01 $\mu\text{Sv/h}$	南	S	2.6
< 0.01 $\mu\text{Sv/h}$	南	S	2.6
< 0.01 $\mu\text{Sv/h}$	南西	SW	2.4
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	1.8
< 0.01 $\mu\text{Sv/h}$	北北東	NNE	1.0
< 0.01 $\mu\text{Sv/h}$	西	W	1.4
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	1.0
< 0.01 $\mu\text{Sv/h}$	南西	SW	2.0
< 0.01 $\mu\text{Sv/h}$	南西	SW	1.8
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	0.8
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.2
< 0.01 $\mu\text{Sv/h}$	西	W	1.2
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.4
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.0
< 0.01 $\mu\text{Sv/h}$	西	W	1.6
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.2
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.0
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.0
< 0.01 $\mu\text{Sv/h}$	西	W	2.2
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.4
< 0.01 $\mu\text{Sv/h}$	西	W	2.4
< 0.01 $\mu\text{Sv/h}$	西	W	2.0
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.0
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.2
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.6
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.2
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.6
< 0.01 $\mu\text{Sv/h}$	北西	NW	3.2



< 0.01 μSv/h	西	W	1.2
< 0.01 μSv/h	西北西	WNW	1.3
< 0.01 μSv/h	西北西	WNW	0.8
< 0.01 μSv/h	西	W	1.0
< 0.01 μSv/h	西北西	WNW	1.2
< 0.01 μSv/h	西	W	1.0
< 0.01 μSv/h	西	W	0.8
< 0.01 μSv/h	西	W	1.0
< 0.01 μSv/h	西北西	WNW	1.3
< 0.01 μSv/h	西	W	0.9
< 0.01 μSv/h	西	W	0.8
< 0.01 μSv/h	西北西	WNW	0.9
< 0.01 μSv/h	西北西	WNW	1.0
< 0.01 μSv/h	西北西	WNW	1.0
< 0.01 μSv/h	西	W	0.8
< 0.01 μSv/h	西	W	0.6
< 0.01 μSv/h	西	W	0.5
< 0.01 μSv/h	北西	NW	0.7
< 0.01 μSv/h	北西	NW	0.8
< 0.01 μSv/h	北西	NW	0.5
< 0.01 μSv/h	西	W	0.9
< 0.01 μSv/h	北西	NW	0.8
< 0.01 μSv/h	北西	NW	1.0
< 0.01 μSv/h	北	N	1.0
< 0.01 μSv/h	西	W	0.6
< 0.01 μSv/h	東南東	ESE	0.5
< 0.01 μSv/h	西北西	WNW	0.8
< 0.01 μSv/h	西	W	0.8
< 0.01 μSv/h	北西	NW	0.7
< 0.01 μSv/h	北西	NW	0.7
< 0.01 μSv/h	西北西	WNW	1.1
< 0.01 μSv/h	西北西	WNW	0.8
< 0.01 μSv/h	北西	NW	0.6
< 0.01 μSv/h	北西	NW	1.1
< 0.01 μSv/h	西北西	WNW	1.3
< 0.01 μSv/h	西北西	WNW	1.6
< 0.01 μSv/h	西北西	WNW	0.9
< 0.01 μSv/h	西	W	0.7
< 0.01 μSv/h	東	E	0.7
< 0.01 μSv/h	東	E	0.8
< 0.01 μSv/h	東北東	ENE	0.7
< 0.01 μSv/h	東	E	1.0
< 0.01 μSv/h	東	E	1.4
< 0.01 μSv/h	北東	NE	1.2
< 0.01 μSv/h	南西	SW	1.1
< 0.01 μSv/h	南西	SW	0.9
< 0.01 μSv/h	北東	NE	1.6
< 0.01 μSv/h	東	E	1.4

< 0.01 $\mu\text{Sv/h}$	東	E	1.2
< 0.01 $\mu\text{Sv/h}$	北北東	NNE	1.0
< 0.01 $\mu\text{Sv/h}$	北北東	NNE	0.8
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.7
< 0.01 $\mu\text{Sv/h}$	北東	NE	0.8
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.8
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	0.9
< 0.01 $\mu\text{Sv/h}$	西	W	1.2
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.0
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.8
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.7
< 0.01 $\mu\text{Sv/h}$	西	W	0.7
< 0.01 $\mu\text{Sv/h}$	西	W	1.7
< 0.01 $\mu\text{Sv/h}$	北	N	4.6
< 0.01 $\mu\text{Sv/h}$	北東	NE	5.0
< 0.01 $\mu\text{Sv/h}$	西	W	3.0
< 0.01 $\mu\text{Sv/h}$	西	W	2.0
< 0.01 $\mu\text{Sv/h}$	北西	NW	4.4
< 0.01 $\mu\text{Sv/h}$	北西	NW	4.1
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.1
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.6
< 0.01 $\mu\text{Sv/h}$	西	W	2.0
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.4
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.5
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.0
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.9
< 0.01 $\mu\text{Sv/h}$	北	N	0.8
< 0.01 $\mu\text{Sv/h}$	南西	SW	1.2
< 0.01 $\mu\text{Sv/h}$	北	N	1.5
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.7
< 0.01 $\mu\text{Sv/h}$	東	E	1.5
< 0.01 $\mu\text{Sv/h}$	北北東	NNE	1.1
< 0.01 $\mu\text{Sv/h}$	南東	SE	0.9
< 0.01 $\mu\text{Sv/h}$	西北西	NW	1.9
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.1
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.9
< 0.01 $\mu\text{Sv/h}$	北	N	0.7
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.6
< 0.01 $\mu\text{Sv/h}$	東	E	0.8
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.0
< 0.01 $\mu\text{Sv/h}$	東	E	0.8
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.5
< 0.01 $\mu\text{Sv/h}$	北東	NE	4.3
< 0.01 $\mu\text{Sv/h}$	北東	NE	4.0
< 0.01 $\mu\text{Sv/h}$	北	N	3.7
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.1
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.2
< 0.01 $\mu\text{Sv/h}$	北	N	1.3

WNW |

< 0.01 $\mu\text{Sv/h}$	北東	NE	3.8
< 0.01 $\mu\text{Sv/h}$	北	N	2.1
< 0.01 $\mu\text{Sv/h}$	北	N	3.8
< 0.01 $\mu\text{Sv/h}$	北東	NE	5.7
< 0.01 $\mu\text{Sv/h}$	北東	NE	6.8
< 0.01 $\mu\text{Sv/h}$	北東	NE	5.8
< 0.01 $\mu\text{Sv/h}$	北東	NE	6.3
< 0.01 $\mu\text{Sv/h}$	北	N	4.9
< 0.01 $\mu\text{Sv/h}$	北東	NE	5.9
< 0.01 $\mu\text{Sv/h}$	北	N	5.7
< 0.01 $\mu\text{Sv/h}$	北東	NE	4.8
< 0.01 $\mu\text{Sv/h}$	東	E	4.9
< 0.01 $\mu\text{Sv/h}$	南	S	0.7
< 0.01 $\mu\text{Sv/h}$	南西	SW	2.5
< 0.01 $\mu\text{Sv/h}$	東	E	3.5
< 0.01 $\mu\text{Sv/h}$	南東	SE	0.9
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	0.7
< 0.01 $\mu\text{Sv/h}$	東北東	ENE	0.5
< 0.01 $\mu\text{Sv/h}$	東北東	ENE	0.7
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	0.5
< 0.01 $\mu\text{Sv/h}$	南東	SE	0.3
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	0.4
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	0.3
< 0.01 $\mu\text{Sv/h}$	西	W	0.4
< 0.01 $\mu\text{Sv/h}$	西	W	0.4
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.2
< 0.01 $\mu\text{Sv/h}$	西	W	0.5
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	0.7
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.7
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.7
< 0.01 $\mu\text{Sv/h}$	南	S	0.3
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	0.4
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.4
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.7
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.8
< 0.01 $\mu\text{Sv/h}$	西	W	0.7
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	0.7
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.7
< 0.01 $\mu\text{Sv/h}$	西	W	0.7
< 0.01 $\mu\text{Sv/h}$	西	W	0.7
< 0.01 $\mu\text{Sv/h}$	西	W	0.6
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.6
< 0.01 $\mu\text{Sv/h}$	西	W	0.6
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.5
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.6
< 0.01 $\mu\text{Sv/h}$	南南西	SSW	0.6
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.3
< 0.01 $\mu\text{Sv/h}$	南	S	0.2

< 0.01 μSv/h	西	W	0.3	WSW
< 0.01 μSv/h	西北西	WNW	0.4	
< 0.01 μSv/h	北西	NW	0.5	
< 0.01 μSv/h	西南西	WNW	0.5	
< 0.01 μSv/h	西	W	0.7	
< 0.01 μSv/h	南東	SE	0.4	
< 0.01 μSv/h	南西	SW	0.4	
< 0.01 μSv/h	西南西	WSW	0.4	
< 0.01 μSv/h	西南西	WSW	0.4	
< 0.01 μSv/h	西	W	0.3	
< 0.01 μSv/h	西南西	WSW	0.4	
< 0.01 μSv/h	西北西	WNW	0.6	
< 0.01 μSv/h	西	W	0.5	
< 0.01 μSv/h	西	W	0.4	
< 0.01 μSv/h	西	W	0.7	
< 0.01 μSv/h	西北西	WNW	0.8	
< 0.01 μSv/h	西北西	WNW	1.0	
< 0.01 μSv/h	西	W	1.1	
< 0.01 μSv/h	西	W	1.3	
< 0.01 μSv/h	西	W	1.1	
< 0.01 μSv/h	西北西	WNW	0.8	
< 0.01 μSv/h	西北西	WNW	1.0	
< 0.01 μSv/h	北北西	NNW	1.0	
< 0.01 μSv/h	北西	NW	0.9	
< 0.01 μSv/h	西北西	WNW	1.0	
< 0.01 μSv/h	北西	NW	0.9	
< 0.01 μSv/h	西北西	WNW	0.9	
< 0.01 μSv/h	西北西	WNW	0.8	
< 0.01 μSv/h	西北西	WNW	0.8	
< 0.01 μSv/h	西北西	WNW	0.8	
< 0.01 μSv/h	西	W	0.6	
< 0.01 μSv/h	北西	NW	0.5	
< 0.01 μSv/h	北北西	NNW	0.4	
< 0.01 μSv/h	北	N	2.1	
< 0.01 μSv/h	北西	NW	1.1	
< 0.01 μSv/h	北西	NW	2.0	
< 0.01 μSv/h	北西	NW	1.8	
< 0.01 μSv/h	西	W	1.6	
< 0.01 μSv/h	北西	NW	1.9	
< 0.01 μSv/h	西	W	1.7	
< 0.01 μSv/h	西	W	1.6	
< 0.01 μSv/h	北	N	1.3	
< 0.01 μSv/h	北西	NW	1.3	
< 0.01 μSv/h	西	W	1.5	
< 0.01 μSv/h	西北西	WNW	1.8	
< 0.01 μSv/h	西北西	WNW	2.3	
< 0.01 μSv/h	北西	NW	2.3	
< 0.01 μSv/h	西北西	WNW	1.8	



< 0.01 $\mu\text{Sv/h}$	北西	NW	2.0
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.9
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.8
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.2
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.4
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.8
< 0.01 $\mu\text{Sv/h}$	西	W	1.4
< 0.01 $\mu\text{Sv/h}$	西	W	1.5
< 0.01 $\mu\text{Sv/h}$	西	W	1.4
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.2
< 0.01 $\mu\text{Sv/h}$	西	W	1.1
< 0.01 $\mu\text{Sv/h}$	西	W	1.5
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.3
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.1
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.5
< 0.01 $\mu\text{Sv/h}$	西	W	1.7
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.8
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.8
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.3
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.4
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.5
< 0.01 $\mu\text{Sv/h}$	北	N	1.5
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	1.6
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	1.7
< 0.01 $\mu\text{Sv/h}$	北	NW	2.2
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	1.3
< 0.01 $\mu\text{Sv/h}$	西	W	1.7
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	1.5
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.3
< 0.01 $\mu\text{Sv/h}$	北	N	1.5
< 0.01 $\mu\text{Sv/h}$	北	N	1.4
< 0.01 $\mu\text{Sv/h}$	北	N	1.3
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.3
< 0.01 $\mu\text{Sv/h}$	北	N	1.7
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	1.4
< 0.01 $\mu\text{Sv/h}$	北	N	1.8
< 0.01 $\mu\text{Sv/h}$	北	N	1.6
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.4
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	1.5
< 0.01 $\mu\text{Sv/h}$	北	N	2.3
< 0.01 $\mu\text{Sv/h}$	北	N	2.1
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.6
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.7
< 0.01 $\mu\text{Sv/h}$	北	N	1.8
< 0.01 $\mu\text{Sv/h}$	北	N	1.6
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.6
< 0.01 $\mu\text{Sv/h}$	北	N	1.2
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.2

N

|

< 0.01 $\mu\text{Sv/h}$	北西	NW	0.8
< 0.01 $\mu\text{Sv/h}$	北	N	1.1
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	1.1
< 0.01 $\mu\text{Sv/h}$	東	E	1.2
< 0.01 $\mu\text{Sv/h}$	東	E	0.7
< 0.01 $\mu\text{Sv/h}$	東	E	0.7
< 0.01 $\mu\text{Sv/h}$	南東	SW	0.7
< 0.01 $\mu\text{Sv/h}$	南東	SW	0.6
< 0.01 $\mu\text{Sv/h}$	東	E	0.6
< 0.01 $\mu\text{Sv/h}$	北北東	NNE	0.6
< 0.01 $\mu\text{Sv/h}$	北	N	0.6
< 0.01 $\mu\text{Sv/h}$	南東	SE	0.4
< 0.01 $\mu\text{Sv/h}$	北東	NE	0.4
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	0.5
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.6
< 0.01 $\mu\text{Sv/h}$	西	W	0.9
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.6
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.4
< 0.01 $\mu\text{Sv/h}$	西	W	0.6
< 0.01 $\mu\text{Sv/h}$	西	W	0.3
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	0.5
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.3
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.5
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	0.1
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.5
< 0.01 $\mu\text{Sv/h}$	西	W	0.6
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.9
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.0
< 0.01 $\mu\text{Sv/h}$	西	W	1.0
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.8
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.6
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.9
< 0.01 $\mu\text{Sv/h}$	西	W	0.8
< 0.01 $\mu\text{Sv/h}$	西	W	0.6
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.4
< 0.01 $\mu\text{Sv/h}$	西	W	0.5
< 0.01 $\mu\text{Sv/h}$	西	W	0.6
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.7
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.0
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.2
< 0.01 $\mu\text{Sv/h}$	西	W	1.3
< 0.01 $\mu\text{Sv/h}$	西	W	1.1
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	0.8
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.0
< 0.01 $\mu\text{Sv/h}$	西	W	0.9
< 0.01 $\mu\text{Sv/h}$	西	W	1.2
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.8
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.8

SE  
SE



< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.6
< 0.01 $\mu\text{Sv/h}$	西	W	4.3
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.5
< 0.01 $\mu\text{Sv/h}$	北東	NE	5.5
< 0.01 $\mu\text{Sv/h}$	北	N	2.4
< 0.01 $\mu\text{Sv/h}$	北東	NE	6.5
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	6.0
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	4.2
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	3.4
< 0.01 $\mu\text{Sv/h}$	北	N	3.3
< 0.01 $\mu\text{Sv/h}$	北	N	3.2
< 0.01 $\mu\text{Sv/h}$	北	N	2.8
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.8
< 0.01 $\mu\text{Sv/h}$	北	N	2.9
< 0.01 $\mu\text{Sv/h}$	北	N	3.0
< 0.01 $\mu\text{Sv/h}$	北西	NW	3.1
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.9
< 0.01 $\mu\text{Sv/h}$	北	N	2.2
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.3
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.3
< 0.01 $\mu\text{Sv/h}$	北	N	2.6
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.2
< 0.01 $\mu\text{Sv/h}$	北	N	2.1
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.1
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.4
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.7
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	1.8
< 0.01 $\mu\text{Sv/h}$	北	N	2.1
< 0.01 $\mu\text{Sv/h}$	北	N	2.1
< 0.01 $\mu\text{Sv/h}$	北	N	1.8
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.2
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.1
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.2
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.4
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.5
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.5
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.6
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.7
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.4
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.1
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.7
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.4
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.6
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.8
< 0.01 $\mu\text{Sv/h}$	北	N	3.0
< 0.01 $\mu\text{Sv/h}$	北	N	2.5
< 0.01 $\mu\text{Sv/h}$	北	N	3.1
< 0.01 $\mu\text{Sv/h}$	北	N	3.2

< 0.01 $\mu\text{Sv/h}$	北北西	NNW	3.5
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	3.9
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	4.4
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	3.1
< 0.01 $\mu\text{Sv/h}$	北	N	3.5
< 0.01 $\mu\text{Sv/h}$	北北東	NNE	3.3
< 0.01 $\mu\text{Sv/h}$	北	N	2.9
< 0.01 $\mu\text{Sv/h}$	北	N	3.4
< 0.01 $\mu\text{Sv/h}$	北北東	NNE	2.5
< 0.01 $\mu\text{Sv/h}$	北北東	NNE	3.1
< 0.01 $\mu\text{Sv/h}$	北	N	2.6
< 0.01 $\mu\text{Sv/h}$	北	N	2.7
< 0.01 $\mu\text{Sv/h}$	北北東	NNE	3.1
< 0.01 $\mu\text{Sv/h}$	北	N	2.9
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.9
< 0.01 $\mu\text{Sv/h}$	北	N	3.1
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	3.0
< 0.01 $\mu\text{Sv/h}$	北	N	2.6
< 0.01 $\mu\text{Sv/h}$	北北東	NNE	2.5
< 0.01 $\mu\text{Sv/h}$	北北東	NNE	2.1
< 0.01 $\mu\text{Sv/h}$	北	N	2.2
< 0.01 $\mu\text{Sv/h}$	北	N	1.5
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	1.6
< 0.01 $\mu\text{Sv/h}$	北北東	NNE	2.6
< 0.01 $\mu\text{Sv/h}$	西	W	1.6
< 0.01 $\mu\text{Sv/h}$	西	W	1.6
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.5
< 0.01 $\mu\text{Sv/h}$	東	E	1.4
< 0.01 $\mu\text{Sv/h}$	東	E	1.2
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	1.9
< 0.01 $\mu\text{Sv/h}$	北	N	2.0
< 0.01 $\mu\text{Sv/h}$	北	N	1.5
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.3
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.2
< 0.01 $\mu\text{Sv/h}$	北	N	1.4
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.0
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	1.6
< 0.01 $\mu\text{Sv/h}$	東	E	0.9
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	1.6
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	1.7
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.6
< 0.01 $\mu\text{Sv/h}$	北	N	1.5
< 0.01 $\mu\text{Sv/h}$	東	E	1.3
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	1.0
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	1.1
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	0.7
< 0.01 $\mu\text{Sv/h}$	東	E	0.9
< 0.01 $\mu\text{Sv/h}$	南	S	0.9



< 0.01 $\mu\text{Sv/h}$	南東	SE	1.3
< 0.01 $\mu\text{Sv/h}$	南南西	SSW	1.0
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	0.8
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.9
< 0.01 $\mu\text{Sv/h}$	北	N	0.5
< 0.01 $\mu\text{Sv/h}$	東	E	0.6
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.1
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.2
< 0.01 $\mu\text{Sv/h}$	西	W	2.7
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	2.0
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.5
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	0.9
< 0.01 $\mu\text{Sv/h}$	北	N	2.3
< 0.01 $\mu\text{Sv/h}$	北西	NW	2.1
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	2.3
< 0.01 $\mu\text{Sv/h}$	北東	NE	1.7
< 0.01 $\mu\text{Sv/h}$	北	N	1.2
< 0.01 $\mu\text{Sv/h}$	北	N	1.4
< 0.01 $\mu\text{Sv/h}$	北	N	0.8
< 0.01 $\mu\text{Sv/h}$	北北東	NNE	0.4
< 0.01 $\mu\text{Sv/h}$	西	W	0.4
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	0.8
< 0.01 $\mu\text{Sv/h}$	北北東	NNE	0.2
< 0.01 $\mu\text{Sv/h}$	東	E	0.2
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.3
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.3
< 0.01 $\mu\text{Sv/h}$	東	E	0.5
< 0.01 $\mu\text{Sv/h}$	東	E	0.3
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	0.3
< 0.01 $\mu\text{Sv/h}$	南東	SE	0.5
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	0.3
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.4
< 0.01 $\mu\text{Sv/h}$	西	W	0.4
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	0.4
< 0.01 $\mu\text{Sv/h}$	西	W	0.5
< 0.01 $\mu\text{Sv/h}$	西	W	0.4
< 0.01 $\mu\text{Sv/h}$	西	W	0.3
< 0.01 $\mu\text{Sv/h}$	西	W	0.4
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.4
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.5
< 0.01 $\mu\text{Sv/h}$	西	W	0.5
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.5
< 0.01 $\mu\text{Sv/h}$	西	W	0.5
< 0.01 $\mu\text{Sv/h}$	西	W	0.6
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.5
< 0.01 $\mu\text{Sv/h}$	南東	SE	0.4
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.3
< 0.01 $\mu\text{Sv/h}$	南	S	0.4

< 0.01 $\mu\text{Sv/h}$	北	N	0.5
< 0.01 $\mu\text{Sv/h}$	西	W	1.2
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.3
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.4
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.6
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.6
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.3
< 0.01 $\mu\text{Sv/h}$	北	N	0.8
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.6
< 0.01 $\mu\text{Sv/h}$	西	W	0.8
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.3
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.7
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.6
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.2
< 0.01 $\mu\text{Sv/h}$	西	W	1.0
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	0.5
< 0.01 $\mu\text{Sv/h}$	西	W	1.0
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	0.9
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.6
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.7
< 0.01 $\mu\text{Sv/h}$	西	W	0.9
< 0.01 $\mu\text{Sv/h}$	西	W	1.0
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.5
< 0.01 $\mu\text{Sv/h}$	北	N	0.6
< 0.01 $\mu\text{Sv/h}$	南	S	0.3
< 0.01 $\mu\text{Sv/h}$	北	N	0.2
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	1.2
< 0.01 $\mu\text{Sv/h}$	西	W	1.2
< 0.01 $\mu\text{Sv/h}$	南東	SE	0.9
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	0.7
< 0.01 $\mu\text{Sv/h}$	南	S	0.6
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	0.8
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.8
< 0.01 $\mu\text{Sv/h}$	西	W	0.7
< 0.01 $\mu\text{Sv/h}$	北	N	0.4
< 0.01 $\mu\text{Sv/h}$	北	N	0.7
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	0.5
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	0.8
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	0.7
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.7
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.9
< 0.01 $\mu\text{Sv/h}$	西	W	1.1
< 0.01 $\mu\text{Sv/h}$	西	W	0.8
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.2
< 0.01 $\mu\text{Sv/h}$	南	S	1.0
< 0.01 $\mu\text{Sv/h}$	南	S	0.8
< 0.01 $\mu\text{Sv/h}$	南西	SW	0.8
< 0.01 $\mu\text{Sv/h}$	南	S	1.2

< 0.01 $\mu\text{Sv/h}$	南	S	1.2
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.7
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.7
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.5
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.8
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	2.5
< 0.01 $\mu\text{Sv/h}$	南東	SE	2.2
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	2.5
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	2.3
< 0.01 $\mu\text{Sv/h}$	南東	SE	2.2
< 0.01 $\mu\text{Sv/h}$	南東	SE	2.6
< 0.01 $\mu\text{Sv/h}$	南東	SE	2.7
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	2.4
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	2.7
< 0.01 $\mu\text{Sv/h}$	南東	SE	22.4
< 0.01 $\mu\text{Sv/h}$	南東	SE	2.8
< 0.01 $\mu\text{Sv/h}$	南	S	2.5
< 0.01 $\mu\text{Sv/h}$	南	S	2.8
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	2.7
< 0.01 $\mu\text{Sv/h}$	南	S	2.5
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	2.7
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	2.9
< 0.01 $\mu\text{Sv/h}$	南	S	3.0
< 0.01 $\mu\text{Sv/h}$	南東	SE	3.0
< 0.01 $\mu\text{Sv/h}$	南東	SE	2.8
< 0.01 $\mu\text{Sv/h}$	南	S	2.5
< 0.01 $\mu\text{Sv/h}$	南	S	3.1
< 0.01 $\mu\text{Sv/h}$	東南東	ESE	3.2
< 0.01 $\mu\text{Sv/h}$	南東	SE	3.1
< 0.01 $\mu\text{Sv/h}$	南	S	3.7
< 0.01 $\mu\text{Sv/h}$	南	S	3.7
< 0.01 $\mu\text{Sv/h}$	南東	SE	3.1
< 0.01 $\mu\text{Sv/h}$	南	S	4.2
< 0.01 $\mu\text{Sv/h}$	南東	SE	3.1
< 0.01 $\mu\text{Sv/h}$	南東	SE	4.1
< 0.01 $\mu\text{Sv/h}$	南東	SE	4.0
< 0.01 $\mu\text{Sv/h}$	南	S	2.3
< 0.01 $\mu\text{Sv/h}$	南	S	1.4
< 0.01 $\mu\text{Sv/h}$	南	S	5.8
< 0.01 $\mu\text{Sv/h}$	南東	SE	4.5
< 0.01 $\mu\text{Sv/h}$	南東	SE	4.4
< 0.01 $\mu\text{Sv/h}$	南	S	4.3
< 0.01 $\mu\text{Sv/h}$	南	S	4.3
< 0.01 $\mu\text{Sv/h}$	南	S	3.8
< 0.01 $\mu\text{Sv/h}$	南	S	4.3
< 0.01 $\mu\text{Sv/h}$	南東	SE	4.5
< 0.01 $\mu\text{Sv/h}$	南	S	4.0
< 0.01 $\mu\text{Sv/h}$	南	S	3.6

in front of Seismically Isolated BI  
in front of Seismically Isolated BI

< 0.01 $\mu\text{Sv/h}$	南	S	4.3
< 0.01 $\mu\text{Sv/h}$	南	S	3.2
< 0.01 $\mu\text{Sv/h}$	南東	SE	2.5
< 0.01 $\mu\text{Sv/h}$	南東	SE	1.8
< 0.01 $\mu\text{Sv/h}$	南	S	1.7
< 0.01 $\mu\text{Sv/h}$	南西	SW	1.3
< 0.01 $\mu\text{Sv/h}$	南	S	1.3
< 0.01 $\mu\text{Sv/h}$	南	S	1.7
< 0.01 $\mu\text{Sv/h}$	南	S	1.4
< 0.01 $\mu\text{Sv/h}$	南	S	1.3
< 0.01 $\mu\text{Sv/h}$	南南東	SSE	1.0
< 0.01 $\mu\text{Sv/h}$	西	W	0.5
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	0.6
< 0.01 $\mu\text{Sv/h}$	西	W	0.6
< 0.01 $\mu\text{Sv/h}$	西	W	0.8
< 0.01 $\mu\text{Sv/h}$	西南西	WSW	1.0
< 0.01 $\mu\text{Sv/h}$	西	W	0.7
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.0
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.3
< 0.01 $\mu\text{Sv/h}$	西	W	1.4
< 0.01 $\mu\text{Sv/h}$	西	W	1.4
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.8
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.7
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.6
< 0.01 $\mu\text{Sv/h}$	西	W	0.9
< 0.01 $\mu\text{Sv/h}$	西	W	0.7
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.2
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.2
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.0
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	0.8
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.4
< 0.01 $\mu\text{Sv/h}$	北	N	0.8
< 0.01 $\mu\text{Sv/h}$	西	W	0.6
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	0.7
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	0.5
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.9
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.5
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.2
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.0
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.6
< 0.01 $\mu\text{Sv/h}$	西北西	WNW	1.5
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.1
< 0.01 $\mu\text{Sv/h}$	北北西	NNW	1.3
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.9
< 0.01 $\mu\text{Sv/h}$	北西	NW	0.9
< 0.01 $\mu\text{Sv/h}$	北西	NW	1.3
< 0.01 $\mu\text{Sv/h}$	西	W	0.8
< 0.01 $\mu\text{Sv/h}$	西	W	0.8



< 0.01 μSv/h	西	W	0.5
< 0.01 μSv/h	北西	NW	0.8
< 0.01 μSv/h	西北西	WNW	0.7
< 0.01 μSv/h	西	W	1.0
< 0.01 μSv/h	西南西	WSW	0.7
< 0.01 μSv/h	西	W	0.5
< 0.01 μSv/h	南西	SW	0.5
< 0.01 μSv/h	南西	SW	0.6
< 0.01 μSv/h	西	W	0.6
< 0.01 μSv/h	南東	SE	0.5
< 0.01 μSv/h	南南西	SSW	0.5
< 0.01 μSv/h	北北西	NNW	0.7
< 0.01 μSv/h	西	W	0.5
< 0.01 μSv/h	西南西	WSW	0.5
< 0.01 μSv/h	西	W	0.7
< 0.01 μSv/h	西	W	1.0
< 0.01 μSv/h	西	W	1.0
< 0.01 μSv/h	西	W	0.8
< 0.01 μSv/h	北西	NW	1.8
< 0.01 μSv/h	北西	NW	1.1
< 0.01 μSv/h	北	N	1.0
< 0.01 μSv/h	西	W	0.8
< 0.01 μSv/h	北西	NW	1.7
< 0.01 μSv/h	北西	NW	1.2
< 0.01 μSv/h	北北西	NNW	1.1
< 0.01 μSv/h	北	N	0.9
< 0.01 μSv/h	北	N	0.8
< 0.01 μSv/h	西北西	WNW	0.9
< 0.01 μSv/h	北北西	NNW	0.8
< 0.01 μSv/h	北西	NW	0.9
< 0.01 μSv/h	北西	NW	0.9
< 0.01 μSv/h	北西	NW	1.8
< 0.01 μSv/h	西北西	WNW	1.6
< 0.01 μSv/h	西北西	WNW	1.5

## **Andersen, James**

---

**From:** Muessle, Mary  
**Sent:** Monday, March 14, 2011 12:42 PM  
**To:** Stewart, Sharon  
**Cc:** Andersen, James  
**Subject:** FW: Update on ADM Activities to Support Japan Efforts

**Importance:** High

Sharon

I understand Chuck Casto and John Monninger will also be leaving for Japan today.

Mary Muessle  
Assistant for Operations - Acting  
Office of the Executive Director for Operations  
U.S. Nuclear Regulatory Commission  
301-415-1703 office  
301-415-2700 fax

---

**From:** Ash, Darren  
**Sent:** Monday, March 14, 2011 12:40 PM  
**To:** Muessle, Mary; Andersen, James  
**Subject:** FW: Update on ADM Activities to Support Japan Efforts

Awareness only – no reply requested

---

**From:** Stewart, Sharon  
**Sent:** Monday, March 14, 2011 12:29 PM  
**To:** Ash, Darren  
**Cc:** Gusack, Barbara; Ross-Lee, MaryJane; Pretzello, Andrew; Kerben, Valerie; Humerick, David; Schoenmann, Sandra  
**Subject:** Update on ADM Activities to Support Japan Efforts

Darren,

We have provided the Op Center with the following:

Dosimeter Badges ~ 20 additional dosimeter badges (already provided 10). We are ordering additional badges to ensure we have an adequate inventory.

Passing Clearances for NRC Employees ~ Last night Valerie forwarded clearance information to the CSO in Japan for Anthony Usles and James Trapp (NRR). Today, she provided the clearances for Jason Kozal, Jeffrey Kowalczyk, and Michael Dudek (NSIR) to the contact at USAID.

Parking ~ DAS has made parking available for individuals working in the Op Center around the clock.

Cleaning ~ Due to the heavy use of the Op Center, we have scheduled additional cleaning.

Thanks!

Sharon D. Stewart-Clark, Acting Director  
Office of Administration



**From:** [Borchardt, Bill](#)  
**To:** [Leeds, Eric](#)  
**Subject:** Re: Update  
**Date:** Friday, March 11, 2011 2:51:16 PM

---

Thanks Eric.  
Bill Borchardt  
Via blackberry

----- Original Message -----

From: Leeds, Eric  
To: Borchardt, Bill  
Cc: Weber, Michael; Virgilio, Martin  
Sent: Fri Mar 11 14:28:10 2011  
Subject: Update

We held a cmr TA brief at 1 pm. Not much more than what I told you on the phone. They asked a lot of questions about the japanese nukes that we don't have answers to. Fukushima daiichi units 1 and 2 seem to be having issues with insufficient cooling and loss of emergency pwr but we have no other info. They brought in a temp diesel to the site. We have provided a sit rep to dhs and opa has talking points

NNNN/pph



---

**From:** PMT03 Hoc  
**Sent:** Thursday, April 07, 2011 2:48 AM  
**To:** PMT07 Hoc

Description: Vince Holahan has requested the following information. Need to discuss with Vince the purpose of each document and how it will be used by PACOM before providing. Need to obtain LT approval before providing to Vince and PACOM

RST Short Term Stability Paper (#4189)

Guidance of Return (Permanent Re-entry) of US Citizens to Areas around Fukushima Daiichi NPP (#4225)

RST March 26, 2011 document referenced in NY Times article

**From:** Shannon, Valerie  
**To:** McIntyre, David  
**Subject:** FW: FOIA Requestt  
**Date:** Thursday, March 31, 2011 11:48:51 AM  
**Attachments:** FOIAexemption.doc.pdf

---

---

**From:** Shannon, Valerie  
**Sent:** Friday, March 25, 2011 12:14 PM  
**To:** Chandrathil, Prema; Dricks, Victor; Hannah, Roger; Ledford, Joey; Mitlyng, Viktoria; Screnci, Diane; Sheehan, Neil; Uselding, Lara; Akstulewicz, Brenda; Brenner, Eliot; Burnell, Scott; Harrington, Holly; Hayden, Elizabeth; 'Ivonne Couret'; Janbergs, Holly; McIntyre, David  
**Subject:** FOIA Requestt

We have received three FOIA requests from the Associated Press asking for all records regarding the Japan event between March 11-16. The 1<sup>st</sup> request (FOIA-2011-0120) asks for communication between NRC and government counterparts in Japan; the 2<sup>nd</sup> request (FOIA-2011-0118) asks for all communications between NRC employees to and from DOE, to and from GE-Energy and to and from Hitachi-GE Nuclear Energy. We assume OPA has no communications that fall within these two requests and have closed them out. If you DO have any records that apply, please notify me immediately along with a hard copy of the communication/email.

The third request (FOIA-2011-0119) asks for communications within the NRC. Communications include e-mails, faxes and written correspondence and covers March 11-16.

Communications that are administrative or operational in nature (e.g. OPA staffing needs, assigned shifts, etc.) are not included.

Please print out all appropriate e-mails (inbox, sent, delete) and indicate those that are NOT releasable, thereby making the remainder releasable by default. Identify the number of exemption for not releasing the record using the exemptions that are explained in the attachment. For Exemption 6, if there are any cell phone numbers, bracket this information and mark with Ex.# 6. Blackberry numbers are releasable. Provide a hard copy of marked e-mails to me. If a string of e-mails is more than one page, please staple them as one package. We understand everyone is very busy and ask that you do this when you have time. Let me know if you have any questions.

If the regional PAO's are responding through their FOIA person in the region to these requests, please let me know.

Thank You,  
Val

NNNN/113

# RESPONSE TO FREEDOM OF INFORMATION ACT (FOIA) / PRIVACY ACT (PA) REQUEST

2010-0292

MAR 3 2011

## APPENDICES J, K

## PART II.A - APPLICABLE EXEMPTIONS

Records subject to the request that are described in the enclosed Appendices are being withheld in their entirety or in part under the Exemption No.(s) of the PA and/or the FOIA as indicated below (5 U.S.C. 552a and/or 5 U.S.C. 552(b)).

- Ex 1 ☐ Exemption 1: The withheld information is properly classified pursuant to Executive Order 12958.
- Ex 2 ☒ Exemption 2: The withheld information relates solely to the internal personnel rules and procedures of NRC.
- ☐ Low 2: Internal matters of a relatively trivial nature.
- ☒ High 2: Disclosure would risk circumvention of a legal requirement.
- Ex 3 ☐ Exemption 3: The withheld information is specifically exempted from public disclosure by statute indicated.
- ☐ Sections 141-145 of the Atomic Energy Act, which prohibits the disclosure of Restricted Data or Formerly Restricted Data (42 U.S.C. 2161-2165).
- ☐ Section 147 of the Atomic Energy Act, which prohibits the disclosure of Unclassified Safeguards Information (42 U.S.C. 2167).
- ☐ 41 U.S.C., Section 253b, subsection (m)(1), prohibits the disclosure of contractor proposals in the possession and control of an executive agency to any person under section 552 of Title 5, U.S.C. (the FOIA), except when incorporated into the contract between the agency and the submitter of the proposal.
- Ex 4 ☐ Exemption 4: The withheld information is a trade secret or commercial or financial information that is being withheld for the reason(s) indicated.
- ☐ The information is considered to be confidential business (proprietary) information.
- ☐ The information is considered to be proprietary because it concerns a licensee's or applicant's physical protection or material control and accounting program for special nuclear material pursuant to 10 CFR 2.390(d)(1).
- ☐ The information was submitted by a foreign source and received in confidence pursuant to 10 CFR 2.390(d)(2).
- ☐ Disclosure will harm an identifiable private or governmental interest.
- Ex 5 ☒ Exemption 5: The withheld information consists of interagency or intraagency records that are not available through discovery during litigation.
- Applicable privileges:
- ☒ Deliberative process: Disclosure of predecisional information would tend to inhibit the open and frank exchange of ideas essential to the deliberative process. Where records are withheld in their entirety, the facts are inextricably intertwined with the predecisional information. There also are no reasonably segregable factual portions because the release of the facts would permit an indirect inquiry into the predecisional process of the agency.
- ☐ Attorney work-product privilege: (Documents prepared by an attorney in contemplation of litigation)
- ☒ Attorney-client privilege: (Confidential communications between an attorney and his/her client)
- Ex 6 ☒ Exemption 6: The withheld information is exempted from public disclosure because its disclosure would result in a clearly unwarranted invasion of personal privacy.
- Ex 7 ☐ Exemption 7: The withheld information consists of records compiled for law enforcement purposes and is being withheld for the reason(s) indicated.
- ☐ (A) Disclosure could reasonably be expected to interfere with an enforcement proceeding (e.g., it would reveal the scope, direction, and focus of enforcement efforts, and thus could possibly allow recipients to take action to shield potential wrongdoing or a violation of NRC requirements from investigators).
- ☐ (C) Disclosure would constitute an unwarranted invasion of personal privacy.
- ☐ (D) The information consists of names of individuals and other information the disclosure of which could reasonably be expected to reveal identities of confidential sources.
- ☐ (E) Disclosure would reveal techniques and procedures for law enforcement investigations or prosecutions, or guidelines that could reasonably be expected to risk circumvention of the law.
- ☐ (F) Disclosure could reasonably be expected to endanger the life or physical safety of an individual.
- ☒ OTHER (Specify)
- The Appendix J and K records denied are listed in Comments section on NRC Form 464 Part I.C.

## PART II.B - DENYING OFFICIALS

Pursuant to 10 CFR 9.25(g), 9.25(h), and/or 9.65(b) of the U.S. Nuclear Regulatory Commission regulations, it has been determined that the information withheld is exempt from production or disclosure, and that its production or disclosure is contrary to the public interest. The person responsible for the denial are those officials identified below as denying officials and the FOIA/PA Officer for any denials that may be appealed to the Executive Director for Operations (EDO).

DENYING OFFICIAL	TITLE/OFFICE	RECORDS DENIED	APPELLATE OFFICIAL		
			EDO	SECY	IG
Patrica Hirsch	Assistant General Counsel for Legal Counsel, Legislation and Special Projects	Appendix J and K - Items listed in Part I.C - Comments		<input checked="" type="checkbox"/>	
Charles L. Miller	Director, Office of Federal and State Materials and Environmental Management Programs	Appendix J and K - Items listed in Part I.C - Comments	<input checked="" type="checkbox"/>		

Appeal must be made in writing within 30 days of receipt of this response. Appeals should be mailed to the FOIA/Privacy Act Officer, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, for action by the appropriate appellate official(s). You should clearly state on the envelope and letter that it is a "FOIA/PA Appeal."

## Phalen, Martin

---

**From:** Werner, Greg  
**Sent:** Tuesday, April 12, 2011 11:35 AM  
**To:** Garry, Steven; Bonser, Brian; Brock, Terry; Bush-Goddard, Stephanie; Carson, Louis; Cassidy, John; Clemons-Webb, Candace; Conatser, Richard; Dickson, Billy; Dickson, Elijah; Dionne, Bruce; Dykes, Carmen; Furia, Joseph; Go, Tony; Graves, Chris; Greene, Natasha; Griffis, Jeff; Hamilton, Ruben; Henderson, Pamela; Jimenez, Manuel; Kellner, Robert; Kuzo, George; LaVera, Ronald; Lewis, Doris; Loo, Wade; Lynn, Henry; Mahlahla, Latonya; Mitchell, Mark; Moslak, Thomas; Nielsen, Adam; Nimitz, Ronald; Noggle, James; Pedersen, Roger; Phalen, Martin; Pursley, William; Ricketson, Larry; Rivera, Jonathan; Roach, Edward; Rolph, Ronald; Saba, Mohammad; Schaffer, Steven; Shaffer, Vered; Shoop, Undine; Stearns, Don; Sun, Casper; Tomon, John  
**Subject:** RE: video of dose rates near Fukushima

FYI. In the briefing this morning about the event, the core for Unit 2 has been determined to have breached the vessel. In addition, there is a keyhole area (think they said northwest of the site) that is being designated as permanent evacuation due to high dose rates due to deposition of radioactive material.

Greg Werner

---

**From:** Garry, Steven  
**Sent:** Tuesday, April 12, 2011 11:32 AM  
**To:** Bonser, Brian; Brock, Terry; Bush-Goddard, Stephanie; Carson, Louis; Cassidy, John; Clemons-Webb, Candace; Conatser, Richard; Dickson, Billy; Dickson, Elijah; Dionne, Bruce; Dykes, Carmen; Furia, Joseph; Garry, Steven; Go, Tony; Graves, Chris; Greene, Natasha; Griffis, Jeff; Hamilton, Ruben; Henderson, Pamela; Jimenez, Manuel; Kellner, Robert; Kuzo, George; LaVera, Ronald; Lewis, Doris; Loo, Wade; Lynn, Henry; Mahlahla, Latonya; Mitchell, Mark; Moslak, Thomas; Nielsen, Adam; Nimitz, Ronald; Noggle, James; Pedersen, Roger; Phalen, Martin; Pursley, William; Ricketson, Larry; Rivera, Jonathan; Roach, Edward; Rolph, Ronald; Saba, Mohammad; Schaffer, Steven; Shaffer, Vered; Shoop, Undine; Stearns, Don; Sun, Casper; Tomon, John; Werner, Greg  
**Subject:** video of dose rates near Fukushima

Here's a 12 minute, YouTube video of a car (possibly a news crew) entering the evacuation zone with a dose rate meter that Manny Jimenez found. It shows steady state dose rates at 30 km is 0.1 mrem/hr and at 1.5 km is 11 mrem/hr.

Some of this might be upwind, downwind, etc. we don't know.

<http://www.youtube.com/watch?v=yp9iJ3pPuL8>



## Achen, Stephanie

---

**From:** Hollcraft, Zachary  
**Sent:** Wednesday, March 23, 2011 7:38 PM  
**To:** Lantz, Ryan  
**Cc:** Carson, Louis; Reynoso, John  
**Subject:** latest isotope samples

Ryan,

The latest from SONGS. They are notifying the protective action measures team now.

I-131: 5E-13 uCi/cc (somewhat constant)  
Cs-137: 7E-14 uCi/cc (down from 3E-13)

Zachary Hollcraft  
Temporary Resident  
San Onofre Nuclear Generating Station  
U.S. NRC  
[zachary.hollcraft@nrc.gov](mailto:zachary.hollcraft@nrc.gov)  
(949)492-2641



Please consider the environment before printing this e-mail.

NNNN/115

**Scarbeary, April**

---

**From:** Voss, Patricia  
**Sent:** Wednesday, April 20, 2011 11:17 AM  
**To:** Orlikowski, Robert  
**Cc:** Scarbeary, April; Thomas, Christopher  
**Subject:** FW: foia  
**Attachments:** Document.pdf

**Categories:** FOIA

The only thing we have...see attached

-----Original Message-----

**From:** [PATRICIA.VOSS@NRC.GOV](mailto:PATRICIA.VOSS@NRC.GOV) [mailto:Patricia.voss@nrc.gov]  
**Sent:** Wednesday, April 20, 2011 11:00 AM  
**To:** Voss, Patricia  
**Subject:** foia

NNNN/116

# REMP Charcoal Air Sample Results

Location	3/23/2011	3/30/2011	4/6/2011	4/13/2011				
M-1 - 11.0 miles NW	0.059	0.066	0.112	0.031				
M-2 - 0.8 miles SE	0.076	0.055	0.089	0.036				
M-3 - 0.6 miles ESE	0.071	0.050	0.098	<0.017				
M-4 - 0.8 miles SSE	0.098	0.061	0.134	<0.027				
M-5 - 2.6 miles SE	0.077	0.047	0.113	<0.022				

All results in pCi/M<sup>3</sup>

**From:** Bagchi, Goutam  
**To:** Pires, Jose; Kammerer, Annie; RES\_DE\_SGSEB; Chokshi, Nilesh; Manoly, Kamal; Karas, Rebecca; Cook, Christopher; Sheron, Brian; Uhle, Jennifer; Case, Michael; Richards, Stuart; Flanders, Scott  
**Subject:** RE: preliminary unconfirmed confidential information  
**Date:** Friday, March 11, 2011 8:08:32 AM

---

There was a mechanical break down of the cooling system at Fukushima. Excerpt from Guardian: Japan's Fukushima nuclear plant under state of emergency after quake

- Plant shut down but reactor cooling system damaged
- No leaks at 11 nuclear powerhouses in quake zone, says PM

*Thank you,  
Goutam Bagchi*

**From:** Pires, Jose  
**Sent:** Friday, March 11, 2011 7:59 AM  
**To:** Kammerer, Annie; RES\_DE\_SGSEB; Chokshi, Nilesh; Bagchi, Goutam; Manoly, Kamal; Karas, Rebecca; Cook, Christopher; Sheron, Brian; Uhle, Jennifer; Case, Michael; Richards, Stuart  
**Subject:** RE: preliminary unconfirmed confidential information

Annie,  
Apparently, at Fukushima I (TEPCO) all 6 units were safely shutdown but a nuclear emergency (evacuation) was declared. I understand that a nuclear emergency also was declared at Onagawa (Tohoku Power). Other plant sites were also safely shutdown and I understand that emergencies were not declared at those sites.

**From:** Kammerer, Annie  
**Sent:** Friday, March 11, 2011 7:52 AM  
**To:** RES\_DE\_SGSEB; Chokshi, Nilesh; Bagchi, Goutam; Manoly, Kamal; Karas, Rebecca; Cook, Christopher; Sheron, Brian; Uhle, Jennifer; Case, Michael; Richards, Stuart  
**Subject:** preliminary unconfirmed confidential information

Fukushima (there are two plants. .not sure which this occurred at): Station blackout. Loss of offsite power and the diesels didn't start. They are brining in generators from an outside facility

Onagawa 0.567g recorded at the base mat. Fire in the turbine building.

Tokai shook but no information yet.

Dr. Annie Kammerer, PE  
Senior Seismologist and Earthquake Engineer  
US Nuclear Regulatory Commission  
Office of Nuclear Regulatory Research  
Washington DC 20555

(b)(6) mobile  
(b)(6) 38

*0000/1*



---

**From:** Kenagy, W David <KenagyWD@state.gov>  
**Sent:** Friday, March 11, 2011 11:01 AM  
**To:** McClelland, Vince; Rodriguez, Veronica; Heinrich, Ann; HOO Hoc; HOO2 Hoc; Huffman, William; Shaffer, Mark A; DeCair, Sara@epamail.epa.gov; timothy.greten@dhs.gov; Maria.Marinissen@hhs.gov; (b)(6) doehqeoc@oem.doe.gov; hhs.soc@hhs.gov; James.Kish@dhs.gov  
**Subject:** For Info: IAEA New Releases  
**Attachments:** News\_Releases\_No5[1].pdf; News\_Releases\_No4\_IAEA1.pdf; News\_Releases\_No 2 \_IAEA1.pdf

This email is UNCLASSIFIED.

0000/2

March 11, 2011

Nuclear and Industrial Safety Agency

Seismic Damage Information (the 2nd Release)  
(As of 16:15 March 11, 2011)

Nuclear and Industrial Safety Agency (NISA) confirmed the current conditions of Tomari Power Station, Hokkaido Electric Power Co., Inc.

Higashidori Nuclear Power Station and Onagawa Nuclear Power Station, Tohoku Electric Power Co., Inc.

Higashidori Nuclear Power Station,, Fukushima Dai-ichi Nuclear Power Station and Fukushima Dai-ni Nuclear Power Station, Tokyo Electric Power Co., Inc. and works at the Japan Nuclear Fuel are as follows:

Walkdowns are continuing at these power stations.

1. Summary of Damage

1. Summary of Damage

(1) Time of Occurrence: 14:46 (UTC 5:46) March 11, 2011, Friday

(2) Epicenter: Off-Coast of Sanriku (North Latitude: 38: East Longitude: 142.9)

10km deep, M7.9

(3) Seismic Intensity in Japanese Scale

<Area of Seismic Intensity Larger Than and Including 4>

7: Northern Miyagi Prefecture

6+: Northern and southern Ibaraki Prefecture

5+: Sanpachi-Kamikita Aomori Prefecture

5: Chuetsu, Niigata Prefecture

<Municipality of Seismic Intensity Larger than and Including 4>

6+: Naraha Machi, Tomioka Machi, Ookuma-machi, and Futaba-machi, Fukushima Prefecture

6: Ishinomaki-city and, Onagawa town (by Seismograph of NPP)of ,

Miyagi Prefecture and Tokaimura, Ibaraki Pref.

5: Kariwa-village, Niigata Prefecture

4: Rokkasho-village, Higashidori-village, Aomori Prefecture,  
Kashiwazaki-city, Niigata Prefecture and Yokosuka-city, Kanagawa  
Prefecture

1: Tomari-mura, Hokkaido

1. The status of operation at Power Stations

a. Tomari Power Station: Hokkaido Electric Power Co., Inc. (Tomari-mura,  
Furui-gun, Hokkaido)

(1) The status of operation

Unit 1 (579MWe): In continued operation

Unit 2 (579MWe): In continued operation

Unit 3 (912MWe): In continued operation

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: Yes/No

Variation in the main stack monitor readings: Yes/No

(3) Report concerning other malfunction

b. Higashidori Nuclear Power Station, Tohoku Electric Power Co., Inc.  
(Higashidori-mura, Shimokita-gun, Aomori Prefecture)

(1) The status of operation

Unit 1 (1,100MWe) (outage for periodic inspection)

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Report of fire: No

c. Onagawa Nuclear Power Station (Onagawa-machi and Ishinomaki-shi,  
Miyagi Prefecture)

(1) The status of operation

Unit 1 (524MWe) (Automatic shutdown)

Unit 2 (825MWe) (Automatic shutdown)

Unit 3 (825MWe) (Automatic shutdown)

(567 Gal was observed on the foundation slab. )

(2) Readings of monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitor readings: No

(3) Report concerning other malfunction

Report of fire: No -Confinement function was confirmed.

d. Fukushima Dai-ichi Nuclear Power Station, Tokyo Electric Power Co., Inc. (Okuma-machi and Futaba-machi, Futaba-gun, Fukushima Prefecture )

(1) The status of operation

Unit 1 (460MWe) (Automatic shutdown)

Unit 2 (784MWe) (Automatic shutdown)

Unit 3 (784MWe) (Automatic shutdown)

Unit4(784MW): in periodic inspection outage

Unit5(784MW): in periodic inspection outage

Unit6(1,100MW): in periodic inspection outage

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Article 10\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ichi(Units 1,2 and 3)

(\* In a heightened alert conditioning)

e. Fukushima-Daini Nuclear Power

Station(TEPCO)(Naraha-cho/Tomioka-cho, Futaba-gun, Fukushima pref.)

(1) The status of operation

Unit1(1,100MW): (Automatic shutdown)

Unit2(1,100MW): (Automatic shutdown)

Unit3(1,100MW): (Automatic shutdown)

Unit4(1,100MW): (Automatic shutdown)

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Report of fire: No-Confinement function was confirmed.

f. Tokai Dai-ni Nuclear Power Station(JAPC)

(1) The status of operation

Unit1(1,100MW): Automatically shut down

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Report of fire: No-Confinement function was confirmed.

2. JNFL(Rokkasho-mura, Kamikita-gun, Aomori Pref)

(1) The status of operation

Reprocessing facility: Originally outage

(2) Report concerning other malfunction

Report of fire: No-Confinement function was confirmed.

3. Action taken by NISA

14:46 Set up of the NISA Emergency Preparedness Headquarters (Tokyo)  
immediately after the Earthquake

15:42: TEPCO reported to NISA in accordance with Article 10 of Act on  
Special Measures Concerning Nuclear Emergency Preparedness (Fukushima  
Dai-ichi(Units 1,2 and 3)

All facilities which will be confirmed safely will be eliminated from next  
press release

(Contact Person)

Mr. Masaomi Koyama

Deputy Director, International Affairs



# News Release



Office, NISA/METI

Phone: +81-(0)3-3501-1087

March 11, 2011

Nuclear and Industrial Safety Agency

Seismic Damage Information (the 4th Release)  
(As of 18:45 March 11, 2011)

(\*English version of the 3<sup>rd</sup> release has not published)

Nuclear and Industrial Safety Agency (NISA) confirmed the current conditions of Tomari Power Station, Hokkaido Electric Power Co., Inc.

Higashidori Nuclear Power Station and Onagawa Nuclear Power Station, Tohoku Electric Power Co., Inc.

Higashidori Nuclear Power Station, Fukushima Dai-ichi Nuclear Power Station and Fukushima Dai-ni Nuclear Power Station, Tokyo Electric Power Co., Inc. and works at the Japan Nuclear Fuel are as follows:

Walkdowns are continuing at these power stations.

1. Summary of Damage

(1) Time of Occurrence: 14:46 (UTC 5:46) March 11, 2011, Friday

(2) Epicenter: Off-Coast of Sanriku (North Latitude: 38; East Longitude: 142.9), 10km deep, M8.4

(3) Seismic Intensity in Japanese Scale

<Area of Seismic Intensity Larger Than and Including 4>

7: Northern Miyagi Prefecture

6+: Northern and southern Ibaraki Prefecture

5+: Sanpachi-Kamikita Aomori Prefecture

5: Chuetsu, Niigata Prefecture

<Municipality of Seismic Intensity Larger than and Including 4>

6+: Naraha Machi, Tomioka Machi, Ookuma-machi, and Futaba-machi, Fukushima Prefecture

6: Ishinomaki-city and, Onagawa town (by Seismograph of NPP) of Miyagi Prefecture and Tokaimura, Ibaraki Pref.

5: Kariwa-village, Niigata Prefecture

4: Rokkasho-village, Higashidori-village, Aomori Prefecture,  
Kashiwazaki-city, Niigata Prefecture and Yokosuka-city, Kanagawa  
Prefecture

1: Tomari-mura, Hokkaido

1. The status of operation at Power Stations

a. Higashidori Nuclear Power Station, Tohoku Electric Power Co., Inc.  
(Higashidori-mura, Shimokita-gun, Aomori Prefecture)

(1) The status of operation

Unit 1 (1,100MWe) : in periodic inspection outage

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Report of fire: No

b. Onagawa Nuclear Power Station (Onagawa-machi and Ishinomaki-shi,  
Miyagi Prefecture)

(1) The status of operation

Unit 1 (524MWe): automatic shutdown

Unit 2 (825MWe): automatic shutdown

Unit 3 (825MWe): automatic shutdown

(2) Readings of monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitor readings: No

(3) Report concerning other malfunction

Report of fire: CO2 extinguishment started at 17:15

c. Fukushima Dai-ichi Nuclear Power Station, Tokyo Electric Power Co., Inc.  
(Okuma-machi and Futaba-machi, Futaba-gun, Fukushima Prefecture)

(1) The status of operation

Unit 1 (460MWe): automatic shutdown

Unit 2 (784MWe): automatic shutdown

Unit 3 (784MWe): automatic shutdown

Unit 4(784MW): in periodic inspection outage

Unit 5(784MW): in periodic inspection outage

Unit 6(1,100MW): in periodic inspection outage

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Article 10\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ichi, Units 1,2 and 3)

(\*A heightened alert condition)

d. Fukushima-Daini Nuclear PowerStation(TEPCO)

(Naraha-cho/Tomioka-cho, Futaba-gun, Fukushima pref.)

(1) The status of operation

Unit1(1,100MW): automatic shutdown

Unit2(1,100MW): automatic shutdown

Unit3(1,100MW): automatic shutdown

Unit4(1,100MW): automatic shutdown

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Report of fire: No

2. JNFL(Rokkasho-mura, Kamikita-gun, Aomori Pref)

(1) The status of operation

Reprocessing facility: Originally outage

(2) Report concerning other malfunction

Report of fire: No

2. Action taken by NISA

14:46 Set up of the NISA Emergency Preparedness Headquarters (Tokyo)  
immediately after the Earthquake

15:42: TEPCO reported to NISA in accordance with Article 10 of the Act on  
Special Measures Concerning Nuclear Emergency Preparedness regarding

Fukushima Dai-ichi, Units 1,2 and 3.

16:36: TEPCO notified to NISA in accordance with Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1 and 2.

All facilities which have been confirmed safety will be eliminated from next press release.

(Contact Person)

Mr. Masaomi Koyama

Deputy Director, International Affairs  
Office, NISA/METI

Phone:+81-(0)3-3501-1087



March 11, 2011  
Nuclear and Industrial Safety Agency

Seismic Damage Information (the 5th Release)  
(As of 20:00 March 11, 2011)

Nuclear and Industrial Safety Agency (NISA) confirmed the current situation of Higashidori and Onagawa NPSs, Tohoku Electric Power Co., Inc.

Higashidori, Fukushima Dai-ichi, and Fukushima Dai-ni NPSs, Tokyo Electric Power Co., Inc. and works at the Japan Nuclear Fuel, and electricity, gas, heat supply and complex as follows:

1. Summary of Damage

- (1) Time of Occurrence: 14:46 (UTC 5:46) March 11, 2011, Friday
- (2) Epicenter: Off-Coast of Sanriku (North Latitude: 38° East Longitude: 142.9), 10km deep, M8.8
- (3) Seismic Intensity in Japanese Scale  
<Area of Seismic Intensity Larger Than and Including 4>
  - 7: Northern Miyagi Prefecture
  - 6+: Northern and southern Ibaraki Prefecture
  - 5+: Sanpachi-Kamikita Aomori Prefecture
  - 5-: Chuetsu, Niigata Prefecture<Municipality of Seismic Intensity Larger than and Including 4>
  - 6+: Naraha Machi, Tomioka Machi, Ookuma-machi, and Futaba-machi, Fukushima Prefecture
  - 6-: Ishinomaki-city and, Onagawa town (by Seismograph of NPP)of , Miyagi Prefecture and Tokaimura, Ibaraki Pref.
  - 5-: Kariwa-village, Niigata Prefecture
  - 4: Rokkasho-village, Higashidori-village, Aomori Prefecture, Kashiwazaki-city, Niigata Prefecture and Yokosuka-city, Kanagawa Prefecture

1: Tomari-village, Hokkaido

2. The status of operation at Power Stations(Number of automatic shutdown(units): 10 (as of 18:45)

a. Onagawa Nuclear Power Station (Onagawa-machi and Ishinomaki-shi, Miyagi Prefecture)

(1) The status of operation

Unit 1 (524MWe): automatic shutdown

Unit 2 (825MWe): automatic shutdown

Unit 3 (825MWe): automatic shutdown

(2) Readings of monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitor readings: No

(3) Report concerning other malfunction

Report of fire: CO2 extinguishment started at 17:15

b. Fukushima Dai-ichi Nuclear Power Station, Tokyo Electric Power Co.,Inc.(TEPCO)

(Okuma-machi and Futaba-machi, Futaba-gun, Fukushima Prefecture)

(1) The status of operation

Unit 1 (460MWe): automatic shutdown

Unit 2 (784MWe): automatic shutdown

Unit 3 (784MWe): automatic shutdown

Unit 4(784MW): in periodic inspection outage

Unit 5(784MW): in periodic inspection outage

Unit 6(1,100MW): in periodic inspection outage

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Article 10\* of Act on Special Measures Concerning Nuclear Emergency Preparedness (Fukushima Dai-ichi, Unit 3)

(\*A heightened alert condition)

Article 15\*\* of Act on Special Measures Concerning Nuclear Emergency Preparedness (Fukushima Dai-ichi, Units 1 and 2)

(\*\* Nuclear emergency situation)

c. Fukushima Dai-ichi Nuclear Power Station (TEPCO)

(Naraha-cho/Tomioka-cho, Futaba-gun, Fukushima pref.)

(1) The status of operation

Unit1(1,100MW): automatic shutdown

Unit2(1,100MW): automatic shutdown

Unit3(1,100MW): automatic shutdown

Unit4(1,100MW): automatic shutdown

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Report of fire: No

Article 10\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ichi, Units 1,2 and 4)

3. Action taken by NISA

14:46 Set up of the NISA Emergency Preparedness Headquarters (Tokyo)  
immediately after the earthquake

15:42: TEPCO reported to NISA in accordance with Article 10 of the Act on  
Special Measures Concerning Nuclear Emergency Preparedness regarding  
Fukushima Dai-ichi, Units 1,2 and 3.

16:36: TEPCO judged the event in accordance with Article 15 of the Act for  
Special Measures Concerning Nuclear Emergency Preparedness regarding  
Fukushima Dai-ichi, Units 1 and 2.(notified to NISA at 16:45)

18:08: Unit 1 of Fukushima Dai-ichi notified NISA of the situation of the  
Article 10 of Act on Special Measures Concerning Nuclear Emergency  
Preparedness.

18:33: Units 1,2 and 4 of Fukushima Dai-ichi notified NISA of the situation of  
the Article 10 of Act on Special Measures Concerning Nuclear Emergency  
Preparedness.

19:03 Government declared the state of nuclear emergency

Facilities which have confirmed safety will be eliminated from the next press  
release.

(Contact Person)

Mr. Masaomi Koyama

Deputy Director, International Affairs

Office, NISA/METI

Phone: +81-(0)3-3501-1087

**From:** HOO Hoc  
**Sent:** Friday, March 11, 2011 3:27 PM  
**To:** LIA04 Hoc; LIA02 Hoc; LIA12 Hoc; LIA01 Hoc; LIA11 Hoc  
**Subject:** FW: IAEA Status of Fukushima NPP

**From:** Greten, Timothy [mailto:Timothy.Greten@dhs.gov]  
**Sent:** Friday, March 11, 2011 3:23 PM  
**To:** Kenagy, W David; McClelland, Vince; Rodriguez, Veronica; Heinrich, Ann; HOO Hoc; HOO2 Hoc; Huffman, William; Shaffer, Mark A; DeCair.Sara@epamail.epa.gov; Greten, Timothy; Maria.Marinissen@hhs.gov; [REDACTED] (b)(6); doehqeoc@oem.doe.gov; hhs.soc@hhs.gov; Kish, James; ISN-NESS-DL; Kang, Eliot  
**Cc:** Sherwood, Harry; Quinn, Vanessa  
**Subject:** RE: IAEA Status of Fukushima NPP

David:

It mentions they are venting reactor 1 – is there a radiological release of some kind associated with that?

Thanks

Tim

Timothy A. Greten, PMP  
Technological Hazards Division Deputy Director  
Federal Radiological Preparedness Coordination Committee Executive Secretariat  
FEMA National Preparedness Directorate  
Department of Homeland Security  
1800 South Bell St.  
Arlington, VA 22202  
timothy.greten@dhs.gov  
office: (202) 616-9907  
cell: [REDACTED] (b)(6)

**From:** Kenagy, W David [mailto:KenagyWD@state.gov]  
**Sent:** Friday, March 11, 2011 3:21 PM  
**To:** Kenagy, W David; McClelland, Vince; Rodriguez, Veronica; Heinrich, Ann; Hoo1@nrc.gov; Hoo2@nrc.gov; wch@nrc.gov; Shaffer, Mark A; DeCair.Sara@epamail.epa.gov; Greten, Timothy; Maria.Marinissen@hhs.gov; [REDACTED] (b)(6); doehqeoc@oem.doe.gov; hhs.soc@hhs.gov; Kish, James; ISN-NESS-DL; Kang, Eliot  
**Subject:** RE: IAEA Status of Fukushima NPP

This email is UNCLASSIFIED

0000/3



---

**From:** HOO Hoc  
**Sent:** Friday, March 11, 2011 2:07 PM  
**To:** LIA04 Hoc; LIA02 Hoc; LIA12 Hoc; LIA01 Hoc; LIA11 Hoc  
**Subject:** FW: IAEA New Release #7  
**Attachments:** News\_Releases\_No7[1].docx

---

**From:** Kenagy, W David [mailto:KenagyWD@state.gov]  
**Sent:** Friday, March 11, 2011 12:11 PM  
**To:** McClelland, Vince; Rodriguez, Veronica; Heinrich, Ann; HOO Hoc; HOO2 Hoc; Huffman, William; Shaffer, Mark A; DeCair.Sara@epamail.epa.gov; timothy.greten@dhs.gov; Maria.Marinissen@hhs.gov; (b)(6); doehqeo@oem.doe.gov; hhs.soc@hhs.gov; James.Kish@dhs.gov; ISN-NESS-DL; Kang, Du W  
**Subject:** IAEA New Release #7

This email is UNCLASSIFIED.

0000/4

March 11, 2011

Nuclear and Industrial Safety Agency

## Seismic Damage Information(the 7<sup>th</sup> Release)

(As of 23:00 March 11, 2011)

(\*English version of the 6<sup>th</sup> release has not published)

Nuclear and Industrial Safety Agency (NISA) confirmed the current situation of Higashidori and Onagawa NPSs, Tohoku Electric Power Co., Inc.

Higashidori, Fukushima Dai-ichi, and Fukushima Dai-ni NPSs, Tokyo Electric Power Co., Inc. and electricity, gas, heat supply and complex as follows:

### 1. Summary of Damage

(1) Time of Occurrence: 14:46 (UTC 5:46) March 11, 2011, Friday

(2) Epicenter: Off-Coast of Sanriku (North Latitude: 38° East Longitude: 142.9), 10km deep, M8.8

(3) Seismic Intensity in Japanese Scale

<Area of Seismic Intensity Larger Than and Including 4>

7: Northern Miyagi Prefecture

6+: Northern and southern Ibaraki Prefecture

5+: Sanpachi-Kamikita Aomori Prefecture

5: Chuetsu, Niigata Prefecture

<Municipality of Seismic Intensity Larger than and Including 4>

6+: Naraha Machi, Tomioka Machi, Ookuma-machi, and Futaba-machi, Fukushima Prefecture

6: Ishinomaki-city and, Onagawa town (by Seismograph of NPP)of , Miyagi Prefecture and Tokaimura, Ibaraki Pref.

5: Kariwa-village, Niigata Prefecture

4: Rokkasho-village, Higashidori-village, Aomori Prefecture, Kashiwazaki-city, Niigata Prefecture and Yokosuka-city, Kanagawa Prefecture

## 1: Tomari-village, Hokkaido

1. The status of operation at Power Stations(Number of automatic shutdown(units): 10 (as of 18:45)

a. Onagawa Nuclear Power Station (Onagawa-machi and Ishinomaki-shi, Miyagi Prefecture)

(1) The status of operation

Unit 1 (524MWe): automatic shutdown

Unit 2 (825MWe): automatic shutdown

Unit 3 (825MWe): automatic shutdown

(2) Readings of monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitor readings: No

(3) Report concerning other malfunction

Report of fire: CO2 extinguishment started at 17:15

b. Fukushima Dai-ichi Nuclear Power Station, Tokyo Electric Power Co.,Inc.(TEPCO)

(Okuma-machi and Futaba-machi, Futaba-gun, Fukushima Prefecture )

(1) The status of operation

Unit 1 (460MWe): automatic shutdown

Unit 2 (784MWe): automatic shutdown

Unit 3 (784MWe): automatic shutdown

Unit 4(784MW): in periodic inspection outage

Unit 5(784MW): in periodic inspection outage

Unit 6(1,100MW): in periodic inspection outage

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Article 10\* of Act on Special Measures Concerning Nuclear Emergency Preparedness (Fukushima Dai-ichi, Unit 3)

(\*A heightened alert condition)

Article 15\*\* of Act on Special Measures Concerning Nuclear Emergency Preparedness (Fukushima Dai-ichi, Units 1 and 2)

(\*\* Nuclear emergency situation)

c. Fukushima-Daini Nuclear Power Station(TEPCO)

(Naraha-cho/Tomioka-cho, Futaba-gun, Fukushima pref.)

(1) The status of operation

Unit1(1,100MW): automatic shutdown

Unit2(1,100MW): automatic shutdown

Unit3(1,100MW): automatic shutdown

Unit4(1,100MW): automatic shutdown

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Report of fire: No

Article 10\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ichi, Units 1,2 and 4)

(\*A heightened alert condition)

3. Action taken by NISA

14:46 Set up of the NISA Emergency Preparedness Headquarters (Tokyo)  
immediately after the earthquake

15:42: TEPCO reported to NISA in accordance with Article 10 of the Act on  
Special Measures Concerning Nuclear Emergency Preparedness regarding  
Fukushima Dai-ichi, Units 1,2 and 3.

16:36: TEPCO judged the event in accordance with Article 15 of the Act for  
Special Measures Concerning Nuclear Emergency Preparedness regarding  
Fukushima Dai-ichi, Units 1 and 2.(notified to NISA at 16:45)

18:08: Unit 1 of Fukushima Dai-ichi notified NISA of the situation of the  
Article 10 of Act on Special Measures Concerning Nuclear Emergency  
Preparedness.

18:33: Units 1,2 and 4 of Fukushima Dai-ichi notified NISA of the situation of  
the Article 10 of Act on Special Measures Concerning Nuclear Emergency  
Preparedness.

19:03 : Government declared the state of nuclear emergency

20:50: Fukushima prefecture's emergency preparedness headquarters  
issued a directive regarding the accident occurred at Fukushima-Dai-ichi  
Nuclear Power Station, TEPCO that the residents living in the area of 2km

radius from Unit 1 of the Nuclear Power Station must be evacuate.

21:23: Directives from Prime Minister to Governor of Fukushima, Mayor of Oookuma and Mayor of Futaba were issued regarding the accident occurred at Fukushima-Dai-ichi Nuclear Power Station, TEPCO, pursuant to Paragraph 3, Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness as follows:

- Residents living in the area of 3km radius from Unit 1 of the Nuclear Power Station must evacuate.
- Residents living in the area of 10km radius from the Unit 1 must take sheltering.

Facilities which have confirmed safety will be eliminated from the next press release.

(Contact Person)

Mr. Masaomi Koyama

Deputy Director, International Affairs  
Office, NISA/METI

Phone: +81-(0)3-3501-1087



---

**From:** Kenagy, W David <KenagyWD@state.gov>  
**Sent:** Friday, March 11, 2011 12:11 PM  
**To:** McClelland, Vince; Rodriguez, Veronica; Heinrich, Ann; HOO Hoc; HOO2 Hoc; Huffman, William; Shaffer, Mark A; DeCair.Sara@epamail.epa.gov; timothy.greten@dhs.gov; Maria.Marinissen@hhs.gov; (b)(6) doehqeoc@oem.doe.gov; hhs.soc@hhs.gov; James.Kish@dhs.gov; ISN-NESS-DL; Kang, Du W  
**Subject:** IAEA New Release #7  
**Attachments:** News\_Releases\_No7[1].docx

This email is UNCLASSIFIED.

March 11, 2011  
Nuclear and Industrial Safety Agency

Seismic Damage Information(the 7<sup>th</sup> Release)  
(As of 23:00 March 11, 2011)

(\*English version of the 6<sup>th</sup> release has not published)

Nuclear and Industrial Safety Agency (NISA) confirmed the current situation of Higashidori and Onagawa NPSs. Tohoku Electric Power Co., Inc

Higashidori, Fukushima Dai-ichi, and Fukushima Dai-ni NPSs, Tokyo Electric Power Co., Inc. and electricity, gas, heat supply and complex as follows:

1. Summary of Damage

- (1) Time of Occurrence: 14:46 (UTC 5:46) March 11, 2011, Friday
- (2) Epicenter: Off-Coast of Sanriku (North Latitude: 38; East Longitude: 142.9), 10km deep, M8.8
- (3) Seismic Intensity in Japanese Scale  
<Area of Seismic Intensity Larger Than and Including 4>
  - 7: Northern Miyagi Prefecture
  - 6+: Northern and southern Ibaraki Prefecture
  - 5+: Sanpachi-Kamikita Aomori Prefecture
  - 5: Chuetsu, Niigata Prefecture<Municipality of Seismic Intensity Larger than and Including 4>
  - 6+: Naraha Machi, Tomioka Machi, Ookuma-machi, and Futaba-machi, Fukushima Prefecture
  - 6: Ishinomaki-city and, Onagawa town (by Seismograph of NPP)of , Miyagi Prefecture and Tokaimura, Ibaraki Pref.
  - 5: Kariwa-village, Niigata Prefecture
  - 4: Rokkasho-village, Higashidori-village, Aomori Prefecture, Kashiwazaki-city, Niigata Prefecture and Yokosuka-city, Kanagawa Prefecture

## 1: Tomari-village, Hokkaido

1. The status of operation at Power Stations(Number of automatic shutdown(units): 10 (as of 18:45)

a. Onagawa Nuclear Power Station (Onagawa-machi and Ishinomaki-shi, Miyagi Prefecture)

(1) The status of operation

Unit 1 (524MWe): automatic shutdown

Unit 2 (825MWe): automatic shutdown

Unit 3 (825MWe): automatic shutdown

(2) Readings of monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitor readings: No

(3) Report concerning other malfunction

Report of fire: CO2 extinguishment started at 17:15

b. Fukushima Dai-ichi Nuclear Power Station, Tokyo Electric Power Co.,Inc.(TEPCO)

(Okuma-machi and Futaba-machi, Futaba-gun, Fukushima Prefecture)

(1) The status of operation

Unit 1 (460MWe): automatic shutdown

Unit 2 (784MWe): automatic shutdown

Unit 3 (784MWe): automatic shutdown

Unit 4(784MW): in periodic inspection outage

Unit 5(784MW): in periodic inspection outage

Unit 6(1,100MW): in periodic inspection outage

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Article 10\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ichi, Unit 3)

(\*A heightened alert condition)

Article 15\*\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ichi, Units 1 and 2)

(\*\* Nuclear emergency situation)

c. Fukushima-Daini Nuclear Power Station(TEPCO)

(Naraha-cho/Tomioka-cho, Futaba-gun, Fukushima pref.)

(1) The status of operation

Unit1(1,100MW): automatic shutdown

Unit2(1,100MW): automatic shutdown

Unit3(1,100MW): automatic shutdown

Unit4(1,100MW): automatic shutdown

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Report of fire: No

Article 10\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ni, Units 1,2 and 4)

(\*A heightened alert condition)

3. Action taken by NISA

14:46 Set up of the NISA Emergency Preparedness Headquarters (Tokyo)  
immediately after the earthquake

15:42: TEPCO reported to NISA in accordance with Article 10 of the Act on  
Special Measures Concerning Nuclear Emergency Preparedness regarding  
Fukushima Dai-ichi, Units 1,2 and 3.

16:36: TEPCO judged the event in accordance with Article 15 of the Act for  
Special Measures Concerning Nuclear Emergency Preparedness regarding  
Fukushima Dai-ichi, Units 1 and 2.(notified to NISA at 16:45)

18:08: Unit 1 of Fukushima Dai-ni notified NISA of the situation of the  
Article 10 of Act on Special Measures Concerning Nuclear Emergency  
Preparedness.

18:33: Units 1,2 and 4 of Fukushima Dai-ni notified NISA of the situation of  
the Article 10 of Act on Special Measures Concerning Nuclear Emergency  
Preparedness.

19:03: Government declared the state of nuclear emergency

20:50: Fukushima prefecture's emergency preparedness headquarters  
issued a directive regarding the accident occurred at Fukushima-Dai-ichi  
Nuclear Power Station, TEPCO that the residents living in the area of 2km

radius from Unit 1 of the Nuclear Power Station must be evacuate.

21:23: Directives from Prime Minister to Governor of Fukushima, Mayor of Oookuma and Mayor of Futaba were issued regarding the accident occurred at Fukushima-Dai-ichi Nuclear Power Station, TEPCO, pursuant to Paragraph 3, Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness as follows:

- Residents living in the area of 3km radius from Unit 1 of the Nuclear Power Station must evacuate.
- Residents living in the area of 10km radius from the Unit 1 must take sheltering.

Facilities which have confirmed safety will be eliminated from the next press release.

(Contact Person)

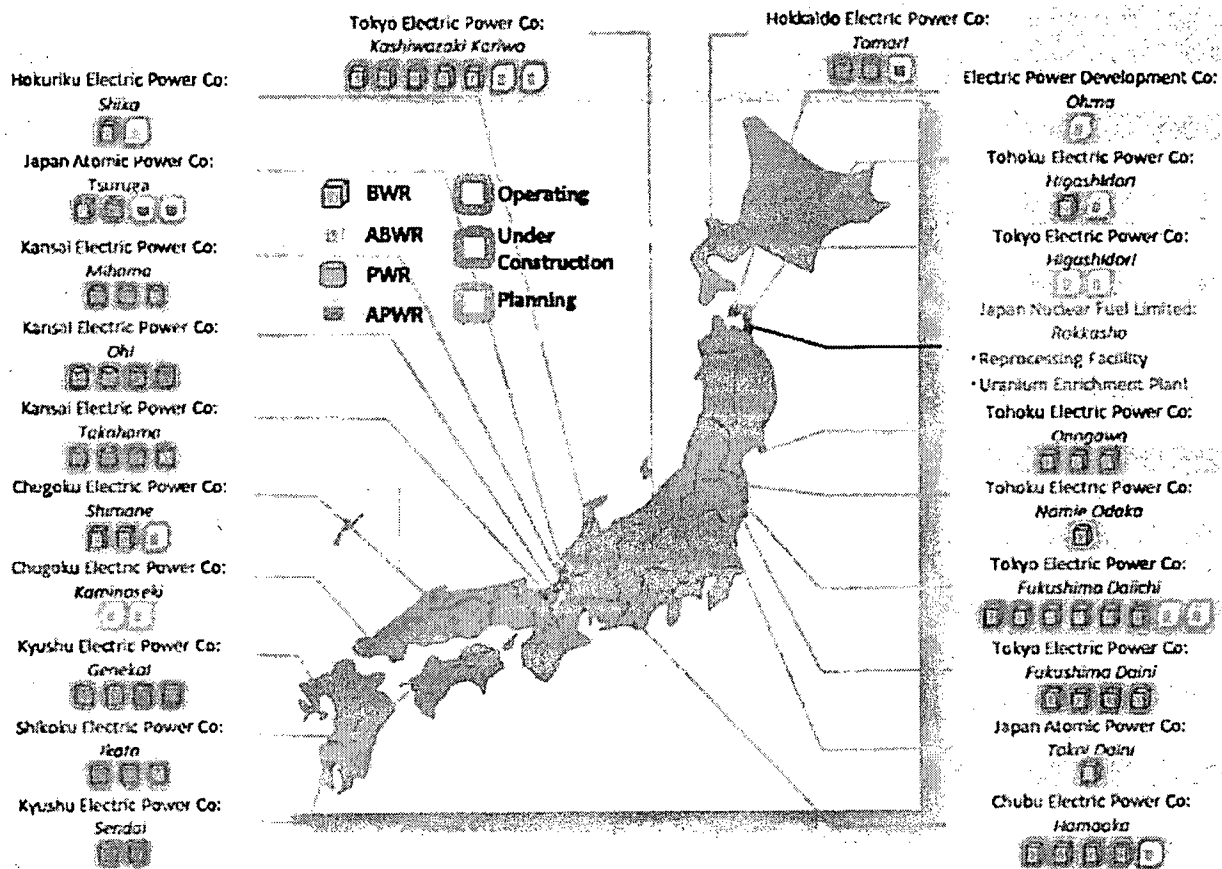
Mr. Masaomi Koyama

Deputy Director, International Affairs  
Office, NISA/METI

Phone: +81-(0)3-3501-1087



**From:** Kenagy, W David <KenagyWD@state.gov>  
**Sent:** Friday, March 11, 2011 11:14 AM  
**To:** Kenagy, W David; McClelland, Vince; Rodriguez, Veronica; Heinrich, Ann; HOO Hoc; HOO2 Hoc; Huffman, William; Shaffer, Mark A; DeCair, Sara@epamail.epa.gov; timothy.greten@dhs.gov; Maria.Marinissen@hhs.gov; (b)(6); doehqeoc@oem.doe.gov; hhs.soc@hhs.gov; James.Kish@dhs.gov; ISN-NESS-DL; Kang, Eliot  
**Subject:** Map of location of Japan's nuclear power plants  
**Attachments:** image001.jpg



This email is UNCLASSIFIED.

**From:** Kenagy, W David  
**Sent:** Friday, March 11, 2011 11:10 AM  
**To:** Kenagy, W David; 'McClelland, Vince'; 'Rodriguez, Veronica'; 'Heinrich, Ann'; 'Hoo1@nrc.gov'; 'Hoo2@nrc.gov'; 'wch@nrc.gov'; Shaffer, Mark A; 'DeCair, Sara@epamail.epa.gov'; 'timothy.greten@dhs.gov'; 'Maria.Marinissen@hhs.gov'; (b)(6); 'doehqeoc@oem.doe.gov'; 'hhs.soc@hhs.gov'; 'James.Kish@dhs.gov'; ISN-NESS-DL; Kang,

Eliot.

**Subject:** Link to Japan's Meteorological Agency website for Tsunami

<http://www.jma.go.jp/er/tsunami/>

This email is UNCLASSIFIED.

**From:** Kenagy, W David

**Sent:** Friday, March 11, 2011 11:01 AM

**To:** McClelland, Vince; Rodriguez, Veronica; Heinrich, Ann; 'Hoo1@nrc.gov'; 'Hoo2@nrc.gov'; 'wch@nrc.gov'; Shaffer, Mark A; 'DeCair.Sara@epamail.epa.gov'; 'timothy.greten@dhs.gov'; 'Maria.Marinissen@hhs.gov';  
(b)(6); 'doehqec@oem.doe.gov'; 'hhs.soc@hhs.gov'; 'James.Kish@dhs.gov'

**Subject:** For Info: IAEA New Releases

This email is UNCLASSIFIED.

## Dean, Bill

**From:** Dean, Bill  
**Sent:** Sunday, March 13, 2011 8:50 PM  
**To:** Screnci, Diane; Sheehan, Neil; Lew, David; Roberts, Darrell; Clifford, James; Weerakkody, Sunil; Wilson, Peter; Lorson, Raymond; Collins, Daniel; Hansell, Samuel  
**Subject:** Fw: 2000 EDT (March 13, 2011) USNRC Earthquake/Tsunami SitRep  
**Attachments:** USNRC Earthquake-Tsunami Update.031311.2000EDT.docx

Bill Dean  
Regional Administrator  
Region I, USNRC  
Sent from NRC BlackBerry

---

**From:** LIA07 Hoc  
**To:** LIA07 Hoc; Al Coons <[albert.coons@dhs.gov](mailto:albert.coons@dhs.gov)>; Andersen, James; Anderson, Joseph; Barker, Allan; Batkin, Joshua; Bill King <[William.King@dhs.gov](mailto:William.King@dhs.gov)>; Bill King 2 <(b)(6)>; Brenner, Eliot; Bubar, Patrice; Castleman, Patrick; Charles Donnell <(b)(6)>; Coggins, Angela; Collins, Elmo; Conrad Burnside <[conrad.burnside@dhs.gov](mailto:conrad.burnside@dhs.gov)>; D Feighert <[dan.feighert@dhs.gov](mailto:dan.feighert@dhs.gov)>; D Hammons <[darrell.hammons@dhs.gov](mailto:darrell.hammons@dhs.gov)>; Dean, Bill; Decker, David; DIA <(b)(6)>; DIA2 <(b)(6)>; Dorman, Dan; DOT <[cmc-01@dot.gov](mailto:cmc-01@dot.gov)>; Droggitis, Spiros; DTRA <(b)(6)>; Dudek <(b)(6)>; EOP <(b)(6)>; EPA <[yeal.lee@epa.gov](mailto:yeal.lee@epa.gov)>; EPA2 <[poppell.sam@epa.gov](mailto:poppell.sam@epa.gov)>; Franovich, Mike; Hahn, Matthew; Haney, Catherine; Harrington, Holly; Harry Sherwood <[harry.sherwood@dhs.gov](mailto:harry.sherwood@dhs.gov)>; HHS <[hhs.soc@hhs.gov](mailto:hhs.soc@hhs.gov)>; Hipschman, Thomas; HOO Hoc; Howell, Linda; J H-L <[jan.hlavy-laposa@dhs.gov](mailto:jan.hlavy-laposa@dhs.gov)>; Jaczko, Gregory; Jim Kish <[james.kish@dhs.gov](mailto:james.kish@dhs.gov)>; Johanna Berkey <[johanna.berkey@dhs.gov](mailto:johanna.berkey@dhs.gov)>; Johnson, Michael; Kahler, Robert; L Hammond <[lisa.hammond@dhs.gov](mailto:lisa.hammond@dhs.gov)>; Leeds, Eric; Logaras, Harral; Loyd, Susan; Maier, Bill; Marshall, Michael; McCree, Victor; McDermott, Brian; McNamara, Nancy; Michelle Ralston <[michelle.ralston@dhs.gov](mailto:michelle.ralston@dhs.gov)>; Miller, Charles; Miller, Chris; Monninger, John; Nan Calhoun <[Nan.Calhoun@dhs.gov](mailto:Nan.Calhoun@dhs.gov)>; Navy <(b)(6)>; Nieh, Ho; NOC <[noc.swo.Restricted@dhs.gov](mailto:noc.swo.Restricted@dhs.gov)>; Orders, William; Pace, Patti; Pearson, Laura; Peter Lyons <[peter.lyons@hq.doe.gov](mailto:peter.lyons@hq.doe.gov)>; R McCabe <[ron.mccabe@dhs.gov](mailto:ron.mccabe@dhs.gov)>; R Thomson <[rebecca.thomson@dhs.gov](mailto:rebecca.thomson@dhs.gov)>; S Horwitz <[steve.horwitz@dhs.gov](mailto:steve.horwitz@dhs.gov)>; Satorius, Mark; Schmidt, Rebecca; Seamus O'Boyle <[seamus.o'boyle@dhs.gov](mailto:seamus.o'boyle@dhs.gov)>; Sharkey, Jeffry; Sheron, Brian; Snodderly, Michael; Sosa, Belkys; Steve Colman <[steve.colman@dhs.gov](mailto:steve.colman@dhs.gov)>; Thomas Zerr <(b)(6)>; Tift, Doug; Timothy Greten <[timothy.greten@dhs.gov](mailto:timothy.greten@dhs.gov)>; Trapp, James; Trojanowski, Robert; Vanessa Quinn <[vanessa.quinn@dhs.gov](mailto:vanessa.quinn@dhs.gov)>; W Webb <[William.Webb@dhs.gov](mailto:William.Webb@dhs.gov)>; Warren, Roberta; Wiggins, Jim; Williams, Kevin; Wittick, Brian; Woodruff, Gena  
**Sent:** Sun Mar 13 20:27:39 2011  
**Subject:** RE: 2000 EDT (March 13, 2011) USNRC Earthquake/Tsunami SitRep

Attached, please find a 2000 EDT situation report from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami on March 13, 2011. This Update includes information related to NRC's evaluation of radiation measurements from the USS Ronald Reagan.

Please note that this information is "Official Use Only" and is only being shared within the federal family.

Please call the Headquarters Operations Officer at 301-816-5100 with questions.

-Jim

Jim Anderson  
Office of Nuclear Security and Incident Response  
US Nuclear Regulatory Commission  
[james.anderson@nrc.gov](mailto:james.anderson@nrc.gov)  
[LIA07.HOC@nrc.gov](mailto:LIA07.HOC@nrc.gov) (Operations Center)

0000/5

**Weber, Michael**

---

**From:** Weber, Michael  
**Sent:** Friday, March 11, 2011 6:57 PM  
**To:** Brenner, Eliot  
**Cc:** Mamish, Nader  
**Subject:** Response - japanese visitors

We were meeting today with government officials (from JNES the technical support organization for Japanese regulation).

---

**From:** Brenner, Eliot  
**To:** Weber, Michael  
**Sent:** Fri Mar 11 16:33:00 2011  
**Subject:** japanese visitors

Are they all government or a mix of government and corporate?

Eliot Brenner  
Director, Office of Public Affairs  
Nuclear Regulatory Commission  
Rockville, Md.  
O: 301-415-8200  
C: (b)(6)

0000/b

**Dean, Bill**

---

**From:** Dean, Bill  
**Sent:** Friday, March 11, 2011 7:01 PM  
**To:** Barkley, Richard  
**Subject:** Re: Communication to the Staff on the Japanese Event

Thanks rich. There will be plenty of comms on this on both news and internally. No need to duplicate  
Bill Dean  
Regional Administrator  
Region I, USNRC  
Sent from NRC BlackBerry

---

**From:** Barkley, Richard  
**To:** Dean, Bill  
**Sent:** Fri Mar 11 17:57:51 2011  
**Subject:** Communication to the Staff on the Japanese Event

I listened in to a TA briefing this afternoon, and would be happy to craft up a message to the staff for release first thing Monday morning based on the events of today and what develops over the weekend.

The latest briefing today was quite gloomy given the understood duration of the station blackout (at this point - 14 hours, although a small skid-mounted EDG was supposedly brought in recently) at one unit, Fukushima 2, a BWR similar in size and design to Monticello in Region III, indications of highly elevated radiation levels (presumably in containment, but possibly in the reactor), and ongoing containment venting to relieve heat & pressure.

Sam Hansell listened in as well, but is out of office next week.

Richard S. Barkley, PE  
Nuclear & Environmental Engineer  
(610) 337-5065 Work  
(b)(6) Cell

Dean, Bill

---

**From:** C. Jones (b)(6)  
**Sent:** Saturday, March 12, 2011 8:43 AM  
**To:** Bill Miller; Dean, Bill; boyd.mike@epamail.epa.gov; (b)(6); Daria Carberry; Donna Smith; John Anderson; John Tomlinson; Judy Camper; Kevin Dwyer; Larry & Judy Camper; Lynne Stauss; Marie-France; Nancy Colford; (b)(6); Phyl Rich; PPJODOIN; Randall Acree; Roy Zimmerman; Sandy; Sigurður M. Magnússon; Steve Colford; Tammy Taylor; Ted Lazo  
**Subject:** Latest on Japan Reactor

The below link is to the Japanese news agency, in English, if you would like to keep up with the latest info.

[http://www3.nhk.or.jp/daily/english/12\\_54.html](http://www3.nhk.or.jp/daily/english/12_54.html)

0000/8



**Matakas, Gina**

---

**From:** Lew, David  
**Sent:** Saturday, March 12, 2011 11:12 AM  
**To:** Dean, Bill  
**Subject:** RE: Fukushima NPP Event

Got it

**From:** Dean, Bill  
**Sent:** Saturday, March 12, 2011 11:11 AM  
**To:** Lew, David  
**Subject:** Re: Fukushima NPP Event

If I am not on the call Dave, please raise the issue about state's requesting information, ala your discussion with Nancy. There might be info to share via SLOs coordinated by FSME that would help them.

Bill Dean  
Regional Administrator  
Region I, USNRC  
Sent from NRC BlackBerry

---

**From:** Lew, David  
**To:** Dean, Bill  
**Sent:** Sat Mar 12 11:01:44 2011  
**Subject:** RE: Fukushima NPP Event

Got it.

**From:** Dean, Bill  
**Sent:** Saturday, March 12, 2011 11:01 AM  
**To:** Lew, David  
**Subject:** Re: Fukushima NPP Event

Dave  
Marty is having call for ODs and RAs on the japan situation at noon. I will probably still be proctoring the test so why don't you call in. (b)(6) enter passcode (b)(6) Will try to tie in or at least call you when test is over. Thanks  
Bill Dean  
Regional Administrator  
Region I, USNRC  
Sent from NRC BlackBerry

---

**From:** Lew, David  
**To:** Dean, Bill  
**Sent:** Sat Mar 12 10:44:46 2011  
**Subject:** RE: Fukushima NPP Event

Very early this morning, the reactor building at Fukushima I exploded. This was capture by numerous report videos and posted on the web as well as on TV. The reports were that the containment remained intact. I don't have an first hand information, but the "speculation" is that the tsunami flooding out the diesels and resulted in a SBO. That significant flooding probably took out other stuff as well which made it difficult to get water into the core. There was a marked increase in rad levels and likely fuel damage. There was venting going on, which I assume was containment venting. There were reports of power being available. I have only been able to get information through the web and other media sources.

Nancy just called me and indicated that MA and PA was wondering what the NRC's plans were to put out information. The States suggested that we highlight of extension radiological monitoring capabilities, but I told Nancy that we should not be taking a position that could be interpreted as minimizing this ongoing event and that we are in "denial."

The NRC has put out a press release and some information on our activities (NRC is in monitoring) but specifically indicated that we would not put on any speculative comments on our blog.

I recommended that Nancy communicate through Neil and ensure that PAOs/Eliot are aware of the States interest for consideration and awareness.

**From:** Dean, Bill  
**Sent:** Saturday, March 12, 2011 10:30 AM  
**To:** Lew, David  
**Subject:** Re: Fukushima NPP Event

Nope. I am proctoring an SAT test. What is going on? No HOO hilites that I have seen.  
Bill Dean  
Regional Administrator  
Region I, USNRC  
Sent from NRC BlackBerry

---

**From:** Lew, David  
**To:** Dean, Bill  
**Sent:** Sat Mar 12 09:59:42 2011  
**Subject:** RE: Fukushima NPP Event

Are you getting any info from the HOO on the explosion of the Fukushima reactor building?

**From:** Dean, Bill  
**Sent:** Saturday, March 12, 2011 9:58 AM  
**To:** Noggle, James; Lew, David  
**Cc:** Wilson, Peter; Henderson, Pamela  
**Subject:** Re: Fukushima NPP Event

Jim  
Thanks for the outreach and volunteering if needed. It is that kind of response from individuals like yourself that make me proud to be part of this agency.  
Bill Dean  
Regional Administrator  
Region I, USNRC  
Sent from NRC BlackBerry

---

**From:** Noggle, James  
**To:** Dean, Bill; Lew, David  
**Cc:** Wilson, Peter; Henderson, Pamela  
**Sent:** Sat Mar 12 09:35:58 2011  
**Subject:** Fukushima NPP Event

Bill and Dave,

I am sure the Japanese Government Ministry of Economic Trade and Industry (METI) is very capable of handling the current nuclear event in Japan. But in case they do reach out for help or the IAEA is looking for assistance, I wanted you to know of my previous experience at that nuclear facility.

Between January 1980 and July 1989, I worked approximately 10 different projects at the Fukushima Daiichi Unit one Nuclear Power Plant as a health physics manager for General Electric International Field Services. My cumulative experience at Fukushima is well over one year onsite. I know the TEPCO organization, the health physics program there (circa 1980's), and how to work well with the Japanese staff at Fukushima.

I am ready and willing to assist if the NRC is called upon for help.

Regards,

Jim

---

**From:** LIA04 Hoc  
**Sent:** Saturday, March 12, 2011 11:26 PM  
**To:** Turtill, Richard  
**Subject:** RE: Q&As FOR STATES

Not likely – I am still working the phones trying to get contact info for CA, WA, & OR but will get you the info you need!

You can call in to listen to TA Brief at 11:30 pm (shortly!) (b)(6) Pass code is (b)(6)

---

**From:** Turtill, Richard  
**Sent:** Saturday, March 12, 2011 10:44 PM  
**To:** LIA04 Hoc  
**Subject:** Re: Q&As FOR STATES

Rosetta - will I see you at 7:00 am?

Richard Turtill  
Sent from NRC Blackberry  
(b)(6)

---

**From:** LIA04 Hoc  
**To:** Harrington, Holly; Hayden, Elizabeth  
**Cc:** Thaggard, Mark; Turtill, Richard  
**Sent:** Sat Mar 12 21:48:44 2011  
**Subject:** RE: Q&As FOR STATES

I agree Holly – thanks for the review

---

**From:** Harrington, Holly  
**Sent:** Saturday, March 12, 2011 9:48 PM  
**To:** LIA04 Hoc; Hayden, Elizabeth; Virgilio, Martin  
**Subject:** RE: Q&As FOR STATES

These are fine, although likely to be overtaken by events quite soon.

Just clarification that we're talking about people in the U.S. not U.S. citizens in Japan:

Q. Are there any protective measures that ~~U.S. citizens~~ residents in the U.S. should be considering?  
A. No.

---

**From:** LIA04 Hoc  
**Sent:** Saturday, March 12, 2011 9:43 PM  
**To:** Harrington, Holly; Hayden, Elizabeth; Virgilio, Martin  
**Subject:** RE: Q&As FOR STATES

Ladies –

The State Liaison Team, in conjunction with other NRC Team members, developed the information below using NRC press releases as a means to provide Governor-appointed State Liaison Officers talking points they can use to address questions from their citizenry. Mark Thaggard, the LT Director and I await your review of

this information, as we plan to share it with the ET and would like to say we received your input, too. Thanks much.

#### **Q&A:**

**Q.** What is the radiological consequence of the event in Japan for the U.S.?

**A.** At this time, there is no indication whatsoever that materials from the incidents in Japan have the potential to have any meaningful effect on the U.S.

**Q.** Are there any protective measures that U.S. citizens should be considering?

**A.** No.

**Q.** What is the Federal family, i.e., NRC-EPA-DOE, doing to monitor the radiological consequence of the event in Japan on the United States?

**A.** The NRC is coordinating its actions with other Federal agencies as part of the U.S. government response. The NRC is examining all available information as part of the effort to analyze the event and understand its implications both for Japan and the United States.

U.S. nuclear power plants have sensitive equipment to monitor the status of radiological conditions. Additionally, personnel at nuclear power plants have specific knowledge in radiological field monitoring techniques and could assist State and Federal personnel in environmental sampling activities, should that be necessary to evaluate public health and safety concerns.

EPA has permanent stationary radiological monitoring stations on the West coast. In the event of a confirmed radiological release with a potential to impact the U.S., EPA is the Federal agency responsible for radiological monitoring. DOE would be responsible for aerial monitoring, should there be a confirmed radiological release.

**Non-Public Info For States Only:** Questions about any radiological impact on the U.S. West coast is Adora Andy, the Deputy Associate Administrator for EPA's Office of External Affairs; cell is (b)(6) email [andy\\_adora@epa.gov](mailto:andy_adora@epa.gov)

#### **Key Messages:**

The NRC is coordinating its actions with other Federal agencies as part of the U.S. government response. The NRC is examining all available information as part of the effort to analyze the event and understand its implications both for Japan and the United States. The NRC's headquarters Operations Center in Rockville, MD has been stood up since the beginning of the emergency in Japan and is operating on a 24-hour basis.

NRC officials in Rockville, MD have spoken with the agency's counterpart in Japan and offered the assistance of U.S. technical experts. Two officials from NRC with expertise in boiling water nuclear reactors have deployed to Japan as part of a U.S. International Agency for International Development (USAID) team. USAID is the federal government agency primarily responsible for providing assistance to countries recovering from disaster administering.

U.S. nuclear power plants are built to withstand environmental hazards, including earthquakes and tsunamis. Even those plants that are located outside of areas with extensive seismic activity are designed for safety in the event of such a natural disaster. The NRC requires that safety-significant structures, systems, and components be designed to take into account the most severe natural phenomena historically estimated for the site and surrounding area.

The NRC will not provide information on the status of Japan's nuclear power plants. See NRC's web site at [www.nrc.gov](http://www.nrc.gov) or blog at <http://public-blog.nrc-gateway.gov> for the latest information on NRC actions.

For background information on generic operations at a boiling-water reactor, including an animated graphic, visit the NRC's website at [www.nrc.gov](http://www.nrc.gov)

**Other sources of information:**

USAID -- [www.usaid.gov](http://www.usaid.gov)

U.S. Dept. of State -- [www.state.gov](http://www.state.gov)

FEMA -- [www.fema.gov](http://www.fema.gov)

White House -- [www.whitehouse.gov](http://www.whitehouse.gov)

Nuclear Energy Institute -- [www.nei.org](http://www.nei.org)

International Atomic Energy Agency -- [www.iaea.org/press](http://www.iaea.org/press)



---

**From:** Kenagy, W David <KenagyWD@state.gov>  
**Sent:** Saturday, March 12, 2011 1:08 AM  
**To:** Kenagy, W David; McClelland, Vince; Rodriguez, Veronica; Heinrich, Ann; HOO Hoc; HOO2 Hoc; Huffman, William; Shaffer, Mark A; DeCair Sara@epamail.epa.gov; timothy.greten@dhs.gov; Maria Marinissen@hhs.gov; (b)(6); doehqeoc@oem.doe.gov; hhs.soc@hhs.gov; James.Kish@dhs.gov; ISN-NESS-DL; Kang, Eliot  
**Subject:** Latest Ministry of Econ Trade and Industry update on Japan earthquake from IAEA  
**Attachments:** News\_Releases\_No10[1][1].pdf; the\_News\_Releases\_No12[2][1].pdf

---

**From:** Kenagy, W David  
**Sent:** Friday, March 11, 2011 8:49 PM  
**To:** Kenagy, W David; 'McClelland, Vince'; 'Rodriguez, Veronica'; 'Heinrich, Ann'; 'Hoo1@nrc.gov'; 'Hoo2@nrc.gov'; 'wch@nrc.gov'; Shaffer, Mark A; 'DeCair.Sara@epamail.epa.gov'; 'timothy.greten@dhs.gov'; 'Maria.Marinissen@hhs.gov'; (b)(6); 'doehqeoc@oem.doe.gov'; 'hhs.soc@hhs.gov'; 'James.Kish@dhs.gov'; ISN-NESS-DL; Kang, Eliot  
**Subject:** RE: IAEA Status of Fukushima NPP

---

**From:** Kenagy, W David  
**Sent:** Friday, March 11, 2011 2:21 PM  
**To:** Kenagy, W David; 'McClelland, Vince'; 'Rodriguez, Veronica'; 'Heinrich, Ann'; 'Hoo1@nrc.gov'; 'Hoo2@nrc.gov'; 'wch@nrc.gov'; Shaffer, Mark A; 'DeCair.Sara@epamail.epa.gov'; 'timothy.greten@dhs.gov'; 'Maria.Marinissen@hhs.gov'; (b)(6); 'doehqeoc@oem.doe.gov'; 'hhs.soc@hhs.gov'; 'James.Kish@dhs.gov'; ISN-NESS-DL; Kang, Eliot  
**Subject:** RE: IAEA Status of Fukushima NPP

This email is UNCLASSIFIED.

March 12, 2011

Nuclear and Industrial Safety Agency

Seismic Damage Information(the 12<sup>th</sup> Release)  
(As of 09:30 March 12, 2011)

Nuclear and Industrial Safety Agency (NISA) confirmed the current situation of Higashidori and Onagawa NPSs, Tohoku Electric Power Co., Inc

Higashidori, Fukushima Dai-ichi, Fukushima Dai-ni and Kashiwazaki-Kariwa NPSs, Tokyo Electric Power Co., Inc. and electricity, gas, heat supply and complex as follows:

1. Summary of Damage(Earthquake at Sanriku-Oki)

(1) Time of Occurrence: 14:46 (UTC 5:46) March 11, 2011, Friday

(2) Epicenter: Off-Coast of Sanriku (North Latitude: 38; East Longitude: 142.9), 10km deep, M8.8

(3) Seismic Intensity in Japanese Scale

<Area of Seismic Intensity Larger Than and Including 4>

7: Northern Miyagi Prefecture

6+: Northern and southern Ibaraki Prefecture

5+: Sanpachi-Kamikita Aomori Prefecture

5-: Chuetsu, Niigata Prefecture

<Municipality of Seismic Intensity Larger than and Including 4>

6+: Naraha Machi, Tomioka Machi, Ookuma-machi, and Futaba-machi, Fukushima Prefecture

6-: Ishinomaki-city and, Onagawa town (by Seismograph of NPP)of , Miyagi Prefecture and Tokaimura, Ibaraki Pref.

5-: Kariwa-village, Niigata Prefecture

4: Rokkasho-village, Higashidori-village, Aomori Prefecture, Kashiwazaki-city, Niigata Prefecture and Yokosuka-city, Kanagawa Prefecture

1: Tomari-village, Hokkaido

2. The status of operation at Power Stations(Number of automatic shutdown(units): 10 (as of 09:30, March12)

a. Onagawa Nuclear Power Station (Onagawa-machi and Ishinomaki-shi, Miyagi Prefecture)

(1) The status of operation

Unit 1 (524MWe): automatic shutdown

Unit 2 (825MWe): automatic shutdown

Unit 3 (825MWe): automatic shutdown

(2) Readings of monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitor readings: No

(3) Report concerning other malfunction

It is confirmed Smoke in the first basement of the Turbine Building was confirmed the extinguished at 22:55 on March 11th.

b. Fukushima Dai-ichi Nuclear Power Station, Tokyo Electric Power Co.,Inc.(TEPCO)

(Okuma-machi and Futaba-machi, Futaba-gun, Fukushima Prefecture)

(1) The status of operation

Unit 1 (460MWe): automatic shutdown

Unit 2 (784MWe): automatic shutdown

Unit 3 (784MWe): automatic shutdown

Unit 4(784MW): in periodic inspection outage

Unit 5(784MW): in periodic inspection outage

Unit 6(1,100MW): in periodic inspection outage

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Article 10\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ichi, Unit 3)

(\*A heightened alert condition)

Article 15\*\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ichi, Units 1 and 2)

(\*\* Nuclear emergency situation)

Situation of power source to recover water injection function at the Station.

-Cable from electric power generating cars are under connecting work(as of 04:00, March 12)

Pressure in the containment vessel has arisen. Steam release is undertaking in order to relieve pressure.

It was confirmed that radioactivity was increased compared to the one at 04:00, March 12.

From 04:00, March 12 by the measurement of radioactive materials in the surrounding area of the power station using monitoring cars. (As of 07:55, March12)

MP6 (near the main gate) 0.07microSv/h ->5.1 micro Sv/h  
(04:00, March12->07:40, March 12)

MP8 (near the main gate) 0.07microSv/h ->2.5 micro Sv/h  
(04:00, March 12->07:30, March 12)

c. Fukushima Dai-ichi Nuclear Power Station(TEPCO)

(Naraha-cho/Tomioka-cho, Futaba-gun, Fukushima pref.)

(1) The status of operation

Unit1(1,100MW): automatic shutdown

Unit2(1,100MW): automatic shutdown

Unit3(1,100MW): automatic shutdown

Unit4(1,100MW): automatic shutdown

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Report of fire: No

Article 10\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ichi, Units 1,2 and 4)

(\*A heightened alert condition)

Article 15\*\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ichi, Units 1,2 and 4)

(\*\*Nuclear emergency situation)

### 3. Action taken by NISA

(March 11)

14:46 Set up of the NISA Emergency Preparedness Headquarters (Tokyo) immediately after the earthquake

15:42: TEPCO reported to NISA in accordance with Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1,2 and 3.

16:36: TEPCO judged the event in accordance with Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1 and 2.(notified to NISA at 16:45)

18:08: Unit 1 of Fukushima Dai-ni notified NISA of the situation of the Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

18:33: Units 1,2 and 4 of Fukushima Dai-ni notified NISA of the situation of the Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

19:03 : Government declared the state of nuclear emergency

20:50: Fukushima prefecture's emergency preparedness headquarters issued a directive regarding the accident occurred at Fukushima-Dai-ichi Nuclear Power Station, TEPCO that the residents living in the area of 2km radius from Unit 1 of the Nuclear Power Station must evacuate.(The population of this area is 1,864)

21:23: Directives from Prime Minister to Governor of Fukushima, Mayor of Ooka and Mayor of Futaba were issued regarding the accident occurred at Fukushima-Dai-ichi Nuclear Power Station. TEPCO, pursuant to Paragraph 3, Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness as follows:

- Residents living in the area of 3km radius from Unit 1 of the Nuclear Power Station must evacuate.

- Residents living in the area of 10km radius from the Unit 1 must take sheltering.

(March12)

5:22 Unit 1 of Fukushima Dai-ni notified NISA of the situation of the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

5:32 Unit 2 of Fukushima Dai-ni notified NISA of the situation of the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

05:44 Residents living in the area of 10km radius from unit 1 of the Nuclear Power Station must evacuate by the Prime Minister Direction.

06:01 Regarding Units 1,2 and 4 of Fukushima Dai-ni NPS, TEPCO reported NISA in accordance with Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

7:45 Directives from Prime Minister to Governor of Fukushima, Mayors of Hirono, Naraha, Tomioka, Ookuma and Futaba were issued regarding the accident occurred at Fukushima-Dai-ni Nuclear Power Station, TEPCO, pursuant to Paragraph 3, Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness as follows:

- Residents living in the area of 3km radius from

- Fukushima-Dai-ni Nuclear Power Station must evacuate.

- Residents living in the area of 10km radius from Fukushima-Dai-ni NPS must take sheltering



## Earthquake at Nagano Prefecture

### 1. Summary of Damage(Earthquake at north part of Nagano prefecture)

- (1) Time of Occurrence: 3:59 (UTC 18:59) March 12, 2011, Saturday
- (2) Epicenter: North part of Nagano Prefecture(North Latitude: 37° East Longitude: 138.6), 10km deep, M6.6
- (3) Seismic Intensity in Japanese Scale  
<Area of Seismic Intensity>  
5: Kashiwazaki-city, Niigata prefecture and Kariwa-village, Niigata prefecture.

### 2. Status of operation at Power Stations

a. Kashiwazaki-Kariwa Nuclear Power Station, Tokyo Electric Power Co., Inc.(TEPCO)

#### (1) The status of operation

Unit1(1,100MW): Keep operation  
Unit2(1,100MW): in periodic inspection outage  
Unit3(1,100MW): in periodic inspection outage  
Unit4(1,100MW): in periodic inspection outage  
Unit5(1,356MW): Keep operation  
Unit6(1,356MW): Keep operation  
Unit7(1,356MW): Keep operation

#### (2) Readings of monitoring post etc.

Variation in the monitoring post readings: No  
Variation in the main stack monitor readings: No

#### (3) Report concerning other malfunction

Report of fire: No

### 3 Industrial Safety

oGeneral Gas

Nagano municipal gas (Nagano city), Joetsu municipal gas, Myouko municipal gas, Ojiya municipal gas, Mitsuke municipal, Kashiwazaki municipal gas, Nagaoka of Hokuiku (Nagaoka city) gas are confirmed there are no supply disruption

Facilities which have confirmed safety will be eliminated from the next press release.

(Contact Person)

Mr. Masaomi Koyama

Deputy Director, International Affairs  
Office, NISA/METI

Phone: +81-(0)3-3501-1087

March 12, 2011  
Nuclear and Industrial Safety Agency

Seismic Damage Information(the 12<sup>th</sup> Release)  
(As of 09:30 March 12, 2011)

Nuclear and Industrial Safety Agency (NISA) confirmed the current situation of Higashidori and Onagawa NPSs, Tohoku Electric Power Co., Inc

Higashidori, Fukushima Dai-ichi, Fukushima Dai-ni and Kashiwazaki-Kariwa NPSs, Tokyo Electric Power Co., Inc. and electricity, gas, heat supply and complex as follows:

1. Summary of Damage(Earthquake at Sanriku-Ok)

- (1) Time of Occurrence: 14:46 (UTC 5:46) March 11, 2011, Friday
- (2) Epicenter: Off-Coast of Sanriku (North Latitude: 38; East Longitude: 142.9), 10km deep, M8.8
- (3) Seismic Intensity in Japanese Scale  
<Area of Seismic Intensity Larger Than and Including 4>  
7: Northern Miyagi Prefecture  
6+: Northern and southern Ibaraki Prefecture  
5+: Sanpachi-Kamikita Aomori Prefecture  
5: Chuetsu, Niigata Prefecture  
<Municipality of Seismic Intensity Larger than and Including 4>  
6+: Naraha Machi, Tomioka Machi, Ookuma-machi, and Futaba-machi, Fukushima Prefecture  
6: Ishinomaki-city and, Onagawa town (by Seismograph of NPP)of , Miyagi Prefecture and Tokaimura, Ibaraki Pref.  
5: Kariwa-village, Niigata Prefecture  
4: Rokkasho-village, Higashidori-village, Aomori Prefecture, Kashiwazaki-city, Niigata Prefecture and Yokosuka-city, Kanagawa Prefecture

1: Tomari-village, Hokkaido

2. The status of operation at Power Stations(Number of automatic shutdown(units): 10 (as of 09:30, March12)

a. Onagawa Nuclear Power Station (Onagawa-machi and Ishinomaki-shi, Miyagi Prefecture)

(1) The status of operation

Unit 1 (524MWe): automatic shutdown

Unit 2 (825MWe): automatic shutdown

Unit 3 (825MWe): automatic shutdown

(2) Readings of monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitor readings: No

(3) Report concerning other malfunction

It is confirmed Smoke in the first basement of the Turbine Building was confirmed the extinguished at 22:55 on March 11th.

b. Fukushima Dai-ichi Nuclear Power Station, Tokyo Electric Power Co.,Inc.(TEPCO)

(Okuma-machi and Futaba-machi, Futaba-gun, Fukushima Prefecture )

(1) The status of operation.

Unit 1 (460MWe): automatic shutdown

Unit 2 (784MWe): automatic shutdown

Unit 3 (784MWe): automatic shutdown

Unit 4(784MW): in periodic inspection outage

Unit 5(784MW): in periodic inspection outage

Unit 6(1,100MW): in periodic inspection outage

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Article 10\* of Act on Special Measures Concerning Nuclear Emergency Preparedness (Fukushima Dai-ichi, Unit 3)

(\*A heightened alert condition)

Article 15\*\* of Act on Special Measures Concerning Nuclear Emergency Preparedness (Fukushima Dai-ichi, Units 1 and 2)

(\*\* Nuclear emergency situation)

Situation of power source to recover water injection function at the Station.

-Cable from electric power generating cars are under connecting work(as of 04:00, March 12)

Pressure in the containment vessel has arisen. Steam release is undertaking in order to relieve pressure.

It was confirmed that radioactivity was increased compared to the one at 04:00, March 12.

From 04:00, March 12 by the measurement of radioactive materials in the surrounding area of the power station using monitoring cars. (As of 07:55, March 12)

MP6 (near the main gate)	0.07microSv/h -5.1 micro Sv/h
	(04:00, March 12->07:40, March 12)
MP8 (near the main gate)	0.07microSv/h ->2.5 micro Sv/h
	(04:00, March 12->07:30, March 12)

c. Fukushima-Daini Nuclear Power Station(TEPCO)

(Naraha-cho/Tomioka-cho, Futaba-gun, Fukushima pref.)

(1) The status of operation

Unit1(1,100MW): automatic shutdown

Unit2(1,100MW): automatic shutdown

Unit3(1,100MW): automatic shutdown

Unit4(1,100MW): automatic shutdown

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Report of fire: No

Article 10\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ri, Units 1,2 and 4)

(\*A heightened alert condition)

Article 15\*\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ri, Units 1,2 and 4)

(\*\*Nuclear emergency situation)

## 3. Action taken by NISA

(March 11)

14:46 Set up of the NISA Emergency Preparedness Headquarters (Tokyo) immediately after the earthquake

15:42: TEPCO reported to NISA in accordance with Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1,2 and 3.

16:36: TEPCO judged the event in accordance with Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1 and 2.(notified to NISA at 16:45)

18:08: Unit 1 of Fukushima Dai-ni notified NISA of the situation of the Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

18:33: Units 1,2 and 4 of Fukushima Dai-ni notified NISA of the situation of the Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

19:03 : Government declared the state of nuclear emergency

20:50: Fukushima prefecture's emergency preparedness headquarters issued a directive regarding the accident occurred at Fukushima-Dai-ichi Nuclear Power Station, TEPCO that the residents living in the area of 2km radius from Unit 1 of the Nuclear Power Station must evacuate.(The population of this area is 1,864)

21:23: Directives from Prime Minister to Governor of Fukushima, Mayor of Ookuma and Mayor of Futaba were issued regarding the accident occurred at Fukushima-Dai-ichi Nuclear Power Station, TEPCO, pursuant to Paragraph 3, Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness as follows:

- Residents living in the area of 3km radius from Unit 1 of the Nuclear Power Station must evacuate.

- Residents living in the area of 10km radius from the Unit 1 must take sheltering.

(March 12)

5:22 Unit 1 of Fukushima Dai-ni notified NISA of the situation of the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.



5:32 Unit 2 of Fukushima Dai-ni notified NISA of the situation of the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

05:44 Residents living in the area of 10km radius from unit 1 of the Nuclear Power Station must evacuate by the Prime Minister Direction.

06:01 Regarding Units 1, 2 and 4 of Fukushima Dai-ni NPS, TEPCO reported NISA in accordance with Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

7:45 Directives from Prime Minister to Governor of Fukushima, Mayors of Hirono, Naraha, Tomioka, Ookuma and Futaba were issued regarding the accident occurred at Fukushima-Dai-ni Nuclear Power Station, TEPCO, pursuant to Paragraph 3, Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness as follows:

- Residents living in the area of 3km radius from

- Fukushima-Dai-ni Nuclear Power Station must evacuate.

- Residents living in the area of 10km radius from Fukushima-Dai-ni NPS must take sheltering

## Earthquake at Nagano Prefecture

### 1. Summary of Damage(Earthquake at north part of Nagano prefecture)

- (1) Time of Occurrence: 3:59 (UTC 18:59) March 12, 2011, Saturday
- (2) Epicenter: North part of Nagano Prefecture(North Latitude: 37: East Longitude: 138.6), 10km deep, M6.6
- (3) Seismic Intensity in Japanese Scale  
<Area of Seismic Intensity>  
5: Kashiwazaki-city, Niigata prefecture and Kariwa-village, Niigata prefecture.

### 2. Status of operation at Power Stations

a. Kashiwazaki-Kariwa Nuclear Power Station, Tokyo Electric Power Co., Inc.(TEPCO)

#### (1) The status of operation

Unit1(1,100MW): Keep operation  
Unit2(1,100MW): in periodic inspection outage  
Unit3(1,100MW): in periodic inspection outage  
Unit4(1,100MW): in periodic inspection outage  
Unit5(1,356MW): Keep operation  
Unit6(1,356MW): Keep operation  
Unit7(1,356MW): Keep operation

#### (2) Readings of monitoring post etc.

Variation in the monitoring post readings: No  
Variation in the main stack monitor readings: No

#### (3) Report concerning other malfunction

Report of fire: No

### 3 Industrial Safety

○General Gas

Nagano municipal gas (Nagano city), Joetsu municipal gas, Myouko municipal gas, Ojiya municipal gas, Mitsuke municipal, Kashiwazaki municipal gas, Nagaoka of Hokuriku (Nagaoka city) gas are confirmed there are no supply disruption

Facilities which have confirmed safety will be eliminated from the next press release.

(Contact Person)

Mr. Masaomi Koyama

Deputy Director, International Affairs  
Office, NISA/METI

Phone: +81-(0)3-3501-1087

March 12, 2011  
Nuclear and Industrial Safety Agency

Seismic Damage Information(the 10<sup>th</sup> Release)  
(As of 4:30 March 12, 2011)

Nuclear and Industrial Safety Agency (NISA) confirmed the current situation of Higashidori and Onagawa NPSs, Tohoku Electric Power Co., Inc

Higashidori, Fukushima Dai-ichi, Fukushima Dai-ni and Kashiwazaki-Kariwa NPSs, Tokyo Electric Power Co., Inc. and electricity, gas, heat supply and complex as follows:

1. Summary of Damage(Earthquake at Sanriku-Oki)

- (1) Time of Occurrence: 14:46 (UTC 5:46) March 11, 2011, Friday
- (2) Epicenter: Off-Coast of Sanriku (North Latitude: 38; East Longitude: 142.9), 10km deep, M8.8
- (3) Seismic Intensity in Japanese Scale  
<Area of Seismic Intensity Larger Than and Including 4>  
7: Northern Miyagi Prefecture  
6+: Northern and southern Ibaraki Prefecture  
5+: Sanpachi-Kamikita Aomori Prefecture  
5-: Chuetsu, Niigata Prefecture  
<Municipality of Seismic Intensity Larger than and Including 4>  
6+: Naraha Machi, Tomioka Machi, Ookuma-machi, and Futaba-machi, Fukushima Prefecture  
6-: Ishinomaki-city and, Onagawa town (by Seismograph of NPP)of , Miyagi Prefecture and Tokaimura, Ibaraki Pref.  
5-: Kariwa-village, Niigata Prefecture  
4: Rokkasho-village, Higashidori-village, Aomori Prefecture, Kashiwazaki-city, Niigata Prefecture and Yokosuka-city, Kanagawa Prefecture

1: Tomari village, Hokkaido

1. The status of operation at Power Stations(Number of automatic shutdown(units): 10 (as of 03:30, March12)

a. Onagawa Nuclear Power Station (Onagawa-machi and Ishinomaki-shi, Miyagi Prefecture)

(1) The status of operation

Unit 1 (524MWe): automatic shutdown

Unit 2 (825MWe): automatic shutdown

Unit 3 (825MWe): automatic shutdown

(2) Readings of monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitor readings: No

(3) Report concerning other malfunction

Report of fire: CO2 extinguishment started at 17:15

b. Fukushima Dai-ichi Nuclear Power Station, Tokyo Electric Power Co.,Inc.(TEPCO)

(Okuma-machi and Futaba-machi, Futaba-gun, Fukushima Prefecture )

(1) The status of operation

Unit 1 (460MWe): automatic shutdown

Unit 2 (784MWe): automatic shutdown

Unit 3 (784MWe): automatic shutdown

Unit 4(784MW): in periodic inspection outage

Unit 5(784MW): in periodic inspection outage

Unit 6(1,100MW): in periodic inspection outage

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Article 10\* of Act on Special Measures Concerning Nuclear Emergency Preparedness (Fukushima Dai-ichi, Unit 3)

(\*A heightened alert condition)

Article 15\*\* of Act on Special Measures Concerning Nuclear Emergency Preparedness (Fukushima Dai-ichi, Units 1 and 2)

(\*\* Nuclear emergency situation)

Situation of power source to recover water injection function at the Station.

-Cable from electric power source cars are under connecting work(as of 04:00, March 12)

Pressure in the Confinement Vessel has arisen. The pressure could have arisen to 840kPa as compared to the design pressure of 400kPa.

c. Fukushima Dai-ichi Nuclear Power Station(TEPCO)

(Naraha-cho/Tomioka-cho, Futaba-gun, Fukushima pref.)

(1) The status of operation

Unit1(1,100MW): automatic shutdown

Unit2(1,100MW): automatic shutdown

Unit3(1,100MW): automatic shutdown

Unit4(1,100MW): automatic shutdown

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Report of fire: No

Article 10\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ichi, Units 1,2 and 4)

(\*A heightened alert condition)

### 3. Industrial Safety

#### ○Electricity

\* Tokyo Electric Power Co. (as of 04:19, March 12, 2011)

Scale of loss of electrical power: 1,540 thousand houses

Power loss area:

Gunma Pref.: Oizumi-machi, Tatebayashi-cho

Ibaraki Pref.: Whole area,

Tochigi Pref.: Whole area of eastern part. Utsunomiya-shi, Ashikaga-shi,  
Sano-shi.

Chiba Pref.: Katori-shi, Yachimata-shi, Yamatake-shi

Saitama Pref.: Konosu-shi, Gyoda-shi

Yamanashi Pref.: Hokuto-shi, Fuji Yoshida-shi

\* Tohoku Electric Power Co. (as of 22:00, March 11, 2011)



Scale of loss of electrical power: approx.4,400 thousand houses

Power loss area:

Aomori Pref.: Whole area

Iwate Pref.: Whole area,

Akita Pref: Whole area

Miyagi Pref: whole area

Yamagata Pref: Almost whole area

Fukushima Pref: Some area

\* Hokkaido Electric Power Co. (as of 20:00, March 11, 2011)

Scale of loss of electrical power:560 houses, maximum number:  
approx:3,000 as of 19:00

\*Chubu Electric Power Co. (as of 22:50, March 11, 2011)

Scale of loss of electrical power: 30 houses(Nagano prefecture),

oGeneral Gas(as of 03:00, March 12)

The Japan Gas Association is preparing to dispatch an advance unit to Sendai-shi upon request from Sendai-shi.

Sendai-city municipal Gas, Kesennuma-city municipal Gas, Ishimaki Gas have trouble contacting.The Japan Gas Association confirmed that there are no supply disruption in the supply area of city gas in Hokkaido, Aomori, Yamagata, and Akita prefecture.

\* Tokyo Gas Co.

Hitachi branch: 30,008 houses are in supply disruption. There is no damage in equipment, however, equipment is inoperable due to loss of power. Walkdown unit of eight person departed at 18:30, March11. Time of recovery is not certain.

Inspection teams were dispatched to this area.

-time of restoration(not certain)

Eastern part of Joso: 453 houses were in supply disruption in Ushiku (supply restarted at 17:10, March11)

471 houses were in supply disruption in Ushiku-kariya cho(supply restarted at 22:36

March 11)

77 houses are in supply disruption in  
Ryuugasaki(supply restarted at 16:20, March 11)

40 houses are in supply disruption in Nishi-ku,  
Yokohama-shi(supply restarted at 17:29, March 11)

Gas leaked from a Nozzle of an LNG tank at Sodegaura but no  
ignition(supply restarted at 17:29, March 11)

Gas Bureau of Sendai-shi: whole supply disruption (approx.360 thousand  
houses)

\*Shiogama Gas Co.: 12,000 houses are in supply disruption

\*Kamaishi Gas Co.: 10,000 houses are in supply disruption. First floor of this  
Gas facility sank.

\*Hatano Gas Co.: 330 houses are in supply disruption

\*Keiyo Gas Co.: Leakage occurred at 5 locations of middle pressure conduit

Leakage occurred at many parts of Low pressure conduits

2,377 houses are in supply disruption.

Supply is disrupted in Yachio-shi

\*Kuju Kurityo Gas Co: Approx 258 houses are in supply disruption.

\*Atsugi Gas Co: leakage occurred at 1 location of middle pressure conduit.

\*Fukushima Gas Co.: Approx 2,726 houses are in supply disruption(which  
are equal to a quarter of whole customer in this region)

\*Tohoku Gas(part of Shirakawa-shi): 300 houses are in supply disruption

\*Tokiwa Kyodo Gas(Iwaki-shi): 15,000 houses are in supply disruption

\*Tobu Gas(Tsuchiura-shi): 7,500 houses are in supply disruption

\*Tosai Gas(Kasukabe-shi) Gas leakage occurred from conduit. 150 houses in  
apartment are in supply disruption

\*Odawara Gas(Odawara-shi)

leakage occurred at 1 locations of low pressure branch conduit and 3 locations  
of ex-core inner conduit and has restored at 21:30 11 March. Other areas are  
under investigation.

oCommunity Gas(as of 03:00, March 12)

Severe damage has not been reported to Japan Community Gas Association  
so far. No information is available about the damage in North part of Ibaraki  
prefecture.

\*Tokyo Gas energy(North part of Ibaraki): Factory stopped supply to 943 houses in Nakago-New Town due to the leakage from pipe.

\*Satoh Kosan (based in Iwatsuki-ku, Saitama City) Iwatsuki-housing complex: Gas leakage occurred from conduit. Factory stopped the supply. Currently gas is temporarily supplied by gas cylinder to 451 sites.

\*Syutoken Gas(based in Sakura-City) Chitose-housing complex:1,320 houses are in supply disruption

\*Kashima Marui Gas(Kamisur-shi): 527 houses are in supply disruption. time of recovery is not certain.

\*Imaichi Gas: Gas leakage occurred from conduit at the simple gas complex in Nikko-shi: 240 houses were in gas supply disruption.

\*Nihon Gas: Gas leakage occurred from conduit at simple gas complex in the jurisdiction: 76 houses in Nasu-karasuyama-shi, 97 houses in Inashiki-shi, 594 houses in Tokai-mura, Natsu-gun,370 houses in Yita-shi, and 3299 houses in Itako-shi were in gas supply disruption.

These areas othan than Itako-shi will be restored on March 12. It will take long before restoration in Hinode housing complex in Itako-shi due to soil liquifaction. 212 houses in Noda-shi were in gas supply disruption. This area was restored in March 11.

oGas conduit Operators(as of 03:00, March12)

\*JX Nikko Nisseki Energy: Hachinohe LNG Station

Premise, electric room and in-house electricity generator equipment, were flooded by the 2<sup>nd</sup> wave of tsunami and the gas supply was stopped.

oHeat supply(as of 00:00)

\*Yamagata Netsu Kyokyu(Yamagata-shi): Stopped heat supply

\*"HITACHI NETSU ENERGY"(Hitachi City): stopped heat supply due to the electrical outage at 15:19, March11.

\*"CHIBA NETSU KYOKYU"(Chiba-city): stopped freezer, etc. at 16:19, March 11. Supply was stopped and walkdown is conducted at 16:19, March 11.

\*"NISHI-IKEBUKURO NETSU KYOKYU": stopped freezer and boiler at 15:45, March 11.

\*"TOKYO NETSU KYOKYU":

·stopped boiler in Takeshiba and Yurakutyo areas at 15:20, March 11

·stopped supply to one of the building complex at Hikarigaoka for approx. 3 hours due to the leakage of pipe at 21:35, March 11

\*Yokohama Business Park NETSU KYOKYU (Hodogaya-ku, Yokohama city)

15:50 Stopped steam and cold water supply to PREZZO building

16:20 recovered by temporary repair

oComplex

\*Cosmo Oil factory Chiba branch

A column of Butane Butylene storage was broken. Fire occurred due to gas leakage. One person suffered serious injury, 2 persons suffered minor injury.

\*JX Nippon Oil&Energy Corporation Sendai oil factory(sendai-city, Miyagi prefecture)

·Fire occurred from explosion of low temperature LPG tank(as of 22:40, March 11)

4. Action taken by NISA

14:46 Set up of the NISA Emergency Preparedness Headquarters (Tokyo) immediately after the earthquake

15:42: TEPCO reported to NISA in accordance with Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1,2 and 3.

16:36: TEPCO judged the event in accordance with Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1 and 2.(notified to NISA at 16:45)

18:08: Unit 1 of Fukushima Dai-ichi notified NISA of the situation of the Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

18:33: Units 1,2 and 4 of Fukushima Dai-ichi notified NISA of the situation of the Article 10 of Act on Special Measures Concerning Nuclear Emergency

Preparedness.

19:03 : Government declared the state of nuclear emergency

20:50: Fukushima prefecture's emergency preparedness headquarters issued a directive regarding the accident occurred at Fukushima-Dai-ichi Nuclear Power Station, TEPCO that the residents living in the area of 2km radius from Unit 1 of the Nuclear Power Station must be evacuate.

21:23: Directives from Prime Minister to Governor of Fukushima, Mayor of Oosuma and Mayor of Futaba were issued regarding the accident occurred at Fukushima-Dai-ichi Nuclear Power Station, TEPCO, pursuant to Paragraph 3, Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness as follows:

- Residents living in the area of 3km radius from Unit 1 of the Nuclear Power Station must evacuate.

- Residents living in the area of 10km radius from the Unit 1 must take sheltering.

## 2. Summary of Damage(Earthquake at Nagano prefecture)

- (1) Time of Occurrence: 3:59 (UTC 18:59) March 12, 2011, Friday
- (2) Epicenter: North part of Nagano Prefecture(North Latitude: 37° East Longitude: 138.6), 10km deep, M6.6
- (3) Seismic Intensity in Japanese Scale  
<Area of Seismic Intensity>  
5: Kashiwazaki-shi, Niigata prefecture and Kariha-villege, Niigata prefecture.

1. Status of operation at Power Stations(NumNumber of automatic shutdown(units):10 (as of 3:30, March 12)

a. Kashiwazaki-Kariha Nuclear Power Station, Tokyo Electric Power Co., Inc.(TEPCO)

(1) The status of operation

Unit1(1,100MW): Keep operation  
Unit2(1,100MW): in periodic inspection outage  
Unit3(1,100MW): in periodic inspection outage  
Unit4(1,100MW): in periodic inspection outage  
Unit5(1,356MW): Keep operation  
Unit6(1,356MW): Keep operation

(2) Readings of monitoring post etc.

Variation in the monitoring post readings: No  
Variation in the main stack monitor readings:No

(3) Report concerning other malfunction

Report of fire: No



Facilities which have confirmed safety will be eliminated from the next press release.

(Contact Person)

Mr. Masaomi Koyama

Deputy Director, International Affairs

Office, NISA/METI

Phone: +81-(0)3-3501-1087

**Matakas, Gina**

**From:** Hansell, Samuel  
**Sent:** Sunday, March 13, 2011 3:21 PM  
**To:** Dean, Bill  
**Subject:** RE: 0630 Japan event status update

Bill,

I'll call in at 3:30p and provide a summary for everyone.

Thanks,  
Sam H

---

**From:** Dean, Bill  
**Sent:** Sunday, March 13, 2011 2:38 PM  
**To:** Hansell, Samuel; Lew, David; Screnci, Diane; Sheehan, Neil; Tift, Doug; McNamara, Nancy; Roberts, Darrell; Wilson, Peter; Lorson, Raymond  
**Subject:** Re: 0630 Japan event status update

Thanks Sam. I will call in but perhaps you can listen in too and provide the same quality summary you did this morning.  
Thanks.  
Bill Dean  
Regional Administrator  
Region I, USNRC  
Sent from NRC BlackBerry

---

**From:** Hansell, Samuel  
**To:** Dean, Bill; Lew, David; Screnci, Diane; Sheehan, Neil; Tift, Doug; McNamara, Nancy; Roberts, Darrell; Wilson, Peter; Lorson, Raymond  
**Sent:** Sun Mar 13 14:20:46 2011  
**Subject:** RE: 0630 Japan event status update

Bill,

The next update call is scheduled for 3:30p today.

Thanks,  
Sam

---

**From:** Dean, Bill  
**Sent:** Sunday, March 13, 2011 12:19 PM  
**To:** Hansell, Samuel; Lew, David; Screnci, Diane; Sheehan, Neil; Tift, Doug; McNamara, Nancy; Roberts, Darrell; Wilson, Peter; Lorson, Raymond  
**Subject:** Fw: 0630 Japan event status update

Do any of you receive this already? If not I will forward if you want  
Bill Dean  
Regional Administrator  
Region I, USNRC  
Sent from NRC BlackBerry

0000/12

**From:** LIA07 Hoc

**To:** Al Coons <[albert.coons@dhs.gov](mailto:albert.coons@dhs.gov)>; Andersen, James; Anderson, Joseph; Barker, Allan; Batkin, Joshua; Bill King <[William.King@dhs.gov](mailto:William.King@dhs.gov)>; Bill King 2 <(b)(6)>; Brenner, Eliot; Bubar, Patrice; Castleman, Patrick; Coggins, Angela; Collins, Elmo; Conrad Burnside <[conrad.burnside@dhs.gov](mailto:conrad.burnside@dhs.gov)>; D Feighert <[dan.feighert@dhs.gov](mailto:dan.feighert@dhs.gov)>; D Hammons <[darrell.hammons@dhs.gov](mailto:darrell.hammons@dhs.gov)>; Dean, Bill; Decker, David; DIA <(b)(6)>; DIA2 <(b)(6)>; Dorman, Dan; DOT <[cmc-01@dot.gov](mailto:cmc-01@dot.gov)>; Droggitis, Spiros; DTRA <(b)(6)>; Dudek <(b)(6)>; EOP <(b)(6)>; EPA <[veal.lee@epa.gov](mailto:veal.lee@epa.gov)>; EPA2 <[poppell.sam@epa.gov](mailto:poppell.sam@epa.gov)>; Franovich, Mike; Haney, Catherine; Harrington, Holly; Harry Sherwood <[harry.sherwood@dhs.gov](mailto:harry.sherwood@dhs.gov)>; HHS <[hhs.soc@hhs.gov](mailto:hhs.soc@hhs.gov)>; Hipschman, Thomas; HOO Hoc; Howell, Linda; J H-L <[jan.hlavaty-laposa@dhs.gov](mailto:jan.hlavaty-laposa@dhs.gov)>; Jaczko, Gregory; Jim Kish <[james.kish@dhs.gov](mailto:james.kish@dhs.gov)>; Johanna Berkey <[Johanna.Berkey@dhs.gov](mailto:Johanna.Berkey@dhs.gov)>; Johnson, Michael; Kahler, Robert; L Hammond <[lisa.hammond@dhs.gov](mailto:lisa.hammond@dhs.gov)>; Leeds, Eric; Logaras, Harral; Loyd, Susan; Maier, Bill; Marshall, Michael; McCree, Victor; McDermott, Brian; McNamara, Nancy; Michelle Ralston <[michelle.ralston@dhs.gov](mailto:michelle.ralston@dhs.gov)>; Miller, Charles; Miller, Chris; Monninger, John; Nan Calhoun <[Nan.Calhoun@dhs.gov](mailto:Nan.Calhoun@dhs.gov)>; Navy <(b)(6)>; Nieh, Ho; Orders, William; Pace, Patti; Pearson, Laura; Peter Lyons <[peter.lyons@hq.doe.gov](mailto:peter.lyons@hq.doe.gov)>; R McCabe <[ron.mccabe@dhs.gov](mailto:ron.mccabe@dhs.gov)>; R Thomson <[rebecca.thomson@dhs.gov](mailto:rebecca.thomson@dhs.gov)>; S Horwitz <[steve.horwitz@dhs.gov](mailto:steve.horwitz@dhs.gov)>; Satorius, Mark; Schmidt, Rebecca; Seamus O'Boyle <[seamus.o'boyle@dhs.gov](mailto:seamus.o'boyle@dhs.gov)>; Sharkey, Jeffry; Sheron, Brian; Snodderly, Michael; Sosa, Belkys; Steve Colman <[steve.colman@dhs.gov](mailto:steve.colman@dhs.gov)>; Thomas Zerr <(b)(6)>; Tifft, Doug; Timothy Greten <[timothy.greten@dhs.gov](mailto:timothy.greten@dhs.gov)>; Trapp, James; Trojanowski, Robert; Vanessa Quinn <[vanessa.quinn@dhs.gov](mailto:vanessa.quinn@dhs.gov)>; W Webb <[William.Webb@dhs.gov](mailto:William.Webb@dhs.gov)>; Warren, Roberta; Wiggins, Jim; Williams, Kevin; Wittick, Brian; Woodruff, Gena

**Sent:** Sun Mar 13 06:30:40 2011

**Subject:** 0630 Japan event status update

**Taylor, Renee**

---

**From:** Borchardt, Bill  
**Sent:** Monday, March 14, 2011 12:09 PM  
**To:** Schmocker Ulrich  
**Cc:** Straub Markus; Doane, Margaret; Mamish, Nader  
**Subject:** RE Accident in Japan

Unfortunately, we have found it very difficult to get reliable and specific information on the event also. We have our operations center staffed 24/7. I suggest that you call 301-816-5100 and ask to speak to the international liaison. Our liaison will provide all the info we can.

Best Regards,  
Bill

---

**From:** Schmocker Ulrich [<mailto:Ulrich.Schmocker@ensi.ch>]  
**Sent:** Monday, March 14, 2011 10:56 AM  
**To:** Borchardt, Bill  
**Cc:** Straub Markus  
**Subject:** Accident in Japan

Dear Bill

Sorry to disturb you. We at ENSI are completely busy to inform the public, the politicians and the media about the accidents happened in Japan. Our problem is that the information we receive from Japan are only the official ones given by the government and some information from the licensee's web-side. Based on this information it is very difficult to come up with a consistent picture about the accident scenario. We assume that NRC may have additional information channels and may have a better and more consistent picture about the accident in Japan. Would it be possible to receive from NRC some additional information for our own use? Could you give us a contact point at NRC which we can contact by mail or phone? Of course we would forward to NRC any information we received but I believe that all we know you know even better. Thank you very much for your help.

Best regards

Ueli and Georg (Schwarz)

Dr. Ulrich Schmocker  
Swiss Federal Nuclear Safety Inspectorate (ENSI)  
Industriestrasse 19  
CH-5200 Brugg

[Ulrich.Schmocker@ensi.ch](mailto:Ulrich.Schmocker@ensi.ch)  
[www.ensi.ch](http://www.ensi.ch)  
Tel. +41 56 480 86 64

My new e-mail address from April 1, 2011 is.

(b)(6)

**From:** HOO Hoc  
**Sent:** Saturday, March 12, 2011 1:22 AM  
**To:** LIA01 Hoc; LIA02 Hoc; LIA04 Hoc; LIA12 Hoc; LIA07 Hoc; LIA11 Hoc  
**Subject:** FW: Latest Ministry of Econ Trade and Industry update on Japan earthquake from IAEA  
**Attachments:** News\_Releases\_No10[1][1].pdf; the\_News\_Releases\_No12[2][1].pdf; image001.jpg

Headquarters Operations Officer  
U.S. Nuclear Regulatory Commission  
Phone: 301-816-5100  
Fax: 301-816-5151  
email: [hoo.hoc@nrc.gov](mailto:hoo.hoc@nrc.gov)  
secure e-mail: [hoo1@nrc.sgov.gov](mailto:hoo1@nrc.sgov.gov)



**From:** Kenagy, W David [mailto:KenagyWD@state.gov]  
**Sent:** Saturday, March 12, 2011 1:08 AM  
**To:** Kenagy, W David; McClelland, Vince; Rodriguez, Veronica; Heinrich, Ann; HOO Hoc; HOO2 Hoc; Huffman, William; Shaffer, Mark A; DeCair.Sara@epamail.epa.gov; timothy.greten@dhs.gov; Maria.Marinissen@hhs.gov; (b)(6); doehqeoc@oem.doe.gov; hhs.soc@hhs.gov; James.Kish@dhs.gov; ISN-NESS-DL; Kang, Eliot  
**Subject:** Latest Ministry of Econ Trade and Industry update on Japan earthquake from IAEA

**From:** Kenagy, W David  
**Sent:** Friday, March 11, 2011 8:49 PM  
**To:** Kenagy, W David; 'McClelland, Vince'; 'Rodriguez, Veronica'; 'Heinrich, Ann'; 'Hoo1@nrc.gov'; 'Hoo2@nrc.gov'; 'wch@nrc.gov'; Shaffer, Mark A; 'DeCair.Sara@epamail.epa.gov'; 'timothy.greten@dhs.gov'; 'Maria.Marinissen@hhs.gov'; (b)(6); 'doehqeoc@oem.doe.gov'; 'hhs.soc@hhs.gov'; 'James.Kish@dhs.gov'; ISN-NESS-DL; Kang, Eliot  
**Subject:** RE: IAEA Status of Fukushima NPP

**From:** Kenagy, W David  
**Sent:** Friday, March 11, 2011 2:21 PM  
**To:** Kenagy, W David; 'McClelland, Vince'; 'Rodriguez, Veronica'; 'Heinrich, Ann'; 'Hoo1@nrc.gov'; 'Hoo2@nrc.gov'; 'wch@nrc.gov'; Shaffer, Mark A; 'DeCair.Sara@epamail.epa.gov'; 'timothy.greten@dhs.gov'; 'Maria.Marinissen@hhs.gov'; (b)(6); 'doehqeoc@oem.doe.gov'; 'hhs.soc@hhs.gov'; 'James.Kish@dhs.gov'; ISN-NESS-DL; Kang, Eliot  
**Subject:** RE: IAEA Status of Fukushima NPP

0000/14

This email is UNCLASSIFIED.



March 12, 2011  
Nuclear and Industrial Safety Agency

Seismic Damage Information(the 12<sup>th</sup> Release)  
(As of 09:30 March 12, 2011)

Nuclear and Industrial Safety Agency (NISA) confirmed the current situation of Higashidori and Onagawa NPSs, Tohoku Electric Power Co., Inc

Higashidori, Fukushima Dai-ichi, Fukushima Dai-ni and Kashiwazaki-Kariwa NPSs, Tokyo Electric Power Co., Inc. and electricity, gas, heat supply and complex as follows:

1. Summary of Damage(Earthquake at Sanriku-Oki)

- (1) Time of Occurrence: 14:46 (UTC 5:46) March 11, 2011, Friday
- (2) Epicenter: Off-Coast of Sanriku (North Latitude: 38: East Longitude: 142.9), 10km deep, M8.8
- (3) Seismic Intensity in Japanese Scale  
<Area of Seismic Intensity Larger Than and Including 4>  
7: Northern Miyagi Prefecture  
6+: Northern and southern Ibaraki Prefecture  
5+: Sanpachi-Kamikita Aomori Prefecture  
5: Chuetsu, Niigata Prefecture  
<Municipality of Seismic Intensity Larger than and Including 4>  
6+: Naraha Machi, Tomioka Machi, Ookuma-machi, and Futaba-machi, Fukushima Prefecture  
6: Ishinomaki-city and, Onagawa town (by Seismograph of NPP)of , Miyagi Prefecture and Tokaimura, Ibaraki Pref.  
5: Kariwa-village, Niigata Prefecture  
4: Rokkasho-village, Higashidori-village, Aomori Prefecture, Kashiwazaki-city, Niigata Prefecture and Yokosuka-city, Kanagawa Prefecture

1: Tomari-village, Hokkaido

2. The status of operation at Power Stations(Number of automatic shutdown(units): 10 (as of 09:30, March12)

a. Onagawa Nuclear Power Station (Onagawa-machi and Ishinomaki-shi, Miyagi Prefecture)

(1) The status of operation

Unit 1 (524MWe): automatic shutdown

Unit 2 (825MWe): automatic shutdown

Unit 3 (825MWe): automatic shutdown

(2) Readings of monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitor readings: No

(3) Report concerning other malfunction

It is confirmed Smoke in the first basement of the Turbine Building was confirmed the extinguished at 22:55 on March 11th.

b. Fukushima Dai-ichi Nuclear Power Station, Tokyo Electric Power Co.,Inc.(TEPCO)

(Okuma-machi and Futaba-machi, Futaba-gun, Fukushima Prefecture )

(1) The status of operation

Unit 1 (460MWe): automatic shutdown

Unit 2 (784MWe): automatic shutdown

Unit 3 (784MWe): automatic shutdown

Unit 4(784MW): in periodic inspection outage

Unit 5(784MW): in periodic inspection outage

Unit 6(1,100MW): in periodic inspection outage

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Article 10\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ichi, Unit 3)

(\*A heightened alert condition)

Article 15\*\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ichi, Units 1 and 2)

(\*\* Nuclear emergency situation)

Situation of power source to recover water injection function at the Station.

• Cable from electric power generating cars are under connecting work (as of 04:00, March 12)

Pressure in the containment vessel has arisen. Steam release is undertaking in order to relieve pressure.

It was confirmed that radioactivity was increased compared to the one at 04:00, March 12.

From 04:00, March 12 by the measurement of radioactive materials in the surrounding area of the power station using monitoring cars. (As of 07:55, March 12)

MP6 (near the main gate) 0.07microSv/h -5.1 micro Sv/h  
(04:00, March 12->07:40, March 12)

MP8 (near the main gate) 0.07microSv/h ->2.5 micro Sv/h  
(04:00, March 12->07:30, March 12)

## c. Fukushima-Daini Nuclear Power Station (TEPCO)

(Naraha-cho/Tomioka-cho, Futaba-gun, Fukushima pref.)

### (1) The status of operation

Unit1(1,100MW): automatic shutdown

Unit2(1,100MW): automatic shutdown

Unit3(1,100MW): automatic shutdown

Unit4(1,100MW): automatic shutdown

### (2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

### (3) Report concerning other malfunction

Report of fire: No

Article 10\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ni, Units 1,2 and 4)

(\*A heightened alert condition)

Article 15\*\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ni, Units 1,2 and 4)

(\*\*Nuclear emergency situation)

## 3. Action taken by NISA

(March 11)

14:46 Set up of the NISA Emergency Preparedness Headquarters (Tokyo) immediately after the earthquake

15:42: TEPCO reported to NISA in accordance with Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1, 2 and 3.

16:36: TEPCO judged the event in accordance with Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1 and 2.(notified to NISA at 16:45)

18:08: Unit 1 of Fukushima Dai-ichi notified NISA of the situation of the Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

18:33: Units 1, 2 and 4 of Fukushima Dai-ichi notified NISA of the situation of the Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

19:03 : Government declared the state of nuclear emergency

20:50: Fukushima prefecture's emergency preparedness headquarters issued a directive regarding the accident occurred at Fukushima Dai-ichi Nuclear Power Station, TEPCO that the residents living in the area of 2km radius from Unit 1 of the Nuclear Power Station must evacuate.(The population of this area is 1,864)

21:23: Directives from Prime Minister to Governor of Fukushima, Mayor of Oosuma and Mayor of Futaba were issued regarding the accident occurred at Fukushima Dai-ichi Nuclear Power Station, TEPCO, pursuant to Paragraph 3, Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness as follows:

- Residents living in the area of 3km radius from Unit 1 of the Nuclear Power Station must evacuate.

- Residents living in the area of 10km radius from the Unit 1 must take sheltering.

(March 12)

5:22 Unit 1 of Fukushima Dai-ichi notified NISA of the situation of the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

- 
- 5:32 Unit 2 of Fukushima Dai-ni notified NISA of the situation of the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 05:44 Residents living in the area of 10km radius from unit 1 of the Nuclear Power Station must evacuate by the Prime Minister Direction.
- 06:01 Regarding Units 1,2 and 4 of Fukushima Dai-ni NPS, TEPCO reported NISA in accordance with Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 7:45 Directives from Prime Minister to Governor of Fukushima, Mayors of Hirono, Naraha, Tomioka, Ookuma and Futaba were issued regarding the accident occurred at Fukushima-Dai-ni Nuclear Power Station, TEPCO, pursuant to Paragraph 3, Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness as follows:
- Residents living in the area of 3km radius from Fukushima-Dai-ni Nuclear Power Station must evacuate.
  - Residents living in the area of 10km radius from Fukushima-Dai-ni NPS must take sheltering

## Earthquake at Nagano Prefecture

### 1. Summary of Damage(Earthquake at north part of Nagano prefecture)

- (1) Time of Occurrence: 3:59 (UTC 18:59) March 12, 2011, Saturday
- (2) Epicenter: North part of Nagano Prefecture(North Latitude: 37; East Longitude: 138.6), 10km deep, M6.6
- (3) Seismic Intensity in Japanese Scale  
<Area of Seismic Intensity>  
5: Kashiwazaki-city, Niigata prefecture and Kariwa-village, Niigata prefecture.

### 2. Status of operation at Power Stations

a. Kashiwazaki-Kariwa Nuclear Power Station, Tokyo Electric Power Co., Inc.(TEPCO)

#### (1) The status of operation

Unit1(1,100MW): Keep operation  
Unit2(1,100MW): in periodic inspection outage  
Unit3(1,100MW): in periodic inspection outage  
Unit4(1,100MW): in periodic inspection outage  
Unit5(1,356MW): Keep operation  
Unit6(1,356MW): Keep operation  
Unit7(1,356MW): Keep operation

#### (2) Readings of monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitor readings:No

#### (3) Report concerning other malfunction

Report of fire: No

### 3 Industrial Safety

○General Gas

Nagano municipal gas (Nagano city), Joetsu municipal gas, Myouko municipal gas, Ojiya municipal gas, Mitsuke municipal, Kashiwazaki municipal gas, Nagaoka of Hokuriku (Nagaoka city) gas are confirmed there are no supply disruption

Facilities which have confirmed safety will be eliminated from the next press release.

(Contact Person)

Mr. Masaomi Koyama

Deputy Director, International Affairs  
Office, NISA/METI

Phone: +81-(0)3-3501-1087



March 12, 2011

Nuclear and Industrial Safety Agency

Seismic Damage Information(the 12<sup>th</sup> Release)  
(As of 09:30 March 12, 2011)

Nuclear and Industrial Safety Agency (NISA) confirmed the current situation of Higashidori and Onagawa NPSs, Tohoku Electric Power Co., Inc

Higashidori, Fukushima Dai-ichi, Fukushima Dai-ni and Kashiwazaki-Kariwa NPSs, Tokyo Electric Power Co., Inc. and electricity, gas, heat supply and complex as follows:

1. Summary of Damage(Earthquake at Sanriku-Oki)

- (1) Time of Occurrence: 14:46 (UTC 5:46) March 11, 2011, Friday
- (2) Epicenter: Off-Coast of Sanriku (North Latitude: 38° East Longitude: 142.9), 10km deep, M8.8
- (3) Seismic Intensity in Japanese Scale
  - <Area of Seismic Intensity Larger Than and Including 4>
    - 7: Northern Miyagi Prefecture
    - 6+: Northern and southern Ibaraki Prefecture
    - 5+: Sanpachi-Kamikita Aomori Prefecture
    - 5-: Chuetsu, Niigata Prefecture
  - <Municipality of Seismic Intensity Larger than and Including 4>
    - 6+: Naraha Machi, Tomioka Machi, Ookuma-machi, and Futaba-machi, Fukushima Prefecture
    - 6-: Ishinomaki-city and, Onagawa town (by Seismograph of NPP)of , Miyagi Prefecture and Tokaimura, Ibaraki Pref.
    - 5-: Kariwa-village, Niigata Prefecture
    - 4: Rokkasho-village, Higashidori-village, Aomori Prefecture, Kashiwazaki-city, Niigata Prefecture and Yokosuka-city, Kanagawa Prefecture

1: Tomari-village, Hokkaido

2. The status of operation at Power Stations(Number of automatic shutdown(units): 10 (as of 09:30, March12)

a. Onagawa Nuclear Power Station (Onagawa-machi and Ishinomaki-shi, Miyagi Prefecture)

(1) The status of operation

Unit 1 (524MWe): automatic shutdown

Unit 2 (825MWe): automatic shutdown

Unit 3 (825MWe): automatic shutdown

(2) Readings of monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitor readings: No

(3) Report concerning other malfunction

It is confirmed Smoke in the first basement of the Turbine Building was confirmed the extinguished at 22:55 on March 11th.

b. Fukushima Dai-ichi Nuclear Power Station, Tokyo Electric Power Co.,Inc.(TEPCO)

(Okuma-machi and Futaba-machi, Futaba-gun, Fukushima Prefecture)

(1) The status of operation

Unit 1 (460MWe): automatic shutdown

Unit 2 (784MWe): automatic shutdown

Unit 3 (784MWe): automatic shutdown

Unit 4(784MW): in periodic inspection outage

Unit 5(784MW): in periodic inspection outage

Unit 6(1,100MW): in periodic inspection outage

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Article 10\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ichi, Unit 3)

(\*A heightened alert condition)

Article 15\*\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ichi, Units 1 and 2)

(\*\* Nuclear emergency situation)

Situation of power source to recover water injection function at the Station.

-Cable from electric power generating cars are under connecting work(as of 04:00, March 12)

Pressure in the containment vessel has arisen. Steam release is undertaking in order to relieve pressure.

It was confirmed that radioactivity was increased compared to the one at 04:00, March 12.

From 04:00, March 12 by the measurement of radioactive materials in the surrounding area of the power station using monitoring cars. (As of 07:55, March 12)

MP6 (near the main gate) 0.07microSv/h ->5.1 micro Sv/h  
(04:00, March 12->07:40, March 12)

MP8 (near the main gate) 0.07microSv/h ->2.5 micro Sv/h  
(04:00, March 12->07:30, March 12)

c. Fukushima Dai-ichi Nuclear Power Station(TEPCO)

(Naraha-cho/Tomioka-cho, Futaba-gun, Fukushima pref.)

(1) The status of operation

Unit1(1,100MW): automatic shutdown

Unit2(1,100MW): automatic shutdown

Unit3(1,100MW): automatic shutdown

Unit4(1,100MW): automatic shutdown

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Report of fire: No

Article 10\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ichi, Units 1,2 and 4)

(\*A heightened alert condition)

Article 15\*\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ichi, Units 1,2 and 4)

(\*\*Nuclear emergency situation)

## 3. Action taken by NISA

(March 11)

14:46 Set up of the NISA Emergency Preparedness Headquarters (Tokyo) immediately after the earthquake

15:42: TEPCO reported to NISA in accordance with Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1,2 and 3.

16:36: TEPCO judged the event in accordance with Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1 and 2.(notified to NISA at 16:45)

18:08: Unit 1 of Fukushima Dai-ni notified NISA of the situation of the Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

18:33: Units 1,2 and 4 of Fukushima Dai-ni notified NISA of the situation of the Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

19:03 : Government declared the state of nuclear emergency

20:50: Fukushima prefecture's emergency preparedness headquarters issued a directive regarding the accident occurred at Fukushima Dai-ichi Nuclear Power Station, TEPCO that the residents living in the area of 2km radius from Unit 1 of the Nuclear Power Station must evacuate.(The population of this area is 1,864)

21:23: Directives from Prime Minister to Governor of Fukushima, Mayor of Oosuma and Mayor of Futaba were issued regarding the accident occurred at Fukushima Dai-ichi Nuclear Power Station, TEPCO, pursuant to Paragraph 3, Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness as follows:

- Residents living in the area of 3km radius from Unit 1 of the Nuclear Power Station must evacuate.

- Residents living in the area of 10km radius from the Unit 1 must take sheltering.

(March 12)

5:22 Unit 1 of Fukushima Dai-ni notified NISA of the situation of the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

- 5:32 Unit 2 of Fukushima Dai-ni notified NISA of the situation of the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 05:44 Residents living in the area of 10km radius from unit 1 of the Nuclear Power Station must evacuate by the Prime Minister Direction.
- 06:01 Regarding Units 1,2 and 4 of Fukushima Dai-ni NPS, TEPCO reported NISA in accordance with Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 7:45 Directives from Prime Minister to Governor of Fukushima, Mayors of Hirono, Naraha, Tomioka, Ookuma and Futaba were issued regarding the accident occurred at Fukushima-Dai-ni Nuclear Power Station, TEPCO. pursuant to Paragraph 3, Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness as follows:
- Residents living in the area of 3km radius from Fukushima-Dai-ni Nuclear Power Station must evacuate.
  - Residents living in the area of 10km radius from Fukushima-Dai-ni NPS must take sheltering

## Earthquake at Nagano Prefecture

### 1. Summary of Damage(Earthquake at north part of Nagano prefecture)

- (1) Time of Occurrence: 3:59 (UTC 18:59) March 12, 2011, Saturday
- (2) Epicenter: North part of Nagano Prefecture(North Latitude: 37; East Longitude: 138.6), 10km deep, M6.6
- (3) Seismic Intensity in Japanese Scale  
<Area of Seismic Intensity>  
5-: Kashiwazaki-city, Niigata prefecture and Kariwa-village, Niigata prefecture.

### 2. Status of operation at Power Stations

a. Kashiwazaki-Kariwa Nuclear Power Station, Tokyo Electric Power Co., Inc.(TEPCO)

#### (1) The status of operation

Unit1(1,100MW): Keep operation  
Unit2(1,100MW): in periodic inspection outage  
Unit3(1,100MW): in periodic inspection outage  
Unit4(1,100MW): in periodic inspection outage  
Unit5(1,356MW): Keep operation  
Unit6(1,356MW): Keep operation  
Unit7(1,356MW): Keep operation

#### (2) Readings of monitoring post etc.

Variation in the monitoring post readings: No  
Variation in the main stack monitor readings:No

#### (3) Report concerning other malfunction

Report of fire: No

### 3 Industrial Safety

oGeneral Gas

Nagano municipal gas (Nagano city), Joetsu municipal gas, Myouko municipal gas, Ojiya municipal gas, Mitsuke municipal, Kashiwazaki municipal gas, Nagaoka of Hokuriku (Nagaoka city) gas are confirmed there are no supply disruption

Facilities which have confirmed safety will be eliminated from the next press release.

(Contact Person)

Mr. Masaomi Koyama

Deputy Director, International Affairs  
Office, NISA/METI

Phone: +81-(0)3-3501-1087



March 12, 2011

Nuclear and Industrial Safety Agency

Seismic Damage Information(the 10<sup>th</sup> Release)  
(As of 4:30 March 12, 2011)

Nuclear and Industrial Safety Agency (NISA) confirmed the current situation of Higashidori and Onagawa NPSs, Tohoku Electric Power Co., Inc

Higashidori, Fukushima Dai-ichi, Fukushima Dai-ni and Kashiwazaki-Kariwa NPSs, Tokyo Electric Power Co., Inc. and electricity, gas, heat supply and complex as follows:

1. Summary of Damage(Earthquake at Sanriku-Okii)

(1) Time of Occurrence: 14:46 (UTC 5:46) March 11, 2011, Friday

(2) Epicenter: Off-Coast of Sanriku (North Latitude: 38; East Longitude: 142.9), 10km deep, M8.8

(3) Seismic Intensity in Japanese Scale

<Area of Seismic Intensity Larger Than and Including 4>

7: Northern Miyagi Prefecture

6+: Northern and southern Ibaraki Prefecture

5+: Sanpachi-Kamikita Aomori Prefecture

5-: Chuetsu, Niigata Prefecture

<Municipality of Seismic Intensity Larger than and Including 4>

6+: Naraha Machi, Tomioka Machi, Ookuma-machi, and Futaba-machi, Fukushima Prefecture

6-: Ishinomaki-city and, Onagawa town (by Seismograph of NPP)of , Miyagi Prefecture and Tokaimura, Ibaraki Pref.

5-: Kariwa-village, Niigata Prefecture

4: Rokkasho-village, Higashidori-village, Aomori Prefecture, Kashiwazaki-city, Niigata Prefecture and Yokosuka-city, Kanagawa Prefecture

## 1. Tomari-village, Hokkaido

1. The status of operation at Power Stations(Number of automatic shutdown(units): 10 (as of 03:30, March12)

a. Onagawa Nuclear Power Station (Onagawa-machi and Ishinomaki-shi, Miyagi Prefecture)

(1) The status of operation

Unit 1 (524MWe): automatic shutdown

Unit 2 (825MWe): automatic shutdown

Unit 3 (825MWe): automatic shutdown

(2) Readings of monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitor readings: No

(3) Report concerning other malfunction

Report of fire: CO2 extinguishment started at 17:15

b. Fukushima Dai-ichi Nuclear Power Station, Tokyo Electric Power Co.,Inc.(TEPCO)

(Okuma-machi and Futaba-machi, Futaba-gun, Fukushima Prefecture)

(1) The status of operation

Unit 1 (460MWe): automatic shutdown

Unit 2 (784MWe): automatic shutdown

Unit 3 (784MWe): automatic shutdown

Unit 4(784MW): in periodic inspection outage

Unit 5(784MW): in periodic inspection outage

Unit 6(1,100MW): in periodic inspection outage

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Article 10\* of Act on Special Measures Concerning Nuclear Emergency Preparedness (Fukushima Dai-ichi, Unit 3)

(\*A heightened alert condition)

Article 15\*\* of Act on Special Measures Concerning Nuclear Emergency Preparedness (Fukushima Dai-ichi, Units 1 and 2)

(\*\* Nuclear emergency situation)

Situation of power source to recover water injection function at the Station.  
-Cable from electric power source cars are under connecting work(as of 04:00,  
March 12)  
Pressure in the Confinement Vessel has arisen. The pressure could have  
arisen to 840kPa as compared to the design pressure of 400kPa.

c. Fukushima-Daini Nuclear Power Station(TEPCO)  
(Naraha-cho/Tomioka-cho, Futaba-gun, Fukushima pref.)

(1) The status of operation

Unit1(1,100MW): automatic shutdown

Unit2(1,100MW): automatic shutdown

Unit3(1,100MW): automatic shutdown

Unit4(1,100MW): automatic shutdown

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Report of fire: No

Article 10\* of Act on Special Measures Concerning Nuclear Emergency

Preparedness (Fukushima Dai-ni, Units 1,2 and 4)

(\*A heightened alert condition)

### 3. Industrial Safety

#### oElectricity

\* Tokyo Electric Power Co. (as of 04:19, March 12, 2011)

Scale of loss of electrical power: 1,540 thousand houses

Power loss area:

Gunma Pref.: Oizumi-machi, Tatebayashi-cho

Ibaraki Pref.: Whole area,

Tochigi Pref.: Whole area of eastern part, Utsunomiya-shi, Ashikaga-shi,  
Sano-shi,

Chiba Pref.: Katori-shi, Yachimata-shi, Yamatake-shi

Saitama Pref.: Konosu-shi, Gyoda-shi

Yamanashi Pref.: Hokuto-shi, Fuji Yoshida-shi

\* Tohoku Electric Power Co. (as of 22:00, March 11, 2011)

Scale of loss of electrical power: approx.4,400 thousand houses  
Power loss area:

Aomori Pref.: Whole area  
Iwate Pref.: Whole area,  
Akita Pref: Whole area  
Miyagi Pref: whole area  
Yamagata Pref: Almost whole area  
Fukushima Pref: Some area

\* Hokkaido Electric Power Co. (as of 20:00, March 11, 2011)

Scale of loss of electrical power:560 houses, maximum number:  
approx:3,000 as of 19:00

\*Chubu Electric Power Co. (as of 22:50, March 11, 2011)

Scale of loss of electrical power: 30 houses(Nagano prefecture).

○General Gas(as of 03:00, March 12)

The Japan Gas Association is preparing to dispatch an advance unit to  
Sendai-shi upon request from Sendai-shi.

Sendai-city municipal Gas, Kesennuma-city municipal Gas, Ishimaki Gas  
have trouble contacting.The Japan Gas Association  
confirmed that there are no supply disruption in the supply area of city gas  
in Hokkaido, Aomori, Yamagata, and Akita prefecture.

\* Tokyo Gas Co.

Hitachi branch: 30,008 houses are in supply disruption. There is no damage  
in equipment, however, equipment is inoperable due to loss of power.  
Walkdown unit of eight person departed at 18:30, March11. Time of recovery  
is not certain.

Inspection teams were dispatched to this area.

-time of restoration(not certain)

Eastern part of Joso: 453 houses were in supply disruption in Ushiku (supply  
restarted at 17:10, March11)

471 houses were in supply disruption in  
Ushiku-kariya cho(supply restarted at 22:36

March 11)

77 houses are in supply disruption in  
Ryuugasaki(supply restarted at 16:20, March 11)

40 houses are in supply disruption in Nishi-ku,  
Yokohama-shi(supply restarted at 17:29, March 11)

Gas leaked from a Nozzle of an LNG tank at Sodegaura but no  
ignition(supply restarted at 17:29, March 11)

Gas Bureau of Sendai-shi: whole supply disruption (approx.360 thousand  
houses)

\*Shiogama Gas Co.: 12,000 houses are in supply disruption

\*Kamaishi Gas Co.: 10,000 houses are in supply disruption. First floor of this  
Gas facility sank.

\*Hatano Gas Co.: 330 houses are in supply disruption

\*Keiyo Gas Co.: Leakage occurred at 5 locations of middle pressure conduit

Leakage occurred at many parts of Low pressure conduits

2,377 houses are in supply disruption.

Supply is disrupted in Yachio-shi

\*Kuju Kurityo Gas Co: Approx 258 houses are in supply disruption.

\*Atsugi Gas Co: leakage occurred at 1 location of middle pressure conduit.

\*Fukushima Gas Co.: Approx 2,726 houses are in supply disruption(which  
are equal to a quarter of whole customer in this region)

\*Tohoku Gas(part of Shirakawa-shi): 300 houses are in supply disruption

\*Tokiwa Kyodo Gas(Iwaki-shi): 15,000 houses are in supply disruption

\*Tobu Gas(Tsuchiura-shi): 7,500 houses are in supply disruption

\*Tosai Gas(Kasukabe-shi) Gas leakage occurred from conduit. 150 houses in  
apartment are in supply disruption

\*Odawara Gas(Odawara-shi)

leakage occurred at 1 locations of low pressure branch conduit and 3 locations  
of ex-core inner conduit and has restored at 21:30 11 March. Other areas are  
under investigation.

oCommunity Gas(as of 03:00, March 12)

Severe damage has not been reported to Japan Community Gas Association  
so far. No information is available about the damage in North part of Ibaraki  
prefecture.

\*Tokyo Gas energy(North part of Ibaraki): Factory stopped supply to 943 houses in Nakago-New Town due to the leakage from pipe.

\*Sato Gas (based in Iwatsuki-ku, Saitama City) Iwatsuki-housing complex: Gas leakage occurred from conduit. Factory stopped the supply. Currently gas is temporarily supplied by gas cylinder to 451 sites.

\*Syutoken Gas(based in Sakura City) Chitose-housing complex:1,320 houses are in supply disruption

\*Kashima Marui Gas(Kamisu-shi): 527 houses are in supply disruption. time of recovery is not certain.

\*Imaichi Gas: Gas leakage occurred from conduit at the simple gas complex in Nikko-shi: 240 houses were in gas supply disruption.

\*Nihon Gas: Gas leakage occurred from conduit at simple gas complex in the jurisdiction: 76 houses in Nasu-karasuyama-shi, 97 houses in Inashiki-shi, 594 houses in Tokai-mura, Natsugun,370 houses in Yita-shi, and 3299 houses in Itako-shi were in gas supply disruption.

These areas othan than Itako-shi will be restored on March 12. It will take long before restoration in Hinode housing complex in Itako-shi due to soil liquefaction. 212 houses in Noda-shi were in gas supply disruption. This area was restored in March 11.

oGas conduit Operators(as of 03:00, March12)

\*JX Nikko Nisseki Energy: Hachinohe LNG Station

Premise, electric room and in-house electricity generator equipment, were flooded by the 2<sup>nd</sup> wave of tsunami and the gas supply was stopped.

oHeat supply(as of 00:00)

\*Yamagata Netsu Kyokyu(Yamagata-shi): Stopped heat supply

\*"HITACHI NETSU ENERGY"(Hitachi City): stopped heat supply due to the electrical outage at 15:19, March11.

\*"CHIBA NETSU KYOKYU"(Chiba-city): stopped freezer, etc. at 16:19, March 11. Supply was stopped and walkdown is conducted at 16:19, March 11.

\*"NISHI-IKEBUKURO NETSU KYOKYU": stopped freezer and boiler at 15:45, March 11.

\*"TOKYO NETSU KYOKYU";

-stopped boiler in Takeshiba and Yurakutyo areas at 15:20, March 11

-stopped supply to one of the building complex at Hikarigaoka for approx. 3 hours due to the leakage of pipe at 21:35, March 11

\*"Yokohama Business Park NETSU KYOKYU (Hodogaya-ku, Yokohama city)

15:50 Stopped steam and cold water supply to PREZZO building

16:20 recovered by temporary repair

○Complex

\*Cosmo Oil factory Chiba branch

A column of Butane Butylene storage was broken. Fire occurred due to gas leakage. One person suffered serious injury, 2 persons suffered minor injury.

\*JX Nippon Oil&Energy Corporation Sendai oil factory(sendai-city, Miyagi prefecture)

-Fire occurred from explosion of low temperature LPG tank(as of 22:40, March 11)

4. Action taken by NISA

14:46 Set up of the NISA Emergency Preparedness Headquarters (Tokyo) immediately after the earthquake

15:42: TEPCO reported to NISA in accordance with Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1,2 and 3.

16:36: TEPCO judged the event in accordance with Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1 and 2.(notified to NISA at 16:45)

18:08: Unit 1 of Fukushima Dai-ichi notified NISA of the situation of the Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

18:33: Units 1,2 and 4 of Fukushima Dai-ichi notified NISA of the situation of the Article 10 of Act on Special Measures Concerning Nuclear Emergency



## Preparedness.

19:03 : Government declared the state of nuclear emergency

20:50: Fukushima prefecture's emergency preparedness headquarters - issued a directive regarding the accident occurred at Fukushima-Dai-ichi Nuclear Power Station, TEPCO that the residents living in the area of 2km radius from Unit 1 of the Nuclear Power Station must be evacuate.

21:23: Directives from Prime Minister to Governor of Fukushima, Mayor of Ooka and Mayor of Futaba were issued regarding the accident occurred at Fukushima-Dai-ichi Nuclear Power Station, TEPCO, pursuant to Paragraph 3, Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness as follows:

- Residents living in the area of 3km radius from Unit 1 of the Nuclear Power Station must evacuate.

- Residents living in the area of 10km radius from the Unit 1 must take sheltering.

## 2. Summary of Damage(Earthquake at Nagano prefecture)

- (1) Time of Occurrence: 3:59 (UTC 18:59) March 12, 2011, Friday
- (2) Epicenter: North part of Nagano Prefecture(North Latitude: 37; East Longitude: 138.6), 10km deep, M6.6
- (3) Seismic Intensity in Japanese Scale  
<Area of Seismic Intensity>  
5: Kashiwazaki-shi, Niigata prefecture and Kariha-village, Niigata prefecture.

### 1. Status of operation at Power Stations(NumNumber of automatic shutdown(units):10 (as of 3:30, March 12)

#### a. Kashiwazaki-Kariha Nuclear Power Station, Tokyo Electric Power Co., Inc.(TEPCO)

##### (1) The status of operation

- Unit1(1,100MW): Keep operation
- Unit2(1,100MW): in periodic inspection outage
- Unit3(1,100MW): in periodic inspection outage
- Unit4(1,100MW): in periodic inspection outage
- Unit5(1,356MW): Keep operation
- Unit6(1,356MW): Keep operation

##### (2) Readings of monitoring post etc.

- Variation in the monitoring post readings: No
- Variation in the main stack monitor readings:No

##### (3) Report concerning other malfunction

- Report of fire: No

# News Release

Facilities which have confirmed safety will be eliminated from the next press release.

(Contact Person)

Mr. Masaomi Koyama

Deputy Director, International Affairs

Office, NISA/METI

Phone: +81-(0)3-3501-1087

## Frazier, Alan

---

From: Frazier, Alan  
Sent: Saturday, March 12, 2011 3:19 PM  
To: Brock, Kathryn; Andersen, James  
Cc: Weber, Michael; Bowman, Gregory  
Subject: RE: Mon and Tues

I relieved Margie supporting the ET at 11am. Greg is going to relieve me at 11pm.

Margie is on travel starting Monday, so right now the rotation is Greg and I through Tuesday unless we need to change that.

Jim Trapp is on his way to Japan and Nathan is taking some shifts as well (as a liaison) so he is not available either. We could also call in others: Witlick? Jesse?, who else??

---

From: Brock, Kathryn  
Sent: Saturday, March 12, 2011 3:06 PM  
To: Frazier, Alan; Andersen, James  
Cc: Weber, Michael; Bowman, Gregory  
Subject: Mon and Tues

Hello. I was asked to report to the Ops Center Mon and Tues from 7:00-3:00 to support the Japan situation. Alan...will you be around to cover FSME?

Sent from my NRC Blackberry

(b)(6)

0000/15

**Matakas, Gina**

---

**From:** LIA07 Hoc  
**Sent:** Saturday, March 12, 2011 6:41 PM  
**To:** Hipschman, Thomas; Marshall, Michael; Batkin, Joshua; Castleman, Patrick; Snodderly, Michael; Orders, William; Bubar, Patrice; Franovich, Mike; Wittick, Brian; Andersen, James; Trapp, James; (b)(6); Leeds, Eric; Brenner, Eliot; Miller, Charles; Wiggins, Jim; Johnson, Michael; Sheron, Brian; Schmidt, Rebecca; Haney, Catherine; Pace, Patti; Sosa, Belkys; Nieh, Ho; Sharkey, Jeffry; Harrington, Holly; Jaczko, Gregory; Coggins, Angela; Loyd, Susan; Monninger, John; Pearson, Laura; Warren, Roberta; Dean, Bill; McCree, Victor; Satonius, Mark; Collins, Elmo; Miller, Chris; Anderson, Joseph; Kahler, Robert; Williams, Kevin; McNamara, Nancy; Tift, Doug; Trojanowski, Robert; Woodruff, Gena; Logaras, Haral; Barker, Allan; Droggitis, Spiros; Decker, David; (b)(6); Maier, Bill; Howell, Linda; Dorman, Dan; McDermott, Brian; Quinn, Vanessa; Ralston, Michelle; albert.coons@dhs.gov; Sherwood, Harry; james.kish@dhs.gov; seamus.o'boyle@dhs.gov; timothy.greten@dhs.gov; (b)(6); (b)(6); cmc-01@dot.gov; peter.lyons@hq.doe.gov; (b)(6); veal.lee@epa.gov; poppell.sam@epa.gov; (b)(6); hss.soc@hhs.gov; Berkey, Johanna; Burnside, Conrad; Calhoun, Nan; Colman, Steve; Feighert, Dan; Hammond, Lisa; Hammons, Darrell; Hlavaty-Laposa, Jan; King, William; McCabe, Ron; Thomson, Rebecca; Webb, William L; Horwitz, Steve; (b)(6)  
**Cc:** HOO Hoc  
**Subject:** 1830 EST (March 12, 2011) USNRC Earthquake/Tsunami SitRep  
**Attachments:** USNRC Earthquake-Tsunami Update.031211.1830EST.docx

Attached, please find a 1830 EST situation report from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami on March 12, 2011.

Please note that this information is "Official Use Only" and is only being shared within the federal family.

Please call the Headquarters Operations Officer at 301-816-5100 with questions.

-Sara

Sara K. Mroz  
Communications and Outreach  
Office of Nuclear Security and Incident Response  
US Nuclear Regulatory Commission  
[sara.mroz@nrc.gov](mailto:sara.mroz@nrc.gov)  
[LIA07.HOC@nrc.gov](mailto:LIA07.HOC@nrc.gov) (Operations Center)

0000/14

**Wittick, Brian**

---

**From:** Wittick, Brian  
**Sent:** Wednesday, April 13, 2011 6:17 PM  
**To:** 'Sandra.Sloan@areva.com'  
**Cc:** 'Thomas.Stevens@areva.com'; 'Thomas.Sliva@areva.com'  
**Subject:** Re: AREVA Contact

Sandra

Thank you for your assistance and the contact information.

Tom

If you are at the 1100 NISA/TEPCO meeting today I would like to meet you.

Kind regards  
Brian

Sent from NRC BlackBerry  
Brian Wittick

(b)(6)

---

**From:** SLOAN Sandra (AREVA) <[Sandra.Sloan@areva.com](mailto:Sandra.Sloan@areva.com)>  
**To:** Wittick, Brian  
**Cc:** STEVENS Thomas (AREVA) <[Thomas.Stevens@areva.com](mailto:Thomas.Stevens@areva.com)>; SLIVA Thomas (AREVA) <[Thomas.Sliva@areva.com](mailto:Thomas.Sliva@areva.com)>  
**Sent:** Wed Apr 13 17:35:13 2011  
**Subject:** AREVA Contact

Brian,

Mr. Tom Stevens is the appropriate AREVA point of contact for the NRC regarding AREVA activities in Japan. Mr. Stevens is currently in Japan and can be reached at his cell phone number of (b)(6) or via email at [thomas.stevens@areva.com](mailto:thomas.stevens@areva.com).

By the way, yesterday at a government briefing Mr. Stevens met a member of the NRC team, Mr. Blamey, and gave him a business card. (I hope I got the spelling right on Mr. Blamey's name.)

Regards,  
Sandra

0000/17

---

**From:** Steinhurst, Laurel A CIV SEA 08 NR  
**Sent:** Sunday, April 03, 2011 4:59 PM  
**To:** RST03 Hoc  
**Subject:** RE: fax

(b)(6)

I will convey no OBE. Radcon may call you for clarification because it is not immediately clear to them.

-----Original Message-----

**From:** RST03 Hoc [mailto:RST03.Hoc@nrc.gov]  
**Sent:** Sunday, April 03, 2011 4:56 PM  
**To:** Steinhurst, Laurel A CIV SEA 08 NR  
**Subject:** RE: fax

No action by you required. But I don't think it is OBE.

-----Original Message-----

**From:** Steinhurst, Laurel A CIV SEA 08 NR [mailto:  
**Sent:** Sunday, April 03, 2011 4:52 PM  
**To:** RST03 Hoc  
**Subject:** RE: fax

(b)(6)

Yes - Radcon table has the fax which is from March 23d and overcome by events it seems. Do I need to better understand what this exchange is about and aid in resolution? Or is direct contact of the radcon folk with you sufficient?

Laurel

-----Original Message-----

**From:** RST03 Hoc [mailto:RST03.Hoc@nrc.gov]  
**Sent:** Sunday, April 03, 2011 4:50 PM  
**To:** RST03 Hoc; Steinhurst, Laurel A CIV SEA 08 NR  
**Subject:** RE: fax

Checking: Did you get this doc to them-they didn't have it as of about 15 minutes ago.

**From:** RST03 Hoc  
**Sent:** Sunday, April 03, 2011 3:23 PM  
**To:** 'Steinhurst, Laurel A CIV SEA 08 NR'  
**Subject:** FW: fax

Pls fwd to radcon table. --TGV

0000 / 18



From: Hoc, PMT12  
Sent: Sunday, April 03, 2011 3:16 PM  
To: RST03 Hoc  
Subject: FW: fax

As requested. The HOOs had the faxes stored electronically

Tim

PMT, PAAD

From: HOO Hoc  
Sent: Sunday, April 03, 2011 3:08 PM  
To: HOO Hoc  
Subject: fax

Headquarters Operations Officer

U.S. Nuclear Regulatory Commission

Phone: 301-816-5100

Fax: 301-816-5151

email: [hoo.hoc@nrc.gov](mailto:hoo.hoc@nrc.gov)

secure e-mail: [hoo@nrc.sgov.gov](mailto:hoo@nrc.sgov.gov)

color NRC seal

---

**From:** LIA04 Hoc  
**Sent:** Sunday, March 13, 2011 1:07 AM  
**To:** Hayden, Elizabeth  
**Subject:** RE: Q&As FOR STATES

Thanks – we incorporated the edit and am running it past Mike

---

**From:** Hayden, Elizabeth  
**Sent:** Sunday, March 13, 2011 12:46 AM  
**To:** LIA04 Hoc  
**Subject:** RE: Q&As FOR STATES

I would run them by Mike Weber. Also, I would suggest holding off sending these to states until the White House statement comes out tomorrow morning. See one more edit below.

---

**From:** LIA04 Hoc  
**Sent:** Sunday, March 13, 2011 12:37 AM  
**To:** Hayden, Elizabeth; Harrington, Holly  
**Cc:** Turtill, Richard; Thaggard, Mark; Blount, Tom; LIA06 Hoc  
**Subject:** FW: Q&As FOR STATES

Ladies – The info below has been revised to include OPA and ET edits. Do we need to get the Chairman's blessing before sending to the NRC Regional State Liaison Officers for dissemination to the Governor-appointed State Liaison Officers?

---

**From:** LIA08 Hoc  
**Sent:** Sunday, March 13, 2011 12:31 AM  
**To:** LIA04 Hoc  
**Subject:** Q&As FOR STATES

The State Liaison Team, in conjunction with OPA and other NRC Team members, developed the information below using NRC press releases as a means to provide Governor-appointed State Liaison Officers talking points they can use to address questions from their citizenry. We would appreciate the ET's review and permission to share the info below with the NRC Regional State Liaison Officers for dissemination to the Governor-appointed State Liaison Officers. Thanks much.

---

**Q&A:**

**Q.** What is the radiological consequence of the event in Japan for the U.S.?

**A.** At this time, there is no indication ~~whatsoever~~ that materials from the incidents in Japan have the potential to have any meaningful health effect on the U.S.

**Q.** Are there any protective measures that residents in the U.S. should be considering?

**A.** No, not given current information.

**Q.** What is the Federal family, i.e., NRC-EPA-DOE, doing to monitor the radiological consequence of the event in Japan on the United States?

A. The NRC is coordinating its actions with other Federal agencies as part of the U.S. government response. The NRC is examining all available information as part of the effort to analyze the event and understand its implications both for Japan and the United States.

U.S. nuclear power plants have sensitive equipment to monitor the status of radiological conditions. Additionally, personnel at nuclear power plants have specific knowledge in radiological field monitoring techniques and could assist State and Federal personnel in environmental sampling activities, should that be necessary to evaluate public health and safety concerns.

EPA has permanent stationary radiological monitoring stations on the West coast. In the event of a confirmed radiological release with a potential to impact the U.S., EPA is the Federal agency responsible for radiological monitoring. DOE would be responsible for aerial monitoring, should there be a confirmed radiological release.

**Non-Public Info For States Only:** Questions about any radiological impact on the U.S. West coast is Adora Andy, the Deputy Associate Administrator for EPA's Office of External Affairs; cell is (b)(6), email [andy.adora@epa.gov](mailto:andy.adora@epa.gov)

#### **Key Messages:**

The NRC is coordinating its actions with other Federal agencies as part of the U.S. government response. The NRC is examining all available information as part of the effort to analyze the event and understand its implications both for Japan and the United States. The NRC's headquarters Operations Center in Rockville, MD has been stood up since the beginning of the emergency in Japan and is operating on a 24-hour basis.

NRC officials in Rockville, MD have spoken with the agency's counterpart in Japan and offered the assistance of U.S. technical experts. Two officials from NRC with expertise in boiling water nuclear reactors have deployed to Japan as part of a U.S. International Agency for International Development (USAID) team. USAID is the federal government agency primarily responsible for providing assistance to countries recovering from disaster administering.

U.S. nuclear power plants are built to withstand environmental hazards, including earthquakes and tsunamis. Even those plants that are located outside of areas with extensive seismic activity are designed for safety in the event of such a natural disaster. The NRC requires that safety-significant structures, systems, and components be designed to take into account the most severe natural phenomena historically estimated for the site and surrounding area.

The NRC will not provide information on the status of Japan's nuclear power plants. See NRC's web site at [www.nrc.gov](http://www.nrc.gov) or blog at <http://public-blog.nrc-gateway.gov> for the latest information on NRC actions.

For background information on generic operations at a boiling-water reactor, including an animated graphic, visit the NRC's website at [www.nrc.gov](http://www.nrc.gov)

#### **Other sources of information:**

USAID -- [www.usaid.gov](http://www.usaid.gov)

U.S. Dept. of State -- [www.state.gov](http://www.state.gov)

FEMA -- [www.fema.gov](http://www.fema.gov)

White House -- [www.whitehouse.gov](http://www.whitehouse.gov)

Nuclear Energy Institute -- [www.nei.org](http://www.nei.org)

International Atomic Energy Agency -- [www.iaea.org/press](http://www.iaea.org/press)

---

**Subject:** FW. Q&As FOR STATES

---

**From:** LIA04 Hoc  
**Sent:** Sunday, March 13, 2011 12:53 AM  
**To:** LIA09 Hoc  
**Subject:** RE: Q&As FOR STATES

---

**From:** LIA08 Hoc  
**Sent:** Sunday, March 13, 2011 12:31 AM  
**To:** LIA04 Hoc  
**Subject:** Q&As FOR STATES

The State Liaison Team, in conjunction with OPA and other NRC Team members, developed the information below using NRC press releases as a means to provide Governor-appointed State Liaison Officers talking points they can use to address questions from their citizenry. We would appreciate the ET's review and permission to share the info below with the NRC Regional State Liaison Officers for dissemination to the Governor-appointed State Liaison Officers. Thanks much.

~~~~~  
**Q&A:**

**Q.** What is the radiological consequence of the event in Japan for the U.S.?

**A.** At this time, there is no indication that materials from the incidents in Japan have the potential to have any meaningful health effect on the U.S.

**Q.** Are there any protective measures that residents in the U.S. should be considering?

**A.** No, not given current information.

**Q.** What is the Federal family, i.e., NRC-EPA-DOE, doing to monitor the radiological consequence of the event in Japan on the United States ?

**A.** The NRC is coordinating its actions with other Federal agencies as part of the U.S. government response. The NRC is examining all available information as part of the effort to analyze the event and understand its implications both for Japan and the United States.

U.S. nuclear power plants have sensitive equipment to monitor the status of radiological conditions. Additionally, personnel at nuclear power plants have specific knowledge in radiological field monitoring techniques and could assist State and Federal personnel in environmental sampling activities, should that be necessary to evaluate public health and safety concerns.

EPA has permanent stationary radiological monitoring stations on the West coast. In the event of a confirmed radiological release with a potential to impact the U.S., EPA is the Federal agency responsible for radiological monitoring. DOE would be responsible for aerial monitoring, should there be a confirmed radiological release.

**Non-Public Info For States Only:** Questions about any radiological impact on the U.S. West coast is Adora Andy, the Deputy Associate Administrator for EPA's Office of External Affairs: cell is (b)(6) email [andy.adora@epa.gov](mailto:andy.adora@epa.gov)

**Key Messages:**

The NRC is coordinating its actions with other Federal agencies as part of the U.S. government response. The NRC is examining all available information as part of the effort to analyze the event and understand its implications both for Japan and the United States. The NRC's headquarters Operations Center in Rockville, MD has been stood up since the beginning of the emergency in Japan and is operating on a 24-hour basis.

NRC officials in Rockville, MD have spoken with the agency's counterpart in Japan and offered the assistance of U.S. technical experts. Two officials from NRC with expertise in boiling water nuclear reactors have deployed to Japan as part of a U.S. International Agency for International Development (USAID) team. USAID is the federal government agency primarily responsible for providing assistance to countries recovering from disaster administering.

U.S. nuclear power plants are built to withstand environmental hazards, including earthquakes and tsunamis. Even those plants that are located outside of areas with extensive seismic activity are designed for safety in the event of such a natural disaster. The NRC requires that safety-significant structures, systems, and components be designed to take into account the most severe natural phenomena historically estimated for the site and surrounding area.

The NRC will not provide information on the status of Japan's nuclear power plants. See NRC's web site at [www.nrc.gov](http://www.nrc.gov) or blog at <http://public-blog.nrc-gateway.gov> for the latest information on NRC actions.

For background information on generic operations at a boiling-water reactor, including an animated graphic, visit the NRC's website at [www.nrc.gov](http://www.nrc.gov)

**Other sources of information:**

USAID -- [www.usaid.gov](http://www.usaid.gov)

U.S. Dept. of State -- [www.state.gov](http://www.state.gov)

FEMA -- [www.fema.gov](http://www.fema.gov)

White House -- [www.whitehouse.gov](http://www.whitehouse.gov)

Nuclear Energy Institute -- [www.nei.org](http://www.nei.org)

International Atomic Energy Agency -- [www.iaea.org/press](http://www.iaea.org/press)

Date:

**Taylor, Renee**

---

**From:** Borchardt, Bill  
**Sent:** Sunday, March 13, 2011 8:45 AM  
**To:** Virgilio, Martin  
**Subject:** Status

Good morning Marty. If you have a moment please give me a call on my BB  
Bill Borchardt  
Via blackberry

(b)(6)

0000/20

**From:** Calma, Neil R <CalmaNR@state.gov>  
**Sent:** Sunday, March 13, 2011 12:02 PM  
**To:** LIA03 Hoc; Betz, Travis; Ulses, Anthony; Sink, Amy (BFS); Berger, William; [REDACTED] Tokyo, DAO  
**Cc:** Beed, John A; LIA02 Hoc; LIA06 Hoc; Cherry, Ronald C  
**Subject:** RE: URGENT: Tony's travel

ALCON,

DAO Tokyo got in touch with Mr Ulses, currently at Misawa AB, earlier and told him that Capt Corbett from Yokota AB will contact him. Capt Corbett is in charge of Special Projects, Yokota AB, and works for Brig Gen W. Black Crowe, USFJ Deputy Commander.

Per phone conversation with Capt Corbett, he's been in touch with Mr. Ulses and is working the issue. He will keep us posted.

Thanks.

V/r

NEIL CALMA, MSgt, USAF

Operations NCO

Defense Attaché Office

U.S. Embassy Tokyo, Japan

Office Phone DSN: 315-224-5387

Fax DSN: 315-224-5972

Cell: [REDACTED] (b)(6)

UNCLASS: CalmaNR@state.gov

SIPR: [REDACTED] (b)(6)

This email is UNCLASSIFIED

-----Original Message-----

**From:** LIA03 Hoc [mailto:LIA03.Hoc@nrc.gov]

**Sent:** Monday, March 14, 2011 12:30 AM

**To:** Betz, Travis; Ulses, Anthony; Sink, Amy (BFS); Berger, William; [REDACTED] Tokyo, DAO

**Cc:** Beed, John A

**Subject:** RE: URGENT: Tony's travel

I spoke with USEmb Tokyo and they are working on it.

-----Original Message-----

**From:** Betz, Travis [mailto:Tbetz@ofda.gov]

**Sent:** Sunday, March 13, 2011 11:20 AM

**To:** Ulses, Anthony; Sink, Amy (BFS) [USAID]; Berger, William; LIA03 Hoc

**Cc:** beedja@state.gov

**Subject:** Re: URGENT: Tony's travel

USAF is still in need of email authorisation for Tony.

Any movement on this?

Please send email to:

(b)(6)

----- Original Message -----

From: Ulses, Anthony <Anthony.Ulses@nrc.gov>  
To: Betz, Travis; Sink, Amy (BFS) [USAID]; Berger, William; LIA03 Hoc <LIA03.Hoc@nrc.gov>  
Cc: 'beedja@state.gov' <beedja@state.gov>  
Sent: Sun Mar 13 10:50:30 2011  
Subject: Re: URGENT: Tony's travel

Anthony Patrick Ulses

(b)(6)

Sent from NRC BlackBerry

Anthony Ulses

(b)(6)

----- Original Message -----

From: Betz, Travis <Tbetz@ofda.gov>  
To: Sink, Amy (BFS) [USAID] <asink@usaid.gov>; Berger, William <wberger@ofda.gov>; Ulses, Anthony  
Cc: beedja@state.gov <beedja@state.gov>  
Sent: Sun Mar 13 10:47:46 2011  
Subject: Re: URGENT: Tony's travel

Tony,

Please reply to all with your SSN and full name.

Travis

----- Original Message -----

From: Sink, Amy (BFS) <asink@usaid.gov>  
To: Betz, Travis; Berger, William  
Cc: Beed, John A <beedja@state.gov>  
Sent: Sun Mar 13 10:44:40 2011  
Subject: URGENT: Tony's travel

Travis, we just left the embassy, but have copied John who was with the DOE team when we left.

Can you send his soc as I don't think we have it.

John-can you please work this and confirm for all?

Thanks,

Amy

----- Original Message -----

From: Betz, Travis <Tbetz@ofda.gov>  
To: Sink, Amy (BFS); OFDAGOV; Berger, William  
Sent: Sun Mar 13 10:36:21 2011  
Subject: Tony's travel



Tony needs an email from someone in authority at the embassy to authorise his transport on a mil flight tonight

Will need an email stating he is authorised by the embassy to fly.

It will need to state urgency.

Need email to include his name, job and social

Email needs to be sent to (b)(6)

ASAP

Travis

**Wittick, Brian**

---

**From:** Wittick, Brian  
**Sent:** Tuesday, April 19, 2011 7:19 PM  
**To:** 'Foster, Dirk L CAPT USN'  
**Subject:** RE: T-Hawk and Other pictures

Thanks Dirk. We haven't heard anything on Friday's visit to Yokota; any info you are aware of is most appreciated.

Thanks  
Brian

-----Original Message-----

**From:** Foster, Dirk L CAPT USN [mailto:(b)(6)]  
**Sent:** Tuesday, April 19, 2011 5:53 PM  
**To:** Davis, Dearcy P CDR USN  
**Cc:** BWC.CNFJ.ROC.FCT@fe.navy.mil; Wittick, Brian; Gauntt, Randall O; Mitman, Jeffrey;  
(b)(6)  
**Subject:** FW: T-Hawk and Other pictures

-----Original Message-----

**From:** Tanaka, Reid CAPT USN  
**Sent:** Tuesday, April 19, 2011 8:32 PM  
**To:** Holbrook, Stewart W CAPT USN USFJ J2; Foster, Dirk L CAPT USN  
**Cc:** Gawboy, Bradley D CAPT USN; Powers, Jeffrey CAPT USN; Quitno, Yvette  
S Col USAF PACAF 5 AF/A2/A6; Pierce, Robert M LCDR USN  
**Subject:** T-Hawk and Other pictures

J2, J3 Team,

Download some of these for the BUB?

<http://www.tepco.co.jp/en/news/110311>

v/r reid

0000/22

## Matakas, Gina

From: Tifft, Doug  
Sent: Sunday, March 13, 2011 12:44 PM  
To: Lew, David; Dean, Bill; Hansell, Samuel; Screnci, Diane; Sheehan, Neil; McNamara, Nancy; Roberts, Darrell; Wilson, Peter; Lorson, Raymond  
Subject: RE: 0630 Japan event status update

The regional SLO's are on distribution since we are supporting the HQ Liaison Team. Also note that our FEMA contacts are on distribution too.

-Doug

---

From: Lew, David  
Sent: Sunday, March 13, 2011 12:26 PM  
To: Dean, Bill; Hansell, Samuel; Screnci, Diane; Sheehan, Neil; Tifft, Doug; McNamara, Nancy; Roberts, Darrell; Wilson, Peter; Lorson, Raymond  
Subject: RE: 0630 Japan event status update

I have not received directly. Only indirectly. I note that Doug Tifft is on distribution but saw no one else.

From: Dean, Bill  
Sent: Sunday, March 13, 2011 12:19 PM  
To: Hansell, Samuel; Lew, David; Screnci, Diane; Sheehan, Neil; Tifft, Doug; McNamara, Nancy; Roberts, Darrell; Wilson, Peter; Lorson, Raymond  
Subject: Fw: 0630 Japan event status update

Do any of you receive this already? If not I will forward if you want.

Bill Dean

Regional Administrator

Region I, USNRC

Sent from NRC BlackBerry

---

From: LIA07 Hoc  
To: Al Coons <[albert.coons@dhs.gov](mailto:albert.coons@dhs.gov)>; Andersen, James; Anderson, Joseph; Barker, Allan; Batkin, Joshua; Bill King <[William.King@dhs.gov](mailto:William.King@dhs.gov)>; Bill King 2 <(b)(6)>; Brenner, Eliot; Bubar, Patrice; Castleman, Patrick; Coggins, Angela; Collins, Elmo; Conrad Burnside <[conrad.burnside@dhs.gov](mailto:conrad.burnside@dhs.gov)>; D Feighert <[dan.feighert@dhs.gov](mailto:dan.feighert@dhs.gov)>; D Hammons <[darrell.hammons@dhs.gov](mailto:darrell.hammons@dhs.gov)>; Dean, Bill; Decker, David; DIA <(b)(6)>; DIA2 <(b)(6)>; Dorman, Dan; DOT <[cmc-01@dot.gov](mailto:cmc-01@dot.gov)>; Droggitis, Spiros; DTRA <(b)(6)>; Dudek <(b)(6)>; EOP <(b)(6)>; EPA <[veal.lee@epa.gov](mailto:veal.lee@epa.gov)>; EPA2 <[poppell.sam@epa.gov](mailto:poppell.sam@epa.gov)>; Franovich, Mike; Haney, Catherine; Harrington, Holly; Harry Sherwood <[harry.sherwood@dhs.gov](mailto:harry.sherwood@dhs.gov)>; HHS <[hhs.soc@hhs.gov](mailto:hhs.soc@hhs.gov)>; Hipschman, Thomas; HOO Hoc; Howell, Linda; J H-L <[jan.hlavy-laposa@dhs.gov](mailto:jan.hlavy-laposa@dhs.gov)>; Jaczko, Gregory; Jim Kish <[james.kish@dhs.gov](mailto:james.kish@dhs.gov)>; Johanna Berkey <[Johanna.Berkey@dhs.gov](mailto:Johanna.Berkey@dhs.gov)>; Johnson, Michael; Kahler, Robert; L Hammond <[lisa.hammond@dhs.gov](mailto:lisa.hammond@dhs.gov)>; Leeds, Eric; Logaras, Haral; Loyd, Susan; Maier, Bill; Marshall, Michael; McCree, Victor; McDermott, Brian; McNamara, Nancy; Michelle Ralston <[michelle.ralston@dhs.gov](mailto:michelle.ralston@dhs.gov)>; Miller, Charles; Miller, Chris; Monninger, John; Nan Calhoun <[Nan.Calhoun@dhs.gov](mailto:Nan.Calhoun@dhs.gov)>; Navy <(b)(6)>; Nieh, Ho; Orders, William; Pace, Patti; Pearson, Laura; Peter Lyons <[peter.lyons@hq.doe.gov](mailto:peter.lyons@hq.doe.gov)>; R McCabe <[ron.mccabe@dhs.gov](mailto:ron.mccabe@dhs.gov)>; R Thomson <[rebecca.thomson@dhs.gov](mailto:rebecca.thomson@dhs.gov)>; S Horwitz <[steve.horwitz@dhs.gov](mailto:steve.horwitz@dhs.gov)>; Satorius, Mark; Schmidt, Rebecca; Seamus O'Boyle <[seamus.o'boyle@dhs.gov](mailto:seamus.o'boyle@dhs.gov)>; Sharkey, Jeffry; Sheron, Brian; Snodderly, Michael; Sosa, Belkys; Steve Colman <[steve.colman@dhs.gov](mailto:steve.colman@dhs.gov)>; Thomas Zerr <(b)(6)>; Tifft, Doug; Timothy Greten <[timothy.greten@dhs.gov](mailto:timothy.greten@dhs.gov)>; Trapp, James; Trojanowski, Robert; Vanessa Quinn <[vanessa.quinn@dhs.gov](mailto:vanessa.quinn@dhs.gov)>; W Webb

0000/23

<[William.Webb@dhs.gov](mailto:William.Webb@dhs.gov)>; Warren, Roberta; Wiggins, Jim; Williams, Kevin; Wittick, Brian;  
Woodruff, Gena

Sent: Sun Mar 13 06:30:40 2011

Subject: 0630 Japan event status update

**From:** Bonaccorso, Amy  
**To:** (b)(6)  
**Subject:** REPLY: James Sanders - Navy Region Northwest  
**Date:** Tuesday, March 29, 2011 3:32:00 PM

---

Hello Mr. Sanders:

We are archiving our emails and found this message – I am not sure if we responded to you yet.

The NRC and EPA both agree that we are not expected to experience any harmful levels of radioactivity in the U.S.

The EPA monitors radiation on RadNet. <http://www.epa.gov/nare/radnet/>

Thank you,

Amy

---

**From:** Ghneim, Munira  
**Sent:** Monday, March 21, 2011 12:49 PM  
**To:** Bonaccorso, Amy  
**Subject:** James Sanders - Navy Region Northwest

Organization – Navy Region Northwest

Contact – James Sanders

Phone – (b)(6)

Email – (b)(6)

Request – Would like to know where he can get the radiological plume data.

0000/24

**From:** sakurai@nhkdc.com  
**To:** McIntyre, David  
**Subject:** Re: Gentle reminder of our interview request...  
**Date:** Tuesday, April 12, 2011 7:02:04 AM

---

Thank you so much, David!  
I look forward to hearing from you soon again!  
We appreciate your kind support!

Sent via BlackBerry by AT&T

---

**From:** "McIntyre, David" <David.McIntyre@nrc.gov>  
**Date:** Tue, 12 Apr 2011 06:44:26 -0400  
**To:** 'sakurai@nhkdc.com' <sakurai@nhkdc.com>  
**Subject:** Re: Gentle reminder of our interview request....

Consider me reminded! I will pass your request along again.

David McIntyre  
NRC Office of Public Affairs

(b)(6) (mobile)

301-415-8200 (office)

Sent from my BlackBerry, which is wholly responsible for all typos.

---

**From:** Reiko Sakurai <sakurai@nhkdc.com>  
**To:** McIntyre, David  
**Sent:** Mon Apr 11 19:21:48 2011  
**Subject:** Gentle reminder of our interview request....

Hello David,

I just was wires coming out about AP doing an interview with Chairman Jackzo today.

May I just gently remind you once again that we would certainly love to do an sit- down interview with the Chairman.

since NHK is probably the most watched media concerning the Fukushima-Daiichi around the globe.

Thank you for your kind attention, and your patience!

I look forward to hearing from you soon...

Best regards,

Reiko Sakurai

Reiko Sakurai  
Correspondent  
NHK/Japan Broadcasting Corporation  
202-828-5180 office

(b)(6) cell

sakurai@nhkdc.com

0000/25

---

**From:** LIA04 Hoc  
**Sent:** Monday, March 14, 2011 10:42 PM  
**To:** LIA08 Hoc  
**Subject:** FW: RIV, Rachel Browder comments

Tim:

Please see Rachel's comments below.

Rich

---

**From:** Virgilio, Rosetta  
**Sent:** Monday, March 14, 2011 10:41 PM  
**To:** LIA04 Hoc  
**Cc:** Browder, Rachel  
**Subject:** Fw:

Rich - see Rachels suggestion below; need to share this with Liaison Team Director

Sent from an NRC Blackberry  
Rosetta O. Virgilio

(b)(6)

---

**From:** Browder, Rachel  
**To:** Virgilio, Rosetta  
**Sent:** Mon Mar 14 22:31:15 2011  
**Subject:**

Thank you for forwarding some of the emails. Bill was out of the office this afternoon...so I was trying to help out. I saw that NRR/Eric Leeds has the lead in developing Q&As for next week's end-of-cycle meetings, in anticipation of questions on the event and US reactors. I was thinking that we should have FSAR information available for earthquake and tsunami design basis for ISFSIs along the coast as well. What do you think?

Thanks,  
Rachel

0000/26

---

**From:** LIA04 Hoc  
**Sent:** Monday, March 14, 2011 10:51 AM  
**To:** Tift, Doug  
**Cc:** McNamara, Nancy  
**Subject:** RE: Questions

We are working on an answer and will get back to you as soon as possible. RGNIV also has similar questions.

---

**From:** Tift, Doug  
**Sent:** Monday, March 14, 2011 10:36 AM  
**To:** LIA04 Hoc  
**Cc:** McNamara, Nancy  
**Subject:** FW: Questions

Additional questions for our Q&A.

-Doug

---

**From:** Giarrusso, John (CDA) [mailto:John.Giarrusso@state.ma.us]  
**Sent:** Monday, March 14, 2011 9:30 AM  
**To:** 'Wilson, Mary Ann'; 'Currier, David'; McKenney, Mike  
**Cc:** McNamara, Nancy; Tift, Doug; Schwartz, Kurt (EPS)  
**Subject:** Questions

Needless to say, there are a lot of questions being asked because of the devastation in Japan. The Director, Secretary of EOPSS and Governor's office have been asking questions and I have been sending out information I have received on the plants in Japan. I would like all three plants to answer the following questions that I have been asked.

- What is the seismic limit that Pilgrim Station, Seabrook Station and Vermont Yankee have been built to withstand?
- Please explain that outcome at each plant if it was hit with a 8.9 earthquake the same as what hit Japan?
- For Pilgrim Station and Seabrook Station, what design and safety precautions have been installed at your plant to sustain a devastating tsunami that would hit as did the tragedy at the Japanese plants?
- If the same tragedy hit our plants would we be having the same major issues that the Japanese plants have? Please explain yes or not.

Please let me know when I can expect an answer to these questions or if you would like to meet and discuss that would be ok  
Thanks and let me know if you have any questions  
John

John Giarrusso, Jr.  
Planning and Preparedness Division Chief  
MEMA  
508-820-2040 (w)  
(b)(6) (c)

0000/27



---

**From:** LIA04 Hoc  
**Sent:** Monday, March 14, 2011 11:07 AM  
**To:** LIA08 Hoc; LIA06 Hoc  
**Subject:** FW: Questions

FYI – These questions are in the queue and will be addressed later.

Amanda

---

**From:** Hayden, Elizabeth  
**Sent:** Monday, March 14, 2011 11:04 AM  
**To:** Burnell, Scott; LIA04 Hoc  
**Cc:** Brenner, Eliot; Harrington, Holly; (b)(6)  
**Subject:** RE: Questions

More good questions. We need a well-understood strategy and process for handling these questions and guidance on what OPA staff can/cannot say. This ties into the questions that will be asked at the EOC meetings coming up. After Eliot talks to the Chairman, perhaps we can spend a few minutes getting resolution to this issue.

Beth

---

**From:** Burnell, Scott  
**Sent:** Monday, March 14, 2011 10:48 AM  
**To:** LIA04 Hoc  
**Cc:** Brenner, Eliot; Hayden, Elizabeth; Harrington, Holly; (b)(6)  
**Subject:** RE: Questions

We're working on that. please stand by.

---

**From:** LIA04 Hoc  
**Sent:** Monday, March 14, 2011 10:47 AM  
**To:** Burnell, Scott  
**Subject:** FW: Questions

Scott, I just left you a voicemail. We are getting many of these types of questions and would like guidance from OPA on how to handle.

---

**From:** Tift, Doug  
**Sent:** Monday, March 14, 2011 10:36 AM  
**To:** LIA04 Hoc  
**Cc:** McNamara, Nancy  
**Subject:** FW: Questions

Additional questions for our Q&A.

-Doug

---

**From:** Giarrusso, John (CDA) [mailto:John.Giarrusso@state.ma.us]  
**Sent:** Monday, March 14, 2011 9:30 AM

0000/28

**To:** 'Wilson, Mary Ann'; 'Currier, David'; McKenney, Mike  
**Cc:** McNamara, Nancy; Tift, Doug; Schwartz, Kurt (EPS)  
**Subject:** Questions

Needless to say, there are a lot of questions being asked because of the devastation in Japan. The Director, Secretary of EOPSS and Governor's office have been asking questions and I have been sending out information I have received on the plants in Japan. I would like all three plants to answer the following questions that I have been asked.

- What is the seismic limit that Pilgrim Station, Seabrook Station and Vermont Yankee have been built to withstand?
- Please explain that outcome at each plant if it was hit with a 8.9 earthquake the same as what hit Japan?
- For Pilgrim Station and Seabrook Station, what design and safety precautions have been installed at your plant to sustain a devastating tsunami that would hit as did the tragedy at the Japanese plants?
- If the same tragedy hit our plants would we be having the same major issues that the Japanese plants have? Please explain yes or not.

Please let me know when I can expect an answer to these questions or if you would like to meet and discuss that would be ok  
Thanks and let me know if you have any questions  
John

John Giarrusso, Jr.  
Planning and Preparedness Division Chief  
MEMA  
508-820-2040 (w)  
(b)(6) (c)

---

**From:** Virgilio, Rosetta  
**Sent:** Monday, March 14, 2011 11:12 PM  
**To:** LIA04 Hoc  
**Subject:** Reply

Got it :-D

Sent from an NRC Blackberry  
Rosetta O. Virgilio

(b)(6)

---

**From:** LIA04 Hoc  
**To:** Virgilio, Rosetta  
**Sent:** Mon Mar 14 23:03:35 2011  
**Subject:** RE: Reply

I meant LIA06, not 05.

Rich

---

**From:** Virgilio, Rosetta  
**Sent:** Monday, March 14, 2011 11:01 PM  
**To:** LIA04 Hoc  
**Subject:** Reply

Ok I'm off to bed - see U at 7

Sent from an NRC Blackberry  
Rosetta O. Virgilio

(b)(6)

---

**From:** LIA04 Hoc  
**To:** Virgilio, Rosetta  
**Sent:** Mon Mar 14 22:56:21 2011  
**Subject:** RE:

Yes, LIA05 is Tim (soon to be Tom Blount)

---

**From:** Virgilio, Rosetta  
**Sent:** Monday, March 14, 2011 10:50 PM  
**To:** LIA04 Hoc  
**Subject:** Re:

Great - is it LIA06?

Sent from an NRC Blackberry

3000/29

Rosetta O. Virgilio

(b)(6)

---

**From:** LIA04 Hoc  
**To:** Virgilio, Rosetta  
**Sent:** Mon Mar 14 22:42:57 2011  
**Subject:** RE:

I just sent it to Tim.

---

**From:** Virgilio, Rosetta  
**Sent:** Monday, March 14, 2011 10:41 PM  
**To:** LIA04 Hoc  
**Cc:** Browder, Rachel  
**Subject:** Fw:

Rich - see Rachels suggestion below; need to share this with Liaison Team Director

Sent from an NRC Blackberry

Rosetta O. Virgilio

(b)(6)

---

**From:** Browder, Rachel  
**To:** Virgilio, Rosetta  
**Sent:** Mon Mar 14 22:31:15 2011  
**Subject:**

Thank you for forwarding some of the emails. Bill was out of the office this afternoon...so I was trying to help out. I saw that NRR/Eric Leeds has the lead in developing Q&As for next week's end-of-cycle meetings, in anticipation of questions on the event and US reactors. I was thinking that we should have FSAR information available for earthquake and tsunami design basis for ISFSIs along the coast as well. What do you think?

Thanks,  
Rachel

---

**From:** Brenner, Eliot  
**Sent:** Monday, March 14, 2011 11:18 AM  
**To:** Hayden, Elizabeth; Burnell, Scott; LIA04 Hoc  
**Cc:** Harrington, Holly; (b)(6)  
**Subject:** RE: Questions

That is why I want a conference call.

---

**From:** Hayden, Elizabeth  
**Sent:** Monday, March 14, 2011 11:04 AM  
**To:** Burnell, Scott; LIA04 Hoc  
**Cc:** Brenner, Eliot; Harrington, Holly; (b)(6)  
**Subject:** RE: Questions

More good questions. We need a well-understood strategy and process for handling these questions and guidance on what OPA staff can/cannot say. This ties into the questions that will be asked at the EOC meetings coming up. After Eliot talks to the Chairman, perhaps we can spend a few minutes getting resolution to this issue.

Beth

---

**From:** Burnell, Scott  
**Sent:** Monday, March 14, 2011 10:48 AM  
**To:** LIA04 Hoc  
**Cc:** Brenner, Eliot; Hayden, Elizabeth; Harrington, Holly; (b)(6)  
**Subject:** RE: Questions

We're working on that, please stand by.

---

**From:** LIA04 Hoc  
**Sent:** Monday, March 14, 2011 10:47 AM  
**To:** Burnell, Scott  
**Subject:** FW: Questions

Scott, I just left you a voicemail. We are getting many of these types of questions and would like guidance from OPA on how to handle.

---

**From:** Tift, Doug  
**Sent:** Monday, March 14, 2011 10:36 AM  
**To:** LIA04 Hoc  
**Cc:** McNamara, Nancy  
**Subject:** FW: Questions

Additional questions for our Q&A.

-Doug

**From:** Giarrusso, John (CDA) [mailto:John.Giarrusso@state.ma.us]  
**Sent:** Monday, March 14, 2011 9:30 AM  
**To:** 'Wilson, Mary Ann'; 'Currier, David'; McKenney, Mike  
**Cc:** McNamara, Nancy; Tift, Doug; Schwartz, Kurt (EPS)  
**Subject:** Questions

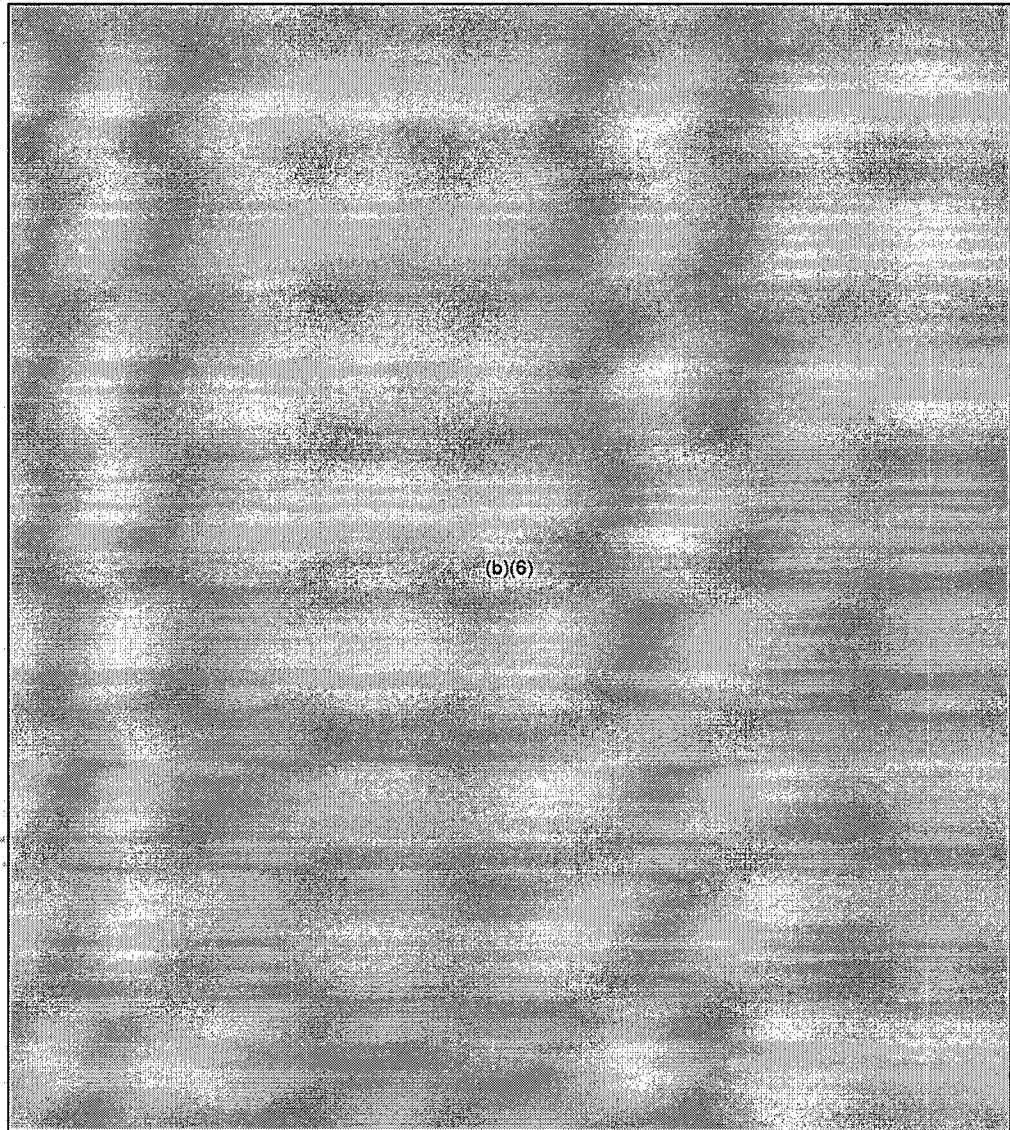
Needless to say, there are a lot of questions being asked because of the devastation in Japan. The Director, Secretary of EOPSS and Governor's office have been asking questions and I have been sending out information I have received on the plants in Japan. I would like all three plants to answer the following questions that I have been asked.

- What is the seismic limit that Pilgrim Station, Seabrook Station and Vermont Yankee have been built to withstand?
- Please explain that outcome at each plant if it was hit with a 8.9 earthquake the same as what hit Japan?
- For Pilgrim Station and Seabrook Station, what design and safety precautions have been installed at your plant to sustain a devastating tsunami that would hit as did the tragedy at the Japanese plants?
- If the same tragedy hit our plants would we be having the same major issues that the Japanese plants have? Please explain yes or not.

Please let me know when I can expect an answer to these questions or if you would like to meet and discuss that would be ok  
Thanks and let me know if you have any questions  
John

John Giarrusso, Jr.  
Planning and Preparedness Division Chief  
MEMA  
508-820-2040 (w)  
(b)(6) (c)

From:  
To:



Subject: Nuclear Plants & People's Safety  
Date: Thursday, March 31, 2011 11:28:27 AM

Be Proactive!

Nuclear radiation is a serious matter. Please copy the link below to your browser and click! Listen and watch some very interesting information regarding development of nuclear power while keeping the public safe.

[http://www.youtube.com/watch?v=0\\_wY6uvngxll](http://www.youtube.com/watch?v=0_wY6uvngxll)

Look forward to hearing from you, but if it is not appropriate for you, please forward.

All the best!

*Craig Germain*

Executive Director  
LIFE SUIT USA  
115 Ave De La Mer, Suite 702

*ccccc*

Palm Coast, FL 32137

T. 386/597-3132, F. 386/597-2901, E/mail: (b)(6)



**Quayle, Lisa**

---

**From:** Holahan, Vincent  
**Sent:** Tuesday, April 05, 2011 12:07 AM  
**To:** Taylor, Robert  
**Cc:** Blamey, Alan; Collins, Elmo  
**Subject:** RE: PACOM embedded contact

Thanks Rob.

Additional information for contact:

Vincent.Holahan@nrc.gov

(b)(6)

(b)(6)

(blackberry)

808-477-9536

808-477-9538 (J9 watch officer)

Let me know how I can be of assistance. Right now it's death by meetings at PACOM, so I am rooming around the PACOM HQs quite a bit. Also note, we are 5 hours ahead of you. My duty day is 0430 to 1800 hrs HST, then I return to quarters to check out emails.

Cheers,  
Vince

---

**From:** Taylor, Robert  
**Sent:** Tuesday, April 05, 2011 1:00 AM  
**To:** Blamey, Alan  
**Cc:** Holahan, Vincent  
**Subject:** PACOM embedded contact

Alan,

Going forward, Chuck wants us to keep Vince as reasonably well informed as possible so he can keep the military informed and minimize the number of questions they have for us. I have been sending him the Daily Assessment tool and we should consider what other things he might need to be cc'd on.

His contact info is as follows:

808-477-9538

BB

(b)(6)

Regards,  
Rob

0000/32

---

**From:** LIA02 Hoc  
**Sent:** Monday, March 14, 2011 4:08 PM  
**To:** LIA06 Hoc  
**Subject:** FW: Deploying DOE Survey Assest

-----Original Message-----

**From:** (b)(6)  
**Sent:** Monday, March 14, 2011 3:56 PM  
**To:** LIA02 Hoc  
**Subject:** Fw: Deploying DOE Survey Assest

Fyi only.

-----Original Message-----

**From:** Ronald C Cherry  
**To:** (b)(6)  
**Subject:** RE: Deploying DOE Survey Assest  
**Sent:** Mar 14, 2011 3:51 PM

Got it. Thanks.

This email is UNCLASSIFIED

-----Original Message-----

**From:** (b)(6)  
**[mailto:** (b)(6)  
**Sent:** Tuesday, March 15, 2011 4:51 AM  
**To:** Cherry, Ronald C  
**Subject:** Deploying DOE Survey Assest

I received a call last night from Troy Mueller of Naval Reactors (b)(6). He requested Embassy support to request permission from the Japanese government to allow DOE to take radiological surveys on a 12 hour frequency. He was aware of the information the survey would provide and indicated it would greatly assist military operations and support in the area.  
Sent from my Verizon Wireless BlackBerry

Sent from my Verizon Wireless BlackBerry

0000/33

## **Matakas, Gina**

---

**From:** Dentel, Glenn  
**Sent:** Monday, March 14, 2011 4:10 PM  
**To:** Dean, Bill; Lew, David; Wilson, Peter; Roberts, Darrell; Collins, Daniel; Lorson, Raymond; Baker, Pamela; Walker, Tracy; [Sunil.Weerakoddy@nrc.gov](mailto:Sunil.Weerakoddy@nrc.gov); Clifford, James; Miller, Chris  
**Cc:** Screnci, Diane; Sheehan, Neil; Trapp, James; McNamara, Nancy; Tifft, Doug; Hansell, Samuel; Hinson, Felicia; [raymond.McKinely@nrc.gov](mailto:raymond.McKinely@nrc.gov)  
**Subject:** March 14, 2011, 3:30pm Japan Nuclear Facility Updates

Update regarding Japan,

Fukushima Daiichi

Unit 1 has restored sea water injection approximately 6 hours ago

Unit 2 has sea water injection; a hole was intentionally created in the secondary containment to prevent a buildup of hydrogen and explosion as occurred at Units 1 and 3

Unit 3 has sea water injection

No spent fuel pool issues at this time.

-----

Chuck Casto will lead a team to support Japan and recovery efforts.

-----

Operations Center has developed/is developing:

- Accident progression evaluations and potential releases
- Q&As including focus on the safety of our reactors

This is a brief summary of the ongoing efforts.

Glenn Dentel, RDO

-----Original Message-----

**From:** samuel hansell [mailto:[samuel.hansell@nrc.gov](mailto:samuel.hansell@nrc.gov)] (b)(6)  
**Sent:** Sunday, March 13, 2011 4:55 PM  
**To:** Dean, Bill; Lew, David; Wilson, Peter; Roberts, Darrell; Collins, Daniel; Lorson, Raymond; Baker, Pamela; Walker, Tracy; [Sunil.Weerakoddy@nrc.gov](mailto:Sunil.Weerakoddy@nrc.gov); Clifford, James; Miller, Chris  
**Cc:** Screnci, Diane; Sheehan, Neil; Trapp, James; McNamara, Nancy; Tifft, Doug; Dentel, Glenn; Hansell, Samuel; Hinson, Felicia; [raymond.McKinely@nrc.gov](mailto:raymond.McKinely@nrc.gov)  
**Subject:** March 13, 2011, 3:00pm Japan Nuclear Facility Updates

Everyone,

Jim Trapp has arrived in Tokyo at the US Ambassador Office and has successfully provided a good source of current Japanese nuclear plant data. He has a scheduled

meeting with Japanese officials in four hours to obtain additional information related to the status of the nuclear power plants.

Fukushima Daiichi Units 1 and 3 have experienced core damage; the reactor cores were completely uncovered for a period of time; reactor water level was restored on Unit 1.

Sea water injection is in progress on Unit 3, however there is no indication that the reactor water level is restored above the fuel zone level on Unit 3.

Fukushima Daiichi Unit 2 reactor condition has improved. DC electrical power has been restored and Reactor Core Isolation Cooling (RCIC) has restored water level to above the fuel zone.

Latest information has stated that the reactor vessel and primary containment structures are still intact for all of the nuclear units; there is intermittent venting of the primary containment (to the atmosphere) to maintain internal pressure within design limits.

The radiation readings on the US aircraft carrier Ronald Reagan was measured at 0.6 millirem; this radiation reading is consistent with the containment venting operation of the Fukushima reactors.

NRC has issued a press release stating that "no harmful radiation release has reached the US; additional press releases to follow.

The NRC Chairman's Senate Hearing scheduled for this Wednesday will now focus on the Japanese nuclear plant followup actions and not the previous budget discussion topic.

An erroneous release of projected Japanese plant release plume data, using the NRC logo without our knowledge, contains information that the release rates could be as high as 75 Rem and reach Colorado, USA. There has been an attempt to remove this mis-leading and unauthorized information; however the info still may exist on some social media locations.

Next Japan update call is tonight at 11:30 pm; I plan to listen in on the call.

Thanks,  
Sam H

Tokyo Electric Power Company recent updates (recent press release details attached):

- The value of radioactive material (iodine, etc) is increasing according to the monitoring car at the site (outside).
- We are currently coordinating with the relevant authorities and departments as to how to cool down the water in the spent nuclear fuel pool.

Daiichi Unit 2's latest report noted that the high pressure Reactor Core Isolation Cooling (RCIC) system is injecting water into the reactor vessel; however vessel level is below normal levels and this reactor could be vulnerable

to further degradation.

The US aircraft carrier Ronald Reagan is 100 miles off the coast of Japan and is

being used by helicopters for supply delivery and rescue efforts. The radiation air monitors are detecting radiation releases from the nuclear plants; when asked the HQs briefer could not provide the initial radiation levels until they're verified with backup readings. Also, the helicopters returning to the aircraft carrier were found to have low levels of contamination; again no values

of the contamination levels at this time.

The White House plans to issue a press release "soon" that will stress the need for effective communication of the Japanese nuclear plants' status; the ongoing US support for the Japanese emergency response efforts; and the fact that the US

plants are not at risk.

The NRC has prepared a press release and will release it if the White House press release does not include sufficient details about the ongoing nuclear reactor recovery efforts

**Dean, Bill**

---

**From:** Dean, Bill  
**Sent:** Monday, March 14, 2011 5:13 PM  
**To:** Lew, David; Roberts, Darrell; Wilson, Peter; Weerakkody, Sunil; Clifford, James; Lorson, Raymond; Collins, Daniel  
**Subject:** FW: 1330 EDT (March 14, 2011) USNRC Earthquake/Tsunami SitRep  
**Attachments:** USNRC Earthquake-Tsunami Update.031411.1330EDT.docx

*Bill*

**From:** LIA07 Hoc  
**Sent:** Monday, March 14, 2011 2:07 PM  
**To:** Al Coons; Andersen, James; Anderson, Joseph; Barker, Allan; Batkin, Joshua; Bill King; Bill King 2; Brenner, Eliot; Bubar, Patrice; Castleman, Patrick; Charles Donnell; Coggins, Angela; Collins, Elmo; Conrad Burnside; D Feighert; D Hammons; Dean, Bill; Decker, David; DIA; DIA2; Dorman, Dan; DOT; Droggitis, Spiros; DTRA; Dudek; EOP; EPA; EPA2; Franovich, Mike; Hahn, Matthew; Haney, Catherine; Harrington, Holly; Harry Sherwood; HHS; Hipschman, Thomas; HOO Hoc; Howell, Linda; J H-L; Jaczko, Gregory; Jim Kish; Johanna Berkey; Johnson, Michael; Kahler, Robert; L Hammond; Leeds, Eric; Logaras, Harral; Loyd, Susan; Maier, Bill; Marshall, Michael; McCree, Victor; McDermott, Brian; McNamara, Nancy; Michelle Ralston; Miller, Charles; Miller, Chris; Monninger, John; Nan Calhoun; Navy; Nieh, Ho; NOC; Orders, William; Pace, Patti; Pearson, Laura; Peter Lyons; R McCabe; R Thomson; S Horwitz; Satorius, Mark; Schmidt, Rebecca; Seamus O'Boyle; Sharkey, Jeffry; Sheron, Brian; Snodderly, Michael; Sosa, Belkys; Steve Colman; Thomas Zerr; Tift, Doug; Timothy Greden; Trapp, James; Trojanowski, Robert; Vanessa Quinn; W Webb; Warren, Roberta; Wiggins, Jim; Williams, Kevin; Wittick, Brian; Woodruff, Gena; Schmidt, Rebecca; Powell, Amy; Loyd, Susan; Coggins, Angela; Batkin, Joshua; [taskforce-1@state.gov](mailto:taskforce-1@state.gov); NOC; Charles Donnell; (b)(6)  
(b)(6)  
NSIR\_DDSP\_ILTAB\_Distribution; [nitops@nnsa.doe.gov](mailto:nitops@nnsa.doe.gov); (b)(6) Michelle Ralston;  
[nuclearssa@hq.dhs.gov](mailto:nuclearssa@hq.dhs.gov); Ostendorff, William  
**Cc:** LIA09 Hoc; LIA11 Hoc  
**Subject:** 1330 EDT (March 14, 2011) USNRC Earthquake/Tsunami SitRep

Attached, please find a 1330 EDT situation report from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami on March 14, 2011. This Update includes information on the Japanese request for US Assistance in cooling Fukushima Daiichi Units 1, 2, and 3.

Please note that this information is "Official Use Only" and is only being shared within the federal family.

Please call the Headquarters Operations Officer at 301-816-5100 with questions.

Yen Chen  
US Nuclear Regulatory Commission  
[LIA07.HOC@nrc.gov](mailto:LIA07.HOC@nrc.gov) (Operations Center)

0000/35

---

**From:** Hoc, PMT12  
**Sent:** Tuesday, April 05, 2011 7:57 PM  
**To:** RST01 Hoc  
**Cc:** PMT03 Hoc  
**Subject:** RE: PACOM Call

Vince's later email says Q and A format.

PMT Coordinator will coordinate with OST to update the reoccurring daily call log.

---

**From:** RST01 Hoc  
**Sent:** Tuesday, April 05, 2011 7:41 PM  
**To:** Hoc, PMT12  
**Subject:** RE: PACOM Call

Just for clarification, when will the call occur? I am assuming tomorrow. Additionally, is there an agenda for the call so we can prepare? Will you be updating the reoccurring daily actions and calls for this phone call? Thanks.

Greg  
RST Coordinator

---

**From:** Hoc, PMT12  
**Sent:** Tuesday, April 05, 2011 7:34 PM  
**To:** Whitney, James  
**Cc:** Holahan, Vincent; Masse, Todd; PMT03 Hoc; RST01 Hoc; (b)(6) Stone, Rebecca  
**Subject:** RE: PACOM Call

Jim,

In the discussion with Vince today, we will have a PMT/RST call with PACOM at the Secret level in the Safeguard Team Room at 1700 EDT.

Note Vince's new PACOM email address. On the high side (b)(6)

Tim  
PMT, PAAD

Vince – the secure phone number in the SGT room is (b)(6)

---

**From:** Whitney, James  
**Sent:** Tuesday, April 05, 2011 6:05 PM  
**To:** Hoc, PMT12  
**Cc:** Holahan, Vincent; Masse, Todd  
**Subject:** RE: PACOM Call

Vince and PMT.

0000/36

I just sent Vince and Col Traub in PACOM an email about having a telcon, conference call via the ops center with the PMT and RST at 1700. This morning I checked with the RST and PMT directors and they said that time was clear on their schedules.

It may not be clear now for PMT. This call would be for PACOM to get clarifying information from the RST and PMT and allow them to ask technical questions.

This call could be at the UNCLASSIFIED or SECRET level (using the phone in the SAFEGUARDS TEAM room).

Another develop has come up that may allow easier communications between NRC and PACOM but there is still a clearance level issue to be figured out.

It is my opinion that NRC is seeing all the information there is on this and it is being shared with all appropriately cleared individuals. These calls are to address any issues or uneasiness PACOM may be experiencing.

v/r

Jim

James Whitney  
Senior Intelligence Analyst  
Intelligence Liaison and Threat Assessment Branch  
Office of Nuclear Security and Incident Response  
U.S. Nuclear Regulatory Commission  
301-415-5253  
[james.whitney@nrc.gov](mailto:james.whitney@nrc.gov)

---

**From:** Hoc, PMT12  
**Sent:** Tuesday, April 05, 2011 5:44 PM  
**To:** Whitney, James  
**Subject:** PACOM Call

Jim,

It occurred to me that the PMT has an HHS call at 5pm. Is it possible to arrange the call for 4:30pm? I'm sensitive to the fact that you guys want to go home and Vince wants to get some sleep in the morning.

Let me know

Tim



Dean, Bill

**From:** Dean, Bill  
**Sent:** Monday, March 14, 2011 7:26 AM  
**To:** Screnci, Diane; Sheehan, Neil; Roberts, Darrell; Lorson, Raymond; Weerakkody, Sunil; Wilson, Peter; Collins, Daniel; Law, David; Clifford, James; Hansell, Samuel  
**Subject:** Fw: 0600 EDT (March 14, 2011) USNRC Earthquake/Tsunami SitRep  
**Attachments:** USNRC Earthquake-Tsunami Update.031411.0600EDT.docx

Bill Dean  
Regional Administrator  
Region I, USNRC  
Sent from NRC BlackBerry

---

**From:** LIA07 Hoc  
**To:** LIA07 Hoc; Al Coons <[albert.coons@dhs.gov](mailto:albert.coons@dhs.gov)>; Andersen, James; Anderson, Joseph; Barker, Allan; Batkin, Joshua; Bill King <[William.King@dhs.gov](mailto:William.King@dhs.gov)>; Bill King 2 <(b)(6)>; Brenner, Eliot; Bubar, Patrice; Castleman, Patrick; Charles Donnell <(b)(6)>; Coggins, Angela; Collins, Elmo; Conrad Burnside <[conrad.burnside@dhs.gov](mailto:conrad.burnside@dhs.gov)>; D Feighert <[dan.feighert@dhs.gov](mailto:dan.feighert@dhs.gov)>; D Hammons <[darrell.hammons@dhs.gov](mailto:darrell.hammons@dhs.gov)>; Dean, Bill; Decker, David; DIA <(b)(6)>; DIA2 <(b)(6)>; Dorman, Dan; DOT <[cmc-01@dot.gov](mailto:cmc-01@dot.gov)>; Droggitis, Spiros; DTRA <(b)(6)>; Dudek <(b)(6)>; EOP <(b)(6)>; EPA <[veal.lee@epa.gov](mailto:veal.lee@epa.gov)>; EPA2 <[poppell.sam@epa.gov](mailto:poppell.sam@epa.gov)>; Franovich, Mike; Hahn, Matthew; Haney, Catherine; Harrington, Holly; Harry Sherwood <[harry.sherwood@dhs.gov](mailto:harry.sherwood@dhs.gov)>; HHS <[hhs.soc@hhs.gov](mailto:hhs.soc@hhs.gov)>; Hipschman, Thomas; HOO Hoc; Howell, Linda; J H-L <[jan.hlavy-laposa@dhs.gov](mailto:jan.hlavy-laposa@dhs.gov)>; Jaczko, Gregory; Jim Kish <[james.kish@dhs.gov](mailto:james.kish@dhs.gov)>; Johanna Berkey <[Johanna.Berkey@dhs.gov](mailto:Johanna.Berkey@dhs.gov)>; Johnson, Michael; Kahler, Robert; L Hammond <[lisa.hammond@dhs.gov](mailto:lisa.hammond@dhs.gov)>; Leeds, Eric; Logaras, Harral; Loyd, Susan; Maier, Bill; Marshall, Michael; McCree, Victor; McDermott, Brian; McNamara, Nancy; Michelle Ralston <[michelle.ralston@dhs.gov](mailto:michelle.ralston@dhs.gov)>; Miller, Charles; Miller, Chris; Monninger, John; Nan Calhoun <[Nan.Calhoun@dhs.gov](mailto:Nan.Calhoun@dhs.gov)>; Navy <(b)(6)>; Nieh, Ho; NOC <[noc.swo.Restricted@dhs.gov](mailto:noc.swo.Restricted@dhs.gov)>; Orders, William; Pace, Patti; Pearson, Laura; Peter Lyons <[peter.lyons@hq.doe.gov](mailto:peter.lyons@hq.doe.gov)>; R McCabe <[ron.mccabe@dhs.gov](mailto:ron.mccabe@dhs.gov)>; R Thomson <[rebecca.thomson@dhs.gov](mailto:rebecca.thomson@dhs.gov)>; S Horwitz <[steve.horwitz@dhs.gov](mailto:steve.horwitz@dhs.gov)>; Satorius, Mark; Schmidt, Rebecca; Seamus O'Boyle <[seamus.o'boyle@dhs.gov](mailto:seamus.o'boyle@dhs.gov)>; Sharkey, Jeffrey; Sheron, Brian; Snoderly, Michael; Sosa, Belkys; Steve Colman <[steve.colman@dhs.gov](mailto:steve.colman@dhs.gov)>; Thomas Zerr <(b)(6)>; Tift, Doug; Timothy Greten <[timothy.greten@dhs.gov](mailto:timothy.greten@dhs.gov)>; Trapp, James; Trojanowski, Robert; Vanessa Quinn <[vanessa.quinn@dhs.gov](mailto:vanessa.quinn@dhs.gov)>; W Webb <[William.Webb@dhs.gov](mailto:William.Webb@dhs.gov)>; Warren, Roberta; Wiggins, Jim; Williams, Kevin; Wittick, Brian; Woodruff, Gena; Schmidt, Rebecca; Powell, Amy; Loyd, Susan; Coggins, Angela; Batkin, Joshua; [taskforce-1@state.gov](mailto:taskforce-1@state.gov) <[taskforce-1@state.gov](mailto:taskforce-1@state.gov)>; NOC <[noc.swo.Restricted@dhs.gov](mailto:noc.swo.Restricted@dhs.gov)>; Charles Donnell <(b)(6)>  
**Cc:** LIA09 Hoc; LIA11 Hoc  
**Sent:** Mon Mar 14 06:15:34 2011  
**Subject:** RE: 0600 EDT (March 14, 2011) USNRC Earthquake/Tsunami SitRep

Attached, please find a 0600 EDT situation report from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami on March 14, 2011. This Update includes information on the Japanese request for US Assistance in cooling Fukushima Daiichi Units 1, 2, and 3.

Please note that this information is "Official Use Only" and is only being shared within the federal family.

Please call the Headquarters Operations Officer at 301-816-5100 with questions.

-Jim

Jim Anderson  
Office of Nuclear Security and Incident Response  
US Nuclear Regulatory Commission  
[james.anderson@nrc.gov](mailto:james.anderson@nrc.gov)  
[LIA07.HOC@nrc.gov](mailto:LIA07.HOC@nrc.gov) (Operations Center)

0000/37

**From:** Ross-Lee, MaryJane  
**To:** Kammerer, Annie; Brown, Frederick; Gitter, Joseph; Howe, Allen; Hiland, Patrick; Skeen, David; Case, Michael; Ruland, William; Dudes, Laura; Karas, Rebecca  
**Cc:** McDermott, Brian; Hasselberg, Rick  
**Subject:** Re: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link  
**Date:** Monday, March 14, 2011 7:45:26 PM

---

There are a number of resources in NRO that could help. Becky Karas is poc.

Sent from my blackberry

MJ (b)(6)

---

**From:** Kammerer, Annie  
**To:** Brown, Frederick; Gitter, Joseph; Howe, Allen; Hiland, Patrick; Skeen, David; Case, Michael; Ruland, William; Dudes, Laura  
**Cc:** McDermott, Brian; Ross-Lee, MaryJane; Hasselberg, Rick  
**Sent:** Mon Mar 14 12:45:21 2011  
**Subject:** RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

I have a fair amount of info on tsunamis. I don't recall ever seeing a tsunami fact sheet, but could be wrong.

My suggestion, if we don't have one, is to get Henry Jones and Goutam Bagchi working on one. I lead the RES work, but can't really dig into this until tomorrow. Goutam and Henry are the two people in NRO who I work most closely with on this topic. They could give us an excellent start. Should I ask them?

BTW, there is a good (and only slightly out of date) summarization of our regulatory approach and regulatory research in an appendix on US practice that I wrote for an IAEA guide on flooding (DS417). Also, Goutam, Henry and I wrote a paper for an IAEA workshop last year.

Annie

**From:** Brown, Frederick  
**Sent:** Monday, March 14, 2011 7:13 AM  
**To:** Gitter, Joseph; Howe, Allen; Hiland, Patrick; Skeen, David; Case, Michael; Ruland, William; Dudes, Laura  
**Cc:** McDermott, Brian; Ross-Lee, MaryJane; Kammerer, Annie; Hasselberg, Rick  
**Subject:** FW: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

FYI

**From:** King, Mark  
**Sent:** Monday, March 14, 2011 7:08 AM  
**To:** Thorp, John; Boger, Bruce  
**Cc:** Brown, Frederick; Thomas, Eric  
**Subject:** RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

We had a NUREG issued on this subject back in March 2009.

**TSUNAMI HAZARD ASSESSMENT AT NUCLEAR POWER PLANT SITES IN THE UNITED STATES OF AMERICA**

0000/38

Click link to view: [\[NUREG/CR-6966\]](#)

<http://pbadupws.nrc.gov/docs/ML0915/ML091590193.pdf>

**From:** Thorp, John  
**Sent:** Monday, March 14, 2011 6:57 AM  
**To:** Boger, Bruce  
**Cc:** Brown, Frederick; King, Mark; Thomas, Eric  
**Subject:** RE: (Action) Tsunami Fact Sheet

We'll look for it; If we don't find it quickly, we'll start producing one. (Mark King, please start looking)

I take it we would define & describe the tsunami phenomena, then address which nuclear stations in the U.S. are located in areas subject to tsunami waves, and describe what we can regarding the design of plants to withstand tsunami impacts?

Thanks,

John

**From:** Boger, Bruce  
**Sent:** Monday, March 14, 2011 6:48 AM  
**To:** Thorp, John  
**Cc:** Brown, Frederick  
**Subject:** Tsunami Fact Sheet

I seem to recall that OpE developed a tsunami fact sheet? Should we dust it off?

---

**From:** Thaggard, Mark  
**Sent:** Tuesday, March 15, 2011 5:38 AM  
**To:** Temple, Jeffrey  
**Cc:** Temple, Jeffrey; Lombard, Mark; Miller, Chris; LIA06 Hoc  
**Subject:** LT Support

Joe Anderson, one of the BCs here in EP has offered to support the LT. He has also reached out to some of his staff. From my time with the LT, we could probably use some additional support with the Federal Liaison. In addition, I believe the ET needs additional support in providing updates on the SITRET report.

### **Mark Thaggard**

Deputy Director  
Emergency Preparedness  
Division of Preparedness & Response  
Office of Nuclear Security and Incident Response  
Phone: 301-415-6971  
BB: (b)(6)  
Email: [Mark.Thaggard@nrc.gov](mailto:Mark.Thaggard@nrc.gov)

0000/39

Dean, Bill

**From:** Dean, Bill  
**Sent:** Tuesday, March 15, 2011 6:32 AM  
**To:** Lew, David  
**Subject:** Fw: 0600 EDT (March 15 2011) USNRC Earthquake/Tsunami SitRep  
**Attachments:** NRC Status Update 3-15.11--0600am.pdf

Did you get this from me? I tried to set up an automatic forwarding feature.

Bill Dean  
Regional Administrator  
Region I, USNRC  
Sent from NRC BlackBerry

**From:** LIA07 Hoc  
**To:** Al Coons <albert.coons@nrc.gov>; Appleman Binkert (b)(6); Bill King <william.king@dhs.gov>; Bill King 2 (b)(6); Charles Burrows (b)(6); Charles Donnell (b)(6); Conrad Burnside <conrad.burnside@dhs.gov>; Dan Feighert <dan.feighert@dhs.gov>; Darrell Hammons <darrell.hammons@dhs.gov>; DOE NTT (b)(6); DOT <cmc-01@dot.gov>; DTRA (b)(6); dudek (b)(6); Elmer Naples (b)(6); EOP (b)(6); EPA <veal.lee@epa.gov>; EPA2 <poppell.sam@epa.gov>; Eric Sinibaldi (b)(6); Gregory Simonson (b)(6); Harry Sherwood <harry.sherwood@dhs.gov>; HHS <hhs.soc@hhs.gov>; J Szymanski (b)(6); Jim Kish <james.kish@dhs.gov>; Johanna Berkey <johanna.berkey@dhs.gov>; John Holdren (b)(6); K Donald (b)(6); Karyn Keller (b)(6); Lisa Hammond <lisa.hammond@dhs.gov>; Lukas McMichael (b)(6); Maceck (b)(6); Michelle Ralston <michelle.ralston@dhs.gov>; Nan Calhoun <nan.calhoun@dhs.gov>; Navy (b)(6); NOC <noc.swo.restricted@dhs.gov>; NOC Duty Director <noc.ndd@hq.dhs.gov>; Nuclear SSA <nuclearssa@hq.dhs.gov>; Peter Lyons <peter.lyons@hq.doe.gov>; Rebecca Thomson <rebecca.thomson@dhs.gov>; RMT <rmt@actis.ehrc.gov>; Ron McCabe <ron.mccabe@dhs.gov>; Seamus O'Boyle <seamus.o'boyle@dhs.gov>; State <taskforce-1@state.gov>; Stephen Trautman (b)(6); Steve Colman <steve.colman@dhs.gov>; Steve Horwitz <steve.horwitz@dhs.gov>; Thomas Conran (b)(6); Thomas Zerr (b)(6); Tim Greden <timothy.greden@dhs.gov>; Vanessa Quinn <vanessa.quinn@dhs.gov>; William Webb <william.webb@dhs.gov>; Andersen, James; Anderson, Joseph; Barker, Allan; Batkin, Joshua; Bradford, Anna; Brenner, Eliot; Bubar, Patrice; Castleman, Patrick; Coggins, Angela; Collins, Brendan; Collins, Elmo; Dean, Bill; Decker, David; Dorman, Dan; Droggitis, Spiros; Franovich, Mike; Gibbs, Catina; Hahn, Matthew; Haney, Catherine; Harrington, Holly; Hipschman, Thomas; HOO Hoc; Howell, Art; Howell, Linda; Jaczko, Gregory; Johnson, Andrea; Johnson, Michael; Kahler, Robert; Leeds, Eric; Logaras, Harral; Loyd, Susan; Maier, Bill; Marshall, Michael; McCree, Victor; McDermott, Brian; McNamara, Nancy; Miller, Charles; Miller, Chris; Monninger, John; Nieh, Ho; NSIR\_DDSP\_ILTAB\_Distribution; Orders, William; Ostendorff, William; Pace, Patti; Pearson, Laura; Satorius, Mark; Schmidt, Rebecca; Sharkey, Jeffry; Sheron, Brian; Snodderly, Michael; Sosa, Belkys; Speiser, Herald; Tifft, Doug; Trapp, James; Trojanowski, Robert; Warren, Roberta; Wiggins, Jim; Williams, Kevin; Wittick, Brian; Woodruff, Gena  
**Sent:** Tue Mar 15 06:01:58 2011  
**Subject:** 0600 EDT (March 15 2011) USNRC Earthquake/Tsunami SitRep

Attached, please find a March 15, 2011, 0600 EDT situation report from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami. This Update includes information related to NRC's evaluation of radiation measurements from the USS Ronald Reagan.

Please note that this information is "Official Use Only" and is only being shared within the federal family.

Please call the Headquarters Operations Officer at 301-816-5100 with questions.

-Rebecca

Rebecca Stone

0000/40

Office of Nuclear Security & Incident Response  
US Nuclear Regulatory Commission  
Lia07.HOC@nrc.gov (Operations Center)  
Rebecca.Stone@nrc.gov

**Rihm, Roger**

---

**From:** Rihm, Roger  
**Sent:** Tuesday, March 15, 2011 7:32 AM  
**To:** Glitter, Joseph  
**Subject:** Re: Need a table

I just found out 10AM is the preferred time if at all possible.

Sent from an NRC BlackBerry

**Roger S. Rihm**

(b)(6)

---

**From:** Glitter, Joseph  
**To:** Rihm, Roger; Thomas, Eric  
**Cc:** Hiland, Patrick  
**Sent:** Mon Mar 14 18:15:35 2011  
**Subject:** RE: Need a table

Roger- DORL has it for action. I'm asking my staff to have something by noon tomorrow.

---

**From:** Rihm, Roger  
**Sent:** Monday, March 14, 2011 5:30 PM  
**To:** Glitter, Joseph; Thomas, Eric  
**Subject:** FW: Need a table  
**Importance:** High

Please confirm that DORL can produce tomorrow. (Hearing is Weds). Note that, for coastal sites, "probably" should read "probable."

Let me know if any questions. thanks

**Roger S. Rihm**

Communications and Performance Improvement Staff

Office of the Executive Director for Operations

US NRC

301.415.1717

[roger.rihm@nrc.gov](mailto:roger.rihm@nrc.gov)

---

**From:** Hiland, Patrick  
**Sent:** Monday, March 14, 2011 4:48 PM  
**To:** Rihm, Roger  
**Cc:** Glitter, Joseph; Thomas, Eric  
**Subject:** RE: Need a table  
**Importance:** High

The below is needed by Roger for Chairman's Wednesday hill meeting. Believe DORL can collect.

---

**From:** Rihm, Roger  
**Sent:** Monday, March 14, 2011 4:42 PM

0000/41

---

**From:** Droggitis, Spiros  
**Sent:** Tuesday, March 15, 2011 8:25 AM  
**To:** LIA02 Hoc  
**Cc:** LIA06 Hoc  
**Subject:** FW: AUSTRALIAN EMBASSY INQUIRY

---

**From:** Burnell, Scott  
**Sent:** Tuesday, March 15, 2011 8:21 AM  
**To:** Droggitis, Spiros  
**Cc:** McIntyre, David  
**Subject:** FW: AUSTRALIAN EMBASSY INQUIRY

Being taken care of...

---

**From:** McIntyre, David  
**Sent:** Tuesday, March 15, 2011 8:20 AM  
**To:** Burnell, Scott  
**Subject:** Fw: AUSTRALIAN EMBASSY INQUIRY

More from Beth. Can u pls fwd to lia team?

David McIntyre  
NRC Office of Public Affairs  
(b)(6) (mobile)  
301-415-8200 (office)  
Sent from my BlackBerry, which is wholly responsible for all typos.

---

**From:** Hayden, Elizabeth  
**To:** McIntyre, David  
**Sent:** Tue Mar 15 02:40:53 2011  
**Subject:** Re: AUSTRALIAN EMBASSY INQUIRY

Probably. Check with them

---

**From:** McIntyre, David  
**To:** Hayden, Elizabeth; Burnell, Scott; 'ivonne@nrc.gov' <ivonne@nrc.gov>  
**Cc:** Everly, JKeith  
**Sent:** Tue Mar 15 02:03:20 2011  
**Subject:** Re: AUSTRALIAN EMBASSY INQUIRY

Shouldn't this be OIP?

David McIntyre  
NRC Office of Public Affairs  
(b)(6) (mobile)

0000/42



301-415-8200 (office)

Sent from my BlackBerry, which is wholly responsible for all typos.

---

**From:** Hayden, Elizabeth  
**To:** Burnell, Scott; McIntyre, David; 'ivonne@nrc.gov' <ivonne@nrc.gov>  
**Cc:** Everly, JKeith  
**Sent:** Tue Mar 15 01:23:46 2011  
**Subject:** Fw: AUSTRALIAN EMBASSY INQUIRY

Could someone please followup w/this inquiry if someone hasn't already done so.

---

**From:** Everly, JKeith  
**To:** Stahl, Eric; Hayden, Elizabeth  
**Sent:** Mon Mar 14 16:35:37 2011  
**Subject:** AUSTRALIAN EMBASSY INQUIRY

Eric and Beth:

I just got a call from a Mr. Ben Milton of the Australian Embassy in WDC. He wanted to know what actions if any the NRC was taking as a result of the earthquake and tsunami in Japan. I told Mr. Milton that I would refer his inquiry to you both for a response. Mr. Milton's number is (b)(6)

J. Keith Everly  
Senior Program Manager (Licensee Security)  
Information Security Branch  
Division of Security Operations  
Office of Nuclear Security and Incident Response  
(O)301-415-7048 (C) (b)(6) (FAX)301-415-2190 (Blackberry) (b)(6)

**From:** Case, Michael  
**To:** Karas, Rebecca  
**Subject:** RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link  
**Date:** Tuesday, March 15, 2011 10:27:00 AM

---

Thanks Becky. I don't know of any more short term requests from the Ops Center, but we'll keep those folks in mind.

**From:** Karas, Rebecca  
**Sent:** Monday, March 14, 2011 11:23 PM  
**To:** Ross-Lee, MaryJane; Kammerer, Annie; Brown, Frederick; Glitter, Joseph; Howe, Allen; Hiland, Patrick; Skeen, David; Case, Michael; Ruland, William; Dudes, Laura  
**Cc:** McDermott, Brian; Hasselberg, Rick; Chokshi, Niles; Munson, Clifford; Seber, Dogan; Li, Yong; Cook, Christopher  
**Subject:** RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

Our people are plugged into Annie, so we are communicating, but we have many more resources. Niles Chokshi and Cliff Munson are here on day shift, and can provide tsunami and seismic expertise, and access to all of our staff. Our GIS people we are currently staffing the ops center with (Dogan Seber and Yong Li) also have seismology expertise. We have a geologist coming for GIS operation on afternoon shift. Someone also asked today about volcanologists. We have people with some of that experience as well who are normally on day shift. Suggest coordinating directly with Niles and Cliff on day shift, and me on evenings for any call-outs or emergent support.

We have tsunami material from previous briefings. Cliff emailed them to a large cast earlier today, and we can put together something specific for what is needed. From the earlier email below that says:

I take it we would define & describe the tsunami phenomena, then address which nuclear stations in the U.S. are located in areas subject to tsunami waves, and describe what we can regarding the design of plants to withstand tsunami impacts?

Is this what is needed?

**From:** Ross-Lee, MaryJane  
**Sent:** Monday, March 14, 2011 7:45 PM  
**To:** Kammerer, Annie; Brown, Frederick; Glitter, Joseph; Howe, Allen; Hiland, Patrick; Skeen, David; Case, Michael; Ruland, William; Dudes, Laura; Karas, Rebecca  
**Cc:** McDermott, Brian; Hasselberg, Rick  
**Subject:** Re: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

There are a number of resources in NRO that could help. Becky Karas is poc.

Sent from my blackberry

MJ (b)(6)

---

**From:** Kammerer, Annie  
**To:** Brown, Frederick; Glitter, Joseph; Howe, Allen; Hiland, Patrick; Skeen, David; Case, Michael; Ruland, William; Dudes, Laura  
**Cc:** McDermott, Brian; Ross-Lee, MaryJane; Hasselberg, Rick  
**Sent:** Mon Mar 14 12:45:21 2011

0000/43

**Subject:** RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

I have a fair amount of info on tsunami. I don't recall ever seeing a tsunami fact sheet, but could be wrong.

My suggestion, if we don't have one, is to get Henry Jones and Goutam Bagchi working on one. I lead the RES work, but can't really dig into this until tomorrow. Goutam and Henry are the two people in NRO who I work most closely with on this topic. They could give us an excellent start. Should I ask them?

BTW, there is a good (and only slightly out of date) summarization of our regulatory approach and regulatory research in an appendix on US practice that I wrote for an IAEA guide on flooding (DS417). Also, Goutam, Henry and I wrote a paper for an IAEA workshop last year.

Annie

**From:** Brown, Frederick

**Sent:** Monday, March 14, 2011 7:13 AM

**To:** Gitter, Joseph; Howe, Allen; Hiland, Patrick; Skeen, David; Case, Michael; Ruland, William; Dudes, Laura

**Cc:** McDermott, Brian; Ross-Lee, MaryJane; Kammerer, Annie; Hasselberg, Rick

**Subject:** FW: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

FYI

**From:** King, Mark

**Sent:** Monday, March 14, 2011 7:08 AM

**To:** Thorp, John; Boger, Bruce

**Cc:** Brown, Frederick; Thomas, Eric

**Subject:** RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

We had a NUREG issued on this subject back in March 2009.

## **TSUNAMI HAZARD ASSESSMENT AT NUCLEAR POWER PLANT SITES IN THE UNITED STATES OF AMERICA**

Click link to view: [\[NUREG/CR-6966\]](#)

<http://pbadupws.nrc.gov/docs/ML0915/ML091590193.pdf>

**From:** Thorp, John

**Sent:** Monday, March 14, 2011 6:57 AM

**To:** Boger, Bruce

**Cc:** Brown, Frederick; King, Mark; Thomas, Eric

**Subject:** RE: (Action) Tsunami Fact Sheet

We'll look for it; If we don't find it quickly, we'll start producing one. (Mark King, please start looking)

I take it we would define & describe the tsunami phenomena, then address which nuclear

stations in the U.S. are located in areas subject to tsunami waves, and describe what we can regarding the design of plants to withstand tsunami impacts?

Thanks,

John

**From:** Boger, Bruce  
**Sent:** Monday, March 14, 2011 6:48 AM  
**To:** Thorp, John  
**Cc:** Brown, Frederick  
**Subject:** Tsunami Fact Sheet

I seem to recall that OpE developed a tsunami fact sheet? Should we dust it off?

---

**From:** Holahan, Eugene V SES PACOM, J91 <(b)(6)>  
**Sent:** Tuesday, April 05, 2011 7:47 PM  
**To:** Hoc, PMT12; Whitney, James; Price, Erik N LTC PACOM, J91  
**Cc:** Masse, Todd; PMT03 Hoc; RST01 Hoc; Stone, Rebecca; Greco, Stephen B. GS-15 CIV  
**Subject:** RE: PACOM Call

Thanks Tim.

I have started alerting people to the opportunity to participate in a Q and A session. I anticipate it being well attended on our end. We can re-evaluate at the end of the session as to whether additional sessions will be of value.

Cheers,  
Vince

-----Original Message-----

**From:** Hoc, PMT12 [mailto:PMT12.Hoc@nrc.gov]  
**Sent:** Tuesday, April 05, 2011 13:34  
**To:** Whitney, James  
**Cc:** Holahan, Vincent; Masse, Todd, PMT03 Hoc; RST01 Hoc; Holahan, Eugene V SES PACOM, J91; Stone, Rebecca  
**Subject:** RE: PACOM Call

Jim,

In the discussion with Vince today, we will have a PMT/RST call with PACOM at the Secret level in the Safeguard Team Room at 1700 EDT.

Note Vince's new PACOM email address. On the high side (b)(6)

Tim

PMT, PAAD

Vince - the secure phone number in the SGT room is (b)(6)

**From:** Whitney, James  
**Sent:** Tuesday, April 05, 2011 6:05 PM

0000/44

To: Hoc, PMT12  
Cc: Holahan, Vincent; Masse, Todd  
Subject: RE: PACOM Call

Vince and PMT,

I just sent Vince and Col Traub in PACOM an email about having a telcon, conference call via the ops center with the PMT and RST at 1700. This morning I checked with the RST and PMT directors and they said that time was clear on their schedules.

It may not be clear now for PMT. This call would be for PACOM to get clarifying information from the RST and PMT and allow them to ask technical questions.

This call could be at the UNCLASSIFIED or SECRET level (using the phone in the SAFEGUARDS TEAM room).

Another develop has come up that may allow easier communications between NRC and PACOM but there is still a clearance level issue to be figured out.

It is my opinion that NRC is seeing all the information there is on this and it is being shared with all appropriately cleared individuals. These calls are to address any issues or uneasiness PACOM may be experiencing.

v/r

Jim

James Whitney

Senior Intelligence Analyst

Intelligence Liaison and Threat Assessment Branch

Office of Nuclear Security and Incident Response

U.S. Nuclear Regulatory Commission

301-415-5253

[james.whitney@nrc.gov](mailto:james.whitney@nrc.gov)

From: Hoc, PMT12  
Sent: Tuesday, April 05, 2011 5:44 PM  
To: Whitney, James  
Subject: PACOM Call

Jim,

It occurred to me that the PMT has an HHS call at 5pm. Is it possible to arrange the call for 4:30pm? I'm sensitive to the fact that you guys want to go home and Vince wants to get some sleep in the morning.

Let me know

Tim

**Arildsen, Jesse**

---

**From:** Arildsen, Jesse  
**Sent:** Tuesday, March 15, 2011 12:50 PM  
**To:** Andersen, James  
**Subject:** RE: Operations Center Time

Jim,

Thank you, sir.

I briefed David Skeen and the RST about the project. They were very receptive and had no previous knowledge of the NRC work in the area I described.

Jesse

**From:** Andersen, James  
**Sent:** Tuesday, March 15, 2011 10:53 AM  
**To:** Arildsen, Jesse  
**Subject:** FW: Operations Center Time

FYI.

**From:** Wittick, Brian  
**Sent:** Tuesday, March 15, 2011 10:52 AM  
**To:** Andersen, James; Sanfilippo, Nathan; Frazier, Alan; Bowman, Gregory; Brock, Kathryn  
**Subject:** RE: Operations Center Time

In case you haven't seen it:

If you have participated in the "Japan Earthquake and Tsunami Drill" that began today (Friday March 11, 2011), please be sure to apply your time spent on this activity to the TAC Number listed below:

D92374 – Incident Response: Japan Earthquake and Tsunami Drill

Brian Wittick  
Executive Technical Assistant for Reactors  
Office of the Executive Director for Operations  
U.S. Nuclear Regulatory Commission  
301-415-2496 (w) (b)(6) (c)

**From:** Andersen, James  
**Sent:** Tuesday, March 15, 2011 10:48 AM  
**To:** Sanfilippo, Nathan; Frazier, Alan; Bowman, Gregory; Brock, Kathryn; Wittick, Brian  
**Subject:** Operations Center Time

All,

I know many of you have worked over the normal 40 hours per week. If you have any questions on how you should charge your time, please let me know. We should be able to work something out.

Jim A.

0000/45



---

**From:** Miller, Chris  
**Sent:** Wednesday, March 16, 2011 6:13 AM  
**To:** LIA06 Hoc  
**Cc:** LIA08 Hoc  
**Subject:** FW: recommendation  
**Attachments:** Combined pdf

---

**From:** Miller, Chris  
**Sent:** Wednesday, March 16, 2011 1:26 AM  
**To:** 'cherryrc@state.gov'  
**Cc:** Miller, Chris  
**Subject:** FW: recommendation

Ron.  
Please call us at the NRC Ops Center at 301-816-5100 to discuss.  
Thanks  
Chris

Christopher G. Miller  
Deputy Director for Emergency Preparedness  
US Nuclear Regulatory Commission  
Office of Nuclear Security and Incident Response  
Division of Preparedness and Response  
work 301-415-1086  
cell (b)(6)

---

**From:** OST02 HOC  
**Sent:** Wednesday, March 16, 2011 1:16 AM  
**To:** Miller, Chris  
**Subject:**

0000/46

## USNRC Understanding of the Current Conditions at the Fukushima Daiichi Site

We understand that there is significant damage to reactors and spent fuel pools at Fukushima Daiichi site as evidenced by:

Unit 1 – We understand that the fuel is damaged, there is limited seawater injection into the reactor vessel, there is no secondary containment integrity due to a previous hydrogen explosion, and we have no information on the condition of the spent fuel pool.

Unit 2– We understand that the fuel is damaged, there is limited seawater injection into the reactor vessel, the reactor coolant system has been breached, the primary containment has been breached, the secondary containment is not at a negative pressure as designed, and we have no information on the condition of the spent fuel pool.

Unit 3 – We understand that the fuel is damaged, there is limited seawater injection into the reactor vessel, the reactor coolant system has been breached, the primary containment has been breached, there is no secondary containment integrity due to a previous hydrogen explosion, and we have no information on the condition of the spent fuel pool.

Unit 4 – We understand that there has been a loss of cooling water for the spent fuel and the fuel is uncovered, there is no secondary containment integrity due to a hydrogen explosion and there is an ongoing fire.

Units 5 and 6 - We understand that there is a loss of cooling capability for the spent fuel pools and fuel pool temperatures are significantly elevated and increasing.

We understand that all TEPCO staff have been evacuated from Fukushima Daiichi site.

We understand that the prevailing winds are currently from the west and are expected to shift to from the east by the end of the week.

Based on this information and understanding, we have prepared dose projections with the following assumptions:

- Unit 4 full core offload in the spent fuel pool fully uncovered and 50% fuel damage

These dose projections are only based on one unit. The contribution of the other units to the offsite dose may be significant.

Based on the attached dose projections, the USNRC would recommend protective actions of:

- Prompt restriction of shipping down wind to 50 miles.
- Evacuation of populations out to 50 miles downwind be completed before Sunday in anticipation of the wind shifts.

## Case Summary

Event Type: Nuclear Power Plant

Location:

Name: Fukushima Unit 2

City, county, state: <undefined>, <undefined>, <undefined>

Lat / Long / Elev: 37.4214° N, 141.0325° E, 0 m

UTC Offset: 9 hours

Population: not available

Reactor Parameters

Reactor power: 2500 MWt

Average fuel burn-up: 30000 MWD / MTU

Containment type: BWR Mark I

Containment volume: 2.50E+05 ft<sup>3</sup>

Design pressure: 60 lb/in<sup>2</sup>

Design leak rate: 0.54 %/d

Coolant mass: 1.25E+05 kg

Assemblies in core: 550

Source Term

Type: Time Core Is Uncovered

Shutdown: 2011/03/11 14:46

Core uncovered: 2011/03/15 21:00

Core recovered: No

Release Pathway

Type: BWR - Release Through Dry Well  
via direct, unfiltered pathway

Description: Unit 4

Release height: 10. m

Release events

2011/03/15 00:00 Sprays Off

2011/03/15 21:00 Leak rate (% vol) Total failure

Meteorology

Type: Actual Observations

Dataset name: Fukushima 1735 email 3-15-11

Dataset desc: Obs/fcsts for Fukushima Unit 2

| Summary of data<br>at release point: | Type | Dir<br>deg | Speed<br>m/s | Stab<br>class | Precip   | Temp<br>°C |
|--------------------------------------|------|------------|--------------|---------------|----------|------------|
| 2011/03/15 09:00                     | Obs  | 009        | 7.0          | D             | None     |            |
| 2011/03/15 10:00                     | Obs  | 012        | 6.5          | D             | None     |            |
| 2011/03/15 11:00                     | Obs  | 032        | 6.0          | D             | None     |            |
| 2011/03/15 12:00                     | Obs  | 037        | 5.2          | D             | None     |            |
| 2011/03/15 13:00                     | Obs  | 044        | 3.8          | D             | None     |            |
| 2011/03/15 14:00                     | Obs  | 047        | 4.0          | C             | None     |            |
| 2011/03/15 15:00                     | Obs  | 004        | 2.4          | C             | None     |            |
| 2011/03/15 16:00                     | Obs  | 042        | 2.9          | C             | Lgt rain |            |
| 2011/03/15 17:00                     | Obs  | 099        | 1.8          | E             | None     |            |
| 2011/03/15 18:00                     | Obs  | 172        | 1.4          | E             | None     |            |
| 2011/03/15 19:00                     | Obs  | 183        | 1.6          | E             | None     |            |

|                  |      |     |      |   |          |
|------------------|------|-----|------|---|----------|
| 2011/03/15 20:00 | Obs  | 242 | 2.4  | E | Lgt rain |
| 2011/03/15 21:00 | Obs  | 258 | 2.5  | E | Lgt rain |
| 2011/03/15 22:00 | Obs  | 305 | 3.3  | E | Lgt rain |
| 2011/03/15 23:00 | Obs  | 307 | 3.9  | E | Rain     |
| 2011/03/16 00:00 | Obs  | 335 | 4.6  | E | Rain     |
| 2011/03/16 01:00 | Obs  | 007 | 4.9  | E | Rain     |
| 2011/03/16 02:00 | Obs  | 344 | 4.7  | E | Lgt rain |
| 2011/03/16 03:00 | Obs  | 331 | 7.6  | D | Lgt rain |
| 2011/03/16 04:00 | Obs  | 332 | 6.1  | D | None     |
| 2011/03/16 05:00 | Obs  | 320 | 4.4  | C | None     |
| 2011/03/16 06:00 | Fcst | 332 | 6.4  | E | None     |
| 2011/03/16 07:00 | Fcst | 329 | 7.2  | D | None     |
| 2011/03/16 08:00 | Fcst | 333 | 7.6  | D | None     |
| 2011/03/16 09:00 | Fcst | 350 | 8.7  | C | None     |
| 2011/03/16 10:00 | Fcst | 353 | 10.0 | C | None     |
| 2011/03/16 11:00 | Fcst | 001 | 7.7  | C | None     |
| 2011/03/16 12:00 | Fcst | 002 | 7.4  | C | None     |
| 2011/03/16 13:00 | Fcst | 351 | 7.3  | C | None     |
| 2011/03/16 14:00 | Fcst | 321 | 10.3 | D | None     |
| 2011/03/16 15:00 | Fcst | 323 | 10.4 | D | None     |
| 2011/03/16 16:00 | Fcst | 316 | 12.7 | D | None     |
| 2011/03/16 17:00 | Fcst | 315 | 13.0 | D | None     |
| 2011/03/16 18:00 | Fcst | 314 | 10.0 | C | None     |
| 2011/03/16 19:00 | Fcst | 315 | 6.4  | D | None     |
| 2011/03/16 20:00 | Fcst | 302 | 6.6  | C | None     |
| 2011/03/16 21:00 | Fcst | 302 | 7.6  | D | None     |
| 2011/03/16 22:00 | Fcst | 280 | 7.1  | E | None     |
| 2011/03/16 23:00 | Fcst | 291 | 7.7  | E | None     |
| 2011/03/17 00:00 | Fcst | 293 | 8.6  | E | None     |
| 2011/03/17 01:00 | Fcst | 291 | 9.1  | E | None     |
| 2011/03/17 02:00 | Fcst | 282 | 7.5  | E | None     |
| 2011/03/17 03:00 | Fcst | 262 | 6.0  | E | None     |
| 2011/03/17 04:00 | Fcst | 278 | 3.7  | E | None     |
| 2011/03/17 05:00 | Fcst | 005 | 3.1  | E | None     |
| 2011/03/17 06:00 | Fcst | 308 | 3.9  | D | None     |

Dataset options:

Est. missing stability using: Wind speed, time of day, etc.  
 Adjust stability for consistency: No  
 Modify winds for topography: Yes

Calculations

Case description: Fukushima Unit 4 estimate for 50 miles  
 End of calculations: 2011/03/16 21:00  
 Start of release to atmosphere + 24 h  
 Distance of calculation: Close-in + to 50 miles  
 Close-in distances: 0.5, 1.0, 1.5, 2.0, 3.0, 5.0, 7.0, 10.0 miles

## Source Term

Total amount released to atmosphere: 1.7E+08 Ci

| Nuclide | Ci      | Nuclide | Ci      | Nuclide | Ci      |
|---------|---------|---------|---------|---------|---------|
| Am-241  | 7.2E-01 | Nd-147  | 1.5E+05 | Tc-99m  | 1.7E+05 |
| Ba-140  | 9.7E+06 | Np-239  | 1.9E+06 | Te-127  | 1.0E+06 |
| Ce-141  | 4.8E+05 | Pm-147  | 5.5E+02 | Te-127m | 2.6E+05 |
| Ce-143  | 5.2E+04 | Pr-143  | 3.6E+05 | Te-129  | 6.5E+05 |
| Ce-144* | 4.2E+05 | Pr-144  | 4.1E+05 | Te-129m | 1.0E+06 |
| Cm-242  | 1.2E+04 | Pu-238  | 1.3E+00 | Te-131  | 6.9E+04 |
| Cs-134  | 4.7E+06 | Pu-239  | 1.3E+00 | Te-131m | 3.0E+05 |
| Cs-136  | 1.5E+06 | Pu-241  | 3.9E+04 | Te-132  | 9.7E+06 |
| Cs-137* | 3.3E+06 | Rb-86   | 5.9E+04 | Xe-131m | 7.1E+05 |
| I-131   | 2.5E+07 | Rb-88   | 2.4E-04 | Xe-133  | 7.8E+07 |
| I-132   | 2.1E+07 | Rh-103m | 4.4E+05 | Xe-133m | 1.1E+06 |
| I-133   | 2.1E+06 | Rh-105  | 4.5E+04 | Xe-135  | 1.1E+05 |
| I-135   | 1.1E+03 | Ru-103  | 4.4E+05 | Xe-135m | 1.5E+03 |
| Kr-85   | 5.4E+05 | Ru-105  | 2.5E-02 | Y-90    | 2.6E+04 |
| Kr-85m  | 1.6E+00 | Ru-106* | 1.3E+05 | Y-91    | 3.4E+05 |
| Kr-88   | 3.8E-04 | Sb-127  | 7.0E+05 | Y-91m   | 7.2E+02 |
| La-140  | 5.8E+05 | Sb-129  | 2.4E-01 | Y-92    | 1.6E-03 |
| La-141  | 3.8E-03 | Sr-89   | 5.9E+06 | Y-93    | 2.0E+02 |
| Mo-99   | 1.8E+05 | Sr-90   | 4.8E+05 | Zr-95   | 4.8E+05 |
| Nb-95   | 5.1E+05 | Sr-91   | 3.5E+03 | Zr-97*  | 6.1E+03 |
| Nb-97   | 3.5E+02 | Sr-92   | 1.6E-05 |         |         |

### Notes:

- Nuclides with \* in name include implicit daughters.

## Maximum Dose Values (rem) - To 50 mi

| Dist from release<br>miles<br>(kilometers) | 15<br>(24.1)   | 20<br>(32.2)   | 30<br>(48.3)   | 40<br>(64.4)   | 50<br>(80.5)   |
|--------------------------------------------|----------------|----------------|----------------|----------------|----------------|
| Total EDE                                  | <u>6.3E+00</u> | <u>4.9E+00</u> | <u>1.3E+00</u> | <u>1.1E+00</u> | <u>9.8E-01</u> |
| Thyroid CDE                                | <u>5.4E+01</u> | <u>3.9E+01</u> | <u>1.6E+01</u> | <u>1.3E+01</u> | <u>9.3E+00</u> |
| Inhalation CEDE                            | <u>2.2E+00</u> | <u>1.5E+00</u> | <u>1.1E+00</u> | <u>9.0E-01</u> | <u>8.1E-01</u> |
| Cloudshine                                 | <u>5.8E-02</u> | <u>4.3E-02</u> | <u>2.9E-02</u> | <u>2.0E-02</u> | <u>1.2E-02</u> |
| 4-day Groundshine                          | <u>4.8E+00</u> | <u>3.5E+00</u> | <u>2.2E-01</u> | <u>1.8E-01</u> | <u>1.6E-01</u> |
| Inter Phase 1st Yr                         | <u>6.6E+01</u> | <u>4.8E+01</u> | <u>3.0E+00</u> | <u>2.3E+00</u> | <u>2.1E+00</u> |
| Inter Phase 2nd Yr                         | <u>3.1E+01</u> | <u>2.2E+01</u> | <u>1.4E+00</u> | <u>1.0E+00</u> | <u>9.4E-01</u> |

### Notes:

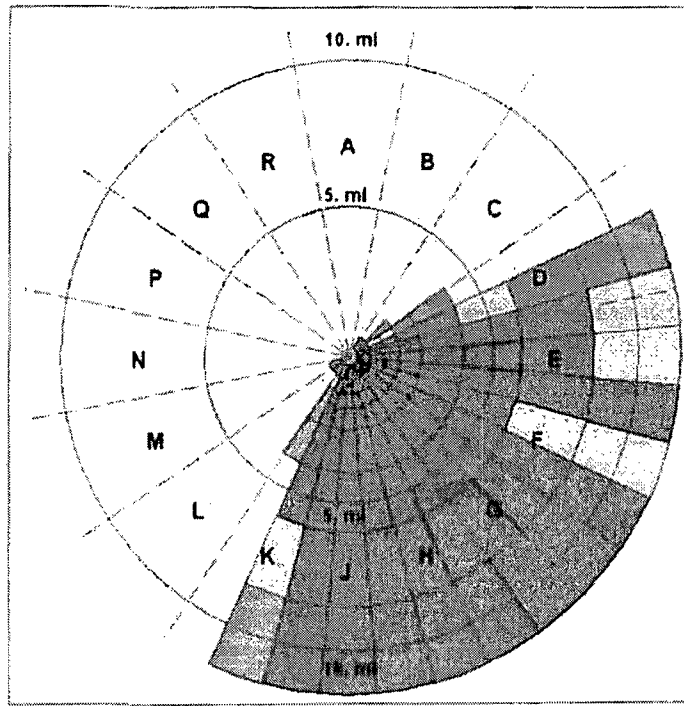
- Doses exceeding PAGs are underlined.
- Early-Phase PAGs: TEDE - 1 rem, Thyroid (iodine) CDE - 5 rem
- Intermediate-Phase PAGs: 1st year - 2 rem, 2nd year - 0.5 rem
- \*\*\* indicates values less than 1 mrem
- To view all values - use Detailed Results | Numeric Table
- Total EDE = CEDE Inhalation + Cloudshine + 4-Day Groundshine
- Total Acute Bone = Bone Inhalation + Cloudshine + Period Groundshine

# Total Effective Dose Equivalent

Accumulated between 2011/03/15 21:00 and 2011/03/16 21:00

Fukushima Unit 4, estimate for 50 miles

Fukushima Unit 2



## Legend

- 0.01 to 1 rem  
Below EPA PAG Range
- 1 to 5 rem  
EPA Early Phase PAG Range
- > 5 rem  
Exceeds EPA PAG Range

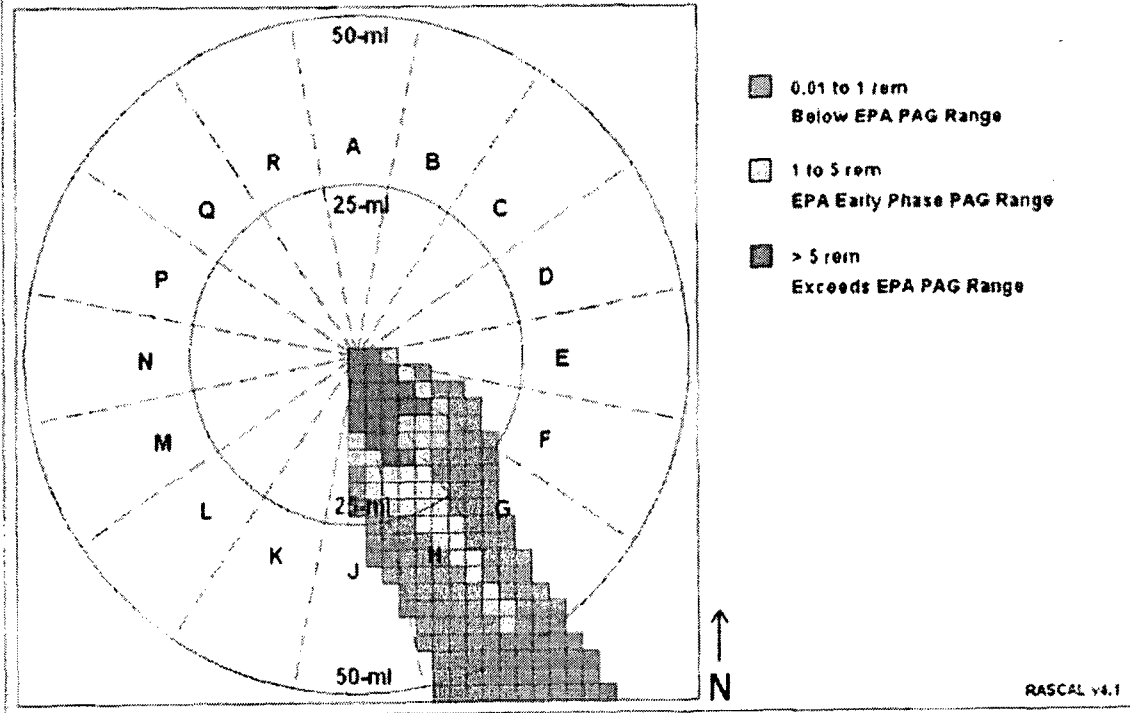
RASCAL v4.1

**Total Effective Dose Equivalent**

Accumulated between 2011/03/15 21:00 and 2011/03/16 21:00

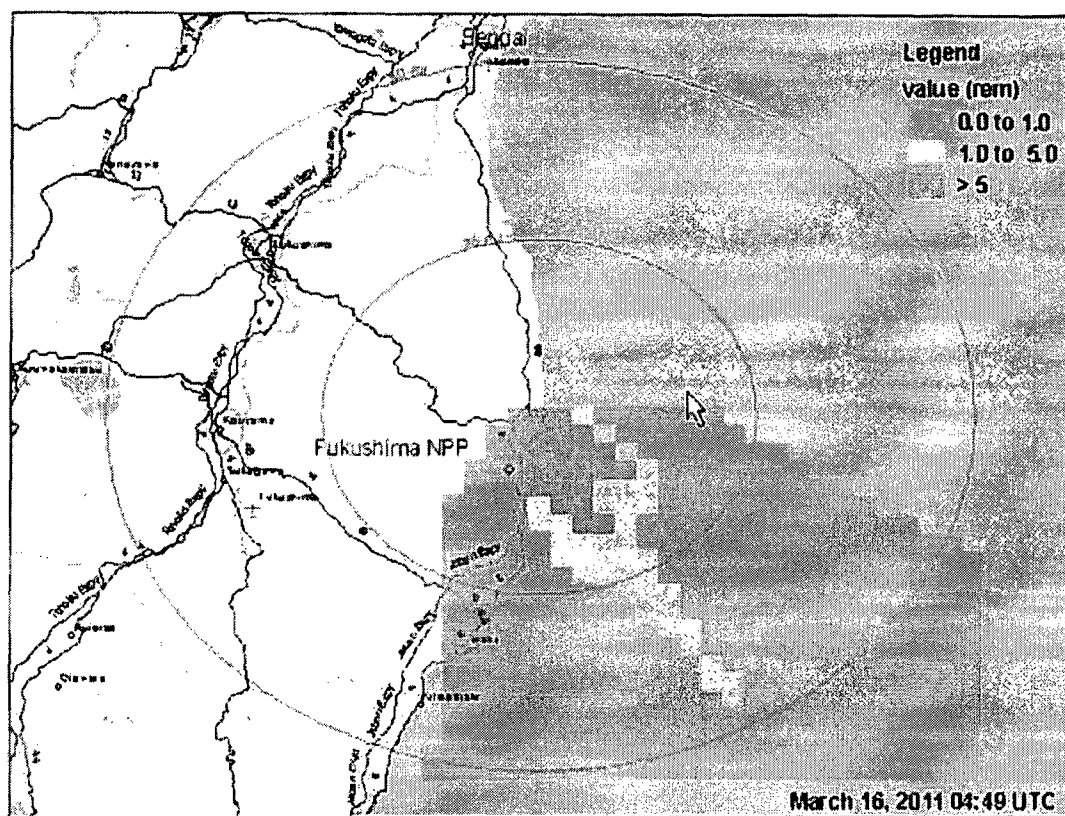
Fukushima Unit 4 estimate for 50 miles

Fukushima Unit 2





# Fukushima Unit 4 estimate for 50 miles - TEDE - Puff



**From:** Case, Michael  
**To:** Karas, Rebecca  
**Subject:** RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link  
**Date:** Wednesday, March 16, 2011 7:54:00 AM

---

Thanks Becky, that's a great tip. It never dawned on me that the GIS operators over on the PMT were seismic folks in disguise. I'm working tonight so I'll at least make that connection with them.

**From:** Karas, Rebecca  
**Sent:** Tuesday, March 15, 2011 10:37 AM  
**To:** Case, Michael  
**Cc:** Devlin, Stephanie; Munson, Clifford; Chokshi, Nilesh; Kammerer, Annie  
**Subject:** RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

If needed, we could actually give you one. In general, so you know, the GIS people we have supporting (Yong Li, Stephanie Devlin, and Dogan Seber) are also seismologists, although they haven't been working with the Q&A document. They are on the PMT. Stephanie is on backshift, so she could help with any questions, or Cliff, Annie or Nilesh could be called through the operator, depending on the complexity of the question and whether there is already an established Q&A that Stephanie could refer to. Cliff/Annie, suggest you include Stephanie on emails of the file in case Mike needs her to help with anything on backshift.

Rebecca Karas, Chief  
Geosciences and Geotechnical Engineering Branch 1  
Division of Site and Environmental Reviews  
Office of New Reactors  
U.S. Nuclear Regulatory Commission  
Phone: 301-415-7533  
Fax: 301-415-5397

**From:** Case, Michael  
**Sent:** Tuesday, March 15, 2011 10:31 AM  
**To:** Karas, Rebecca  
**Subject:** RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

Thanks. Nobody helps me on the back shift (but then again, there aren't many folks around asking questions)

**From:** Karas, Rebecca  
**Sent:** Tuesday, March 15, 2011 10:29 AM  
**To:** Case, Michael  
**Subject:** RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

We actually have people embedded with the RST now on day and afternoons working on the Q&As and providing more direct access for OPA and the ET. Cliff is covering days, and Annie afternoons (except that Nilesh will cover Thursday days). This has all been coordinated through the ops center scheduler now.

0000/47

Rebecca Karas, Chief  
Geosciences and Geotechnical Engineering Branch 1  
Division of Site and Environmental Reviews  
Office of New Reactors  
U.S. Nuclear Regulatory Commission  
Phone: 301-415-7533  
Fax: 301-415-5397

**From:** Case, Michael  
**Sent:** Tuesday, March 15, 2011 10:28 AM  
**To:** Karas, Rebecca  
**Subject:** RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

Thanks Becky. I don't know of any more short term requests from the Ops Center, but we'll keep those folks in mind.

**From:** Karas, Rebecca  
**Sent:** Monday, March 14, 2011 11:23 PM  
**To:** Ross-Lee, MaryJane; Kammerer, Annie; Brown, Frederick; Glitter, Joseph; Howe, Allen; Hiland, Patrick; Skeen, David; Case, Michael; Ruland, William; Dudes, Laura  
**Cc:** McDermott, Brian; Hasselberg, Rick; Chokshi, Niles; Munson, Clifford; Seber, Dogan; Li, Yong; Cook, Christopher  
**Subject:** RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

Our people are plugged into Annie, so we are communicating, but we have many more resources. Niles Chokshi and Cliff Munson are here on day shift, and can provide tsunami and seismic expertise, and access to all of our staff. Our GIS people we are currently staffing the ops center with (Dogan Seber and Yong Li) also have seismology expertise. We have a geologist coming for GIS operation on afternoon shift. Someone also asked today about volcanologists. We have people with some of that experience as well who are normally on day shift. Suggest coordinating directly with Niles and Cliff on day shift, and me on evenings for any call-outs or emergent support.

We have tsunami material from previous briefings. Cliff emailed them to a large cast earlier today, and we can put together something specific for what is needed. From the earlier email below that says:

I take it we would define & describe the tsunami phenomena, then address which nuclear stations in the U.S. are located in areas subject to tsunami waves, and describe what we can regarding the design of plants to withstand tsunami impacts?

Is this what is needed?

**From:** Ross-Lee, MaryJane  
**Sent:** Monday, March 14, 2011 7:45 PM  
**To:** Kammerer, Annie; Brown, Frederick; Glitter, Joseph; Howe, Allen; Hiland, Patrick; Skeen, David; Case, Michael; Ruland, William; Dudes, Laura; Karas, Rebecca  
**Cc:** McDermott, Brian; Hasselberg, Rick  
**Subject:** Re: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

There are a number of resources in NRO that could help. Becky Karas is poc.

Sent from my blackberry

My (b)(6)

---

**From:** Kammerer, Annie

**To:** Brown, Frederick; Gitter, Joseph; Howe, Allen; Hiland, Patrick; Skeen, David; Case, Michael; Ruland, William; Dudes, Laura

**Cc:** McDermott, Brian; Ross-Lee, MaryJane; Hasselberg, Rick

**Sent:** Mon Mar 14 12:45:21 2011

**Subject:** RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

I have a fair amount of info on tsunami. I don't recall ever seeing a tsunami fact sheet, but could be wrong.

My suggestion, if we don't have one, is to get Henry Jones and Goutam Bagchi working on one. I lead the RES work, but can't really dig into this until tomorrow. Goutam and Henry are the two people in NRO who I work most closely with on this topic. They could give us an excellent start. Should I ask them?

BTW, there is a good (and only slightly out of date) summarization of our regulatory approach and regulatory research in an appendix on US practice that I wrote for an IAEA guide on flooding (DS417). Also, Goutam, Henry and I wrote a paper for an IAEA workshop last year.

Annie

**From:** Brown, Frederick

**Sent:** Monday, March 14, 2011 7:13 AM

**To:** Gitter, Joseph; Howe, Allen; Hiland, Patrick; Skeen, David; Case, Michael; Ruland, William; Dudes, Laura

**Cc:** McDermott, Brian; Ross-Lee, MaryJane; Kammerer, Annie; Hasselberg, Rick

**Subject:** FW: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

FYI

**From:** King, Mark

**Sent:** Monday, March 14, 2011 7:08 AM

**To:** Thorp, John; Boger, Bruce

**Cc:** Brown, Frederick; Thomas, Eric

**Subject:** RE: (Action) Tsunami Fact Sheet - NUREG issued in March 2009 Link

We had a NUREG issued on this subject back in March 2009.

**TSUNAMI HAZARD ASSESSMENT AT NUCLEAR POWER PLANT SITES IN THE UNITED STATES OF AMERICA**

Click link to view: [\[NUREG/CR-6966\]](#)

<http://pbadupws.nrc.gov/docs/ML0915/ML091590193.pdf>

**From:** Thorp, John

**Sent:** Monday, March 14, 2011 6:57 AM  
**To:** Böger, Bruce  
**Cc:** Brown, Frederick; King, Mark; Thomas, Eric  
**Subject:** RE: (Action) Tsunami Fact Sheet

We'll look for it; If we don't find it quickly, we'll start producing one. (Mark King, please start looking)

I take it we would define & describe the tsunami phenomena, then address which nuclear stations in the U.S. are located in areas subject to tsunami waves, and describe what we can regarding the design of plants to withstand tsunami impacts?

Thanks.

John

**From:** Böger, Bruce  
**Sent:** Monday, March 14, 2011 6:48 AM  
**To:** Thorp, John  
**Cc:** Brown, Frederick  
**Subject:** Tsunami Fact Sheet

I seem to recall that OpE developed a tsunami fact sheet? Should we dust it off?

## **Matakas, Gina**

---

**From:** Tift, Doug  
**Sent:** Wednesday, March 16, 2011 8:34 AM  
**To:** LIA04 Hoc; Nguyen, Quynh  
**Cc:** Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Haral; Maier, Bill; McNamara, Nancy; Trojanowski, Robert; Woodruff, Gena; Flannery, Cindy; Lukes, Kim; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtill, Richard; Virgilio, Rosetta; Dean, Bill; Lew, David  
**Subject:** RE: Question

My understanding is that the direction we have been given is that we are only permitted to respond to the states questions regarding the Japanese events with OPA approved responses and nothing else. Is the statement in the below email the OPA approved response we are supposed to send to the state? Because since this response is going to the Governor of Massachusetts's appointed representative, I would recommend a more tactful response if we can't answer a question, something along the lines of:

John, although we typically provide the state with nonpublic predecisional information and security related information (including safeguards information) related to the nuclear power plants in your state, due to the international nature of the event coupled with the difficulty of receiving clear, consistent, and accurate information from another country during their ongoing crisis, the NRC is unable to provide information on the magnitude of the release. We can say, that at this time, it does not appear that harmful levels of radiation will reach any part of the U.S., including Alaska and Hawaii.

Can I use the answer above, or do I have to say "We are not commenting on the event so no, we can't say anything on the magnitude of the release?"

-Doug

**From:** LIA04 Hoc  
**Sent:** Tuesday, March 15, 2011 4:26 PM  
**To:** Nguyen, Quynh  
**Cc:** Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Haral; Maier, Bill; McNamara, Nancy; Tift, Doug; Trojanowski, Robert; Woodruff, Gena; Flannery, Cindy; Lukes, Kim; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtill, Richard; Virgilio, Rosetta  
**Subject:** RE: Question

Quynh, for the SharePoint site.

Doug, as our press releases say, we are not commenting on the event so no, we can't say anything on the magnitude of the release.

**From:** Tift, Doug  
**Sent:** Tuesday, March 15, 2011 2:44 PM  
**To:** LIA04 Hoc  
**Cc:** McNamara, Nancy  
**Subject:** FW: Question

Getting this question again. Can we say anything on this?  
-Doug

**From:** Giarrusso, John (CDA) [<mailto:John.Giarrusso@state.ma.us>]  
**Sent:** Tuesday, March 15, 2011 2:00 PM

0000/48

**To:** McNamara, Nancy; Tift, Doug

**Subject:** Question

Nancy and Doug

Continue to hear and see a wide range of information regarding the magnitude of the release in Japan. Can you clarify what Japan is seeing around the reactor, 10 miles out and others?

Thanks

John

John Giarrusso, Jr.

Planning and Preparedness Division Manager

MEMA

508-820-2040 (w)

(b)(6) (c)

**Wittick, Brian**

---

**From:** Wittick, Brian  
**Sent:** Wednesday, March 16, 2011 8:35 AM  
**To:** Nguyen, Quynh; Meighan, Sean  
**Cc:** Merzke, Daniel; Sanfilippo, Nathan; Brock, Kathryn; Frazier, Alan; Bowman, Gregory  
**Subject:** FW: commission meeting outline.docx  
**Attachments:** commission meeting outline.docx

FYI

Brian Wittick  
Executive Technical Assistant for Reactors  
Office of the Executive Director for Operations  
U.S. Nuclear Regulatory Commission  
301-415-2496 (w) (b)(6) (c)

---

**From:** Virgilio, Martin  
**Sent:** Wednesday, March 16, 2011 3:29 AM  
**To:** Borchardt, Bill  
**Cc:** Weber, Michael; Leeds, Eric; Dorman, Dan; Miller, Chris; Lewis, Robert; Doane, Margaret; Powell, Amy; Wiggins, Jim; Casto, Chuck; Brenner, Eliot; Muesle, Mary; Andersen, James; Wittick, Brian; Grobe, Jack; Evans, Michele; Ash, Darren  
**Subject:** FW: commission meeting outline.docx

Bill

Last night the Chairman briefed the Commissioners on the status of the events in Japan and NRC's response. During that meeting the Commissioners suggested NRC hold a Commission meeting either this week or next on the events and the Chairman agreed to the meeting.

Attached is a draft outline for that meeting. We believe this outline could also be used as a tool for organizing a presentation for Congressional Briefings and interactions with the media. We acknowledge the ambitious nature of the outline and the fact that we might not be ready to speak to each of the issues if the Commission meeting is held this week.

Marty

0000/49



## Commission Meeting Outline

### NRC Response to Core Damage Accident in Japan

#### Current Status of Fukushima Daiichi

- Reactors
- Spent Fuel Pools

#### Consequence Projections

#### NRC Response Objectives

- Support of US Citizens in Japan
- Support of the Japanese Government
- Advance Our Understanding of Safety and Risk

#### NRC Response Actions

- In Japan
- At HQ

#### US Government Response

- NRC Partners and Stakeholders

#### Challenges to Success in the Response

- Information
- Coordination

#### Situation Assessment For US Reactors and Applicants (JCO)

- External Events
- Severe Accidents

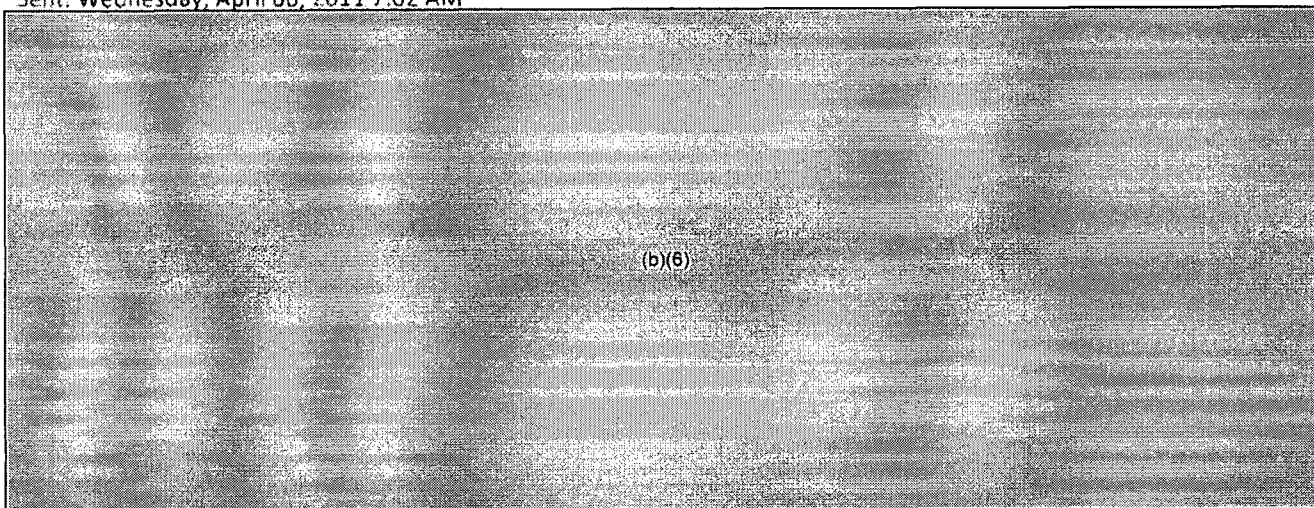
#### Path Forward and Priorities

- Near Term Actions
  - In Support of Response
- Longer Term Actions
  - Lessons Learned From this Event
  - Resolution of GSI 19

**From:** Brandon, Lou  
**Sent:** Wednesday, April 06, 2011 7:43 AM  
**To:** PMT02 Hoc; PMT11 Hoc  
**Subject:** FW: NEWS: Japan sets safety limit for radiation in fish (2,000 Bq/kg for radioactive iodine in seafood) (UNCLASSIFIED)

-----Original Message-----

**From:** Cunningham, William C [mailto:William.Cunningham@fda.hhs.gov]  
**Sent:** Wednesday, April 06, 2011 7:02 AM



**Subject:** RE: NEWS: Japan sets safety limit for radiation in fish (2,000 Bq/kg for radioactive iodine in seafood) (UNCLASSIFIED)

170 Bq/kg (one guideline that applies to all food)

The following include the Guidance and a supporting document.

Further questions on FDA, let us know.

Bill


1998 guidance

<http://www.fda.gov/downloads/MedicalDevices/DeviceRegulationandGuidance/GuidanceDocuments/UCM094513.pdf>

FDA Center for Food Safety and Applied Nutrition supporting document for the 1998 Guidance

<http://www.fda.gov/Food/FoodSafety/FoodContaminantsAdulteration/ChemicalContaminants/Radionuclides/UCM078341>

-----Original Message-----

**From:** Walters, Bob E COL MIL USA MEDCOM OTSG [mailto:  
**Sent:** Tuesday, April 05, 2011 11:28 PM

0000/50

(b)(6)

Subject: RE: NEWS: Japan sets safety limit for radiation in fish (2,000 Bq/kg for radioactive iodine in seafood)  
(UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

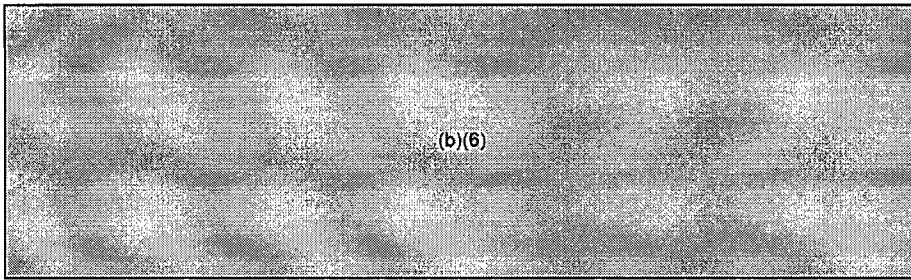
Thanks. Wouldn't happen to have close at hand what the US standard for this is or if US has a pre-set standard already? Appreciate it. Bew

v/r

Bob E. Walters, DVM, MPH  
Colonel, US Army  
Director, Department of Defense  
Veterinary Service Activity  
Office: (703) 981-3062  
E-mail: (b)(6)

-----Original Message-----

From: Jablonowski.Eugene@epamail.epa.gov  
[mailto:Jablonowski.Eugene@epamail.epa.gov]  
Sent: Tuesday, April 05, 2011 2:46 PM  
To: Graham, Ron; albert.wiley@orise.orau.gov; Ansari, Armin J. (CDC);  
Walters, Bob E COL MIL USA MEDCOM OTSG; Brennan, Inga; Whitcomb, Robert  
(CDC); Maher, Carmen; Connell, Carol (ATSDR); cmht@nnsa.doe.gov;  
cmw6@CDC.GOV; Miller, Charles W. (CDC); Liles.Darrell@epamail.epa.gov,  
Dixon, Teri; Tupin Edward@epamail.epa.gov; Morrison, Ellen F;  
EOC\_Environmental\_Unit@epamail.epa.gov; Hornsby-Myers, Jennifer L. (CDC);  
Ferris.John@dol.gov; Brozowski.George@epamail.epa.gov; Allen Jr, George T;  
Evans, Donna L. (CDC); gordon.s.cleveland@aphis.usda.gov; Dixon, John E.  
(CDC); ira.s.reese@cbp.dhs.gov; Cherniack, James; james.williams@dot.gov;  
Nemhauser, Jeffrey B. (CDC); john.jensen@dm.usda.gov;  
john.pavek@wdc.usda.gov; (b)(6) Anderson, Jeri L  
(CDC); Smallwood, Karen R; Keith, Sam (ATSDR); Veal.Lee@epamail.epa.gov;  
lia11.hoc@nrc.gov; lkb1@nrc.gov; Causgrove.Maggie@epamail.epa.gov; Russo,  
Mark; Matthews, Denise - OSHA; Brooks, Michael D. (ATSDR);  
menarm@nv.doe.gov; Menon.Ramesh@dol.gov; michael.howe@dhs.gov; Noska,



Subject: NEWS: Japan sets safety limit for radiation in fish (2,000 Bq/kg for radioactive iodine in seafood)

This article states: "On Tuesday, government chief spokesman Yukio Edano announced a legal limit of 2,000 becquerels per kilogram for radioactive iodine in seafood, the first time it has imposed such a restriction on fish."

Japan sets safety limit for radiation in fish  
(via Nuclear Headlines for ANS Members)

[http://www.channelnewsasia.com/stories/afp\\_asiapacific/view/1120835/1/.html](http://www.channelnewsasia.com/stories/afp_asiapacific/view/1120835/1/.html)  
<blocked[http://www.channelnewsasia.com/stories/afp\\_asiapacific/view/1120835/1/.html](http://www.channelnewsasia.com/stories/afp_asiapacific/view/1120835/1/.html)>

TOKYO - Japan imposed a legal limit Tuesday for radioactive iodine in fish, as the operator of the stricken Fukushima nuclear plant pumped toxic water into the Pacific Ocean for a second day.

The government also said it would look at widening its testing to cover a larger area after raised levels of radioactive iodine were discovered in a small fish caught off Ibaraki prefecture, south of the plant.

The move came as shares in Tokyo Electric Power Co. plunged to a new low of 362 yen -- their lowest ever level -- amid concerns the operator of Japan's crippled nuclear plant will face huge compensation bills.

The embattled company has lost more than 80 percent of its value since the March 11 quake and tsunami knocked out reactor cooling systems at the Fukushima nuclear plant, triggering explosions and releasing radiation.

On Monday, its operators began releasing low-level radioactive water into the sea to free up urgently needed safe storage space for water so toxic that it is halting crucial repair work.

The company has said it needs to dump 11,500 tonnes, or more than four Olympic pools' worth, of the radioactive liquid, raising concerns about marine life in the island nation, where seafood is a key source of protein.

Some radioactive runoff has already leaked into the Pacific Ocean, raising levels of iodine-131 to over 4,000 times the legal limit in one measurement.

On Tuesday, government chief spokesman Yukio Edano announced a legal limit

of 2,000 becquerels per kilogram for radioactive iodine in seafood, the first time it has imposed such a restriction on fish.

"As there is no limit set for radioactive iodine in fish, the government has decided to temporarily adopt the same limit as for vegetables," he told a press conference.

The move came after radioactive iodine of more than double that concentration was detected in a variety of small fish known as konago, or sand lance, caught off Ibaraki prefecture, south of the plant.

Fishing of the species was stopped locally, media reports said, but no wider ban was issued.

Radioactive iodine above legal limits has been detected in vegetables, dairy products and mushrooms, triggering shipping bans, but officials had said seafood was less at risk because ocean currents and tides dilute the dangerous isotopes.

Fishermen in the area expressed outrage over the decision to dump radioactive water into the ocean, saying they had not been consulted.

"We were notified... Can you believe it?" said Yoshihiro Niizuma of the Fukushima Fisheries cooperative. "We heard radioactive material was leaking into the sea. Now they are dumping contaminated water on purpose."

Seoul also questioned the decision to pump radioactive water into the ocean, saying the proximity of the two neighbours made Japan's action "a pressing issue" for South Korea.

Fishing has been banned within 20 kilometres (12 miles) of the stricken plant, matching the radius of the evacuation zone on land, where tens of thousands of residents have been moved out.

The Yomiuri Shimbun on Tuesday reported TEPCO has decided to offer provisional damage payments to residents and farmers near the plant before official damage amounts are estimated later.

But the dumping into the sea of radioactive water has also cast concerns on the earnings of the fishery industry, and some analysts estimate TEPCO could face compensation claims of more than 10 trillion yen (US\$120 billion).

The company last week said it had secured 2 trillion yen in funding but warned that this would not be enough.

The wider economic fallout from Japan's triple calamity -- the massive March 11 earthquake, giant tsunami and the nuclear crisis -- is likely to drive the country into recession in coming months, said a survey of economists.

The disaster, which has left more than 12,000 dead and over 15,000 missing, has also hit exports, business confidence and consumer spending, the Nikkei daily said in the survey of 11 major private economic institutions.

On Tuesday, Tokyo police arrested two people for selling a drug they claimed would protect people from the radiation leaking from the plant.

The pair, a 50-year-old health food trader and his 29-year-old assistant, were charged with the unlicensed sale of a medicine, a police spokesman said.

- AFP/ir

Eugene Jablonowski, Health Physicist  
U.S. EPA Region 5 Emergency Response  
77 W. Jackson Blvd. (SM-5J)  
Chicago, IL 60604  
(312) 886-4591 office  
(b)(6) cell <--- NEW  
(312) 692-2466 fax  
jablonowski.eugene@epa.gov

Classification: UNCLASSIFIED  
Caveats: NONE

**Dean, Bill**

---

**From:** Dean, Bill  
**Sent:** Wednesday, March 16, 2011 9:57 AM  
**To:** Matakas, Gina; ODaniell, Cynthia  
**Cc:** Lew, David  
**Subject:** FW: 11:00 a.m. (EST) Telcon w/ Regions Re: Japan (phone: 888-469-2155/Passcode: (b)(6))

Will require some manipulation of my schedule.

*Bill*

**From:** Cohen, Shari  
**Sent:** Wednesday, March 16, 2011 9:55 AM  
**To:** Schwarz, Sherry; Dean, Bill; Lew, David; Roberts, Darrell; Wilson, Peter; McCree, Victor; Wert, Leonard; Casto, Chuck; Croteau, Rick; Munday, Joel; Satorius, Mark; Pederson, Cynthia; West, Steven; Reynolds, Steven; Collins, Elmo; Howell, Art; Kennedy, Kriss; Vogel, Anton  
**Cc:** Leeds, Eric  
**Subject:** 11:00 a.m. (EST) Telcon w/ Regions Re: Japan (phone: 888-469-2155/Passcode: (b)(6))

Mr. Eric Leeds has requested a teleconference with the regions. He wants to update you and ask for your support – teleconference information below:

Phone: 888-469-2155

Pass code: (b)(6)

Headquarters:

Eric Leeds

Please forward to appropriate AA and DAAs (actors or delegation of authority):

Region 1: Bill Dean, David Lew, Darrell Roberts, Peter Wilson

Region 2: Victor McCree, Len Wert, Chuck Casto, Richard Croteau, Joel Munday

Region 3: Mark Satorius, Cindy Pederson, Steve West, Steve Reynolds

Region 4: Elmo Collins, Art Howell, Kriss Kennedy, Anton Vogel

Shari Cohen, Contract Secretary  
Office of Nuclear Reactor Regulation, USNRC  
Room – O-13H18 / Mail Stop - O13H16M  
Phone – 301-415-1270  
Fax - 301 - 415-8333  
Email - [shari.cohen@nrc.gov](mailto:shari.cohen@nrc.gov)

**From:** Kammerer, Annie  
**To:** Birla, Sushil  
**Cc:** Case, Michael  
**Subject:** Re: Calls for answering questions on earthquakes, etc, in support of Japanese event activities  
**Date:** Wednesday, March 16, 2011 1:34:36 PM

---

Yes, use the "public response" provided if you are outside and are cornered, and are not talking to a reporter. Do not provide any of the information in the "additional..." section.

However, if you get calls from outside, or anyone involved with the press, you should refer them to OPA.

Cheers,  
Annie

Sent from an NRC blackberry  
Annie Kammerer  
mobile (b)(6)  
bb (b)(6)  
annie.kammerer@nrc.gov

---

**From:** Birla, Sushil  
**To:** Kammerer, Annie  
**Cc:** Case, Michael  
**Sent:** Wed Mar 16 12:36:50 2011  
**Subject:** RE: Calls for answering questions on earthquakes, etc, in support of Japanese event activities

Annie  
The document is marked "OUO."  
If I am asked questions outside the NRC, e.g., in public places, am I allowed to use these answers?

Sushil Birla (phonetically Su-sheel)  
Senior Technical Advisor - Digital Instrumentation and Control  
Office of Nuclear Regulatory Research, Mail Stop C5-A24M  
U.S. Nuclear Regulatory Commission  
21 Church Street, Rockville, MD 20850, USA  
Phone: 301-251-7660  
Mobile: (b)(6)  
Fax: 301-251-7425  
Email address: Sushil.Birla@nrc.gov  
Postal address: Mail Stop C5-A24M, Washington DC 20555-0001  
It's time to meet: <http://www.internal.nrc.gov/news/nrcreporter/2010/profiles/Sushil-Birla.html>



**From:** Kammerer, Annie  
**Sent:** Wednesday, March 16, 2011 12:18 PM  
**To:** RES Distribution

0000/52



**Cc:** Karas, Rebecca

**Subject:** FW: Calls for answering questions on earthquakes, etc, in support of Japanese event activities

All,

Please read Becky's email below and follow the procedures she laid out to NRO staff.

It is important that we keep the NRC's message consistent and moving through appropriate channels. I have added the latest version of the seismic Q&As for the convenience of those of you who are getting in-house questions related to your projects and responsibilities. Currently we are updating this daily with the questions (and answers) we collect each day.

Thanks.

Annie

**From:** Karas, Rebecca

**Sent:** Wednesday, March 16, 2011 12:05 PM

**To:** NRO\_DSER Distribution

**Cc:** Chokshi, Niles; Kammerer, Annie; Munson, Clifford

**Subject:** Calls for answering questions on earthquakes, etc, in support of Japanese event activities

All,

Based on what just happened, individuals within NRC appear to be either randomly calling geologists/geophysicists/hydrologists or people they happen to know to answer questions.

For callers who are NRC staff who ask you a question, please direct them to call the Ops Center and ask to be connected to the RST seismologist (Cliff on day shift, Annie on evening shift). That person will coordinate all question responses (if Cliff or Annie call you, provide any support they need to help answer these questions).

For callers who are NOT NRC staff (including people from other agencies), please continue to follow the direction of the EDO here:

**THIS IS NOT A DRILL**

**The Office of Public Affairs is expecting a large volume of calls from media and the general public regarding the latest statements from the State Department and the NRC regarding the situation in Japan. ALL CALLS from media or the general public on this topic must be referred to the 301-415-8200 number.**

The NRC is coordinating its actions with other Federal agencies as part of the U.S. government response to the events in Japan. The NRC is examining all available information as part of the effort to analyze the event and understand its implications both for Japan and the United States. The NRC's Headquarters Operations Center in Rockville, MD has been stood up since the beginning of the emergency in Japan and is operating on a 24-hour basis.

NRC Incident Responders at Headquarters have spoken with the agency's counterpart in Japan and

offered the assistance of U.S. technical experts. NRC representatives with expertise on boiling water nuclear reactors have deployed to Japan as part of a U.S. International Agency for International Development (USAID) team. USAID is the Federal government agency primarily responsible for providing assistance to countries recovering from disasters.

U.S. nuclear power plants are built to withstand environmental hazards, including earthquakes and tsunamis. Even those plants that are located outside of areas with extensive seismic activity are designed for safety in the event of such a natural disaster. The NRC requires that safety significant structures, systems, and components be designed to take in account the most severe natural phenomena historically estimated for the site and surrounding area.

The NRC will not provide information on the status of Japan's nuclear power plants. For the latest information on NRC actions see the NRC's web site at [www.nrc.gov](http://www.nrc.gov) or blog at <http://public-blog.nrc.gov>.

**Two important reminders:**

It is possible that some of us will be requested by colleagues in another country to provide technical advice and assistance during this emergency. It is essential that all such communications be handled through the NRC Operations Center. Any assistance to a foreign government or entity must be coordinated through the NRC Operations Center and the U.S. Department of State (DOS). If you receive such a request, contact the NRC Operations Officer (301-816-5100 or via the NRC Operator) immediately.

If you receive information regarding this or any emergency (foreign or domestic) and you are not certain that the NRC's Incident Response Operations Officer is already aware of that information, you should contact the NRC Operations Officer (301-816-5100 or via the NRC Operator) and provide that information.

**Other Sources of Information:**

USAID – [www.usaid.gov](http://www.usaid.gov)

U.S. Department of State – [www.state.gov](http://www.state.gov)

FEMA – [www.fema.gov](http://www.fema.gov)

White House – [www.whitehouse.gov](http://www.whitehouse.gov)

Nuclear Energy Institute – [www.nei.org](http://www.nei.org)

International Atomic Energy Agency – [www.iaea.org/press](http://www.iaea.org/press)

No response to this message is required.

**THIS IS NOT A DRILL**

Rebecca Karas, Chief  
Geosciences and Geotechnical Engineering Branch 1

Division of Site and Environmental Reviews  
Office of New Reactors  
U.S. Nuclear Regulatory Commission  
Phone: 301-415-7533  
Fax: 301-415-5397

---

**From:** OST05 Hoc  
**Sent:** Wednesday, March 16, 2011 1:54 PM  
**To:** Browder, Rachel; Maier, Bill  
**Cc:** Whitten, Jack; LIA04 Hoc; Virgilio, Rosetta; Barker, Allan; Erickson, Randy; Logaras, Haral; McNamara, Nancy; Tift, Doug; Trojanowski, Robert; Woodruff, Gena; Flannery, Cindy; Lukes, Kim; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michael; Turtill, Richard  
**Subject:** RE: Air Forces in Japan

Direction here is to refer this Q back to their United command structure. You can provide NRC's press release, which I understand should come out soon. Will plan to get it to you as soon as it does.

---

**From:** Browder, Rachel  
**Sent:** Wednesday, March 16, 2011 1:12 PM  
**To:** OST05 Hoc; LIA04 Hoc; Maier, Bill; Virgilio, Rosetta  
**Cc:** Whitten, Jack  
**Subject:** Air Forces in Japan

I received a request from the Air Force MML regarding the event in Japan. They were wondering if they could get more specific information to provide to their responders and Base Personnel in Japan. Can this be coordinated with Chuck Casto et.al?

Please see the email link below that is for classified email only - if that would help.

I appreciate it,  
Rachel Browder

(b)(6)

---

**From:** Dowell, Laurie E CTR USAF AFMSA/SG3PB  
**Sent:** Wednesday, March 16, 2011 1:05 PM  
**To:** Browder, Rachel  
**Subject:** Classified email

(b)(6)

Rachael,

Lt Col Smith's SIPR email address is below. It is for classified email only. If the NRC can access the email address, perhaps they can send information not available to the public

(b)(6)

Thank you for your help, Rachael

Elisa  
Elisa Dowell, CHP  
Health Physicist, Contracted to  
AF Radioisotope Committee Secretariat  
AF Medical Support Agency  
Office of the Surgeon General  
1500 Wilson Blvd, Suite 1600

0000/53

**From:** Harrington, Holly  
**To:** Brenner, Eliot; Hayden, Elizabeth; Stuckle, Elizabeth; Strasma, Jan; Clark, Kenneth; Akstulewicz, Brenda; Chandrathil, Prema; McIntyre, David; Screnci, Diane; Couret, Iyonna; Janbergs, Holly; Ledford, Joey; Sheehan, Neil; Hannah, Roger; Burnell, Scott; Uselding, Lara; Shannon, Valerie; Dricks, Viktor; Mitlyng, Viktoria  
**Subject:** RE: fire q-and-a  
**Date:** Thursday, April 14, 2011 10:13:28 AM

---

I copied this to the "japan folder" in the G drive

---

**From:** Brenner, Eliot  
**Sent:** Thursday, April 14, 2011 9:55 AM  
**To:** Hayden, Elizabeth; Stuckle, Elizabeth; Strasma, Jan; Clark, Kenneth; Akstulewicz, Brenda; Chandrathil, Prema; McIntyre, David; Screnci, Diane; Harrington, Holly; Couret, Iyonna; Janbergs, Holly; Ledford, Joey; Sheehan, Neil; Hannah, Roger; Burnell, Scott; Uselding, Lara; Shannon, Valerie; Dricks, Viktor; Mitlyng, Viktoria  
**Subject:** fire q-and-a

Attached is the document we sent Propublica on some of their fire questions. Note the discussion on the introductory page about NFPA 805 being a custom-tailored fire safety program based on risk as opposed to Appendix R being a one-size-fits-all approach.

eliot

Eliot Brenner  
Director, Office of Public Affairs  
Nuclear Regulatory Commission  
Rockville, Md.

O: 301-415-8200

C: (b)(6)

0000/54

## Huffert, Anthony

---

**From:** Huffert, Anthony  
**Sent:** Tuesday, April 19, 2011 11:23 PM  
**To:** (b)(6)  
**Cc:** Reynolds, Steven; Gepford, Heather; Meighan, Sean; Wittick, Brian;  
'christopher.smith@nnsa.doe.gov'  
**Subject:** Visit to Yokota base

CAPT. Tanaka,

As you requested, I'm sending you this email to summarize the purpose of the NRC staff visit at the Yokota base later this week. Our goal is to meet with other US Government (DOE and USAF) counterparts that have been collecting, analyzing, and interpreting radiological data in response to the Fukushima Daichi incident. We're seeking information on both ongoing and planned measurements, the process DOE used for developing PAGs based on DOE measurement methods, and an understanding of environmental monitoring methods at the base.

We understand that Friday, April 22<sup>nd</sup>, is proposed for this trip. NRC staff participants will bring their HSPD-12 security badges – please let us know if additional security or other information is needed in support of this trip.

We look forward to hearing from you.

PMT Embassy  
Heather Gepford, Tony Huffert, Sean Meighan

0000/55

**Dean, Bill**

---

**From:** LIA04 Hoc  
**Sent:** Wednesday, March 16, 2011 7:16 PM  
**To:** OST05 Hoc; Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill; McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena; Collins, Elmo; Dean, Bill; Heck, Jared; McCree, Victor; Satorius, Mark; Flannery, Cindy; Lukes, Kim; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtill, Richard; Virgilio, Rosetta  
**Cc:** Piccone, Josephine; Jackson, Deborah  
**Subject:** FW: Japan event links and statement excerpts from the States of Alaska, Washington, Oregon, California and Hawaii; and EPA RadNet Info

Thank you Harral.

Everyone else: here are State statements from today.

Richard Turtill  
State Liaison – Liaison Team  
Incident Response Center

**From:** Logaras, Harral  
**Sent:** Wednesday, March 16, 2011 4:32 PM  
**To:** OST05 Hoc; LIA04 Hoc; LIA07 Hoc  
**Cc:** Heck, Jared; Pederson, Cynthia; Barker, Allan; Lynch, James; Jablonowski.Eugene@epamail.epa.gov; Reynolds, Steven; Boland, Anne; West, Steven; Holt, BJ  
**Subject:** FW: Japan event links and statement excerpts from the States of Alaska, Washington, Oregon, California and Hawaii; and EPA RadNet Info

Please see the forwarded message from our counterpart at U. S. EPA Region V.

Sincerely,

Harral Logaras  
U. S. NRC Region III  
Regional Government Liaison  
630-829-9659

Link to the Award Winning NRC Information Digest <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/v22/sr1350v22.pdf>

Link to NRC Fact Sheets and Brochures <http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/>

**From:** Jablonowski.Eugene@epamail.epa.gov [mailto:Jablonowski.Eugene@epamail.epa.gov]  
**Sent:** Wednesday, March 16, 2011 3:06 PM  
**To:** Barker, Allan; Logaras, Harral; VanHorn, Christine; rifkind@anl.gov; Jeffry McSpaden-Federal Highway Admn.; Jablonowski.Eugene@epamail.epa.gov; Ostrodka.Stephen@epamail.epa.gov; Evans, Rachel T; Adrianopoli, Carl (HHS/ASPR/OPEO); Bates, Kerris; Bebrich, Carl; Bellone, Christopher; Crackel, Clint; Diaz, Edward; Fulk, Deborah; Genskie, Todd; King, James; King, William; Kinsley, Delwyn; Naskrent, Gary; Nettles-Bey, Rosie; Ortman, David; Rabenhorst, Karl; Scott, Kara; Simpson, John; Sturghill, Carolyn; Tulley, Stephen; Warren, Dwaine; kevin.leuer@state.mn.us; COCLAIRE@DPS.STATE.OH.US; Idresen@dhs.in.gov; teri.engelhart@dma.state.wi.us; Thomas Higinbotham; William Conway; King, William  
**Cc:** Ostrodka.Stephen@epamail.epa.gov; Mitchell.James@epamail.epa.gov; Barnette.Jack@epamail.epa.gov

0000/56

**Subject:** FYI: Japan event links and statement excerpts from the States of Alaska, Washington, Oregon, California and Hawaii; and EPA RadNet Info

Following up with Bill King's recent email, here's what some of the States and U.S. EPA are saying.

**Japan event links and statement excerpts from the States of Alaska, Washington, Oregon, California and Hawaii**

**Alaska**

[http://www.hss.state.ak.us/press/2011/Reactor\\_pr\\_031511.pdf](http://www.hss.state.ak.us/press/2011/Reactor_pr_031511.pdf)

<http://www.hss.state.ak.us/prepared/radiological.htm>

*"The State of Alaska, along with our Federal counterparts, is continually monitoring the situation in Japan regarding their nuclear reactors. According to officials, at this time there is no immediate or anticipated threat of nuclear radiation reaching Alaska. We will continue to monitor the situation and notify the public through regular media channels and this website should the situation change."*

**Washington**

<http://www.doh.wa.gov/Topics/japan-faq.htm>

*"We don't expect significant levels of radioactivity in our state, and there's no health risk. Japan is thousands of miles from our state, and if radioactivity from the reactors there is released to the upper atmosphere it would be thinned-out by the winds before it could reach us. We could see a very small increase in radiation levels — well below levels that would be a health concern. We're working with federal, state, and local agencies in a coordinated effort to monitor radiation levels in the air and rain water."*

**Oregon**

<http://public.health.oregon.gov/Preparedness/CurrentHazards/Pages/index.aspx>

<http://public.health.oregon.gov/Preparedness/CurrentHazards/Documents/Factsheets/factsheet-japan-event.pdf>

<http://public.health.oregon.gov/Preparedness/CurrentHazards/Documents/Factsheets/qa-japan-event.pdf>

*"No Health Risk to Oregon from Japanese Radiation Events"*

**California**

<http://www.cdph.ca.gov/Pages/CDPHCalEMAstatementMarch152011.aspx>

<http://www.calema.ca.gov/WebPage/oeswebsite.nsf/Content/1E69ED3C8DE165DB882576D70062B6FE?OpenDocument>

<http://calemanews.wordpress.com/2011/03/16/statement-from-california-s-department-of-public-health-and-emergency-management-agency-on-risk-of-radiation-exposure/>

*"We urge Californians to not take potassium iodide as a precautionary measure. It is not necessary given the current circumstances in Japan, it can present a danger to people with allergies to iodine, shellfish or who have thyroid problems, and taken inappropriately it can have serious side effects including abnormal heart rhythms, nausea, vomiting, electrolyte abnormalities and bleeding."*

**Hawaii**

<http://hawaii.gov/health/about/pr/pressdate.html>

*"The DOH Indoor and Radiological Health Branch (IRHB) is closely monitoring information on the radiation release, and with the current size of the release and the distance from Hawaii, no public health risk to the state is expected."*

*"The DOH in partnership with the U.S. Environmental Protection Agency has a system in place for ambient monitoring for radioactive dust. The system (RADNET) looks at real-time data as well as particulate sampling (from monitors located on the islands of Oahu and Hawaii) which are analyzed by the DOH and at a laboratory in Alabama. At this time, the department has no indication of any readings above normal background levels and does not expect any "spikes" due to the limited amount of material released and the current environmental conditions."*

**U.S. EPA: Japanese Nuclear Emergency: Basic Radiation Facts From EPA**

<http://www.epa.gov/radiation/>

<http://www.epa.gov/radiation/statement.html>



Tyson.Marypat@epamail.epa.gov; Mankowski.Craig@epamail.epa.gov

**Subject:** FYI: Japan event links and statement excerpts from the States of Alaska, Washington, Oregon, California and Hawaii; and EPA RadNet Info

Following up with Bill King's recent email, here's what some of the States and U.S. EPA are saying.

#### Japan event links and statement excerpts from the States of Alaska, Washington, Oregon, California and Hawaii

##### Alaska

[http://www.hss.state.ak.us/press/2011/Reactor\\_pr\\_031511.pdf](http://www.hss.state.ak.us/press/2011/Reactor_pr_031511.pdf)

<http://www.hss.state.ak.us/prepared/radiological.htm>

*"The State of Alaska, along with our Federal counterparts, is continually monitoring the situation in Japan regarding their nuclear reactors. According to officials, at this time there is no immediate or anticipated threat of nuclear radiation reaching Alaska. We will continue to monitor the situation and notify the public through regular media channels and this website should the situation change."*

##### Washington

<http://www.doh.wa.gov/Topics/japan-faq.htm>

*"We don't expect significant levels of radioactivity in our state, and there's no health risk. Japan is thousands of miles from our state, and if radioactivity from the reactors there is released to the upper atmosphere it would be thinned-out by the winds before it could reach us. We could see a very small increase in radiation levels — well below levels that would be a health concern. We're working with federal, state, and local agencies in a coordinated effort to monitor radiation levels in the air and rain water."*

##### Oregon

<http://public.health.oregon.gov/Preparedness/CurrentHazards/Pages/index.aspx>

<http://public.health.oregon.gov/Preparedness/CurrentHazards/Documents/Factsheets/factsheet-japan-event.pdf>

<http://public.health.oregon.gov/Preparedness/CurrentHazards/Documents/Factsheets/qa-japan-event.pdf>

*"No Health Risk to Oregon from Japanese Radiation Events"*

##### California

<http://www.cdph.ca.gov/Pages/CDPHCalEMAstatementMarch152011.aspx>

<http://www.calema.ca.gov/WebPage/oeswebsite.nsf/Content/1E69ED3C8DE165DB882576D70062B6FE?OpenDocument>

<http://calemanews.wordpress.com/2011/03/16/statement-from-california-s-department-of-public-health-and-emergency-management-agency-on-risk-of-radiation-exposure/>

*"We urge Californians to not take potassium iodide as a precautionary measure. It is not necessary given the current circumstances in Japan, it can present a danger to people with allergies to iodine, shellfish or who have thyroid problems, and taken inappropriately it can have serious side effects including abnormal heart rhythms, nausea, vomiting, electrolyte abnormalities and bleeding."*

##### Hawaii

<http://hawaii.gov/health/about/pr/pressdate.html>

*"The DOH Indoor and Radiological Health Branch (IRHB) is closely monitoring information on the radiation release, and with the current size of the release and the distance from Hawaii, no public health risk to the state is expected."*

*"The DOH in partnership with the U.S. Environmental Protection Agency has a system in place for ambient monitoring for radioactive dust. The system (RADNET) looks at real-time data as well as particulate sampling (from monitors located on the islands of Oahu and Hawaii) which are analyzed by the DOH and at a laboratory in Alabama. At this time, the department has no indication of any readings above normal background levels and does not expect any "spikes" due to the limited amount of material released and the current environmental conditions."*

##### U.S. EPA: Japanese Nuclear Emergency: Basic Radiation Facts From EPA

<http://www.epa.gov/radiation/>

<http://www.epa.gov/radiation/statement.html>

EPA Statement on Air Monitoring Effort: "As the Nuclear Regulatory Commission has said, we do not expect to see radiation at harmful levels reaching the U.S. from damaged Japanese nuclear power plants. As part of the federal government's continuing effort to make our activities and science transparent and available to the public, the Environmental Protection Agency (EPA) will continue to keep all RadNet data available in the current online database. In addition, EPA plans to work with its federal partners to deploy additional monitoring capabilities to parts of the western U.S. and U.S. territories."

---

Eugene Jablonowski, Health Physicist  
U.S. EPA Region 5 Emergency Response  
77 W. Jackson Blvd. (SM-5J)  
Chicago, IL 60604  
(312) 886-4591 office  
(b)(6) cell <--- NEW  
(312) 692-2466 fax  
jablonowski.eugene@epa.gov

---

**From:** Kenagy, W David <KenagyWD@state.gov>  
**Sent:** Wednesday, March 16, 2011 7:29 PM  
**To:** Kenagy, W David; McClelland, Vince; Rodriguez, Veronica; Heinrich, Ann; HOO Hoc; HOO2 Hoc; Huffman, William; DeCair, Sara@epamail.epa.gov; timothy.greten@dhs.gov; Maria.Marinissen@hhs.gov; (b)(6) doehqeoc@oem.doe.gov; hhs.soc@hhs.gov; James.Kish@dhs.gov; HOO Hoc; Smith, Brooke; Zubarev, Jill E; Shaffer, Mark R; NITOPS@nnsa.doe.gov  
**Subject:** IAEA distributed document  
**Attachments:** en20110317-1[1].pdf

This email is UNCLASSIFIED.

0000/57

March 16, 2011

Nuclear and Industrial Safety Agency

Seismic Damage Information (the 26th Release)  
(As of 14:00 March 16th, 2011)

Nuclear and Industrial Safety Agency (NISA) confirmed the current situation of Onagawa NPS, Tohoku Electric Power Co., Inc; Fukushima Dai-ichi and Fukushima Dai-ni NPSs, Tokyo Electric Power Co., Inc. Tokai Dai-ni NPS, Japan Atomic Power Co., Inc, as follows:

New updates are as follows.

1. Nuclear Power Stations (NPS)

● Fukushima Dai-ichi NPS

- The white smoke like steam generated from Unit 3. (08:30 March 16th)
- Because of the possibility that the Primary Containment Vessel (PCV) of Unit 3 was damaged, the operators evacuated from the central control room of Unit 3 and 4 ( a sheared facility). (10:45 March 16th) Thereafter the operators returned to the room and restarted the operation for water injection. (11:30 March 16th)
- The fire at Unit 4 occurred. (05:45 March 16th) TEPCO reported that no fire could be confirmed on the ground. (06:15 March 16th)

2. Actions taken by NISA

(March 15th)

22:00 According to the Nuclear Regulation Act, Minister of Economy, Trade and Industry issued the directives as follows.

For Unit 4: To implement the injection of water to the Spent Fuel Storage Pool.

<Situation of the injured>

- As for the member of Self-Defense-Force(a person) who injured due to the explosion of Unit 3 of Fukushima Dai-ichi NPS and was transported to National Institute of Radiological Sciences, the examination resulted in no internal exposure. Discharged March 16th.

# News Release



(Contact Person)  
Mr. Toshihiro Bannai  
Director, International Affairs Office,  
NISA/METI  
Phone: +81-(0)3-3501-1087

(Attached sheet)

## 1. The status of operation at NPS (Number of automatic shutdown units: 10)

- Fukushima Dai-ichi NPS, Tokyo Electric Power Co. Inc. (TEPCO)  
(Okuma-machi and Futaba-machi, Futaba-gun, Fukushima Prefecture)

### (1) The status of operation

Unit 1 (460MWe): automatic shutdown  
 Unit 2 (784MWe): automatic shutdown  
 Unit 3 (784MWe): automatic shutdown  
 Unit 4 (784MWe): in periodic inspection outage  
 Unit 5 (784MWe): in periodic inspection outage  
 Unit 6 (1,100MWe): in periodic inspection outage

### (2) Major Plant Parameters (14:00 March 16th)

|                                    | unit | Unit 1                | Unit 2                       | Unit 3                |
|------------------------------------|------|-----------------------|------------------------------|-----------------------|
| Reactor Pressure                   | MPa  | 0.207 (A)<br>0.171(B) | Bad indication <sup>*2</sup> | 0.059 (A)<br>0.065(A) |
| CV Pressure                        | KPa  | Not available         | 40                           | 230                   |
| Reactor Water Level*               | mm   | -1750(A)<br>-1750(B)  | -1400(A)<br>Not available(B) | -1900(A)<br>-2300(B)  |
| Suppression Pool Water Temperature | °C   | Not available         | Not available                | Not available         |
| Suppression Pool Pressure          | KPa  | Not available         | down scale                   | down scale            |
| Measuring time                     |      | 12:25                 | 12:25                        | 12:40                 |

\*1: Distance from the top of fuel.

\*2: Due to loss of battery power.

### (3) Report concerning other incidents

- TEPCO reported to NISA the Event in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi. (15:42 March 11th)
- TEPCO reported to NISA the event in accordance with the Article 15 of the Act on

## Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1 and 2 (16:36 March 11th)

### <Unit 1>

- Seawater was injected to the Containment Vessel via the Fire Extinguishing System Line (Started up 11:55 March 13th)  
→Temporary interruption of the injection (01:10 March 14th)
- The sound of explosion in Unit 1 occurred. (15:36 March 12nd)
- Under sea water injection (14:00 March 16th)

### <Unit 2>

- Water injection function was sustained. (14:00 March 13th)
- Reactor water level was decreasing. (13:18 March 14th)
- Seawater injection to the Reactor Pressure Vessel (RPV) was ready through the Fire Extinguishing System line. (19:20 March 14th)
- TEPCO evaluated core damage of Unit 2 was "less than 5%" (22:14 March 14th)
- Water level in RPV in Unit 2 is decreasing. (22:50 March 14th)
- A sound of explosion was made in Unit 2. As the pressure in Suppression Chamber decreased, there was possibility that an incident occurred in this Chamber. (06:20 March 15th)
- Under sea water injection (14:00 March 16th)

### <Unit 3>

- Fresh water was injected to the PCV via the Fire Extinguishing System Line (FESL). (11:55 March 13th)
- Seawater was injected to the PCV via FESL. (13:12 March 13th)
- Injection of seawater for Unit 1 and Unit 3 into PCV was interrupted due to the lack of seawater in pit. (01:10 March 14th)
- For Unit 3 injection of seawater into PCV was restarted (03:20 March 14th)
- For Unit 3 the pressure increased unusually. (11:45 March 14th)
- For Unit 3 the explosion like Unit 1 occurred around the Reactor Building (11:01 March 14th)
- The white smoke like steam generated from Unit 3. (08:30 March 16th)
- Because of the possibility that the Primary Containment Vessel (PCV) of Unit 3 was damaged, the operators evacuated from the central control room of Unit 3 and 4 ( a shared facility). (10:45 March 16th) Thereafter the operators returned to the

room and restarted the operation for water injection. (11:30 March 16<sup>th</sup>)

## <Unit 4>

- It was confirmed that a part of wall in the operation area of Unit 4 was damaged. (06:14 March 15th)
- The fire at Unit 4 occurred. (09:38 March 15th) TEPCO reported that the fire was extinguished spontaneously. (11:00 March 15th)
- The temperature of water in the Spent Fuel Storage Pool at Unit 4 had increased. (84 °C at 04:08 March 14th)
- The fire occurred at Unit 4. (5:45 March 15th) TEPCO reported that no fire could be confirmed on the ground. (06:15 March 16th)
- The water injection was stopped. (14:00 March 16th)

- Fukushima Dai-ichi Nuclear Power Station (TEPCO)  
(Naraha-machi/Tomioka-machi, Futaba-gun, Fukushima pref.)

## (1) The status of operation

Unit1 (1,100MWe): automatic shutdown, cold shut down at 17:00, March 14th  
 Unit2 (1,100MWe): automatic shutdown, cold shut down at 18:00, March 14th  
 Unit3 (1,100MWe): automatic shutdown, cold shut down at 12:15, March 12th  
 Unit4 (1,100MWe): automatic shutdown, cold shut down at 07:15, March 15th

## (2) Major plant parameters (As of 13:00, 16 March)

|                                    | unit | Unit 1        | Unit 2        | Unit 3        | Unit 4        |
|------------------------------------|------|---------------|---------------|---------------|---------------|
| Reactor Pressure                   | MPa  | 0.10          | 0.03          | 0.04          | 0.08          |
| Reactor water temperature          | °C   | 55.6          | 52.3          | 27.9          | 55.4          |
| Reactor water level*               | Mm   | 10,996        | 11,396        | 7,547         | 8,615         |
| Suppression pool water temperature | °C   | 39            | 34            | 44            | 56            |
| Suppression pool pressure          | KPa  | 147           | 137           | 131           | 174           |
| Remarks                            |      | cold shutdown | cold shutdown | cold shutdown | cold shutdown |

\*: Distance from the top of fuel



(3) Report concerning other incidents

- TEPCO reported to NISA the event in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi Unit 1. (18:08 March 11th)
- TEPCO reported to NISA the events in accordance with the Article 10 regarding Units 1, 2 and 4. (18:33 March 11th)

- Onagawa NPS (Tohoku Electric Power Co., Inc.)  
(Onagawa-cho, Oga-gun and Ishinomaki-shi, Miyagi Prefecture)

(1) The status of operation

Unit 1 (524MWe): automatic shutdown, cold shut down at 0:58, March 12th

Unit 2 (825MWe): automatic shutdown, cold shut down at earthquake

Unit 3 (825MWe): automatic shutdown, cold shut down at 1:17, March 12th

(2) Readings of monitoring post

Reading of monitoring post:

MP2 (Monitoring at the North End of Site Boundary)

approx. 6,500 nGy/h (19:00 March 14th)

→approx. 5,400 nGy/h (19:00 March 15th)

(3) Report concerning other incidents

- Fire Smoke on the first basement of the Turbine Building was extinguished. (22:55 on March 11th)
- Reported on the Article 10\* of the Act on Special Measures Concerning Nuclear Emergency Preparedness (13:09 March 13th)

## 2. Action taken by NISA

(March 11th)

14:46 Set up of the NISA Emergency Preparedness Headquarters (Tokyo) immediately after the earthquake

15:42 TEPCO reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.

16:36 TEPCO judged the event in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS, Units 1 and 2. (reported to NISA at 16:45)

- 18:08 Regarding Unit 1 of Fukushima Dai-ni NPS, TEPCO reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 18:33 Regarding Units 1,2 and 4 of Fukushima Dai-ni NPS, TEPCO reported to NISA in accordance with the Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 19:03 Government declared the state of nuclear emergency. (Establishment of Government Nuclear Emergency Response Headquarters and Local Emergency Response Headquarters)
- 20:50 Fukushima Prefecture's Emergency Response Headquarters issued a direction for the residents within 2 km radius from Unit 1 of Fukushima Dai-ichi NPS to evacuate. (The population of this area is 1,864)
- 21:23 Directives from Prime Minister to the Governor of Fukushima Prefecture, the Mayor of Ookuma Town and the Mayor of Futaba Town were issued regarding the event occurred at Fukushima-Dai-ichi NPS, TEPCO, in accordance with the Paragraph 3, the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness as follows:
- Direction for the residents within 3km radius from Unit 1 to evacuate.
  - Direction for the residents within 10km radius from Unit 1 to stay in-house.
- 24:00 Vice Minister of Economy, Trade and Industry, Ikeda arrived at the Local Emergency Response Headquarters

(March 12th)

- 05:22 Regarding Unit 1 of Fukushima Dai-ni NPS, TEPCO reported to NISA in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 05:32 Regarding Unit 2 of Fukushima Dai-ni NPS, TEPCO reported to NISA in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 05:44 Residents within 10km radius from Unit 1 of Fukushima Dai-ichi NPS shall evacuate by the Prime Minister Direction.
- 06:07 Regarding of Unit 4 of Fukushima Dai-ni NPS, TEPCO reported to NISA in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 06:50 In accordance with the Paragraph 3, the Article 64 of the Nuclear Regulation Act, the order was issued to control the internal pressure of the Containment

Vessel of Units 1 and 2 of Fukushima Dai-ichi NPS.

07:45 Directives from Prime Minister to the Governor of Fukushima Prefecture, the Mayors of Hirono Town, Naraha Town, Tomioka Town and Ookuma Town were issued regarding the event occurred at Fukushima Dai-ichi NPS, TEPCO, pursuant to the Paragraph 3, the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness as follows:

- Direction for the residents within 3km radius from Fukushima Dai-ichi NPS to evacuate.
- Direction for the residents within 10km radius from Fukushima Dai-ichi NPS to stay in-house

17:00 TEPCO reported to NISA in accordance with the Article 15 of the Act on Special Measure Concerning Nuclear Emergency Preparedness since the radiation level at Fukushima Dai-ichi NPS exceeded the acceptable limit.

17:39 Prime Minister directed evacuation of the residents within the 10 km radius from Fukushima-Dai-ichi NPS

18:25 Prime Minister directed evacuation of the residents within the 20km radius from Fukushima Dai-ichi NPS

19:55 Directives from Prime Minister was issued regarding seawater injection to Unit No.1 of Fukushima Dai-ichi NPS.

20:05 Considering the Directives from Prime Minister and pursuant to the Paragraph 3, the Article 64 of the Nuclear Regulation Act, order was issued to inject seawater to Unit 1 of Fukushima Dai-ichi NPS.

20:20 At Unit 1 of Fukushima Dai-ichi NPS, seawater injection started.

## (March 13th)

05:38 TEPCO reported to NISA pursuant to the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness since Unit 3 of Fukushima Dai-ichi NPS lost total coolant injection function. Recovering efforts by TEPCO of the power source and coolant injection function and work on venting are underway.

09:08 Pressure suppression in the Containment Vessel and fresh water injection started at Unit 3 of Fukushima Dai-ichi NPS

09:20 Opening of Pressure vent valve of Unit 3 of Fukushima Dai-ichi NPS.

09:30 The order was issued for the Governor of Fukushima Prefecture, the Mayors of Ookuma Town, Futaba Town, Tomioka Town and Namie Town in accordance with the Act on Special Measures Concerning Nuclear Emergency Preparedness

on the contents of radioactivity decontamination screening.

09:38 TEPCO reported to NISA that Unit 1 of Fukushima Dai-ichi NPS reached a situation specified in the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

13:09 Tohoku Electric Power Company reported to notified that Onagawa NPS reached a situation specified in the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

13:12 Fresh water injection was switched to seawater injection at Unit 3 of Fukushima Dai-ichi NPS.

14:25 TEPCO reported to NISA that Fukushima Dai-ichi NPS reached a situation specified in the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

## (March 14th)

01:10 Seawater injection at Unit 1 and Unit 3 of Fukushima Dai-ichi NPS were temporarily interrupted due to the lack of seawater in pit.

03:20 Seawater injection at Unit 3 of Fukushima Dai-ichi NPS was restarted.

04:24 TEPCO reported to NISA that Fukushima Dai-ichi NPS reached the situation specified in the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

07:53 TEPCO reported to NISA that Fukushima Dai-ichi NPS reached the situation specified in the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

13:25 TEPCO reported to NISA that Fukushima Dai-ichi Unit 2 of NPS reached the situation specified in the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

22:13 TEPCO reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.

22:35 TEPCO reported to NISA in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.

## (March 15th)

00:00: The acceptance of experts from IAEA was decided.

NISA agreed to accept the offer of dispatching of the expert on NPS damage

from IAEA considering the intention by Mr. Amano, Director General of IAEA. Therefore, the schedule of expert acceptance will be planned from now on according to the situation.

00:00: NISA also decided the acceptance of experts dispatched from NRC.

07:24 JAEA reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding, Tokai Research and Development Centre, Nuclear Fuel Cycle Engineering Laboratories.

07:44 JAEA reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Nuclear Science Research Institute.

10:30 According to the Nuclear Regulation Act, Minister of Economic, Trade and Industry issued the directives as follows.

For Unit 4: To extinguish fire and to prevent the occurrence of re-criticality

For Unit 2: To inject water to reactor vessel promptly and to vent Drywell.

10:59 Considering the possibility of lingering situation, it is decided that the function of the Local Emergency Response Headquarter is moved to the Fukushima Prefectural Office.

11:00 Prime Minister directed the in-house stay area.

In-house stay was additionally directed to the residents in the area from 20 km to 30 km radius from Fukushima Dai-ichi NPS considering in-reactor situation.

22:00 According to the Nuclear Regulation Act, Minister of Economy, Trade and Industry issued the directives as follows.

For Unit 4: To implement the injection of water to the Spent Fuel Storage Pool.

< Possibility on radiation exposure (As of 14:00 March 16th) >

<Exposure of residents>

(1) Including the evacuees from Futaba Public Welfare Hospital to Nihonmatsu City Fukushima Gender Equality Centre as the result of measurement of 133 persons at the Centre, 23 persons counted more than 13,000 cpm were decontaminated.

(2) The 35 residents transferred from Futaba Public Welfare Hospital to Kawamata Town Saiseikai Hospital by private bus arranged by Fukushima Prefecture were judged to be not contaminated by the Prefectural Response Centre.

- (3) As for the about 100 residents in Futaba Town evacuated by bus, the results of measurement for 9 of the 100 residents were as follows. The evacuees were divided into two groups which joined later to Nihonmatsu City Fukushima Gender Equality Centre.

| No. of Counts               | No. of Persons |
|-----------------------------|----------------|
| 18,000cpm                   | 1              |
| 30,000-36,000cpm            | 1              |
| 40,000cpm                   | 1              |
| little less than 40,000cpm* | 1              |
| very small counts           | 5              |

\*(These results were measured without shoes, though the first measurement exceeded 100,000cpm)

## <Exposure of workers>

- (1) As for the 18 workers conducting operations in Fukushima Dai-ichi NPS, results of measurements are as follows;

One worker; 106.3 mSv. At the level of exposure no internal exposure and medical treatment was not required.

Other workers: No threat of internal exposure and no medical treatment needed.

- (2) The 6 out of 7 people working at the time of explosion at the Unit 3 of Fukushima Dai-ichi NPS injured and were conscious. The detailed measurement data are not available.

## <Others>

- (1) Fukushima Prefecture has started the screening from 13 March at two health office in the prefecture. It is undertaken at 12 evacuation sites, 6 health offices, etc. The results of screening are being totalled up.

- (2) 5 members of Self-Defence-Force who worked for water supply in Fukushima Dai-ichi NPS were exposed. After the work (March 12th), 30,000 cpm was counted by the measurement at Off site Centre. The counts after decontamination were between 5,000 and 10,000 cpm. One member was transferred to National Institute of Radiological Science. No other exposure of the Self-Defence-Force member was confirmed at the Ministry of Defence.

- (3) As for policeman, the decontaminations of two policemen were confirmed by the National Police Agency. Nothing unusual was reported.

- (4) As for fireman, no contamination was reported to National Firefighting Agency. The confirmation is continued.

<Situation of the injured (As of 14:00 March 16th)>

1. Injury due to earthquake
  - Two employees (slightly)
  - Two subcontract employees (one fracture in both legs)
  - Two missing (TEPCO's employee, missing in the turbine building of Unit 4)
  - One emergency patient (According to the local prefecture, one patient of cerebral infarction was transported by the ambulance).
  - Ambulance was requested for one employee complaining the pain at left chest outside of control area (conscious).
  - Two employees complaining discomfort wearing full-face mask in the main control room were transported to the industrial doctor of Fukushima Dai-ichi NPS.
2. Injury due to the explosion of Unit 1 of Fukushima Dai-ichi NPS
  - Four employees were injured at the explosion and smoke of Unit 1 around turbine building (out of control area). Examined by Kawauchi clinic.
3. Injury due to the explosion of Unit 3 of Fukushima Dai-ichi NPS
  - Four TEPCO's employees
  - Three subcontractor employees
  - Four members of Self-Defence-Force (one of them will be transported to National Institute of Radiological Sciences considering internal exposure) The examination resulted in no internal exposure. Discharged March 16th.

<Situation of Resident Evacuation (As of 14:00 March 16th)>

At 11:00 March 15th, Prime Minister directed in-house stay to the residents in the area from 20 km to 30 km radius from Fukushima Dai-ichi NPS. The directive was conveyed to Fukushima Prefecture and related municipalities.

Regarding the evacuation as far as 20-km from Fukushima Dai-ichi NPS and 10-km from Fukushima Dai-ichi, necessary have already taken measures.

- It seems that a plural number of people who were staying in the 20 km zone are in moving gradually.
- The in-house stay in the area from 20 km to 30 km from Fukushima Dai-ichi NPS is made fully known to the residents concerned.

(Contact Person)

Mr. Toshihiro Bannai

Director, International Affairs Office,  
NISA/METI

Phone: +81-(0)3-3501-1087



**From:** Kenagy, W David  
**To:** Kenagy, W David; McClelland, Vince; Rodriguez, Veronica; Heinrich, Ann; HOO Hoc; HOOZ Hoc; Huffman, William; DeCair, Sara@epamail.epa.gov; timothy.greten@dhs.gov; Maria.Madriessen@hhs.gov; [REDACTED] (b)(6) [REDACTED] goehring@oem.doe.gov; hns.sec@hhs.gov; James.Kish@dhs.gov; HOO Hoc; Smith, Brooke; Zubarev, Jill E; Shafer, Mark R; NITOPS@nnsa.doe.gov  
**Subject:** RE: IAEA distributed documents  
**Date:** Thursday, March 17, 2011 10:10:39 AM  
**Attachments:** Japan Note verbatim request for assistance 15 March 11.pdf  
Letter - Summary of reactor unit status at 600 17-March UTC (2)11.pdf  
Letter - Summary of reactor unit status at 0600 17-March UTC (2)11.pdf

---

This email is UNCLASSIFIED.

This email is UNCLASSIFIED.

0000/58

Ref. No.: JPM/NV-102 - 11

PERMANENT MISSION OF JAPAN  
VIENNA

Andorned Tower  
Donau City Strasse 6  
A-1020 Vienna  
Austria

Telephone : +43 (0) 1 260 63-0  
Facsimile : +43 (0) 1 263 5750

NOTE VERBALE

The Permanent Mission of Japan to the International Organizations in Vienna presents its compliments to the Director General of the International Atomic Energy Agency and has the honour to request, on behalf of the Government of Japan and in connection with the incidents involving the nuclear power plants in Japan affected by the recent natural disasters, the Agency's assistance through the dispatch to Japan of experts in the fields of environmental monitoring and effects of radiation on human health at its earliest possible convenience.

The Permanent Mission of Japan to the International Organizations in Vienna avails itself of this opportunity to renew to the Director General of the International Atomic Energy Agency the assurances of its highest consideration.

15 March 2011  
Vienna  
To the Director General of the  
International Atomic Energy Agency



**Subject:** FW: 2011 Pacific Basin Earthquake/Tsunami ESF-8 Conference Call  
**Location:** Phone: 877-700-1237 and Pass code: (b)(6) [Mute PH \*6]  
**Start:** Thu 3/17/2011 11:00 AM  
**End:** Thu 3/17/2011 12:00 PM  
**Show Time As:** Tentative  
**Recurrence:** (none)  
**Meeting Status:** Not yet responded  
**Organizer:** OS Secretarys Operations Center

-----Original Appointment-----

**From:** OS Secretarys Operations Center [mailto:hhs.soc@hhs.gov]

**Sent:** Wednesday, March 16, 2011 2:12 PM

**To:** OS Secretarys Operations Center; Beall, Jack (HHS/ASPR/OPEO); Walton, Tim (HHS/ASPR/OPEO); Scharf-Bell, Helga (HHS/ASPR/OPEO); Russo, Mark (HHS/ASPR/OPEO); Espinosa, Gregorio (HHS/ASPR/OPEO); Dodgen, Daniel (HHS/ASPR/OPP); Ball, Harvey (HHS/ASPR); Ketchie, Karen (HHS/); Korch, George (HHS/ASPR/IO); Lurie, Nicole (HHS/ASPR/IO); Carr, Thom (HHS/ASPR/OPEO); Yeskey, Kevin (HHS/ASPR/OPEO); Sizemore, Tom (HHS/ASPR/OPEO); OS Fusion (HHS/OS); OS EMGLOG (HHS/ASPR); Ray, Jennifer (HHS/OGC); OS EMGPLAN (HHS/ASPR); OS EMGOFRD (HHS/ASPR); OS EMGCIKR; OS EMG ABC (HHS/ASPR); OS EMGACF (HHS/ASPR); OS EMGARC; OS EMGSAMHSA (HHS/ASPR); Bozzo, Robert (HHS/ASPR/OPEO); Cashion, Linda (HHS/ASPR/OPEO); Davis, Tim (HHS/ASPR/OPEO); Dell, Randall (HHS/ASPR/OPEO); Dobbs, Allen (HHS/ASPR/OPEO); Dolinsky, David (HHS/ASPR/OFPA); Fernandez, Jose (HHS/ASPR/OPP); Fitzgerald, Denis (HHS/ASPR/OPEO); Garrett, Andrew (HHS/ASPR/OPEO); Hicks, Kristen (HHS/ASPR/OFPA); OS ASPR IHR Program; OS EMGNDS (HHS/ASPR); OS EMGOPS (HHS/ASPR); Piggott, Bill (HHS/ASPR/OPEO); Poblano, Luis (CDC/OPHPR/DEO); Sanders, Melissa (HHS/ASPR/OPEO); Smart, John (HHS/ASPR/OPEO); Timmons, Meta (HHS/ASPR/OPEO); Vineyard, Michael (HHS/ASPR/OPEO); (b)(6); Elmer, Stacy (HHS/ASPR/IO); Young, H. James (HHS/ASPR/OPEO); St. Cyr II, Zeno W. (HHS/ASPR/COO); Chen, Andrew (HHS/ASPR/OPEO); Gracia, Nadine (IO/OASH); 'NOC.OHA@hq.dhs.gov'; Knebel, Ann (HHS/ASPR/OPEO); Black, Delaine (HHS/ASPR/OPEO); Toomey, Lauren (HHS/ASPR/OPEO); Lauda, Mark (HHS/ASPR/OPEO); Jackson, Zhoowan (HHS/ASPR/OPEO); Forsha, Joseph D (HHS/ASPR/OPEO); Christopher, Kenneth (HHS/ASPR/OPEO); Mignone, Thomas (HHS/ASPR/OPEO); Koerner, John (HHS/ASPR/OPEO); Estes, Derek (HHS/ASPR); Leinberger, Thomas (HHS/ASPR/OPEO); (b)(6); Larson, Leon (HHS/ASPR/OPEO); Smith, Greg (FDA/ORR); Siekierski, Edmund (HHS/ASPR/OPEO); Pagan Motta, Monica (HHS/ASPR); Evans, Pamela (HHS/ASPR/OPEO); La Prairie, Andre (HHS/ASPR); Smith, Gregory (HHS/ASPR/OPEO); Olsen, Jennifer (HHS/ASPR/OPEO); Phillips, Jimmy (HHS/ASPR/OPEO); Natarajan, Nitin (HHS/ASPR/OPEO); Mayer, Harry (HHS/ASPR/OPEO); Pratt, Vicky (HHS/ASPR); Reed, Paul (HHS/OPHS); Kane, Elleen (HHS/ASPR/COO); Boss, Diana (HHS/ASPR); Caprio, John (HHS/ASPR); Cocciardi, Joseph (HHS/ASPR); Kendrick, Linda (HHS/ASPR); Leach, Joanne (HHS/); McCoy, Michael (HHS/); Myers, Marsha (HHS); Parker, Lloyd (HHS/); (b)(6); Passman, Dina (HHS/ASPR/OPEO); Bourg, Michael (HHS/ASPR/OPEO); Harper, Victor (HHS/ASPR/OPEO); Pacewicz, Alicia (HHS/ASPR/OPEO); Whitley, Latisha (HHS/ASPR/COO); Veitch, MaryAnn (HHS/ASPR/OPEO); Braswell, Mack (HHS/ASPR/COO); DiMascio, Michael (HHS/ASPR/OPEO); Janisko, Thomas (HHS/ASPR/OPEO); Bayko, Sarah (HHS/ASPR); Novak, Ben (HHS/ASPR); Daulaire, Nils (HHS/OGHA); Eibl, Marita (HHS/ASPR); Hadzibegovic, Diana (HHS/ASPR/OPP); HHS EMGCMO (HHS/ASPR); EOC Report (CDC); Michael, Gretchen (HHS/ASPR/COO); Stenrud, Chris (HHS/ASPR); Rodgers, Jerry (HHS/ASPR/OPEO); Dueringer, Paul (HHS/ASPR); Adrianopoli, Carl (HHS/ASPR/OPEO); Banner, Gregory (HHS/ASPR/OPEO); Blanchette, Glenn (HHS/ASPR/OPEO); Bradford, Terrace (HHS/ASPR/OPEO); Bryce, Michael (HHS/ASPR/OPEO); Buell, Rick (HHS/ASPR/OPEO); Byrd, Mark (OS/ASPR); Compton, Karl (HHS/ASPR); Cote, Mick (HHS/ASPR/OPEO); Falone, Emily (HHS/ASPR); Fenner, Jerold (HHS/ASPR/OPEO); Formanski, Stephen (HHS/ASPR/OPEO); Gibbons, John (HHS/ASPR); Greim, William (HHS/ASPR/OPEO); Hall, Dana L. (HHS/ASPR/OPEO);

0000/59

Imholte, Jim (HHS/ASPR/OPEO); Kates, Chris (HHS/ASPR/OPEO); Kerschner, David (HHS/ASPR/OPEO); Kleinman, Gary (HHS/ASPR/OPEO); Libby, Mark (HHS/ASPR/OPEO); Lightner, Louis (HHS/ASPR/OPEO); Odom, Janet (HHS/ASPR/OPEO); Pinheiro, Ronald (HHS/ASPR/OPEO); Raheem, Murad (HHS/ASPR/OPEO); Sheehan, Kevin (HHS/ASPR/OPEO); Smith, Diane (HHS/ASPR/OPEO); Spector, Dara-Leigh (HHS/ASPR/OPEO); Taylor, Amy O. (HHS/ASPR/OPEO); Weir, Charles (HHS/ASPR); Wetter, Donald (HHS/ASPR/OPEO); (b)(6) Nabakowski, Andrei (HHS/OPHS); Rosewood, Alyson (OS/OGHA); Torres, Carmen-Rosa (HHS/OGHA); Barnett, Che (HHS/ASPR/OPEO); Latz, John (HHS/ASPR/COO); OS Johnl (HHS/OS); Frasca, Dominic (FDA/OC); Robinson, Lewis (HHS/ASPR/OPEO); Breadheft, Marc (FDA/OC); Kennedy, Ted (HHS/ASPR/OPEO); Rruka, Eris (HHS/ASPR/OPP); Barna, Lauren (OS/ASPR/OPP); Beck, Dan (HHS/OASH); McCutcheon, Rodney (HHS/ASPR); Stevermer, Andrew (HHS/ASPR/OPEO); Channer, Mark A. (CDC/OPHPR/DEO); (b)(6) Makkenchery, Anita (HHS/ASPR); 'fema-operations-center@dhs.gov'; FDA Emergency Operations (FDA); 'FDA EOC IMG'; (b)(6) Mastrianni, William (HHS/); Kruschke, Gary (HHS/); Thorp, George (HHS/); Hoban, Kevin (HHS/ASPR); Player, Michael (HHS/); Linstrom, John (HHS/); Sebastian, Frank (HHS/ASPR); FEMA-NRCC-ESF08; (b)(6) NOC SWO Restricted (HHS); 'KaneC@usa.redcross.org'; 'YeaterD@usa.redcross.org'; 'StanleyS@usa.redcross.org'; 'WoodA@usa.redcross.org'; 'FitzGeraldW@usa.redcross.org'; Hinton, Christina (HHS/ASPR/OPEO); Bowerman, Carlton G (HHS/ASPR/OPEO); Mead, Grant (HHS/ASPR/OPEO); Cosgrove, Sandra (HHS/ASPR/OPEO); Dickinson, Jeanette (HHS/ASPR/OPEO); Gaines, David (HHS/ASPR/COO); Cummings, Anne (HHS/OPEO); Davis, Pamela (HHS/ASPR/OPEO); (b)(6) 'Engstrand, James K Mr CTR US NG NGB ARNG'; 'ses-o@state.gov'; Wassermann, Eric (NIH/NINDS) [E]; Coleman, Norman (NIH/NCI) [E]; Scott, Crystal (HHS/ASPR/COO); Gutierrez, Felipe (HHS/ASPR/COO); Henry, Richard A (HHS/OASH); Fredenberg, John E. (CDC/OPHPR/DSNS); Wallace, Monte (ACF); (b)(6) Zinn, Brendan (HHS/ASPR/BARDA); bzinn.ctr; Field, Sarah (HHS/OASH); Stephan, Briana (HHS/ASPR); Lebedev, Dianna (HHS/ASPR); Reed, Brian (HHS/ASPR/OPEO); Curren, Stephen (HHS/ASPR/OPEO); OS Region 1 Cal (HHS/OS); Hill, Jerry (HHS/ASPR/OPEO); Fuller, Ronnetta (HHS/ASPR/OPEO); Smith, Damon (HHS/OFRD); Waterman, Sean-David (HHS); Taylor, Shhonn (HHS/ASPR/COO); Jarrett, Elizabeth (HHS/ASPR/COO); Gorski, Wayne A (FDA/OC); Himmler, Bruno (HHS/ASPR/OPP/DIHS); Engler, William (HHS/); (b)(6) Goldhaber, Ben (HHS/ASPR/IO); 'Austin, Francesca M.'; 'Player, Mike'; Margolis, Gregg (HHS/ASPR/OPP); Brown, Charles (ACF); White, Jonathan (ACF); OS TELL\_CAP (HHS/OS); Caples, Ingrid (HHS/ASPR/COO); Harp, Barry (HHS/ASPR/COO); OS OPEO.LTS; (b)(6) Kendali, Karyn (HHS/ASFR); Howard King, Vinetta (FDA/OC); (b)(6) MorazzanoTeeter, Anne (OS/ASA/ASAI/PMO); 'Maher, Barbara R MAJ MIL NG NGB ARNG'; 'Gaul, Mark COL MIL US NG NGB ARNG'; 'Newcomb, Timothy R LTC MIL NG NGB ARNG'; Bader, Judith (NIH/NCI) [E]; Marinissen, Maria Julia (HHS/ASPR/OPP); HOO Hoc; Austin, Brad (HHS/ASPR); Myers, Christopher (HHS/ASPR/OPEO/NDMS); (b)(6) Ashton-Caudle, Angela (HHS/ASPR/OPEO); Scott, Maurice (HHS/ASPR/COO); Baldini, Christopher (HHS/ASPR); Siebenaler, Georgia (HHS/); 'Steve Myren'; Lindsay, Keith (HHS); Newcomer, Joseph (HHS/ASPR/OPEO); 'Maycock, Brett'; (b)(6) 'Duncan, Debra CAPT PACOM J0713'; (b)(6) Mackay, Thomas (HHS/ASPR/OPEO); Clay, Paula (HHS/ASPR); Gallagher, Kevin (CDC/OPHPR/DEO); Schrecengost, Bryan (HHS/ASPR/OPEO); LIA11 Hoc; Norton, Bonnie (HHS/ASFR); Shapiro, Craig (HHS/OGHA); Rollins, Beth (HHS/OGHA); Hancock, Jessica (HHS/OGHA); Pettis, Patricia (HHS/ASPR/OPEO); Morrison, Ellen F (FDA/OC); Gaiser, Linda (HHS/); 'taskforce-1@state.gov'; Sherman, Susan (HHS/OGC); 'HousmanC@usa.redcross.org'; 'opscenter@usda.gov'; (b)(6) 'eoc.epahq@epa.gov'; 'lee.eugene@epa.gov'; 'irizarry.gilberto@epa.gov'; 'steve.mabley@va.gov'; andrew.flacks; Hager, Christie (HHS/IGA/ORD); Torres, Jaime (HHS/IGA/ORD); Grossi, Joanne (HHS/IGA); 'Wheeler, Marva L CAPT COMPACFLT, N01H'; 'O'Brien, David M Col USAF PACAF 13 AF/SG'; 'Lane CAPT David A'; 'Pina, Joseph COL MIL US USA USARPAC'; 'Hockings, Phillip COL MIL US USA USARPAC'; 'Barham, Kelley M COL PACOM J07A'; 'OpsCenter'; 'Moore, Michelle (FAS)'; 'CMS TaskForce1G - ISN'; 'Mark D COL MIL USA MEDCOM OTSG Harris'; Harris, Mark (HHS/OPEO/OPP); Arthur, Bonnie (HHS/ASPR); Newcomer, Kimberly (HHS/ASPR/OPEO); Carrington, Clark D (FDA/CFSAN); Hargrove, Janet (HHS/ASPR); Kraemer, Donald W (FDA/CFSAN); 'Lathrop, Keith M CPT MIL NG NGB ARNG'; Adams, William J. (CDC/OPHPR/DEO); Crockett, James B. (CDC/OPHPR/DEO); 'Burdett, Amy (FAS)'; Green, Tracy (HHS/ASPR); 'Wendy.Hall@dhs.gov'; Gunn, Anton (HHS/IGA/ORD); Galloway, James (HHS/OASH); 'Marge.Petty@hhs.gov'; Baker, Judy (HHS/IGA); Salazar, Marguerite (HHS/IGA); Schultz, Herb (HHS/IGA/ORD); Johnson, Susan (HHS/IGA); 'ABANO, JOSE'; Jiggitts, Eugene; 'rmt\_pactsu@ofda.gov'; LIA01 Hoc; LIA06 Hoc

**Cc:** CDC IMS Documentation Branch Director (CDC); Lumpkin, Murray (FDA/OC); DeLancey, Siobhan (FDA/OC); Roberts, Rosemary (FDA/CDER); Kates, April (FDA/OC); 'Lee.Eugene@epamail.epa.gov'; LeBlanc, Pamela (FDA/CFSAN); Simenauer, Paula A. (FDA/CDRH); El-Hinnawy, Patricia (FDA/OC); 'REESE, IRA S'; Gilliard, Deric (HHS/IGA); Beuttenmuller, Denise (FDA/CFSAN); 'MacKinney, John A'; 'NICC'; Elliot, Elisa L (FDA/CFSAN)

**Subject:** 2011 Pacific Basin Earthquake/Tsunami ESF-8 Conference Call

**When:** Thursday, March 17, 2011 11:00 AM-12:00 PM (GMT-05:00) Eastern Time (US & Canada).

**Where:** Phone: 877-700-1237 and Pass code: 4066488 [Mute PH \*6]

Please mute your phone by pressing \*6 when not speaking

## 2011 Pacific Basin Earthquake/Tsunami ESF-8 Conference Call

### AGENDA:

Phone: 877-700-1237 and Pass code: (b)(6)

Objective: Discussion of current response operations and future actions.

HHS – Opening Comment

- Quick summary on any HHS issues/concerns

#### EMG Updates:

EMG OPS/FIELD OPS/OFRD OPS

EMG Logs

EMG Plans

EMG A/F

Public Affairs

#### Other OPDIVs/STAFF DIVs:

FDA update

CDC update

#### Supporting Agencies:

DOS update

NRC update

USDA update

EPA update

FAA update

#### Other supporting Agencies update

Questions:

Adjournment & Closing Comments:

Time for the next conference call: TBD

Please mute your phone by pressing \*6 when not speaking

---

**From:** LIA03 Hoc  
**Sent:** Thursday, March 17, 2011 12:03 AM  
**To:** LIA08 Hoc; LIA06 Hoc  
**Subject:** FW: temp increase in fuel pool reported  
**Attachments:** 3-17-11.pdf

-----Original Message-----

**From:** Danielle Emche (b)(6)  
**Sent:** Wednesday, March 16, 2011 10:07 PM  
**To:** LIA02 Hoc; LIA03 Hoc; Emche, Danielle; RST01 Hoc; RST01B Hoc  
**Subject:** Re: temp increase in fuel pool reported

Also, status of unit 3 fuel pool.

On Wed, Mar 16, 2011 at 9:24 PM, Danielle Emche (b)(6) wrote:

- > There is not much new reported by Japan Atomic Industry Forum.
- > Previously "spent fuel pool levels decreasing" and currently it is
- > reported that temperatures are also increasing, showing the trend,
- > though no data.
- > Danielle
- >

0000/60

|                 |                         |                               |                                      |                                                                       |                       |      |
|-----------------|-------------------------|-------------------------------|--------------------------------------|-----------------------------------------------------------------------|-----------------------|------|
|                 | Not Damaged             | Damage Suspected              | Damage Suspected                     | Not Damaged                                                           | Not Damaged           |      |
| er              | Not Functional          | Not Functional                | Not Functional                       | Not necessary                                                         | Not necessary         |      |
| power           | Not Functional          | Not Functional                | Not Functional                       | Not necessary                                                         | Not necessary         |      |
|                 | Severely Damaged        | Slightly Damaged              | Severely Damaged                     | Severely Damaged                                                      | Not Damaged           |      |
| ssel            | Around half of the Fuel | Recovering after Dried up     | Around half of the Fuel              | Safe                                                                  | Safe                  |      |
| el              | Stable                  | Fluctuating                   | Stable                               | Safe                                                                  | Safe                  |      |
|                 | Stable                  | D/W: Unknown, S/P: Atmosphere | Stable                               | Safe                                                                  | Safe                  |      |
| ent Management) | Continuing (Seawater)   | Continuing (Seawater)         | Continuing (Seawater)                | Not necessary                                                         | Not necessary         | N    |
| t Vessel (AM)   | Continuing (Seawater)   | to be decided (Seawater)      | to be decided (Seawater)             | Not necessary                                                         | Not necessary         | N    |
|                 | Continuing (Seawater)   | Preparing (Seawater)          | Continuing (Seawater)                | Not necessary                                                         | Not necessary         | N    |
| pool            | (No info)               | (No info)                     | Level Low, Preparing Water Injection | Level Low, Preparing Water Injection<br>Damage to Fuel Rods Suspected | Pool Temp. Increasing | Pool |

NPS border: 1937  $\mu$ Sv/h at 14:30, Mar. 16

20km from NPS

\* People who live between 20km to 30km from the Fukushima #1NPS are to stay indoors.

A fire broke on the 4th floor of the Unit-4 Reactor Building around 6AM, Mar. 15, and the radiation monitor readings increased outside of the building: 30mSv between Unit-2 and Unit-3, 400mSv beside Unit-3, 100mSv beside Unit-4 at 10:22, Mar. 15.  
It is estimated that spent fuels stored in the spent fuel pit heated and hydrogen was generated from these fuels, resulting in explosion.  
TEPCO later announced the fire was been burned out. Another fire was observed at 5:45, Mar. 16, and then disappeared later.  
Other staff and workers than fifty TEPCO employees who are engaged in water injection operation have been evacuated.  
White smoke was seen rising from the vicinity of Unit-3 at around 8:30, Mar. 16. TEPCO estimates that failing to cool the SFP has resulted in evaporation generating steam.

#### Fukushima #2 Nuclear Power Station

|                 |                                               |               |               |               |
|-----------------|-----------------------------------------------|---------------|---------------|---------------|
|                 | 1                                             | 2             | 3             | 4             |
| ut (MW)         | 1100 / 3293                                   |               |               |               |
|                 | BWR-5                                         | BWR-5         | BWR-5         | BWR-5         |
| quake occurred  | Service                                       | Service       | Service       | Service       |
|                 | Not Damaged                                   | Not Damaged   | Not Damaged   | Not Damaged   |
|                 | Not Damaged                                   | Not Damaged   | Not Damaged   | Not Damaged   |
| er              | Functioning                                   | Functioning   | Functioning   | Functioning   |
| power           | Not necessary                                 | Not necessary | Not necessary | Not necessary |
|                 | Not Damaged                                   | Not Damaged   | Not Damaged   | Not Damaged   |
| ssel            | (No info)                                     | (No info)     | (No info)     | (No info)     |
| el              | (No info)                                     | (No info)     | (No info)     | (No info)     |
|                 | (No info)                                     | (No info)     | (No info)     | (No info)     |
| ent Management) | Not necessary                                 | Not necessary | Not necessary | Not necessary |
| t Vessel (AM)   | Not necessary                                 | Not necessary | Not necessary | Not necessary |
|                 | Not necessary                                 | Not necessary | Not necessary | Not necessary |
| pool            | (No Info)                                     | (No Info)     | (No Info)     | (No Info)     |
|                 | NPS border: 29.4 $\mu$ Sv/h at 12:00, Mar. 16 |               |               |               |
|                 | 10km from NPS                                 |               |               |               |
|                 | All the units are in cold shutdown            |               |               |               |

[Significance judged by JAIF]

---

**From:** Danielle Emche (b)(6)  
**Sent:** Wednesday, March 16, 2011 10:07 PM  
**To:** LIA02 Hoc; LIA03 Hoc; Emche, Danielle; RST01 Hoc; RST01B Hoc  
**Subject:** Re: temp increase in fuel pool reported  
**Attachments:** 3-17-11.pdf

Also, status of unit 3 fuel pool.

On Wed, Mar 16, 2011 at 9:24 PM, Danielle Emche (b)(6) wrote:

- > There is not much new reported by Japan Atomic Industry Forum.
- > Previously "spent fuel pool levels decreasing" and currently it is
- > reported that temperatures are also increasing, showing the trend,
- > though no data.
- > Danielle
- >



|                 |                         |                               |                                      |                                                                       |                       |      |
|-----------------|-------------------------|-------------------------------|--------------------------------------|-----------------------------------------------------------------------|-----------------------|------|
|                 | Not Damaged             | Damage Suspected              | Damage Suspected                     | Not Damaged                                                           | Not Damaged           |      |
| er              | Not Functional          | Not Functional                | Not Functional                       | Not necessary                                                         | Not necessary         | N    |
| power           | Not Functional          | Not Functional                | Not Functional                       | Not necessary                                                         | Not necessary         | N    |
|                 | Severely Damaged        | Slightly Damaged              | Severely Damaged                     | Severely Damaged                                                      | Not Damaged           |      |
| ssel            | Around half of the Fuel | Recovering after Dried up     | Around half of the Fuel              | Safe                                                                  | Safe                  |      |
| al              | Stable                  | Fluctuating                   | Stable                               | Safe                                                                  | Safe                  |      |
|                 | Stable                  | D/W: Unknown, S/P: Atmosphere | Stable                               | Safe                                                                  | Safe                  |      |
| ent Management) | Continuing (Seawater)   | Continuing (Seawater)         | Continuing (Seawater)                | Not necessary                                                         | Not necessary         | N    |
| l Vessel (AM)   | Continuing (Seawater)   | to be decided (Seawater)      | to be decided (Seawater)             | Not necessary                                                         | Not necessary         | N    |
|                 | Continuing (Seawater)   | Preparing (Seawater)          | Continuing (Seawater)                | Not necessary                                                         | Not necessary         | N    |
| pool            | (No info)               | (No info)                     | Level Low, Preparing Water Injection | Level Low, Preparing Water Injection<br>Damage to Fuel Rods Suspected | Pool Temp. Increasing | Pool |

NPS border: 1937  $\mu$  Sv/h at 14:30, Mar. 16

20km from NPS

\* People who live between 20km to 30km from the Fukushima #1NPS are to stay indoors

A fire broke on the 4th floor of the Unit-4 Reactor Building around 6AM, Mar. 15, and the radiation monitor readings increased outside of the building: 30mSv between Unit-2 and Unit-3, 400mSv beside Unit-3, 100mSv beside Unit-4 at 10:22, Mar. 15.  
It is estimated that spent fuels stored in the spent fuel pit heated and hydrogen was generated from these fuels, resulting in explosion. TEPCO later announced the fire was been burned out. Another fire was observed at 5:45, Mar. 16, and then disappeared later.  
Other staff and workers than fifty TEPCO employees who are engaged in water injection operation have been evacuated.  
While smoke was seen rising from the vicinity of Unit-3 at around 8:30, Mar. 16, TEPCO estimates that failing to cool the SFP has resulted in evaporation generating steam.

#### Fukushima #2 Nuclear Power Station

|                                               | 1             | 2             | 3             | 4             |
|-----------------------------------------------|---------------|---------------|---------------|---------------|
| ut (MW)                                       | 1100 / 3293   |               |               |               |
|                                               | BWR-5         | BWR-5         | BWR-5         | BWR-5         |
| quake occurred                                | Service       | Service       | Service       | Service       |
|                                               | Not Damaged   | Not Damaged   | Not Damaged   | Not Damaged   |
|                                               | Not Damaged   | Not Damaged   | Not Damaged   | Not Damaged   |
| er                                            | Functioning   | Functioning   | Functioning   | Functioning   |
| power                                         | Not necessary | Not necessary | Not necessary | Not necessary |
|                                               | Not Damaged   | Not Damaged   | Not Damaged   | Not Damaged   |
| ssel                                          | (No info)     | (No info)     | (No info)     | (No info)     |
| al                                            | (No info)     | (No info)     | (No info)     | (No info)     |
|                                               | (No info)     | (No info)     | (No info)     | (No info)     |
| ent Management)                               | Not necessary | Not necessary | Not necessary | Not necessary |
| t Vessel (AM)                                 | Not necessary | Not necessary | Not necessary | Not necessary |
|                                               | Not necessary | Not necessary | Not necessary | Not necessary |
| pool                                          | (No Info)     | (No Info)     | (No Info)     | (No Info)     |
| NPS border: 29.4 $\mu$ Sv/h at 12:00, Mar. 16 |               |               |               |               |
| 10km from NPS                                 |               |               |               |               |
| All the units are in cold shutdown.           |               |               |               |               |

[Significance judged by JAIF]

---

**From:** Danielle Emche (b)(6)  
**Sent:** Wednesday, March 16, 2011 9:24 PM  
**To:** LIA02 Hoc; LIA03 Hoc; Emche, Danielle; RST01 Hoc; RST01B Hoc  
**Subject:** temp increase in fuel pool reported

There is not much new reported by Japan Atomic Industry Forum.  
Previously "spent fuel pool levels decreasing" and currently it is reported that temperatures are also increasing, showing the trend, though no data.  
Danielle

0000/61

---

**From:** Casto, Chuck  
**Sent:** Thursday, March 17, 2011 3:17 PM  
**To:** LIA06 Hoc; Kolb, Timothy  
**Subject:** RE: INPO Resources and SAMG expertise

I know the legal team is working on questions related to this support.....nevertheless the INPO inbed would be here in Tokyo.....in the embassy with the NRC team.....

---

**From:** LIA06 Hoc  
**Sent:** Thursday, March 17, 2011 3:13 PM  
**To:** Casto, Chuck; Kolb, Timothy  
**Subject:** FW: INPO Resources and SAMG expertise  
**Importance:** High

Can you all please respond to the questions below from INPO (sorry for the late nature of the request but it has been a busy day on this end too and I just got this email)?

Thanks,

Mark Lombard  
Liaison Team Director  
U.S. Nuclear Regulatory Commission  
Operations Center

---

**From:** INPO EmergencyResponseCtr (INPO) [mailto:INPOERC@INPO.org]  
**Sent:** Thursday, March 17, 2011 12:29 PM  
**To:** LIA06 Hoc  
**Cc:** Nielsen, Rick M (INPO); INPOERCassistance  
**Subject:** FW: INPO Resources and SAMG expertise  
**Importance:** High

---

**From:** Nielsen, Rick M (INPO)  
**Sent:** Thursday, March 17, 2011 12:20 PM  
**To:** Anderson, Cyrus K. (INPO)  
**Subject:** INPO Resources and SAMG expertise  
**Importance:** High

Please send to [LIA06.Hoc@nrc.gov](mailto:LIA06.Hoc@nrc.gov)

Mark,

I'm working with INPO's response team to provide industry support.

We have some questions about the SAMG expert:

- where and when will the person be needed (domestically, Tokyo, on site etc.) We're working to develop a list, but that question will be asked.

0000/62

- Can you provide specifics about what they may be asked to support.

Thanks – any clarification will help. If you don't know the answers, we'll proceed anyway.

Rick Nielsen

Rick Nielsen  
Corporate Evaluations

INPO  
770 644-8696 (office)  
(b)(6) (cell)

*In Pursuit of Excellence!*

LIA06.Hoc@nrc.gov on 3/17/2011 11:55 AM

None of your e-mail accounts could send to this recipient.

---

**DISCLAIMER**

This e-mail and any files or attachments may contain proprietary NRC or INPO information that is either confidential or provided by copyright or other means to INPO or NRC. This e-mail is intended solely for the use of the individual or entity for whom it is intended. It may be the intended recipient of this e-mail. Any dissemination, distribution, copying, or other use in relation to the contents of this e-mail, or any attachments to this e-mail, is contrary to the NRC or INPO policies and is prohibited. If you are not the intended recipient of this e-mail, please notify the sender immediately by return e-mail and delete the e-mail. Do not copy or print any part of this e-mail and its attachments.  
Thank you

---

**From:** Kenagy, W David <KenagyWD@state.gov>  
**Sent:** Thursday, March 17, 2011 12:30 PM  
**To:** Kenagy, W David; McClelland, Vince; Rodriguez, Veronica; Heinrich, Ann; HOO Hoc; HOO2 Hoc; Huffman, William; DeCair Sara@epamail.epa.gov; timothy.greten@dhs.gov; Maria.Marinissen@hhs.gov; (b)(6) doehqeoc@oem.doe.gov; hhs.soc@hhs.gov; James.Kish@dhs.gov; HOO Hoc; Smith, Brooke; Zubarev, Jill E; Shaffer, Mark R; NITOPS@nnsa.doe.gov  
**Subject:** RE: IAEA distributed documents  
**Attachments:** 26\_NISA\_Press\_Release\_\_26\_(English)[1].pdf; 25\_NISA\_Press\_Release\_\_25\_(English)[1].pdf; Criteria\_for\_Use\_in\_Preparedness\_and\_Response\_for\_a\_Nuclear\_or\_Radiological\_Emergency(GSG-2)[1].pdf

This email is UNCLASSIFIED.

00000/63

March 15, 2011

Nuclear and Industrial Safety Agency

Seismic Damage Information (the 25th Release)  
(As of 23:30 March 15th, 2011)

Nuclear and Industrial Safety Agency (NISA) confirmed the current situation of Onagawa NPS, Tohoku Electric Power Co., Inc; Fukushima Dai-ichi and Fukushima Dai-ni NPSs, Tokyo Electric Power Co., Inc. Tokai Dai-ni NPS, Japan Atomic Power Co., Inc. as follows:

New updates are as follows.

1. Nuclear Power Stations (NPS)

● Fukushima Dai-ichi NPS

- TEPCO confirmed that the fire occurred at Unit 4 was extinguished.  
(11:00 March 15th)

2. Actions taken by NISA

(March 15th)

07:24 Incorporated Administrative Agency, Japan Atomic Energy Agency (JAEA) reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Nuclear Fuel Cycle Engineering Laboratories, Tokai Research and Development Center.

07:44 JAEA reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Nuclear Science Research Institute.

10:30 According to the Nuclear Regulation Act, Minister of Economy, Trade and Industry issued the directives as follows.

For Unit 4: To extinguish fire and to prevent the occurrence of re-criticality

For Unit 2: To inject water to reactor vessel promptly and to vent Drywell.

10:59 Considering the possibility of lingering situation, it is decided that the

function of the Local Emergency Response Headquarter is moved to the Fukushima Prefectural Office.

<Situation of the evacuation>

- Prime Minister Kan issued the directive at AM 11:00 this morning for in-house stay in the area from 20-km to 30-km radius from the Fukushima Dai-ichi NPS.
- Regarding the evacuation as far as 20-km from Fukushima Dai-ichi NPS and 10-km from Fukushima Dai-ni, necessary measures have already taken.

|                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------|
| (Contact Person)<br>Mr. Toshihiro Bannai<br>Director, International Affairs Office,<br>NISA/METI<br>Phone: +81-(0)3-3501-1087 |
|-------------------------------------------------------------------------------------------------------------------------------|

(Attached sheet)

## 1. The status of operation at NPS (Number of automatic shutdown units: 10)

- Fukushima Dai-ichi NPS, Tokyo Electric Power Co. Inc. (TEPCO)  
(Okuma-machi and Futaba-machi, Futaba-gun, Fukushima Prefecture)

### (1) The status of operation

Unit 1 (460MWe): automatic shutdown  
 Unit 2 (784MWe): automatic shutdown  
 Unit 3 (784MWe): automatic shutdown  
 Unit 4 (784MWe): in periodic inspection outage  
 Unit 5 (784MWe): in periodic inspection outage  
 Unit 6 (1,100MWe): in periodic inspection outage

### (2) Major Plant Parameters (21:05 March 15th)

|                                    | unit | Unit 1                | Unit 2        | Unit 3                |
|------------------------------------|------|-----------------------|---------------|-----------------------|
| Reactor Pressure                   | MPa  | 0.169 (A)<br>0.166(B) | 0.099         | 0.170 (A)<br>0.180(A) |
| CV Pressure                        | KPa  | Not available         | 250           | 355                   |
| Reactor Water Level*               | mm   | -1800(A)<br>-1800(B)  | -1200(A)      | -1900(A)<br>-2300(B)  |
| Suppression Pool Water Temperature | ℃    | Not available         | Not available | Not available         |
| Suppression Pool Pressure          | KPa  | Not available         | down scale    | down scale            |
| Measuring time                     |      | 18:43                 | 18:43*2       | 21:05                 |

\*1: Distance from the top of fuel.

\*2: The data of Unit 2 were not available because operators evacuated from the central control room.

### (3) Report concerning other incidents

- ・ TEPCO reported to NISA the Event in accordance with the Article 10 of



- the Act on Special Measures Concerning Nuclear Emergency  
Preparedness regarding Fukushima Dai-ichi. (15:42 March 11th)
- TEPCO reported to NISA the event in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1 and 2. (16:36 March 11th)
  - For Unit 1: Seawater was injected to the Containment Vessel via the Fire Extinguishing System Line (Started up 11:55 March 13th)  
→Temporary interruption of the injection (01:10 March 14th)
  - For Unit 2: Water injection function was sustained. (14:00 March 13th)
  - For Unit 2: Reactor water level was decreasing. (13:18 March 14th)
  - For Unit 2: Seawater injection to the Reactor Pressure Vessel (RPV) was ready through the Fire Extinguishing System line. (19:20 March 14th)
  - TEPCO evaluated core damage of Unit 2 was "less than 5%" (22:14 March 14th)
  - Water level in RPV in Unit 2 is decreasing. (22:50 March 14th)
  - A sound of explosion in Unit 2. As the pressure in Suppression Chamber decreased, there was possibility that an incident occurred in this Chamber. (06:20 March 15th)
  - For Unit 3: Fresh water was injected to the PCV via the Fire Extinguishing System Line (FESL). (11:55 March 13th)
  - For Unit 3: Seawater was injected to the PCV via FESL. (13:12 March 13th)
  - Unit 1 and Unit 3: Injection of seawater into PCV was interrupted due to the lack of seawater in pit. (01:10 March 14th)
  - For Unit 3: Injection of seawater into PCV was restarted (03:20 March 14th)
  - For Unit 3: The pressure increased unusually. (11:45 March 14th)
  - For Unit 3: The explosion like Unit 1 occurred around the Reactor Building (11:01 March 14th)
  - A sound of explosion was made in Unit 2 and the pressure in Suppression Chamber decreased. (06:10 March 15th) Thereafter it was confirmed that a part of wall in the operation area of Unit 4 was damaged. (06:14 March 15th)
  - The fire at Unit 4 occurred. (09:38 March 15th) It was confirmed that the fire was extinguished spontaneously. (11:00 March 15th)

- The temperature of water in the Spent Fuel Storage Pool at Unit 4 had increased.

(84 °C at 04:08 March 14th)

● Fukushima Dai-ni Nuclear Power Station (TEPCO)

(Naraha-machi/Tomioka-machi, Futaba-gun, Fukushima pref.)

(1) The status of operation

Unit1 (1,100MWe): automatic shutdown, cold shut down at 17:00, March 14th

Unit2 (1,100MWe): automatic shutdown, cold shut down at 18:00, March 14th

Unit3 (1,100MWe): automatic shutdown, cold shut down at 12:15, March 12th

Unit4 (1,100MWe): automatic shutdown, cold shut down at 07:15, March 15th

(2) Major plant parameters (As of 05:00, 15 March)

|                                    | unit | Unit 1        | Unit 2        | Unit 3        | Unit 4        |
|------------------------------------|------|---------------|---------------|---------------|---------------|
| Reactor Pressure                   | MPa  | 0.13          | 0.09          | 0.04          | 0.13          |
| Reactor water temperature          | °C   | 59.0          | 56.1          | 29.1          | 93.2          |
| Reactor water level*               | Mm   | 11,396        | 11,296        | 7,558         | 8,784         |
| Suppression pool water temperature | °C   | 43            | 36            | 44            | 72            |
| Suppression pool pressure          | KPa  | 189           | 163           | 131           | 207           |
| Remarks                            |      | cold shutdown | cold shutdown | cold shutdown | cold shutdown |

\*: Distance from the top of fuel

(3) Report concerning other incidents

- TEPCO reported to NISA the event in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ni Unit 1. (18:08 March 11th)

- TEPCO reported to NISA the events in accordance with the Article 10 regarding Units 1, 2 and 4. (18:33 March 11th)
- Onagawa NPS (Tohoku Electric Power Co., Inc.)  
(Onagawa-cho, Oga-gun and Ishinomaki-shi, Miyagi Prefecture)
  - (1) The status of operation
    - Unit 1 (524MWe): automatic shutdown, cold shut down at 0:58, March 12th
    - Unit 2 (825MWe): automatic shutdown, cold shut down at earthquake
    - Unit 3 (825MWe): automatic shutdown, cold shut down at 1:17, March 12th
  - (2) Readings of monitoring post
    - Reading of monitoring post:
      - MP2 (Monitoring at the North End of Site Boundary)
        - approx. 6,500 nGy/h (19:00 March 14th)
        - approx. 5,400 nGy/h (19:00 March 15th)
  - (3) Report concerning other incidents
    - Fire Smoke on the first basement of the Turbine Building was extinguished. (22:55 on March 11th)
    - Reported on the Article 10\* of the Act on Special Measures Concerning Nuclear Emergency Preparedness (13:09 March 13th)

## 2. Action taken by NISA

### (March 11th)

- 14:46 Set up of the NISA Emergency Preparedness Headquarters (Tokyo) immediately after the earthquake
- 15:42 TEPCO reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.
- 16:36 TEPCO judged the event in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS. Units 1 and 2. (reported to NISA at 16:45)
- 18:08 Regarding Unit 1 of Fukushima Dai-ichi NPS, TEPCO reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

- 18:33 Regarding Units 1,2 and 4 of Fukushima Dai-ni NPS, TEPCO reported to NISA in accordance with the Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 19:03 Government declared the state of nuclear emergency. (Establishment of Government Nuclear Emergency Response Headquarters and Local Emergency Response Headquarters)
- 20:50 Fukushima Prefecture's Emergency Response Headquarters issued a direction for the residents within 2 km radius from Unit 1 of Fukushima Dai-ichi NPS to evacuate. (The population of this area is 1,864)
- 21:23 Directives from Prime Minister to the Governor of Fukushima Prefecture, the Mayor of Ookuma Town and the Mayor of Futaba Town were issued regarding the event occurred at Fukushima Dai-ichi NPS, TEPCO, in accordance with the Paragraph 3, the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness as follows:
- Direction for the residents within 3km radius from Unit 1 to evacuate.
  - Direction for the residents within 10km radius from Unit 1 to stay in-house.
- 24:00 Vice Minister of Economy, Trade and Industry, Ikeda arrived at the Local Emergency Response Headquarters

(March 12th)

- 05:22 Regarding Unit 1 of Fukushima Dai-ni NPS, TEPCO reported to NISA in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 05:32 Regarding Unit 2 of Fukushima Dai-ni NPS, TEPCO reported to NISA in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 05:44 Residents within 10km radius from Unit 1 of Fukushima Dai-ichi NPS shall evacuate by the Prime Minister Direction.
- 06:07 Regarding of Unit 4 of Fukushima Dai-ni NPS, TEPCO reported to NISA in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 06:50 In accordance with the Paragraph 3, the Article 64 of the Nuclear

Regulation Act, the order was issued to control the internal pressure of the Containment Vessel of Units 1 and 2 of Fukushima Dai-ichi NPS.

07:45 Directives from Prime Minister to the Governor of Fukushima Prefecture, the Mayors of Hirono Town, Naraha Town, Tomioka Town and Ookuma Town were issued regarding the event occurred at Fukushima Dai-ni NPS, TEPCO, pursuant to the Paragraph 3, the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness as follows:

- Direction for the residents within 3km radius from Fukushima Dai-ni NPS to

  - evacuate.

- Direction for the residents within 10km radius from Fukushima Dai-ni NPS

  - to stay in-house

17:00 TEPCO reported to NISA in accordance with the Article 15 of the Act on Special Measure Concerning Nuclear Emergency Preparedness since the radiation level at Fukushima Dai-ichi NPS exceeded the acceptable limit.

17:39 Prime Minister directed evacuation of the residents within the 10 km radius from Fukushima Dai-ni NPS

18:25 Prime Minister directed evacuation of the residents within the 20km radius from Fukushima Dai-ichi NPS

19:55 Directives from Prime Minister was issued regarding seawater injection to Unit No.1 of Fukushima Dai-ichi NPS.

20:05 Considering the Directives from Prime Minister and pursuant to the Paragraph 3, the Article 64 of the Nuclear Regulation Act, order was issued to inject seawater to Unit 1 of Fukushima Dai-ichi NPS.

20:20 At Unit 1 of Fukushima Dai-ichi NPS, seawater injection started.

## (March 13th)

05:38 TEPCO reported to NISA pursuant to the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness since Unit 3 of Fukushima Dai-ichi NPS lost total coolant injection function. Recovering efforts by TEPCO of the power source and coolant injection function and work on venting are underway.

- 09:08 Pressure suppression in the Containment Vessel and fresh water injection started at Unit 3 of Fukushima Dai-ichi NPS.
- 09:20 Opening of Pressure vent valve of Unit 3 of Fukushima Dai-ichi NPS.
- 09:30 The order was issued for the Governor of Fukushima Prefecture, the Mayors of Ookuma Town, Futaba Town, Tomioka Town and Namie Town in accordance with the Act on Special Measures Concerning Nuclear Emergency Preparedness on the contents of radioactivity decontamination screening.
- 09:38 TEPCO reported to NISA that Unit 1 of Fukushima Dai-ichi NPS reached a situation specified in the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 13:09 Tohoku Electric Power Company reported to notified that Onagawa NPS reached a situation specified in the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 13:12 Fresh water injection was switched to seawater injection at Unit 3 of Fukushima Dai-ichi NPS.
- 14:25 TEPCO reported to NISA that Fukushima Dai-ichi NPS reached a situation specified in the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

(March 14th)

- 01:10 Seawater injection at Unit 1 and Unit 3 of Fukushima Dai-ichi NPS were temporarily interrupted due to the lack of seawater in pit.
- 03:20 Seawater injection at Unit 3 of Fukushima Dai-ichi NPS was restarted.
- 04:24 TEPCO reported to NISA that Fukushima Dai-ichi NPS reached the situation specified in the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 07:53 TEPCO reported to NISA that Fukushima Dai-ichi NPS reached the situation specified in the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 13:25 TEPCO reported to NISA that Fukushima Dai-ichi Unit 2 of NPS reached the situation specified in the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 22:13 TEPCO reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency

Preparedness regarding Fukushima Dai-ichi NPS.

22:35 TEPCO reported to NISA in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.

(March 15th)

00:00 The acceptance of experts from IAEA was decided.

NISA agreed to accept the offer of dispatching of the expert on NPS damage from IAEA considering the intention by Mr. Amano, Director General of IAEA. Therefore, the schedule of expert acceptance will be planned from now on according to the situation.

00:00 NISA also decided the acceptance of experts dispatched from NRC.

07:24 JAEA reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Nuclear Fuel Cycle Engineering Laboratories, Tokai Research and Development Center.

07:44 JAEA reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Nuclear Science Research Institute.

10:30 According to the Nuclear Regulation Act, Minister of Economy, Trade and Industry issued the directives as follows.

For Unit 4: To extinguish fire and to prevent the occurrence of re-criticality

For Unit 2: To inject water to reactor vessel promptly and to vent Drywell.

10:59 Considering the possibility of lingering situation, it is decided that the function of the Local Emergency Response Headquarter is moved to the Fukushima Prefectural Office.

11:00 Prime Minister directed the in-house stay area.

In-house stay was additionally directed to the residents in the area from 20 km to 30 km radius from Fukushima Dai-ichi NPS considering in-reactor situation.

< Possibility on radiation exposure (As of 19:00 March 15th) >

<Exposure of residents>

(1) Including the evacuees from Futaba Public Welfare Hospital to

Nihonmatsu City Fukushima Gender Equality Center as the result of measurement of 133 persons at the Center, 23 persons counted more than 13,000 cpm were decontaminated.

- (2) The 35 residents transferred from Futaba Public Welfare Hospital to Kawamata Town Saiseikai Hospital by private bus arranged by Fukushima Prefecture were judged to be not contaminated by the Prefectural Response Center.
- (3) As for the about 100 residents in Futaba Town evacuated by bus, the results of measurement for 9 of the 100 residents were as follows. The evacuees were divided into two groups which joined later to Nihonmatsu City Fukushima Gender Equality Center.

| No. of Counts               | No. of Persons |
|-----------------------------|----------------|
| 18,000cpm                   | 1              |
| 30,000-36,000cpm            | 1              |
| 40,000cpm                   | 1              |
| little less than 40,000cpm* | 1              |
| very small counts           | 5              |

\*(This results was measured without shoes, though the first measurement exceeded 100,000cpm)

## <Exposure of workers>

- (1) As for the 18 workers conducting operations in Fukushima Dai-ichi NPS, results of measurements are as follows:  
One worker: 106.3 mSv, No threat of internal exposure and no medical treatment needed.  
Others: at the level of no impact to health. No exact data was available.
- (2) The 6 out of 7 people working at the time of explosion at the Unit 3 of Fukushima Dai-ichi NPS injured and were conscious. The detailed measurement data are not available.

## <Others>



- (1) Fukushima Prefecture has started the screening from 13 March at two health office in the prefecture. It is undertaken at 12 evacuation sites, 6 health offices, etc. The results of screening are being totalled up.
- (2) 5 members of Self-Defence-Force who worked for water supply in Fukushima Dai-ichi NPS were exposed. After the work (March 12th), 30,000 cpm was counted by the measurement at Off site Center. The counts after decontamination were between 5,000 and 10,000 cpm. One member was transferred to National Institute of Radiological Science. No other exposure of the Self-Defence-Force member was confirmed at the Ministry of Defence.
- (3) As for policeman, the decontaminations of two policemen were confirmed by the National Police Agency. Nothing unusual was reported.
- (4) As for fireman, no contamination was reported to National Firefighting Agency. The confirmation is continued.

<Situation of the injured (As of 19:00 March 15th)>

1. Injury due to earthquake
  - Two employees (slightly)
  - Two subcontract employees (one fracture in both legs)
  - Two missing (in the turbine building of Unit 4)
  - One emergency patient (According to the local prefecture, one patient of cerebral infarction was transported by the ambulance).
  - Ambulance was requested for one employee complaining the pain at left chest outside of control area (conscious).
  - Two employees complaining discomfort wearing full-face mask in the main control room were transported to the industrial doctor of Fukushima Dai-ichi NPS.
2. Injury due to the explosion of Unit 1 of Fukushima Dai-ichi NPS
  - Four employees were injured at the explosion and smoke of Unit 1 around turbine building (out of control area). Examined by Kawauchi clinic.
3. Injury due to the explosion of Unit 3 of Fukushima Dai-ichi NPS
  - Four employees
  - Three subcontractor employees

- Four members of Self-Defence-Force (one of them will be transported to National Institute of Radiological Sciences considering internal exposure)

## <Situation of Resident Evacuation (As of 19:00 March 15th)>

At 11:00 March 15th, Prime Minister directed in-house stay to the residents in the area from 20 km to 30 km radius from Fukushima Dai-ichi NPS. The directive was conveyed to Fukushima Prefecture and related municipalities.

Regarding the evacuation as far as 20-km from Fukushima Dai-ichi NPS and 10-km from Fukushima Dai-ni, necessary measures have already taken.

- It was reported that all people in Futaba Hospital and Onhuuru Futaba completed the evacuation from the 20 km zone.
- It seems that a plural number of people who were staying in the 20 km zone are in moving gradually.
- The in-house stay in the area from 20 km to 30 km from Fukushima Dai-ichi NPS is made fully known to the residents concerned.

(Contact Person)

Mr. Toshihiro Bannai

Director, International Affairs Office,  
NISA/METI

Phone: +81-(0)3-3501-1087

March 16, 2011

Nuclear and Industrial Safety Agency

Seismic Damage Information (the 26th Release)  
(As of 14:00 March 16th, 2011)

Nuclear and Industrial Safety Agency (NISA) confirmed the current situation of Onagawa NPS, Tohoku Electric Power Co., Inc; Fukushima Dai-ichi and Fukushima Dai-ni NPSs, Tokyo Electric Power Co., Inc. Tokai Dai-ni NPS, Japan Atomic Power Co., Inc. as follows:

Major updates are as follows.

1. Nuclear Power Stations (NPS)

● Fukushima Dai-ichi NPS

- The white smoke like steam generated from Unit 3. (08:30 March 16th)
- Because of the possibility that the Primary Containment Vessel (PCV) of Unit 3 was damaged, the operators evacuated from the central control room of Unit 3 and 4 ( a sheared facility). (10:45 March 16th) Thereafter the operators returned to the room and restarted the operation for water injection. (11:30 March 16th)
- The fire at Unit 4 occurred. (05:45 March 16th) TEPCO reported that no fire could be confirmed on the ground. (06:15 March 16th)

2. Actions taken by NISA

(March 15th)

22:00 According to the Nuclear Regulation Act, Minister of Economy, Trade and Industry issued the following directive.

For Unit 4: To implement the injection of water to the Spent Fuel Storage Pool.

<Situation of the injured>

- As for the member of Self-Defense Force (a person) who was injured due to the explosion at Unit 3 of Fukushima Dai-ichi NPS and was transported to National Institute of Radiological Sciences. the

examination resulted in no internal exposure. The member was discharged from the institute on March 16th.

(Contact Person)  
Mr. Toshihiro Bannai  
Director, International Affairs Office,  
NISA/METI  
Phone: +81-(0)3-3501-1087

(Attached sheet)

## 1. The status of operation at NPS (Number of automatic shutdown units: 10)

- Fukushima Dai-ichi NPS, Tokyo Electric Power Co. Inc. (TEPCO)  
(Okuma-machi and Futaba-machi, Futaba-gun, Fukushima Prefecture)

### (1) The status of operation

Unit 1 (460MWe): automatic shutdown  
Unit 2 (784MWe): automatic shutdown  
Unit 3 (784MWe): automatic shutdown  
Unit 4 (784MWe): in periodic inspection outage  
Unit 5 (784MWe): in periodic inspection outage  
Unit 6 (1,100MWe): in periodic inspection outage

### (2) Major Plant Parameters (14:00 March 16th)

|                                    | unit | Unit 1                 | Unit 2                        | Unit 3                 |
|------------------------------------|------|------------------------|-------------------------------|------------------------|
| Reactor Pressure                   | MPa  | 0.207 (A)<br>0.171(B)  | Incorrect indication*2        | 0.059 (A)<br>0.065(A)  |
| CV Pressure                        | KPa  | Not available          | 40                            | 230                    |
| Reactor Water Level*               | mm   | -1,750(A)<br>-1,750(B) | -1,400(A)<br>Not available(B) | -1,900(A)<br>-2,300(B) |
| Suppression Pool Water Temperature | ℃    | Not available          | Not available                 | Not available          |
| Suppression Pool Pressure          | KPa  | Not available          | down scale                    | down scale             |
| Measuring time                     |      | 12:25                  | 12:25                         | 12:40                  |

\*1: Distance from the top of fuel.

\*2: Due to loss of battery power.

### (3) Report concerning other incidents

- TEPCO reported to NISA the Event in accordance with the Article 10 of

the Act on Special Measures Concerning Nuclear Emergency

Preparedness regarding Fukushima Dai-ichi. (15:42 March 11th)

- TEPCO reported to NISA the event in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1 and 2. (16:36 March 11th)

## <Unit 1>

- Seawater was injected to the Containment Vessel via the Fire Extinguishing System Line (Started up 11:55 March 13th)  
→Temporary interruption of the injection (01:10 March 14th)
- The sound of explosion in Unit 1 occurred. (15:36 March 12nd)
- Seawater is being injected as of 14:00 March 16th.

## <Unit 2>

- Water injection function was sustained. (14:00 March 13th)
- Reactor water level was decreasing. (13:18 March 14th)
- Seawater injection to the Reactor Pressure Vessel (RPV) was ready through the Fire Extinguishing System line. (19:20 March 14th)
- TEPCO evaluated core damage of Unit 2 was "less than 5%" (22:14 March 14th)
- Water level in RPV in Unit 2 is decreasing. (22:50 March 14th)
- A sound of explosion was made in Unit 2. As the pressure in Suppression Chamber decreased, there was a possibility that an incident occurred in the Chamber. (06:20 March 15th)
- Seawater is being injected as of 14:00 March 16th.

## <Unit 3>

- Fresh water was injected to the PCV via the Fire Extinguishing System Line (FESL). (11:55 March 13th)
- Seawater was injected to the PCV via FESL. (13:12 March 13th)
- Injection of seawater for Unit 1 and Unit 3 into PCV was interrupted due to the lack of seawater in pit. (01:10 March 14th)
- For Unit 3 injection of seawater into PCV was restarted (03:20 March 14th)
- For Unit 3 the pressure increased unusually. (11:45 March 14th)

- For Unit 3 the explosion like Unit 1 occurred around the Reactor Building (11:01 March 14th)
- The white smoke like steam generated from Unit 3. (08:30 March 16th)
- Because of the possibility that the PCV of Unit 3 was damaged, the operators evacuated from the central control room of Unit 3 and 4 (a sheared facility). (10:45 March 16th) Thereafter the operators returned to the room and restarted the operation for water injection. (11:30 March 16th)

## <Unit 4>

- It was confirmed that a part of wall in the operation area of Unit 4 was damaged. (06:14 March 15th)
- The fire at Unit 4 occurred. (09:38 March 15th) TEPCO reported that the fire was extinguished spontaneously. (11:00 March 15th)
- The temperature of water in the Spent Fuel Storage Pool at Unit 4 had increased.  
(84 °C at 04:08 March 14th)
- The fire occurred at Unit 4. (5:45 March 15th) TEPCO reported that no fire could be confirmed on the ground. (06:15 March 16th)
- The water injection is suspended as of 14:00 March 16th.

## ● Fukushima Dai-ichi Nuclear Power Station (TEPCO)

(Naraha-machi/Tomioka-machi, Futaba-gun, Fukushima pref.)

### (1) The status of operation

|                   |                                                            |
|-------------------|------------------------------------------------------------|
| Unit1 (1,100MWe): | automatic shutdown, cold shut down at 17:00,<br>March 14th |
| Unit2 (1,100MWe): | automatic shutdown, cold shut down at 18:00,<br>March 14th |
| Unit3 (1,100MWe): | automatic shutdown, cold shut down at 12:15,<br>March 12th |
| Unit4 (1,100MWe): | automatic shutdown, cold shut down at 07:15,<br>March 15th |

## (2) Major plant parameters (As of 13:00, 16 March)

|                                    | unit | Unit 1        | Unit 2        | Unit 3        | Unit 4        |
|------------------------------------|------|---------------|---------------|---------------|---------------|
| Reactor Pressure                   | MPa  | 0.10          | 0.03          | 0.04          | 0.08          |
| Reactor water temperature          | ℃    | 55.6          | 52.3          | 27.9          | 55.4          |
| Reactor water level*               | mm   | 10,996        | 11,396        | 7,547         | 8,615         |
| Suppression pool water temperature | ℃    | 39            | 34            | 44            | 56            |
| Suppression pool pressure          | kPa  | 147           | 137           | 131           | 174           |
| Remarks                            |      | cold shutdown | cold shutdown | cold shutdown | cold shutdown |

\*: Distance from the top of fuel

## (3) Report concerning other incidents

- TEPCO reported to NISA the event in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ni Unit 1. (18:08 March 11th)
- TEPCO reported to NISA the events in accordance with the Article 10 regarding Units 1, 2 and 4. (18:33 March 11th)

## ● Onagawa NPS (Tohoku Electric Power Co., Inc.)

(Onagawa-cho, Oga-gun and Ishinomaki-shi, Miyagi Prefecture)

### (1) The status of operation

Unit 1 (524MWe): automatic shutdown, cold shut down at 0:58, March 12th

Unit 2 (825MWe): automatic shutdown, cold shut down at earthquake

Unit 3 (825MWe): automatic shutdown, cold shut down at 1:17, March 12th

### (2) Readings of monitoring post

Reading of monitoring post:

MP2 (Monitoring at the North End of Site Boundary)

approx. 6,500 nGy/h (19:00 March 14th)

→approx. 5,400 nGy/h (19:00 March 15th)



(3) Report concerning other incidents

- Fire Smoke on the first basement of the Turbine Building was extinguished. (22:55 on March 11th)
- Reported on the Article 10\* of the Act on Special Measures Concerning Nuclear Emergency Preparedness (13:09 March 13th)

2. Action taken by NISA

(March 11th)

- 14:46 Set up of the NISA Emergency Preparedness Headquarters (Tokyo) immediately after the earthquake
- 15:42 TEPCO reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.
- 16:36 TEPCO judged the event in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS, Units 1 and 2. (reported to NISA at 16:45)
- 18:08 Regarding Unit 1 of Fukushima Dai-ichi NPS, TEPCO reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 18:33 Regarding Units 1,2 and 4 of Fukushima Dai-ichi NPS, TEPCO reported to NISA in accordance with the Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 19:03 Government declared the state of nuclear emergency. (Establishment of Government Nuclear Emergency Response Headquarters and Local Emergency Response Headquarters)
- 20:50 Fukushima Prefecture's Emergency Response Headquarters issued a direction for the residents within 2 km radius from Unit 1 of Fukushima Dai-ichi NPS to evacuate. (The population of this area is 1,864)
- 21:23 Directives from Prime Minister to the Governor of Fukushima Prefecture, the Mayor of Oosuma Town and the Mayor of Futaba Town were issued regarding the event occurred at Fukushima Dai-ichi NPS. TEPCO, in accordance with the Paragraph 3, the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness as follows:

-Direction for the residents within 3km radius from Unit 1 to evacuate.

-Direction for the residents within 10km radius from Unit 1 to stay in-house.

24:00 Vice Minister of Economy, Trade and Industry, Ikeda arrived at the Local Emergency Response Headquarters

(March 12th)

05:22 Regarding Unit 1 of Fukushima Dai-ni NPS, TEPCO reported to NISA in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

05:32 Regarding Unit 2 of Fukushima Dai-ni NPS, TEPCO reported to NISA in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

05:44 Residents within 10km radius from Unit 1 of Fukushima Dai-ichi NPS shall evacuate by the Prime Minister Direction.

06:07 Regarding of Unit 4 of Fukushima Dai-ni NPS, TEPCO reported to NISA in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

06:50 In accordance with the Paragraph 3, the Article 64 of the Nuclear Regulation Act, the order was issued to control the internal pressure of the Containment Vessel of Units 1 and 2 of Fukushima Dai-ichi NPS.

07:45 Directives from Prime Minister to the Governor of Fukushima Prefecture, the Mayors of Hirono Town, Naraha Town, Tomioka Town and Ookuma Town were issued regarding the event occurred at Fukushima Dai-ni NPS, TEPCO, pursuant to the Paragraph 3, the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness as follows:

-Direction for the residents within 3km radius from Fukushima Dai-ni NPS to evacuate.

-Direction for the residents within 10km radius from Fukushima Dai-ni NPS to stay in-house

17:00 TEPCO reported to NISA in accordance with the Article 15 of the Act

on Special Measure Concerning Nuclear Emergency Preparedness since the radiation level at Fukushima Dai-ichi NPS exceeded the acceptable limit.

17:39 Prime Minister directed evacuation of the residents within the 10 km radius from Fukushima Dai-ichi NPS

18:25 Prime Minister directed evacuation of the residents within the 20km radius from Fukushima Dai-ichi NPS

19:55 Directives from Prime Minister was issued regarding seawater injection to Unit No.1 of Fukushima Dai-ichi NPS.

20:05 Considering the Directives from Prime Minister and pursuant to the Paragraph 3, the Article 64 of the Nuclear Regulation Act, order was issued to inject seawater to Unit 1 of Fukushima Dai-ichi NPS.

20:20 At Unit 1 of Fukushima Dai-ichi NPS, seawater injection started.

## (March 13th)

05:38 TEPCO reported to NISA pursuant to the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness since Unit 3 of Fukushima Dai-ichi NPS lost total coolant injection function. Recovering efforts by TEPCO of the power source and coolant injection function and work on venting are underway.

09:08 Pressure suppression in the Containment Vessel and fresh water injection started at Unit 3 of Fukushima Dai-ichi NPS.

09:20 Opening of Pressure vent valve of Unit 3 of Fukushima Dai-ichi NPS.

09:30 The order was issued for the Governor of Fukushima Prefecture, the Mayors of Ookuma Town, Futaba Town, Tomioka Town and Namie Town in accordance with the Act on Special Measures Concerning Nuclear Emergency Preparedness on the contents of radioactivity decontamination screening.

09:38 TEPCO reported to NISA that Unit 1 of Fukushima Dai-ichi NPS reached a situation specified in the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

13:09 Tohoku Electric Power Company reported to notified that Onagawa NPS reached a situation specified in the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

13:12 Fresh water injection was switched to seawater injection at Unit 3 of Fukushima Dai-ichi NPS.

14:25 TEPCO reported to NISA that Fukushima Dai-ichi NPS reached a situation specified in the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

(March 14th)

01:10 Seawater injection at Unit 1 and Unit 3 of Fukushima Dai-ichi NPS were temporarily interrupted due to the lack of seawater in pit.

03:20 Seawater injection at Unit 3 of Fukushima Dai-ichi NPS was restarted.

04:24 TEPCO reported to NISA that Fukushima Dai-ichi NPS reached the situation specified in the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

07:53 TEPCO reported to NISA that Fukushima Dai-ichi NPS reached the situation specified in the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

13:25 TEPCO reported to NISA that Fukushima Dai-ichi Unit 2 of NPS reached the situation specified in the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

22:13 TEPCO reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.

22:35 TEPCO reported to NISA in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.

(March 15th)

00:00 The acceptance of experts from IAEA was decided.

NISA agreed to accept the offer of dispatching of the expert on NPS damage from IAEA considering the intention by Mr. Amano, Director General of IAEA. Therefore, the schedule of expert acceptance will be planned from now on according to the situation.

00:00 NISA also decided the acceptance of experts dispatched from NRC.

07:24 JAEA reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Tokai Research and Development Centre, Nuclear Fuel Cycle Engineering Laboratories.

07:44 JAEA reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Nuclear Science Research Institute.

10:30 According to the Nuclear Regulation Act, Minister of Economic, Trade and Industry issued the directives as follows.

For Unit 4: To extinguish fire and to prevent the occurrence of re-criticality

For Unit 2: To inject water to reactor vessel promptly and to vent Drywell.

10:59 Considering the possibility of lingering situation, it is decided that the function of the Local Emergency Response Headquarter is moved to the Fukushima Prefectural Office.

11:00 Prime Minister directed the in-house stay area.

In-house stay was additionally directed to the residents in the area from 20 km to 30 km radius from Fukushima Dai-ichi NPS considering in-reactor situation.

22:00 According to the Nuclear Regulation Act, Minister of Economy, Trade and Industry issued the following directive.

For Unit 4: To implement the injection of water to the Spent Fuel Storage Pool.

< Possibility on radiation exposure (As of 14:00 March 16th) >

<Exposure of residents>

(1) Including the evacuees from Futaba Public Welfare Hospital to Nihonmatsu City Fukushima Gender Equality Centre as the result of measurement of 133 persons at the Centre, 23 persons counted more than 13,000 cpm were decontaminated.

(2) The 35 residents transferred from Futaba Public Welfare Hospital to Kawamata Town Saiseikai Hospital by private bus arranged by Fukushima Prefecture were judged to be not contaminated by the Prefectural Response Centre.

(3) As for the about 100 residents in Futaba Town evacuated by bus, the results of measurement for 9 of the 100 residents were as follows. The

evacuees were divided into two groups which joined later to Nihonmatsu City Fukushima Gender Equality Centre.

| No. of Counts               | No. of Persons |
|-----------------------------|----------------|
| 18,000cpm                   | 1              |
| 30,000-36,000cpm            | 1              |
| 40,000cpm                   | 1              |
| little less than 40,000cpm* | 1              |
| very small counts           | 5              |

\*(These results were measured without shoes, though the first measurement exceeded 100,000cpm)

## <Exposure of workers>

- (1) As for the 18 workers conducting operations in Fukushima Dai-ichi NPS, results of measurements are as follows:  
 One worker: 106.3 mSv. At the level of exposure no internal exposure and medical treatment was not required.  
 Other workers: No threat of internal exposure and no medical treatment needed.
- (2) The 6 out of 7 people working at the time of explosion at the Unit 3 of Fukushima Dai-ichi NPS injured and were conscious. The detailed measurement data are not available.

## <Others>

- (1) Fukushima Prefecture has started the screening from 13 March at two health office in the prefecture. It is undertaken at 12 evacuation sites, 6 health offices, etc. The results of screening are being totalled up.
- (2) 5 members of Self-Defence Force who worked for water supply in Fukushima Dai-ichi NPS were exposed. After the work (March 12th), 30,000 cpm was counted by the measurement at Off site Centre. The counts after decontamination were between 5,000 and 10,000 cpm. One member was transferred to National Institute of Radiological Science. No other exposure of the Self-Defence Force member was confirmed at the Ministry of Defence.
- (3) As for policeman, the decontaminations of two policemen were confirmed by the National Police Agency. Nothing unusual was reported.

- (4) As for fireman, no contamination was reported to National Firefighting Agency. The confirmation is continued.

<Situation of the injured (As of 14:00 March 16th)>

1. Injury due to earthquake
  - Two employees (slightly)
  - Two subcontract employees (one fracture in both legs)
  - Two missing (TEPCO's employee, missing in the turbine building of Unit 4)
  - One emergency patient (According to the local prefecture, one patient of cerebral infarction was transported by the ambulance).
  - Ambulance was requested for one employee complaining the pain at left chest outside of control area (conscious).
  - Two employees complaining discomfort wearing full-face mask in the main control room were transported to the industrial doctor of Fukushima Dai-ichi NPS.
2. Injury due to the explosion of Unit 1 of Fukushima Dai-ichi NPS
  - Four employees were injured at the explosion and smoke of Unit 1 around turbine building (out of control area). Examined by Kawauchi clinic.
3. Injury due to the explosion of Unit 3 of Fukushima Dai-ichi NPS
  - Four TEPCO's employees
  - Three subcontractor employees
  - Four members of Self-Defence Force (one of them was transported to National Institute of Radiological Sciences considering internal possible exposure. The examination resulted in no internal exposure. The member was discharged from the institute on March 16th.)

<Situation of Resident Evacuation (As of 14:00 March 16th)>

At 11:00 March 15th, Prime Minister directed in-house stay to the residents in the area from 20 km to 30 km radius from Fukushima Dai-ichi NPS. The directive was conveyed to Fukushima Prefecture and related municipalities.

Regarding the evacuation as far as 20-km from Fukushima Dai-ichi NPS and 10-km from Fukushima Dai-ni, necessary measures have already been taken.

- It seems that a plural number of people who were staying in the 20 km zone are in moving gradually.
- The in-house stay in the area from 20 km to 30 km from Fukushima Dai-ichi NPS is made fully known to the residents concerned.

(Contact Person)

Mr. Toshihiro Bannai

Director, International Affairs Office,  
NISA/METI

Phone: +81-(0)3-3501-1087



---

**From:** LIA01 Hoc  
**Sent:** Thursday, March 17, 2011 1:25 PM  
**To:** LIA11 Hoc; LIA08 Hoc; LIA06 Hoc  
**Subject:** FW: Logistics

fyi

-----Original Message-----

**From:** Southern, Glenn A CIV SEA 08 NR [mailto: (b)(6)]  
**Sent:** Thursday, March 17, 2011 1:24 PM  
**To:** LIA01 Hoc  
**Cc:** Grunzke, Shawn D CIV SEA 08 NR; Foley, William B CIV SEA 08 NR; Szeto, Gordon CIV SEA 08 NR  
**Subject:** RE: Logistics

Ted,

Below is the contract info for the SRF OIC that has been the conduit for getting the pumps where they needed to go.

CDR Neil Sexton  
(b)(6)  
SRF-JRMC Detachment Sasebo OIC  
Cell: (b)(6)  
DSN (315)-252-2801  
From CONUS: (b)(6)

I have been working with the Navy salvage folks on readying additional assets for shipment.

My contact info

Glenn A. Southern  
Naval Reactors  
1240 Isaac Hull Ave SE  
Washington Navy Yard  
Washington, DC 20376-8022  
Cell: (b)(6)  
Wk 202-781-6039  
(b)(6)

-----Original Message-----

**From:** LIA01 Hoc [mailto:LIA01.Hoc@nrc.gov]  
**Sent:** Thursday, March 17, 2011 1:03 PM  
**To:** Southern, Glenn A CIV SEA 08 NR  
**Subject:** Logistics

Glenn,

Thanks for the assist. A list of contacts will be very helpful if this request returns.

V/R

Ted Smith

From: Chokshi, Nilesh  
To: Kammerer, Annie; Hogan, Rosemary; Munson, Clifford; Flanders, Scott; Karas, Rebecca; Khanna, Meena  
Cc: Case, Michael; Richards, Stuart  
Subject: RE: planning mtg  
Date: Thursday, March 17, 2011 2:00:34 PM

---

A GT has already been generated. The EDO's office is coordinating the response with NRO, NSIR, and NRR. So, we will all contribute to the responses. But, the responsibilities will lie with the identified divisions (e.g., AP 1000 structural questions will be likely DE/NRO responsibility).

-----Original Message-----

From: Kammerer, Annie  
Sent: Thursday, March 17, 2011 1:32 PM  
To: Hogan, Rosemary; Chokshi, Nilesh; Munson, Clifford; Flanders, Scott; Karas, Rebecca; Khanna, Meena  
Cc: Case, Michael; Richards, Stuart  
Subject: Re: planning mtg

Rosemary, I'm not sure I understand. Do you think the EDO's staff is going to answer marky's letter and that it won't flow down to the seismic staff? That's what you seem to imply.

If that is not what you meant, then please be aware that the agency's seismic staff is working full out right now. We don't have much margin at all and the workload is increasing by the day. This is simply a suggestion to address a huge need that we all see coming.

Cheers,  
Annie

Sent from an NRC blackberry  
Annie Kammerer  
mobile (b)(6)  
pb (b)(6)  
annie.kammerer@nrc.gov

----- Original Message -----

From: Hogan, Rosemary  
To: Kammerer, Annie; Chokshi, Nilesh; Munson, Clifford; Flanders, Scott; Karas, Rebecca; Khanna, Meena  
Cc: Case, Michael; Richards, Stuart  
Sent: Thu Mar 17 12:50:54 2011  
Subject: Re: planning mtg

EDO staff is charged with responding to GTs. Because of the volume of letters and questions expected, has this policy changed?

Sent from my NRC Blackberry  
Rosemary Hogan  
(b)(6)

----- Original Message -----

From: Kammerer, Annie  
To: Chokshi, Nilesh; Munson, Clifford; Flanders, Scott; Karas, Rebecca; Khanna, Meena; Hogan, Rosemary  
Cc: Case, Michael; Richards, Stuart; Flanders, Scott  
Sent: Thu Mar 17 12:13:18 2011  
Subject: RE: planning mtg

Great. Thanks very much for starting the discussion. It was a great idea and it's good that we get out

0000/65

ahead of it.

-----Original Message-----

From: Chokshi, Niles

Sent: Thursday, March 17, 2011 12:12 PM

To: Kammerer, Annie; Munson, Clifford; Flanders, Scott; Karas, Rebecca; Khanna, Meena; Hogan, Rosemary

Cc: Case, Michael; Richards, Stuart; Flanders, Scott

Subject: RE: planning mtg

As I understand, this may be already under discussion - we may get a direction soon..

-----Original Message-----

From: Kammerer, Annie

Sent: Thursday, March 17, 2011 12:09 PM

To: Chokshi, Niles; Munson, Clifford; Flanders, Scott; Karas, Rebecca; Khanna, Meena; Hogan, Rosemary

Cc: Case, Michael; Richards, Stuart

Subject: RE: planning mtg

Great idea. I'll get our management thinking about it as well.

So far the coordination has been as good as anyone could have expected, better actually. I am hearing from a lot of people that our Q&A document is very helpful. In fact, it's kind of gone viral. Let's do what we can to assure that the productive cooperation continues. Also, as Cliff notes, if we don't manage the workflow and work as a team, we'll probably all drown.

Also, we need get Meena involved because she's been listed as the point of contact for NRR. They are going to have a lot of the lead for specific tasks we need so assist with. I'm sending this to her into the conversation as well.

Perhaps we can get a meeting scheduled as Cliff suggests? The end of next week?

Cheers,  
Annie

-----Original Message-----

From: Chokshi, Niles

Sent: Thursday, March 17, 2011 10:21 AM

To: Munson, Clifford; Kammerer, Annie; Flanders, Scott; Karas, Rebecca

Subject: Re: planning mtg

I agree. I proposed this to upper management.

Sent from NRC Blackberry

Niles

(b)(6)

----- Original Message -----

From: Munson, Clifford

To: Kammerer, Annie; Flanders, Scott; Chokshi, Niles; Karas, Rebecca

Sent: Thu Mar 17 10:13:48 2011

Subject: planning mtg

We are going to become quickly overwhelmed (if not already) with requests for briefings, to prepare briefing materials, respond to articles in press, etc. The green tickets should start coming in any day as we already have letters from Senators, Congressmen, etc. Maybe we should take the time to plan and organize when we have a brief interlude - next week?

Cliff

Dean, Bill

---

**From:** Leeds, Eric  
**Sent:** Thursday, March 17, 2011 2:38 PM  
**To:** Dean, Bill; McCree, Victor; Satorius, Mark; Collins, Elmo; Lew, David; Wert, Leonard; Pederson, Cynthia; Howell, Art; Boger, Bruce; Grobe, Jack; Wiggins, Jim; Evans, Michele; Sheron, Brian; Uhle, Jennifer; Johnson, Michael; Holahan, Gary; Haney, Catherine; Dorman, Dan; Miller, Charles; Moore, Scott; Doane, Margaret; Mamish, Nader; Boyce, Thomas (OIS); Schmidt, Rebecca; Powell, Amy; Brenner, Eliot; Hayden, Elizabeth; McDermott, Brian  
**Cc:** Virgilio, Martin; Weber, Michael; Ash, Darren; Nguyen, Quynh; Meighan, Sean; Kammerer, Annie; Landau, Mindy; Wittick, Brian; Morris, Scott; Bahadur, Sher; Blount, Tom; Brown, Frederick; Cheek, Michael; Galloway, Melanie; Giltner, Joseph; Givvines, Mary; Hiland, Patrick; Holian, Brian; Howe, Allen; Lee, Samson; Lubinski, John; McGinty, Tim; Nelson, Robert; Quay, Theodore; Ruland, William; Skeen, David  
**Subject:** Japan event Q&As - additional info

I've assigned Bob Nelson, Deputy Director, Division of Operating Reactor Licensing, as the NRR Coordinator for External Communications related to NRR's response to the recent events in Japan. Nelson and his team will be responsible for coordinating the development and review of related Qs & As, and coordinating the response to related controlled correspondence tasked to NRR, including related 2.206 petitions. Assisting Nelson will be Sean Meighan and Quynh Nguyen from the NRR front office, Eric Thomas from DIRS and a communications "tiger team" being formulated in DORL headed by Mike Markley. Harold Chernoff will also provide assistance as needed. Please forward all of your requests for support in this area to Nelson. (Extension 7298 and cell: (b)(6)).

Eric J. Leeds, Director  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
301-415-1270

## Huffert, Anthony

---

**From:** Tanaka, Reid CAPT USN (b)(6)  
**Sent:** Wednesday, April 20, 2011 1:25 AM  
**To:** Huffert, Anthony  
**Cc:** Reynolds, Steven; Gepford, Heather; christopher.smith@nnsa.doe.gov; Meighan, Sean; Wittick, Brian; Michaud, Mark CAPT USN; Harvis, Lee Col USAF; Capria, Frederick CAPT; Powers, Jeffrey CAPT USN; Bacon, Jeffrey B MAJ USA; Hawkins, Leslie LTCOL USA USFJ; Wilde, Jacob H Capt USMC; Beavers, Shane L LT USN; Livingston, Brian E Capt USAF  
**Subject:** RE: NRC Visit to Yokota on Friday

Tony, OK, thanks.

Dirk and team. To help focus the Friday visit.

v/r reid

-----Original Message-----

**From:** Huffert, Anthony [mailto:Anthony.Huffert@nrc.gov]  
**Sent:** Wednesday, April 20, 2011 12:23 PM  
**To:** Tanaka, Reid CAPT USN  
**Cc:** Reynolds, Steven; Gepford, Heather; Meighan, Sean; Wittick, Brian; 'christopher.smith@nnsa.doe.gov'  
**Subject:** Visit to Yokota base

CAPT. Tanaka,

As you requested, I'm sending you this email to summarize the purpose of the NRC staff visit at the Yokota base later this week. Our goal is to meet with other US Government (DOE and USAF) counterparts that have been collecting, analyzing, and interpreting radiological data in response to the Fukushima Daichi incident. We're seeking information on both ongoing and planned measurements, the process DOE used for developing PAGs based on DOE measurement methods, and an understanding of environmental monitoring methods at the base.

We understand that Friday, April 22nd, is proposed for this trip. NRC staff participants will bring their HSPD-12 security badges - please let us know if additional security or other information is needed in support of this trip.

We look forward to hearing from you.

PMT Embassy

Heather Gepford, Tony Huffert, Sean Meighan

0000/67

**Landau, Mindy**

---

**From:** Landau, Mindy  
**Sent:** Thursday, March 17, 2011 4:14 PM  
**To:** Loyd, Susan; Ellmers, Glenn  
**Subject:** RE: EDO Update - would like to get it out before it get too late today - thanks

Good catch, Susan – we all missed it. We are putting out a network announcement separately about the meeting tomorrow so that should clear it up.

---

**From:** Loyd, Susan  
**Sent:** Thursday, March 17, 2011 4:10 PM  
**To:** Ellmers, Glenn; Landau, Mindy  
**Subject:** Fw: EDO Update - would like to get it out before it get too late today - thanks

Looks great. Be sure to correct auditorium location - twfn

Sent from an NRC Blackberry  
Susan Loyd

(b)(6)

---

**From:** Batkin, Joshua  
**To:** Landau, Mindy; Coggins, Angela; Loyd, Susan  
**Sent:** Thu Mar 17 15:22:45 2011  
**Subject:** RE: EDO Update - would like to get it out before it get too late today - thanks

Love it – go for it.

---

**From:** Landau, Mindy  
**Sent:** Thursday, March 17, 2011 3:20 PM  
**To:** Coggins, Angela; Batkin, Joshua  
**Subject:** EDO Update - would like to get it out before it get too late today - thanks

Mindy S. Landau  
Deputy Assistant for Operations  
Communication and Performance Improvement  
Office of the Executive Director for Operations  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555  
301-415-8703  
[mindy.landau@nrc.gov](mailto:mindy.landau@nrc.gov)

0000/68



## Landau, Mindy

---

**From:** Landau, Mindy  
**Sent:** Thursday, March 17, 2011 4:47 PM  
**To:** Taylor, Robert  
**Subject:** RE: EDO Update

I agree!

**From:** Taylor, Robert  
**Sent:** Thursday, March 17, 2011 4:45 PM  
**To:** Landau, Mindy  
**Subject:** FW: EDO Update

Good for Bill. Getting out and talking to the staff is a great idea.

**From:** EDO Update [<mailto:nrc.announcement@nrc.gov>]  
**Sent:** Thursday, March 17, 2011 4:08 PM  
**To:** Taylor, Renee  
**Subject:** EDO Update



## EDO Update

---

Thursday, March 17, 2011



The situation at the Fukushima reactor site in Japan continues to be very serious and dynamic. The NRC has responded quickly and effectively to an incredibly challenging situation. We have staffed the Operations Center 24/7 since last Friday and we have a team of 11 individuals who are in Japan to 1) provide support to the U.S. ambassador and the embassy, 2) interface with the Japanese regulator and licensee, and 3) help to facilitate coordination of the U.S. Government response. The Chairman was on Capitol Hill yesterday to brief committees of both the House and Senate on what is happening and how the NRC is responding. The quality of the work done by the NRC staff is clearly recognized and appreciated by all of our stakeholders.

Given the available information, we continue to be very concerned about the condition of three reactor cores and two spent fuel pools. Based on calculations performed by NRC experts for the situation as a whole, we now believe that it is appropriate for U.S. residents within 50 miles of the Fukushima reactors to evacuate. Our recommendation is based on NRC guidelines for public safety that would be used in the U.S. under similar circumstances. At the same time, however, we do not expect any part of the U.S. or its territories to experience any harmful levels of

0000/69

analyses to verify our understanding of this issue. The NRC is working closely with our federal partners to monitor radiation releases from the Japanese nuclear power plants.

We will continue to place emphasis on communication activities. The agency is being flooded with phone calls from the media, stakeholders, and the general public. Once again, thank you to everyone who is pitching in to help deal with this volume of activity.

Given the dynamic situation, there will be an All-Hands meeting tomorrow at 2:00 p.m. in the One White Flint auditorium, with VTC to the regions, Technical Training Center, and headquarters satellite offices. Overflow seating will be available in the TWFN Exhibit Area as well as the Commission Hearing Room. (There will also be a bridge line: 888-820-8960; pass code (b)(6).) I will give you an update on what we know, and answer any questions to the best of my ability. In addition, we are expecting to have a Commission meeting early next week. We will provide a link to the briefing materials as soon as possible. Finally, you may find these documents prepared by the Office of Nuclear Reactor Regulation to be of interest:  
<http://portal.nrc.gov/edo/nrr/default.aspx>.

---

*Bill*

Bill Borchardt, EDO

---

**From:** LIA06 Hoc  
**Sent:** Thursday, March 17, 2011 4:54 PM  
**To:** Hoc, PMT12  
**Cc:** LIA08 Hoc; Lombard, Mark  
**Subject:** RE: Call with NEI

We are establishing a regular call with NEI at 10:00 am. The first call will take place tomorrow (3/18). NEI has indicated a desire to get information on the following:

1. The assumptions used in our analysis for coming up our 50-mile PAR.
2. Results of any dispersion modeling on where the plume might be headed with respect to concentrations along the US west coast.

Please call into (b)(6)

Mark Thaggard  
Liaison Team Director  
U.S. Nuclear Regulatory Commission  
Operations Center

---

**From:** Hoc, PMT12  
**Sent:** Thursday, March 17, 2011 4:35 PM  
**To:** LIA06 Hoc  
**Subject:**

0000/10

**Weber, Michael**

---

**From:** Weber, Michael  
**Sent:** Thursday, March 17, 2011 6:49 PM  
**To:** NTEU, Dale Yeilding  
**Cc:** Pittiglio, Clayton; Bolduc, Angela; Tracy, Glenn  
**Subject:** HEADS UP/QUERY - EDO Update

Good evening, Dale. Sorry for the late notice, but as you are aware, the agency continues to respond to the nuclear emergency affecting Japan and US citizens abroad involving the nuclear power plants at Fukushima – Daiichi. As a result of high public interest in this response, we have scheduled an all staff meeting (see Bill's last paragraph below) for tomorrow afternoon at 2:00. As a result of space constraints, we are planning to conduct the meeting in person and using a variety of media to accommodate all of our staff members. Would you like to speak at the conclusion of the meeting?

**From:** EDO Update [<mailto:nrc.announcement@nrc.gov>]  
**Sent:** Thursday, March 17, 2011 4:08 PM  
**To:** Taylor, Renee  
**Subject:** EDO Update



EDO Update

---

Thursday, March 17, 2011



The situation at the Fukushima reactor site in Japan continues to be very serious and dynamic. The NRC has responded quickly and effectively to an incredibly challenging situation. We have staffed the Operations Center 24/7 since last Friday and we have a team of 11 individuals who are in Japan to 1) provide support to the U.S. ambassador and the embassy, 2) interface with the Japanese regulator and licensee, and 3) help to facilitate coordination of the U.S. Government response. The Chairman was on Capitol Hill yesterday to brief committees of both the House and Senate on what is happening and how the NRC is responding. The quality of the work done by the NRC staff is clearly recognized and appreciated by all of our stakeholders.

Given the available information, we continue to be very concerned about the condition of three reactor cores and two spent fuel pools. Based on calculations performed by NRC experts for the situation as a whole, we now believe that it is appropriate for U.S. residents within 50 miles of the Fukushima reactors to evacuate. Our recommendation is based on NRC guidelines for public safety that would be used in the U.S. under similar circumstances. At the same time, however, we do not expect any part of the U.S. or its territories to experience any harmful levels of radioactivity, given the great distances involved. We continue to do analyses to verify our understanding of this issue. The NRC is working closely with our federal partners to monitor radiation releases from the

0000/71

Japanese nuclear power plants.

We will continue to place emphasis on communication activities. The agency is being flooded with phone calls from the media, stakeholders, and the general public. Once again, thank you to everyone who is pitching in to help deal with this volume of activity.

Given the dynamic situation, there will be an All-Hands meeting tomorrow at 2:00 p.m. in the One White Flint auditorium, with VTC to the regions, Technical Training Center, and headquarters satellite offices. Overflow seating will be available in the TWFN Exhibit Area as well as the Commission Hearing Room. (There will also be a bridge line: 888-820-8960; pass code: (b)(6)). I will give you an update on what we know, and answer any questions to the best of my ability. In addition, we are expecting to have a Commission meeting early next week. We will provide a link to the briefing materials as soon as possible. Finally, you may find these documents prepared by the Office of Nuclear Reactor Regulation to be of interest:  
<http://portal.nrc.gov/edo/nrr/default.aspx>.

---

*Bill*

Bill Borchardt, EDO

**Weber, Michael**

---

**From:** Weber, Michael  
**Sent:** Thursday, March 17, 2011 6:50 PM  
**To:** OST02 Hoc; LIA05 Hoc; RST01 Hoc; PMT01 Hoc; HOO Hoc  
**Subject:** FYI - EDO Update

You might want to share this update with our teams who are responding so diligently to the emergency in Japan and highlight the all staff meeting tomorrow afternoon.

**From:** EDO Update [<mailto:nrc.announcement@nrc.gov>]  
**Sent:** Thursday, March 17, 2011 4:08 PM  
**To:** Taylor, Renee  
**Subject:** EDO Update



EDO Update

---

Thursday, March 17, 2011



The situation at the Fukushima reactor site in Japan continues to be very serious and dynamic. The NRC has responded quickly and effectively to an incredibly challenging situation. We have staffed the Operations Center 24/7 since last Friday and we have a team of 11 individuals who are in Japan to 1) provide support to the U.S. ambassador and the embassy, 2) interface with the Japanese regulator and licensee, and 3) help to facilitate coordination of the U.S. Government response. The Chairman was on Capitol Hill yesterday to brief committees of both the House and Senate on what is happening and how the NRC is responding. The quality of the work done by the NRC staff is clearly recognized and appreciated by all of our stakeholders.

Given the available information, we continue to be very concerned about the condition of three reactor cores and two spent fuel pools. Based on calculations performed by NRC experts for the situation as a whole, we now believe that it is appropriate for U.S. residents within 50 miles of the Fukushima reactors to evacuate. Our recommendation is based on NRC guidelines for public safety that would be used in the U.S. under similar circumstances. At the same time, however, we do not expect any part of the U.S. or its territories to experience any harmful levels of radioactivity, given the great distances involved. We continue to do analyses to verify our understanding of this issue. The NRC is working closely with our federal partners to monitor radiation releases from the Japanese nuclear power plants.

We will continue to place emphasis on communication activities. The agency is being flooded with phone calls from the media, stakeholders,

0000/12

and the general public. Once again, thank you to everyone who is pitching in to help deal with this volume of activity.

Given the dynamic situation, there will be an All-Hands meeting tomorrow at 2:00 p.m. in the One White Flint auditorium, with VTC to the regions, Technical Training Center, and headquarters satellite offices. Overflow seating will be available in the TWFN Exhibit Area as well as the Commission Hearing Room. (There will also be a bridge line: 888-820-8960; pass code: (b)(6)). I will give you an update on what we know, and answer any questions to the best of my ability. In addition, we are expecting to have a Commission meeting early next week. We will provide a link to the briefing materials as soon as possible. Finally, you may find these documents prepared by the Office of Nuclear Reactor Regulation to be of interest:  
<http://portal.nrc.gov/edo/nrr/default.aspx>.

---

*Bill*

Bill Borchardt, EDO

---

**From:** LIA07 Hoc  
**Sent:** Thursday, March 17, 2011 8:49 PM  
**To:** OST04 Hoc  
**Subject:** FW: IAEA distributed documents  
**Attachments:** Summary\_of\_reactor\_unit\_status\_at\_2300\_17-March.UTC[1].pdf

For books ... status update from IAEA  
Thank you!

---

**From:** HOO Hoc  
**Sent:** Thursday, March 17, 2011 8:46 PM  
**To:** LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC  
**Subject:** FW: IAEA distributed documents

---

**From:** Kenagy, W David [mailto:KenagyWD@state.gov]  
**Sent:** Thursday, March 17, 2011 8:26 PM  
**To:** Kenagy, W David; McClelland, Vince; Rodriguez, Veronica; Heinrich, Ann; HOO Hoc; HOO2 Hoc; Huffman, William; DeCair, Sara@epamail.epa.gov; timothy.greten@dhs.gov; Maria.Marinissen@hhs.gov; (b)(6); doehqeoc@oem.doe.gov; hhs.soc@hhs.gov; James.Kish@dhs.gov; HOO Hoc; Smith, Brooke; Zubarev, Jill E; Shaffer, Mark R; NITOPS@nnsa.doe.gov; Skypek, Thomas M  
**Subject:** RE: IAEA distributed documents

This email is UNCLASSIFIED.

0000/13



**Landau, Mindy**

---

**From:** Landau, Mindy  
**Sent:** Thursday, March 17, 2011 7:50 PM  
**To:** Pace, Patti  
**Cc:** Borchardt, Bill; Ellmers, Glenn  
**Subject:** Re: EDO Update

It's in the TWFN auditorium - small typo in the EDO Update. We will clarify in a network announcement tomorrow.  
Thanks!

Sent from my NRC Blackberry

Mindy Landau

(b)(6)

Mindy.Landau@nrc.gov

---

**From:** Pace, Patti  
**To:** Landau, Mindy  
**Cc:** Bradford, Anna; Loyd, Susan  
**Sent:** Thu Mar 17 19:47:11 2011  
**Subject:** FW: EDO Update

Hi Mindy,

Chairman Jaczko is planning to come by to speak at the beginning of All Hands Meeting tomorrow at 2:00PM.  
Can you clarify the location please? Is it in the OWFN Commission Meeting Room? TWFN Auditorium?

Thanks!

Patti Pace  
Assistant to Chairman Gregory B. Jaczko  
U.S. Nuclear Regulatory Commission  
301-415-1820 (office)  
301-415-3504 (fax)

**From:** EDO Update [<mailto:nrc.announcement@nrc.gov>]  
**Sent:** Thursday, March 17, 2011 4:08 PM  
**To:** Taylor, Renee  
**Subject:** EDO Update



EDO Update

---

Thursday, March 17, 2011

0000/14



The situation at the Fukushima reactor site in Japan continues to be very serious and dynamic. The NRC has responded quickly and effectively to an incredibly challenging situation. We have staffed the Operations Center 24/7 since last Friday and we have a team of 11 individuals who are in Japan to 1) provide support to the U.S. ambassador and the embassy, 2) interface with the Japanese regulator and licensee, and 3) help to facilitate coordination of the U.S. Government response. The Chairman was on Capitol Hill yesterday to brief committees of both the House and Senate on what is happening and how the NRC is responding. The quality of the work done by the NRC staff is clearly recognized and appreciated by all of our stakeholders.

Given the available information, we continue to be very concerned about the condition of three reactor cores and two spent fuel pools. Based on calculations performed by NRC experts for the situation as a whole, we now believe that it is appropriate for U.S. residents within 50 miles of the Fukushima reactors to evacuate. Our recommendation is based on NRC guidelines for public safety that would be used in the U.S. under similar circumstances. At the same time, however, we do not expect any part of the U.S. or its territories to experience any harmful levels of radioactivity, given the great distances involved. We continue to do analyses to verify our understanding of this issue. The NRC is working closely with our federal partners to monitor radiation releases from the Japanese nuclear power plants.

We will continue to place emphasis on communication activities. The agency is being flooded with phone calls from the media, stakeholders, and the general public. Once again, thank you to everyone who is pitching in to help deal with this volume of activity.

Given the dynamic situation, there will be an All-Hands meeting tomorrow at 2:00 p.m. in the One White Flint auditorium, with VTC to the regions, Technical Training Center, and headquarters satellite offices. Overflow seating will be available in the TWFN Exhibit Area as well as the Commission Hearing Room. (There will also be a bridge line: 888-820-8960; pass code (b)(6).) I will give you an update on what we know, and answer any questions to the best of my ability. In addition, we are expecting to have a Commission meeting early next week. We will provide a link to the briefing materials as soon as possible. Finally, you may find these documents prepared by the Office of Nuclear Reactor Regulation to be of interest:  
<http://portal.nrc.gov/edo/nrr/default.aspx>.

---

*Bill*

Bill Borchardt, EDO

---

**From:** Virgilio, Rosetta  
**Sent:** Thursday, March 17, 2011 9:08 PM  
**To:** LIA04 Hoc  
**Subject:** Re: 10 mile EPZ and 50 mile evacuation zone in Japan

Good explanation

Sent from an NRC Blackberry  
Rosetta O. Virgilio

(b)(6)

---

**From:** LIA04 Hoc  
**To:** Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill; McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena  
**Cc:** Piccone, Josephine; LIA06 Hoc; OST05 Hoc; Harrington, Holly; Collins, Elmo; Dean, Bill; Heck, Jared; McCree, Victor; Pederson, Cynthia; Satorius, Mark; Flannery, Cindy; LIA04 Hoc; Lukes, Kim; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtill, Richard; Virgilio, Rosetta  
**Sent:** Thu Mar 17 20:49:09 2011  
**Subject:** 10 mile EPZ and 50 mile evacuation zone in Japan

RSLOs:

Many of your states and others have inquired about the 10 mile EPZ and the 50 mile evacuation recommendation as stated in the NRC's press release of March 16 (No. 11-050), which states "the NRC believes it is appropriate for U.S. residents within 50 miles of the Fukushima reactors to evacuate."

The following has been provided by OPA on March 17 through its approved Talking Points.

- The 10-mile EPZ reflects the area where projected doses from design basis accidents at nuclear power plants would not exceed the EPA's protective action guidelines, and we are confident that it would be adequate even for severe accidents. However, the 10-mile zone was always considered a base for emergency response that could be expanded if the situation warranted. The situation in Japan, with four reactors experiencing exceptional difficulties simultaneously, creates the need to expand the EPZ beyond the normal 10-mile radius. We have said from the beginning of this crisis that the NRC would analyze this situation for any lessons that can be derived to improve our oversight of U.S. nuclear power plants. Emergency planning will be part of that review.

Richard Turtill  
State Liaison – Liaison Team  
Incident Response Center

**Dean, Bill**

---

**From:** Dean, Bill  
**Sent:** Thursday, March 17, 2011 11:06 PM  
**To:** Wilson, Peter  
**Subject:** Re: Info: Possible request wrt KI

Thanks for stepping up Pete.  
Bill Dean  
Regional Administrator  
Region I, USNRC  
Sent from NRC BlackBerry

----- Original Message -----

**From:** Wilson, Peter  
**To:** Collins, Elmo  
**Cc:** Lew, David; Dean, Bill; Weerakkody, Sunil; Henderson, Pamela; Howell, Linda  
**Sent:** Thu Mar 17 10:52:36 2011  
**Subject:** FW: Info: Possible request wrt KI

Elmo,

We will be shipping out 252 KI tablets to you today via FedEx.

Hope all is well in Region IV.

Pete

Peter R. Wilson  
Acting Director  
Division of Reactor Safety, Region I  
U.S. Nuclear Regulatory Commission  
610-337-5126 (W)  
(b)(6) (C)  
610-337-6928 (fax)  
[peter.wilson@nrc.gov](mailto:peter.wilson@nrc.gov)

-----Original Message-----

**From:** Hinson, Felicia  
**Sent:** Thursday, March 17, 2011 10:29 AM  
**To:** McKinley, Raymond; Wilson, Peter  
**Subject:** RE: Info: Possible request wrt KI

Pete,

We are sending 252 tablets to Region IV today (via Federal Express).

-Felicia

-----Original Message-----

0000/76

From: McKinley, Raymond  
Sent: Thursday, March 17, 2011 9:25 AM  
To: Wilson, Peter; Hinson, Felicia  
Subject: RE: Info: Possible request wrt KI

Yes, but we need to keep a minimum of 50 packs to accommodate two 25 person Site Teams for 14 days. We do not have a minimum standard, but I think that should be our minimum stock for planning purposes. We will send what we have above our 50 pack minimum.

Ray

-----Original Message-----

From: Wilson, Peter  
Sent: Thursday, March 17, 2011 6:28 AM  
To: McKinley, Raymond; Hinson, Felicia  
Subject: FW: Info: Possible request wrt KI  
Importance: High

Ray and Felicia,

Do we have any spare KI that we can send to Region IV?

Thanks,

Pete

-----Original Message-----

From: Dean, Bill  
Sent: Wednesday, March 16, 2011 10:37 PM  
To: Henderson, Pamela  
Cc: Lew, David; Wilson, Peter; Weerakkody, Sunil  
Subject: FW: Info: Possible request wrt KI

what does our stash look like and can we help region IV?

---

From: Collins, Elmo  
Sent: Wednesday, March 16, 2011 2:38 PM  
To: McCree, Victor; Satorius, Mark; Dean, Bill; Wiggins, Jim; Rudisail, Steven  
Cc: Evans, Michele; Pederson, Cynthia; Lew, David; Wert, Leonard; Howell, Art; Croteau, Rick; Munday, Joel; Christensen, Harold; Jones, William  
Subject: RE: Info: Possible request wrt KI

©

From: McCree, Victor  
Sent: Wednesday, March 16, 2011 1:35 PM  
To: Collins, Elmo; Satorius, Mark; Dean, Bill; Wiggins, Jim; Rudisail, Steven  
Cc: Evans, Michele; Pederson, Cynthia; Lew, David; Wert, Leonard; Howell, Art; Croteau, Rick; Munday, Joel; Christensen, Harold; Jones, William  
Subject: RE: Info: Possible request wrt KI

Thanks Elmo – we had provided a “stash” of KI for Chuck to carry along with him, but he inadvertently left it in his office. I’ll ask our guys (Steve – your action) to interface with yours and share as much as we can.

Vic

From: Collins, Elmo  
Sent: Wednesday, March 16, 2011 2:33 PM  
To: Satorius, Mark; Dean, Bill; McCree, Victor; Wiggins, Jim  
Cc: Evans, Michele; Pederson, Cynthia; Lew, David; Wert, Leonard; Howell, Art  
Subject: Info: Possible request wrt KI

All

Chuck Casto had a layover here in Texas on his way to Japan. In the hurriedness of getting on the plane, he found that he might not have been equipped as he needed to be, especially wrt KI. So, Region IV gave all our KI (53 packets) to Chuck for use in Japan, along with dosimeters and pocket dosimeters. So, Region IV finds itself without an immediate stash of KI for use if we had to send a site team.

Needless to say, given the high demand for KI, it is difficult to purchase on the open market.

Your staff will likely be contacted to see if we can beg, borrow, or steal enough packets of KI in order to equip a site team.

Thank you for your cooperation and generosity.

Elmo

From: Case, Michael  
To: Kammerer, Annie  
Subject: RE: Seismic Q&As March 18th Sam update  
Date: Friday, March 18, 2011 6:58:00 AM

Good morning Annie. What's the status of the one sheeter for the DOE folks? Is someone going to pick up the ball and take it from here, bless it, and send it to DOE?

More importantly, what's your plan to take a couple of days off this weekend?

From: Kammerer, Annie  
Sent: Friday, March 18, 2011 6:51 AM  
To: Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc  
Cc: Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Nilesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Sheron, Brian; Dricks, Victor; Warrick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castelman, Patrick; Sharkey, Jeffry; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas; Webb, Michael; Mandy, Kamal; Khanna, Meena; Schend, Diane; Thomas, Eric; Nguyen, Quynh; Meighan, Sean  
Subject: RE: Seismic Q&As March 18th Sam update

All,

Please see the updated version of the Seismic Q&As.

Among today's highlights:

- \*We added a Terms and Definitions section at the end of the document. (We know that an acronyms list would be helpful too, but it will have to wait a little)
- \*The "additional information" section has been split into tables, plots, and fact sheets
- \*A high-level draft fact sheet on NRC's seismic regulations has been added
- \*We added a section to track outstanding questions that have come in from congress. This will support those who get the tickets in the short terms (most likely NRR). The questions will be moved to the appropriate sections long term (as long as they are not duplicates.)

I'm sure we all agree this has been a crazy week! We're hoping that the weekend workload is lighter (if only because we won't get as many email from in house) and we can clean up this document and fill in some of the missing answers in preparation for the news story changing. We're trying hard to get out in front of the next wave.

Cheers,  
Annie

From: Kammerer, Annie  
Sent: Thursday, March 17, 2011 2:36 AM  
To: Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc  
Cc: Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Nilesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Glitter, Joseph; Howe, Allen; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Munson, Clifford; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Dricks, Victor; Warrick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castelman, Patrick; Sharkey, Jeffry; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas  
Subject: Seismic Q&As March 17th Zam update

All,

As promised, a sharepoint site has been set up where our friends in NRR will be posting the latest version of the Seismic Q&A document on an ongoing basis. If someone would prefer to use the sharepoint site, instead of being on this distribution list, please let me know...

<http://portal.nrc.gov/edo/nrr/NRR%20IA/FAQ%20related%20to%20Events%20Occuring%20in%20Japan/Forms/AllItems.aspx>

This latest update has a number of new questions (not many with answers today, but we are working hard). A high priority question we are working on is "how many plants are near a mapped active fault". We're focusing on anything within 50 miles. We're also putting relevant questions from the congressional inquiries we just received, and will also give these high priority to support any needs by NRR.

Many new figures and some draft fact sheets have added to the "additional information" section. These include the NRO half of a tsunami fact sheet. A description of the tsunami research is still to come from RES.

Some good news: Yesterday's version seems to have been widely forwarded around the agency. So, we are also starting to get some excellent questions from staff looking forward. This is allowing us to feel that we are finally getting out in front of things to a small degree. Also, our team has grown and we now have someone acting as source of seismic expertise for the 11pm to 7 am shift. This means that we now have seismic experts available to the RST and OPA at the Op Center 24 hours.

0000/77

with 2 people during the day. That extra support is allowing us to get this out at least an hour earlier today ☺

We are continuing to compile the questions that come in and update the seismic Q&A document. If you have suggested changes, or want to provide missing answers, please forward them to me for compilation.

This is a living document and will be updated daily in the foreseeable future.

Happy St. Paddy's Day. May the world (especially our friends in Japan) have the luck of the Irish today.

Cheers,

Annie

Dr. Annie Kammerer, PE  
Senior Seismologist and Earthquake Engineer  
US Nuclear Regulatory Commission  
Office of Nuclear Regulatory Research  
Washington DC 20555

(b)(6) mobile

(b)(6) BA

**From:** Kammerer, Annie

**Sent:** Tuesday, March 15, 2011 3:41 AM

**To:** Hiland, Patrick; Skeen, David

**Cc:** Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Kammerer, Annie; Chokshi, Nilesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Glitter, Joseph; Howe, Allen; Case, Michael; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Munson, Clifford; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sharon, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael  
**Subject:** latest version of Q&As

All,

This is the first draft of the seismic-specific Q&As. It is pretty rough and there are many answers still missing, but people have contributed a lot and we thought it may be useful for many people trying to answer questions coming in.

We are continuing to compile the questions that come in and update the seismic Q&A document. If you have suggested changes, or want to provide missing answers, please forward them to me for compilation.

This is a living document and will be updated daily in the foreseeable future.

Annie

Dr. Annie Kammerer, PE  
Senior Seismologist and Earthquake Engineer  
US Nuclear Regulatory Commission  
Office of Nuclear Regulatory Research  
Washington DC 20555

(b)(6) mobile

(b)(6) BA



**Wittick, Brian**

---

**From:** Wittick, Brian  
**Sent:** Friday, March 18, 2011 7:14 AM  
**To:** LIA02 Hoc; LIA03 Hoc  
**Cc:** Foggie, Kirk, Smith, Brooke; LIA08 Hoc  
**Subject:** FW: New ERF on NEWS, INES Rating: 3, Japan, Power Reactor

FYI

Brian Wittick  
Executive Technical Assistant for Reactors Office of the Executive Director for Operations U.S. Nuclear  
Regulatory Commission  
301-415-2496 (w): (b)(6) (c)

—Original Message—

**From:** NEWS Automated Mailer [<mailto:ContactPointNEWS@iaea.org>]  
**Sent:** Friday, March 18, 2011 5:10 AM  
**To:** [NEWS.Contact-Point@iaea.org](mailto:NEWS.Contact-Point@iaea.org)  
**Subject:** New ERF on NEWS, INES Rating: 3, Japan, Power Reactor

Dear NEWS User,

This is to notify you as a registered user of the NEWS Web site that an Event Rating Form (ERF) for the Event titled:

"Loss of cooling function and water supplying function on the spent fuel pool due to the big tsunami."

has as of today, Friday, 18 March 2011, 10:07:27 UTC, been added to the NEWS Web site. Additional information regarding the ERF is as follows:

Country: Japan  
Location/Facility: FUKUSHIMA-DAIICHI-4  
Event Type: Power Reactor  
Event Date: 2011.03.11

Rating Date: 2011.03.18  
ERF Version: Provisional  
INES Rating Level: 3

For more detailed information about the ERF, including the related Event and press releases as well as on-site participation in forum discussions, please visit the NEWS Web site at:

<http://www-news.iaea.org/news/>

NEWS Administration

0000/18

**Weber, Michael**

---

**From:** Weber, Michael  
**Sent:** Friday, March 18, 2011 7:21 AM  
**To:** Leeds, Eric  
**Subject:** Please Call ME

When you get in...we need to discuss replacement staffing for our team in the Japan, as well as the President's requested review of reactor safety.

(b)(6)

Thanks

0000/79

---

**From:** LIA07 Hoc  
**Sent:** Friday, March 18, 2011 7:24 PM  
**To:** LIA06 Hoc  
**Subject:** FW: DHS IP Deployment to Federal Liaison Team

I believe that this is the referenced email. It was marked as "read" so I didn't notice it yesterday when I was in ...  
I'm very sorry.  
-Sara

---

**From:** Liang, Rachel [mailto:Rachel.Liang@dhs.gov]  
**Sent:** Thursday, March 17, 2011 10:52 AM  
**To:** LIA07 Hoc  
**Cc:** Nuclear SSA  
**Subject:** DHS IP Deployment to Federal Liaison Team

NRC Federal Liaison Team,

Per the earlier invitation, DHS Office of Infrastructure Protection intends to deploy an individual to the NRC Federal Liaison team to provide support and facilitate information sharing.

Please confirm that this course of action is still appropriate. Additionally, if any logistical preparations need to take place, please advise accordingly.

Thanks,

Rachel (Treffeisen) Liang  
Nuclear Sector-Specific Agency  
Office of Infrastructure Protection  
Department of Homeland Security  
(703) 603-5136 (office)  
(b)(6) (mobile)  
[rachel.liang@dhs.gov](mailto:rachel.liang@dhs.gov) NEW!

0000/80

## Wittick, Brian

---

**From:** Wittick, Brian  
**Sent:** Friday, March 18, 2011 7:28 AM  
**To:** LIA02 Hoc, LIA03 Hoc, LIA08 Hoc  
**Subject:** FW: New ERF on NEWS, INES Rating: 3, Japan, Power Reactor

FYI

Brian Wittick  
Executive Technical Assistant for Reactors Office of the Executive Director for Operations U.S. Nuclear  
Regulatory Commission  
301-415-2496 (w); (b)(6) (c)

---Original Message---

**From:** NEWS Automated Mailer [<mailto:ContactPointNEWS@iaea.org>]  
**Sent:** Friday, March 18, 2011 5:25 AM  
**To:** [NEWS.Contact-Point@iaea.org](mailto:NEWS.Contact-Point@iaea.org)  
**Subject:** New ERF on NEWS, INES Rating: 3, Japan, Power Reactor

Dear NEWS User,

This is to notify you as a registered user of the NEWS Web site that an Event Rating Form (ERF) for the Event titled:

"Loss of the cooling function to the ultimate heat sink due to the big tsunami"

has as of today, Friday, 18 March 2011, 10:18:13 UTC, been added to the NEWS Web site. Additional information regarding the ERF is as follows:

Country: Japan  
Location/Facility: FUKUSHIMA-DAINI-4  
Event Type: Power Reactor  
Event Date: 2011.03.11

Rating Date: 2011.03.18  
ERF Version: Provisional  
INES Rating Level: 3

For more detailed information about the ERF, including the related Event and press releases as well as on-site participation in forum discussions, please visit the NEWS Web site at:

<http://www-news.iaea.org/news/>

NEWS Administration

Wittick, Brian

---

From: Wittick, Brian  
Sent: Friday, March 18, 2011 7:29 AM  
To: LIA02 Hoc; LIA08 Hoc; LIA03 Hoc  
Subject: FW: New ERF on NEWS, INES Rating: 3, Japan, Power Reactor

FYI

Brian Wittick  
Executive Technical Assistant for Reactors Office of the Executive Director for Operations U.S. Nuclear  
Regulatory Commission  
301-415-2496 (w) (b)(6) (c)

-----Original Message-----

From: NEWS Automated Mailer [mailto:ContactPointNEWS@iaea.org]  
Sent: Friday, March 18, 2011 5:15 AM  
To: NEWS.Contact-Point@iaea.org  
Subject: New ERF on NEWS, INES Rating: 3, Japan, Power Reactor

Dear NEWS User,

This is to notify you as a registered user of the NEWS Web site that an Event Rating Form (ERF) for the Event titled:

"Loss of the cooling function to the ultimate heat sink due to the big tsunami"

has as of today, Friday, 18 March 2011, 10:12:38 UTC, been added to the NEWS Web site. Additional information regarding the ERF is as follows:

Country: Japan  
Location/Facility: FUKUSHIMA-DAINI-1  
Event Type: Power Reactor  
Event Date: 2011.03.11

Rating Date: 2011.03.18  
ERF Version: Provisional  
INES Rating Level: 3

For more detailed information about the ERF, including the related Event and press releases as well as on-site participation in forum discussions, please visit the NEWS Web site at:

<http://www-news.iaea.org/news/>

NEWS Administration

0000/82

Wittick, Brian

---

From: Wittick, Brian  
Sent: Friday, March 18, 2011 7:31 AM  
To: LIA02 Hoc; LIA03 Hoc; LIA08 Hoc  
Subject: FW: New ERF on NEWS, INES Rating: 3, Japan, Power Reactor

FYI

Brian Wittick  
Executive Technical Assistant for Reactors Office of the Executive Director for Operations U.S. Nuclear  
Regulatory Commission  
301-415-2496 (w); (b)(6) (c)

-----Original Message-----

From: NEWS Automated Mailer [<mailto:ContactPointNEWS@iaea.org>]  
Sent: Friday, March 18, 2011 5:19 AM  
To: [NEWS.Contact-Point@iaea.org](mailto:NEWS.Contact-Point@iaea.org)  
Subject: New ERF on NEWS, INES Rating: 3, Japan, Power Reactor

Dear NEWS User,

This is to notify you as a registered user of the NEWS Web site that an Event Rating Form (ERF) for the Event titled:

"Loss of the cooling function to the ultimate heat sink due to the big tsunami"

has as of today, Friday, 18 March 2011, 10:14:53 UTC, been added to the NEWS Web site. Additional information regarding the ERF is as follows:

Country: Japan  
Location/Facility: FUKUSHIMA-DAINI-2  
Event Type: Power Reactor  
Event Date: 2011.03.11

Rating Date: 2011.03.18  
ERF Version: Provisional  
INES Rating Level: 3

For more detailed information about the ERF, including the related Event and press releases as well as on-site participation in forum discussions, please visit the NEWS Web site at:

<http://www-news.iaea.org/news/>

NEWS Administration

0000/83

Wittick, Brian

---

From: Wittick, Brian  
Sent: Friday, March 18, 2011 7:33 AM  
To: LIA02 Hoc; LIA08 Hoc; LIA03 Hoc  
Subject: FW: New ERF on NEWS, INES Rating: 5, Japan, Power Reactor

FYI

Brian Wittick  
Executive Technical Assistant for Reactors Office of the Executive Director for Operations U.S. Nuclear  
Regulatory Commission  
301-415-2496 (w); (b)(6) (c)

-----Original Message-----

From: NEWS Automated Mailer [<mailto:ContactPointNEWS@iaea.org>]  
Sent: Friday, March 18, 2011 5:03 AM  
To: [NEWS.Contact-Point@iaea.org](mailto:NEWS.Contact-Point@iaea.org)  
Subject: New ERF on NEWS, INES Rating: 5, Japan, Power Reactor

Dear NEWS User,

This is to notify you as a registered user of the NEWS Web site that an Event Rating Form (ERF) for the Event titled:

"Abnormal rise of radioactive dosage value at site boundary (INES Level 4)"

has as of today, Friday, 18 March 2011, 09:48:34 UTC, been added to the NEWS Web site. Additional information regarding the ERF is as follows:

Country: Japan  
Location/Facility: FUKUSHIMA-DAIICHI-1  
Event Type: Power Reactor  
Event Date: 2011.03.12

Rating Date: 2011.03.12  
ERF Version: Provisional  
INES Rating Level: 5

For more detailed information about the ERF, including the related Event and press releases as well as on-site participation in forum discussions, please visit the NEWS Web site at:

<http://www-news.iaea.org/news/>

NEWS Administration

0000/84

**Wittick, Brian**

---

**From:** Wittick, Brian  
**Sent:** Friday, March 18, 2011 7:34 AM  
**To:** LIA02 Hoc; LIA03 Hoc; LIA08 Hoc  
**Subject:** FW: New ERF on NEWS, INES Rating: 5, Japan, Power Reactor

FYI

Brian Wittick  
Executive Technical Assistant for Reactors Office of the Executive Director for Operations U.S. Nuclear  
Regulatory Commission  
301-415-2496 (w); (b)(6) (c)

-----Original Message-----

**From:** NEWS Automated Mailer [<mailto:ContactPointNEWS@iaea.org>]  
**Sent:** Friday, March 18, 2011 5:02 AM  
**To:** [NEWS.Contact-Point@iaea.org](mailto:NEWS.Contact-Point@iaea.org)  
**Subject:** New ERF on NEWS, INES Rating: 5, Japan, Power Reactor

Dear NEWS User,

This is to notify you as a registered user of the NEWS Web site that an Event Rating Form (ERF) for the Event titled:

"The core damage by loss of all cooling function due to the big tsunami."

has as of today, Friday, 18 March 2011, 09:59:34 UTC, been added to the NEWS Web site. Additional information regarding the ERF is as follows:

Country: Japan  
Location/Facility: FUKUSHIMA-DAIICHI-3  
Event Type: Power Reactor  
Event Date: 2011.03.11

Rating Date: 2011.03.18  
ERF Version: Provisional  
INES Rating Level: 5

For more detailed information about the ERF, including the related Event and press releases as well as on-site participation in forum discussions, please visit the NEWS Web site at:

<http://www-news.iaea.org/news/>

NEWS Administration

0000/85



**Wittick, Brian**

---

**From:** Wittick, Brian  
**Sent:** Friday, March 18, 2011 7:35 AM  
**To:** LIA02 Hoc; LIA08 Hoc; LIA03 Hoc  
**Subject:** FW: New ERF on NEWS, INES Rating: 5, Japan, Power Reactor

FYI

Brian Wittick  
Executive Technical Assistant for Reactors Office of the Executive Director for Operations U.S. Nuclear  
Regulatory Commission  
301-415-2496 (w); (b)(6) (c)

-----Original Message-----

**From:** NEWS Automated Mailer [<mailto:ContactPointNEWS@iaea.org>]  
**Sent:** Friday, March 18, 2011 4:57 AM  
**To:** [NEWS.Contact.Point@iaea.org](mailto:NEWS.Contact.Point@iaea.org)  
**Subject:** New ERF on NEWS, INES Rating: 5, Japan, Power Reactor

Dear NEWS User,

This is to notify you as a registered user of the NEWS Web site that an Event Rating Form (ERF) for the Event titled:

"The core damage by loss of all cooling function due to the big tsunami."

has as of today, Friday, 18 March 2011, 09:54:39 UTC, been added to the NEWS Web site. Additional information regarding the ERF is as follows:

Country: Japan  
Location/Facility: FUKUSHIMA-DAIICHI-2  
Event Type: Power Reactor  
Event Date: 2011.03.11

Rating Date: 2011.03.18  
ERF Version: Provisional  
INES Rating Level: 5

For more detailed information about the ERF, including the related Event and press releases as well as on-site participation in forum discussions, please visit the NEWS Web site at:

<http://www-news.iaea.org/news/>

NEWS Administration

0000/816

**Wittick, Brian**

---

**From:** Wittick, Brian  
**Sent:** Friday, March 18, 2011 7:36 AM  
**To:** LIA02 Hoc; LIA03 Hoc, LIA08 Hoc  
**Subject:** FW: New ERF on NEWS, INES Rating 3, Japan, Power Reactor

FYI

Brian Wittick  
Executive Technical Assistant for Reactors Office of the Executive Director for Operations U.S. Nuclear  
Regulatory Commission  
301-415-2496 (w); (b)(6) (c)

-----Original Message-----

**From:** NEWS Automated Mailer [<mailto:ContactPointNEWS@iaea.org>]  
**Sent:** Friday, March 18, 2011 1:48 AM  
**To:** [NEWS.Contact-Point@iaea.org](mailto:NEWS.Contact-Point@iaea.org)  
**Subject:** New ERF on NEWS, INES Rating: 3, Japan, Power Reactor

Dear NEWS User,

This is to notify you as a registered user of the NEWS Web site that an Event Rating Form (ERF) for the Event titled:

"Effect to the Nuclear Facilities from the earthquake on east area of Japan"

has as of today, Friday, 18 March 2011, 06:33:54 UTC, been added to the NEWS Web site. Additional information regarding the ERF is as follows:

Country: Japan  
Location/Facility: FUKUSHIMA-DAIIC1-1,2 FUKUSHIMA-DAINI-1, Japan  
Event Type: Power Reactor  
Event Date: 2011.03.11

Rating Date: 2011.03.12  
ERF Version: Provisional  
INES Rating Level: 3

For more detailed information about the ERF, including the related Event and press releases as well as on-site participation in forum discussions, please visit the NEWS Web site at:

<http://www-news.iaea.org/news/>

NEWS Administration

0000/87

**Andersen, James**

---

**From:** Andersen, James  
**Sent:** Friday, March 18, 2011 11:54 AM  
**To:** Evans, Michele  
**Cc:** Wittick, Brian  
**Subject:** FW: Japan NRC Team

Michele, another name for consideration for the Japan relief team. We already have Brian on the Op Center list.

Jim Andersen

**From:** Wittick, Brian  
**Sent:** Friday, March 18, 2011 10:54 AM  
**To:** Mamish, Nader  
**Cc:** Andersen, James  
**Subject:** Japan NRC Team

Nader,

I spoke to Jim about volunteering to support the Japan NRC team and he recommended I provide you an email. I think I have unique qualifications to support the NRC effort as follows:

- Having served 21+ years as a naval submariner I have a good understanding of U.S. military processes and capabilities. I have also had oversight of many Embassy embedded Defense Cooperation Offices (MDAO in Japan) and/or the defense cooperation activities of Embassy defense attaches. It is clear the U.S. military and Japanese MOD are significant actors in the current crisis. The defense cooperation experience also provided a good understanding of the workings and protocols of our Embassies.
- In addition to Navy nuclear training I completed most of the BWR training pipeline, was a resident at IP and did several BWR inspections
- International relations officer experience in IP

(b)(6)

If you need volunteers I am willing to support.

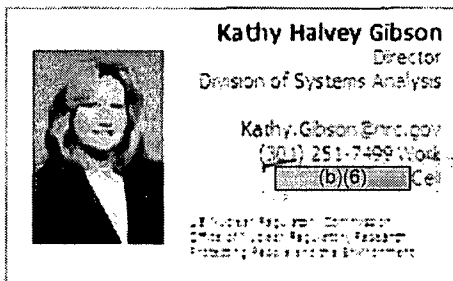
VR  
Brian Wittick  
Executive Technical Assistant for Reactors  
Office of the Executive Director for Operations  
U.S. Nuclear Regulatory Commission  
301-415-2496 (w) (b)(6) (c)

0000/08

**From:** Gibson, Kathy  
**To:** Case, Michael  
**Subject:** RE: Syed and the Japan Trip  
**Date:** Friday, March 18, 2011 1:39:31 PM  
**Attachments:** Kathy Halvey Gibson.vcf

---

Ok do you have an alternative?



**From:** Case, Michael  
**Sent:** Friday, March 18, 2011 1:38 PM  
**To:** Gibson, Kathy  
**Subject:** Syed and the Japan Trip

Hi Kathy. Syed reports that he has a previous commitment in Paris during the first week of April so he wouldn't be available for the two week duration.

0000/89

Attachment: Kathy Halvey Gibson\_6.vcf (5196 Bytes) cannot be converted to PDF format.

## **Landau, Mindy**

---

**From:** Landau, Mindy  
**Sent:** Friday, March 18, 2011 3:12 PM  
**To:** Rihm, Roger  
**Cc:** Jaegers, Cathy  
**Subject:** Re: State of New York

I think I would rather stay in process and assign to staff to coordinate w/you. I don't think we should take the lead on everything on the event or we'll quickly get overloaded including burdening our admin staff.

Sent from my NRC Blackberry

Mindy Landau

(b)(6)

[Mindy.Landau@nrc.gov](mailto:Mindy.Landau@nrc.gov)

---

**From:** Rihm, Roger  
**To:** Landau, Mindy  
**Cc:** Jaegers, Cathy  
**Sent:** Fri Mar 18 15:06:47 2011  
**Subject:** FW: State of New York

Mindy, letter from NY state attorney general. I suppose we (OEDO) should take it and put it in the pool, and then once we figure out what we're doing with the pool, we do the same with this? (I think this is letter #9; a THIRD letter from Markey came in today!)

---

**From:** Jaegers, Cathy  
**Sent:** Friday, March 18, 2011 2:59 PM  
**To:** Rihm, Roger  
**Subject:** FW: State of New York

Should we assign to you to stay consistent with response or do you want me to task staff and ask them to coordinate with you?

---

**From:** Champ, Billie  
**Sent:** Friday, March 18, 2011 2:56 PM  
**To:** Batkin, Joshua; Sharkey, Jeffry; Sosa, Belkys; Bubar, Patrice; Nieh, Ho; Burns, Stephen; Bates, Andrew  
**Cc:** Vietti-Cook, Annette; Jaegers, Cathy; Clayton, Kathleen  
**Subject:** State of New York

Attached for your information is an incoming from Eric Schneiderman, State of New York, re: Seismic risk at Indian Point Nuclear Generating Station.

*Billie A. C-Lopes*  
*March 17, 2011*

0000/90

**From:** Evans, Michele  
**To:** Case, Michael  
**Subject:** Re: Staff for Potential Support in Japan  
**Date:** Friday, March 18, 2011 3:45:31 PM

---

Call me 4153236

Sent from an NRC Blackberry  
Michele Evans

---

**From:** Case, Michael  
**To:** Gibson, Kathy; Evans, Michele  
**Sent:** Fri Mar 18 15:42:22 2011  
**Subject:** RE: Staff for Potential Support in Japan

The other alternative I had is extremely good structural, good people skills but not a lot of plant and agency experience so I don't think it would be the best fit. If the agency really needs a structural person to make it work, I could try some sort of Plan B with Syed.

**From:** Gibson, Kathy  
**Sent:** Friday, March 18, 2011 2:06 PM  
**To:** Evans, Michele  
**Cc:** Case, Michael  
**Subject:** Re: Staff for Potential Support in Japan

No he is not, Mike Case is considering alternatives.

---

**From:** Evans, Michele  
**To:** Gibson, Kathy  
**Sent:** Fri Mar 18 14:04:02 2011  
**Subject:** RE: Staff for Potential Support in Japan

A question came up from Wiggins whether Syed Ali was available for structural since he was so involved in the post 911 work

**From:** Gibson, Kathy  
**Sent:** Friday, March 18, 2011 1:39 PM  
**To:** Evans, Michele  
**Cc:** Uhle, Jennifer; Coyne, Kevin; Huffert, Anthony; Rubin, Stuart; Yarsky, Peter; Salley, MarkHenry; Elkins, Scott; Case, Michael; Bush-Goddard, Stephanie; Scott, Michael  
**Subject:** Staff for Potential Support in Japan  
**Importance:** High

Michele,

I am following up on your request to Jennifer for staff to potentially go to Japan beginning around March 24 for about 2 weeks.

I don't have a name for structural as yet, but will provide it when DE gets back to me.

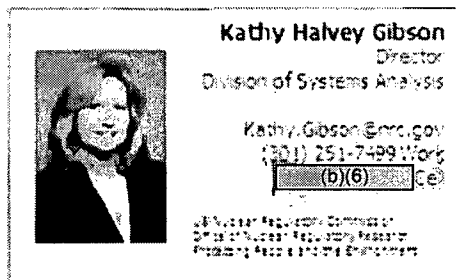
For the other areas of expertise:

0000/91

Protective Measures – Tony Huffert  
Engineers with good people skills – Stu Rubin, Peter Yarsky  
Infrared Imaging – Mark Salley

Please let me know if you need anything else.

Kathy





**Rihm, Roger**

---

**From:** Rihm, Roger  
**Sent:** Friday, March 18, 2011 4:24 PM  
**To:** Barkley, Richard  
**Subject:** RE: Need Anything for Monday's Commission Meeting??

Mindy's in Atlanta, Glenn is gone for the day, and it's just me! Haven't heard that we need to produce anything for Monday's meeting. I'm assuming most info is going to come from the EOC.

---

**From:** Barkley, Richard  
**Sent:** Friday, March 18, 2011 3:32 PM  
**To:** Landau, Mindy; Ellmers, Glenn; Rihm, Roger  
**Subject:** Need Anything for Monday's Commission Meeting??

I do work weekends. Also, thanks for the credit on Bill's slides today.

My cell and home phone numbers are below.

Richard S. Barkley, PE  
Nuclear & Environmental Engineer  
(610) 337-5065 Work  
(b)(6) Cell  
(b)(6) Home

0000/92

**From:** Koshy, Thomas  
**To:** Case, Michael  
**Subject:** Re: Staffing Plan  
**Date:** Friday, March 18, 2011 4:57:00 PM

---

Next week I am out to Sandia  
I can fill in at other slots

Replied from NRC Blackberry  
Thomas Koshy  
USNRC  
(b)(6)

---

**From:** Case, Michael  
**To:** Koshy, Thomas; Boyce, Tom (RES)  
**Cc:** Richards, Stuart  
**Sent:** Fri Mar 18 16:01:37 2011  
**Subject:** FW: Staffing Plan

Hey brothers Tom.

There still seems to be spaces in some of the Reactor Safety Team spots for the Ops Center. If you still have an interest, you both would do well

**From:** OST02 HOC  
**Sent:** Friday, March 18, 2011 3:06 PM  
**To:** Abrams, Charlotte; Adams, John; Afshar-Tous, Mugeh; Alemu, Bezakulu; Alter, Peter; Anderson, James; Ashkeboussi, Nima; Athey, George; Baker, Stephen; Bergman, Thomas; Berry, Rollic; Bhachu, Ujagar; Bloom, Steven; Blount, Tom; Boger, Bruce; Borchardt, Bill; Bower, Anthony; Bowman, Gregory; Brandon, Lou; Brandt, Philip; Brock, Kathryn; Brown, Cris; Brown, David; Brown, Eva; Brown, Frederick; Brown, Michael; Bukharin, Oleg; Camper, Larry; Carpenter, Cynthia; Carter, Mary; Case, Michael; Casto, Greg; Cecere, Bethany; Cervera, Margaret; Chazell, Russell; Chen, Yen-Ju; Cheek, Michael; Chokshi, Nilesh; Chowdhury, Prosanta; Circle, Jeff; Clement, Richard; Clinton, Rebecca; Coggins, Anita; Collins, Frank; Cool, Donald; Costa, Arlon; Crutchley, Mary Glenn; Cruz, Zahira; Cutaiar, Robert; Dacus, Eugene; DeCicco, Joseph; Decker, David; Dembek, Stephen; Devlin, Stephanie; Doane, Margaret; Dorman, Dan; Dorsey, Cynthia; Dozier, Jerry; Droggitis, Spiros; Dube, Donald; Dudes, Laura; Eads, Johnny; Emche, Danielle; English, Lance; Erlanger, Craig; Esmaili, Hossein; Figueroa, Roberto; Fiske, Jonathan; Floyd, Daphene; Foggie, Kirk; Foster, Jack; Fragoyannis, Nancy; Franovich, Rani; Frazier, Alan; Freshwater, David; Fuller, Edward; Galletta, Thomas; Gambone, Kimberly; Gibson, Kathy; Glitter, Joseph; Gilmer, James; Gordon, Dennis; Gott, William; Grant, Jeffery; Grimes, Kelly; Grobe, Jack; Gulla, Gerald; Hale, Jerry; Hardesty, Duane; Harris, Tim; Hart, Ken; Hart, Michelle; Harvey, Brad; Hasselberg, Rick; Henderson, Karen; Hiland, Patrick; Holahan, Patricia; Holahan, Vincent; Holian, Brian; Howard, Tabitha; Huffert, Anthony; Hurd, Sapna; Huyck, Doug; Isom, James; Jackson, Karen; Jacobson, Jeff; Jessie, Janelle; Johnson, Michael; Jolicoeur, John; Jones, Andrea; Jones, Cynthia; Kahler, Carolyn; Kammerer, Annie; Karas, Rebecca; Khan, Omar; Kolb, Timothy; Kotzalas, Margie; Kowalczyk, Jeffrey; Kratchman, Jessica; Kugler, Andrew; Lamb, Christopher; Lane, John; Larson, Emily; Laur, Steven; LaVie, Steve; Lewis, Robert; Li, Yong; Lising, Jason; Lombard, Mark; Lubinski, John; Lui, Christiana; Lynch, Jeffery; Mamish, Nader; Manahan, Michelle; Marksberry, Don; Marshall, Jane; Masao, Nagai; Maupin, Cardilia; Mayros, Lauren; Mazaika, Michael; McConnell, Keith; McCoppin, Michael; McDermott, Brian; McGinty, Tim; McGovern, Denise; McMurtry, Anthony; Merritt, Christina; Meyer, Karen; Miller, Charles; Miller, Chris; Milligan, Patricia; Mohseni, Aby; Moore, Scott; Morlang, Gary; Morris, Scott; Mroz (Sahm), Sara; Munson, Clifford; Murray, Charles; Nerret, Amanda; Nguyen, Carolyn; Norris, Michael; Norton, Charles; Ordaz, Vonna; Owens, Janice; Padovan, Mark; Parillo, John; Patel, Jay; Perin, Vanice; Pope, Tia; Powell, Amy; Purdy, Gary; Quinlan, Kevin; Ragland, Robert; Ragland, Randolph; Ralph, Melissa; Ramsey, Jack; Reed, Elizabeth; Reed, Sara; Reed, Wendy; Reis, Terrence; Resner, Mark; Riley (OCA), Timothy; Riner, Kelly; Rini, Brett; Robinson, Edward; Rodriguez-Luccioni, Hector; Rosenberg, Stacey; Ross-Lee,

0000/93

MaryJane; Roundtree, Amy; Ruland, William; Salay, Michael; Salter, Susan; Salus, Amy; Sanfilippo, Nathan; Scarbrough, Thomas; Schaperow, Jason; Schmidt, Duane; Schmidt, Rebecca; Schoenebeck, Greg; Schrader, Eric; Schwartzman, Jennifer; Seber, Dogan; See, Kenneth; Shane, Raeann; Shea, James; Shepherd, Jill; Sheron, Brian; Skeen, David; Sloan, Scott; Smirolodo, Elizabeth; Smith, Brooke; Smith, Theodore; Stahl, Eric; Stang, Annette; Steger (Tucci), Christine; Stieve, Alice; Stone, Rebecca; Stransky, Robert; Sturz, Fritz; Sullivan, Randy; Sun, Casper; Tappert, John; Temple, Jeffrey; Thaggard, Mark; Thomas, Eric; Thorp, John; Tobin, Jennifer; Trefethan, Jean; Tschiltz, Michael; Turtill, Richard; Uhle, Jennifer; Valencia, Sandra; Vaughn, James; Vick, Lawrence; Virgilio, Martin; Virgilio, Rosetta; Ward, Leonard; Wastler, Sandra; Watson, Bruce; Webber, Robert; Weber, Michael; White, Bernard; Wiggins, Jim; Wiggins, Jim; Williams, Donna; Williams, Joseph; Williamson, Linda; Willis, Dori; Wimbush, Andrea; Wittuck, Brian; Wray, John; Wright, Lisa (Gibney); Wright, Ned; Wunder, George; Young, Francis; Zimmerman, Roy

**Subject:** Staffing Plan

This list is for next week Sat 3/19 at 7a.m. to Friday 3/25. We do recognize that some positions do not have full staffing. We are looking to fill those. If you know anyone who would want to fill them, have them contact OPS Center at 816-5100.

## **Matakas, Gina**

---

**From:** Barkley, Richard  
**Sent:** Friday, March 18, 2011 5:24 PM  
**To:** Sheehan, Neil; Harrington, Holly; Rihm, Roger; Dean, Bill  
**Subject:** For Consideration for Use at the Commission Meeting Monday Morning  
**Attachments:** 5535336297\_ea06096dd4\_b.jpg; Fukushima Presentation.pptx

**Importance:** High

The EDO used my attached slide show during his All Hands meeting today, and added two additional slides.

The photo I just attached were just loaded on Flickr – It gives the best aerial view of the site as it currently stands:

Unit 1 – Secondary containment upper walls blown off and apparently the roof collapsed onto the refuel floor

Unit 3 – Showing extensive structure damage to the reactor building upper level and the secondary containment from its hydrogen explosion

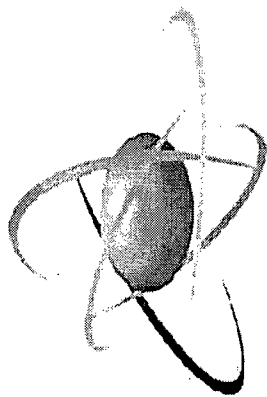
Unit 4 – Showing the effect of fires which burned through the roof membrane, but left the roof support structure intact

The lower left corner shows what appear to be several fire trucks at the waterfront.

Richard S. Barkley, PE  
Nuclear & Environmental Engineer  
(610) 337-5065 Work  
(b)(6) Cell

0000/94





**U.S.NRC**

UNITED STATES NUCLEAR REGULATORY COMMISSION

*Protecting People and the Environment*

# **Events at Fukushima**

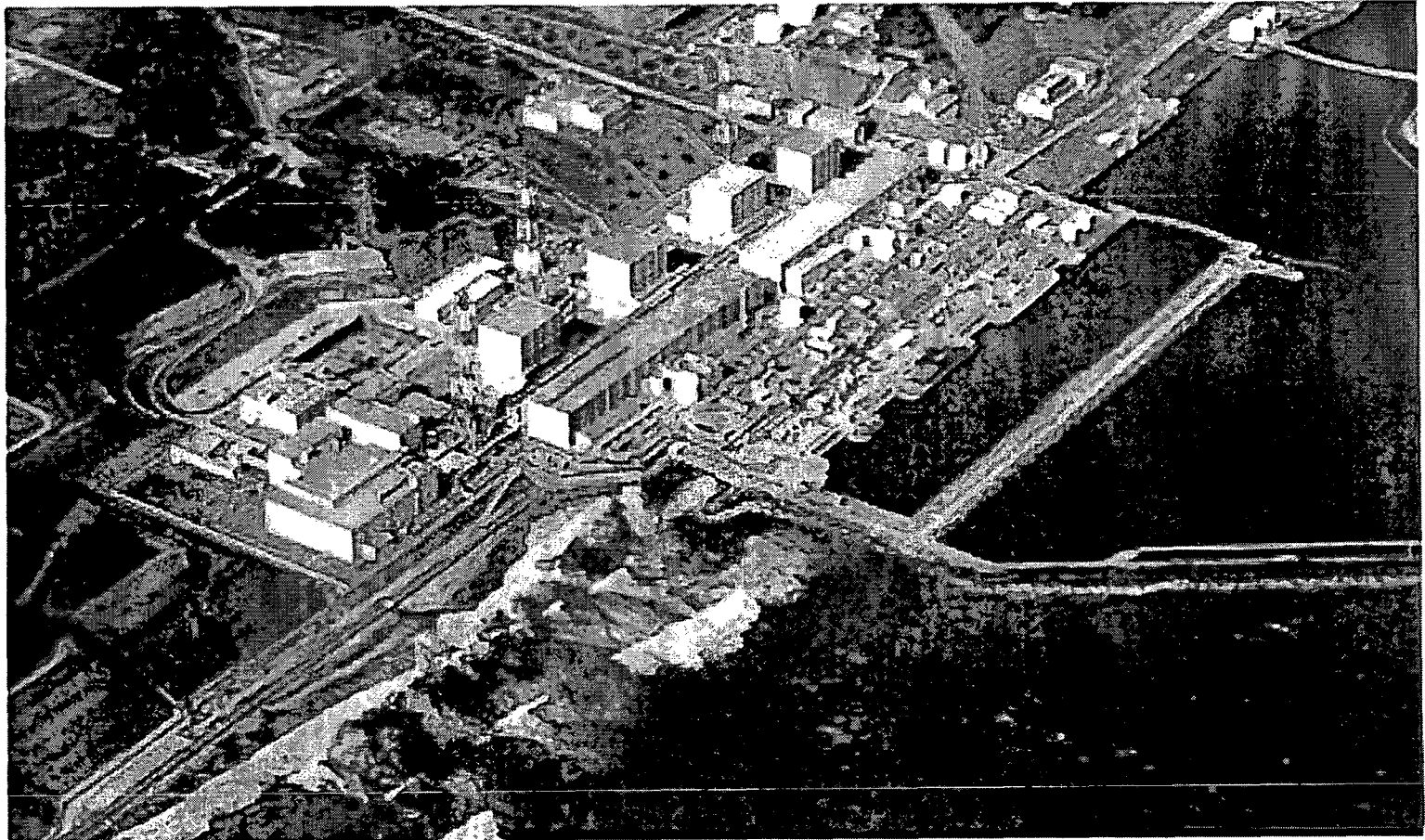
## **Units 1-4**

Bill Dean

March 16, 2011



# Fukushima Units 1 - 4

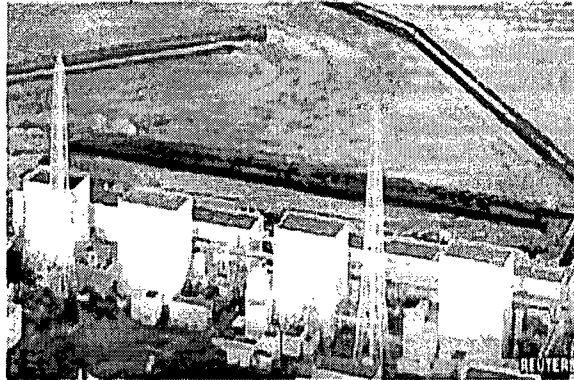




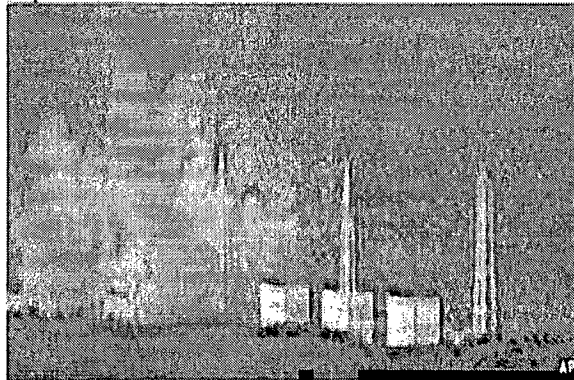


# 3/11 Earthquake & 3/12 Unit 1 Hydrogen Explosion

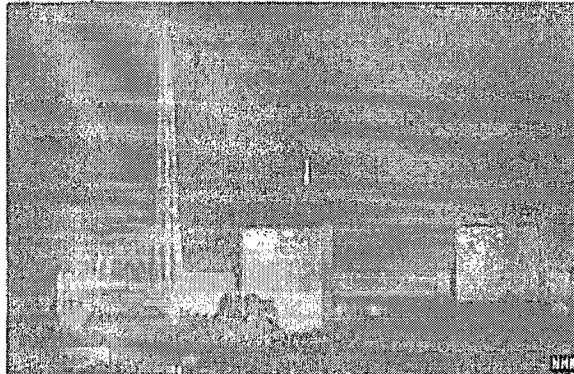
After earthquake 11 March



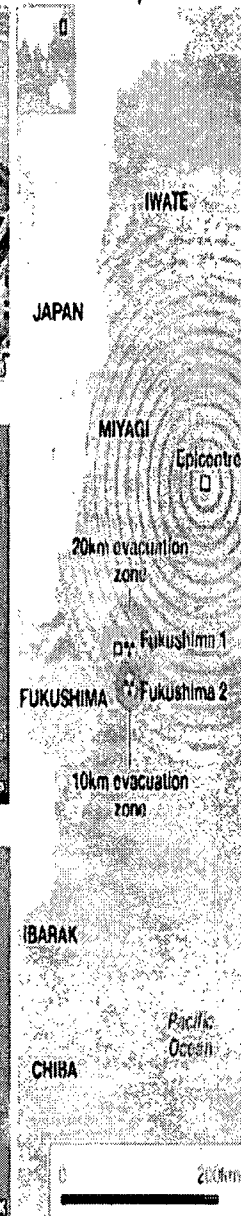
Explosion 0630 GMT 12 March



After explosion 0730 GMT

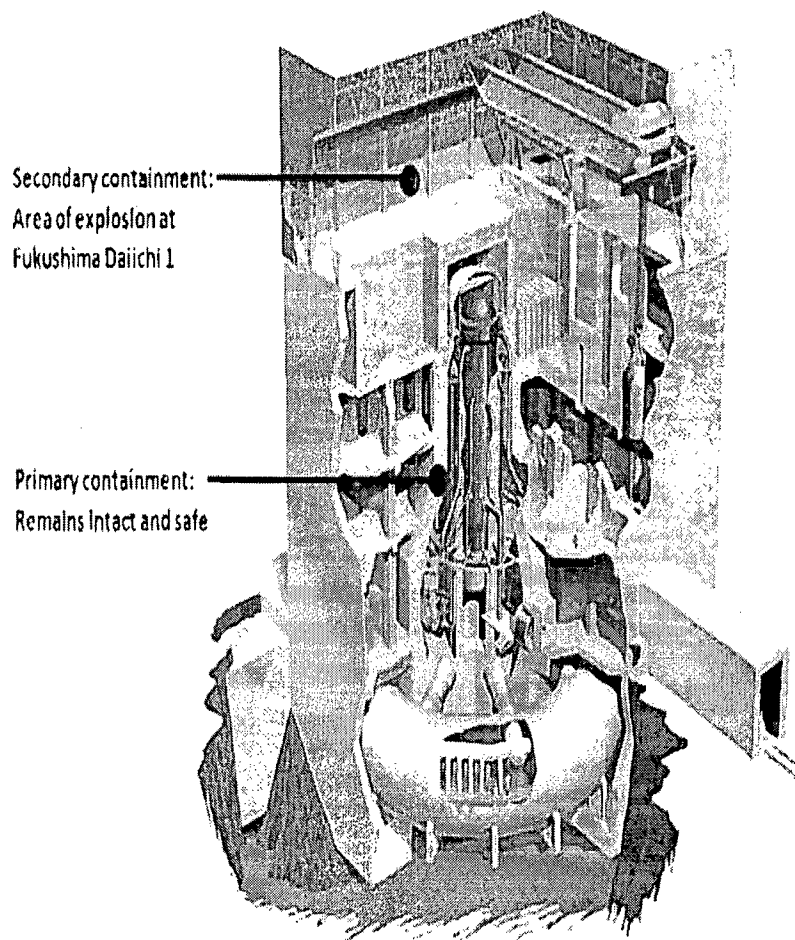


Fukushima plants



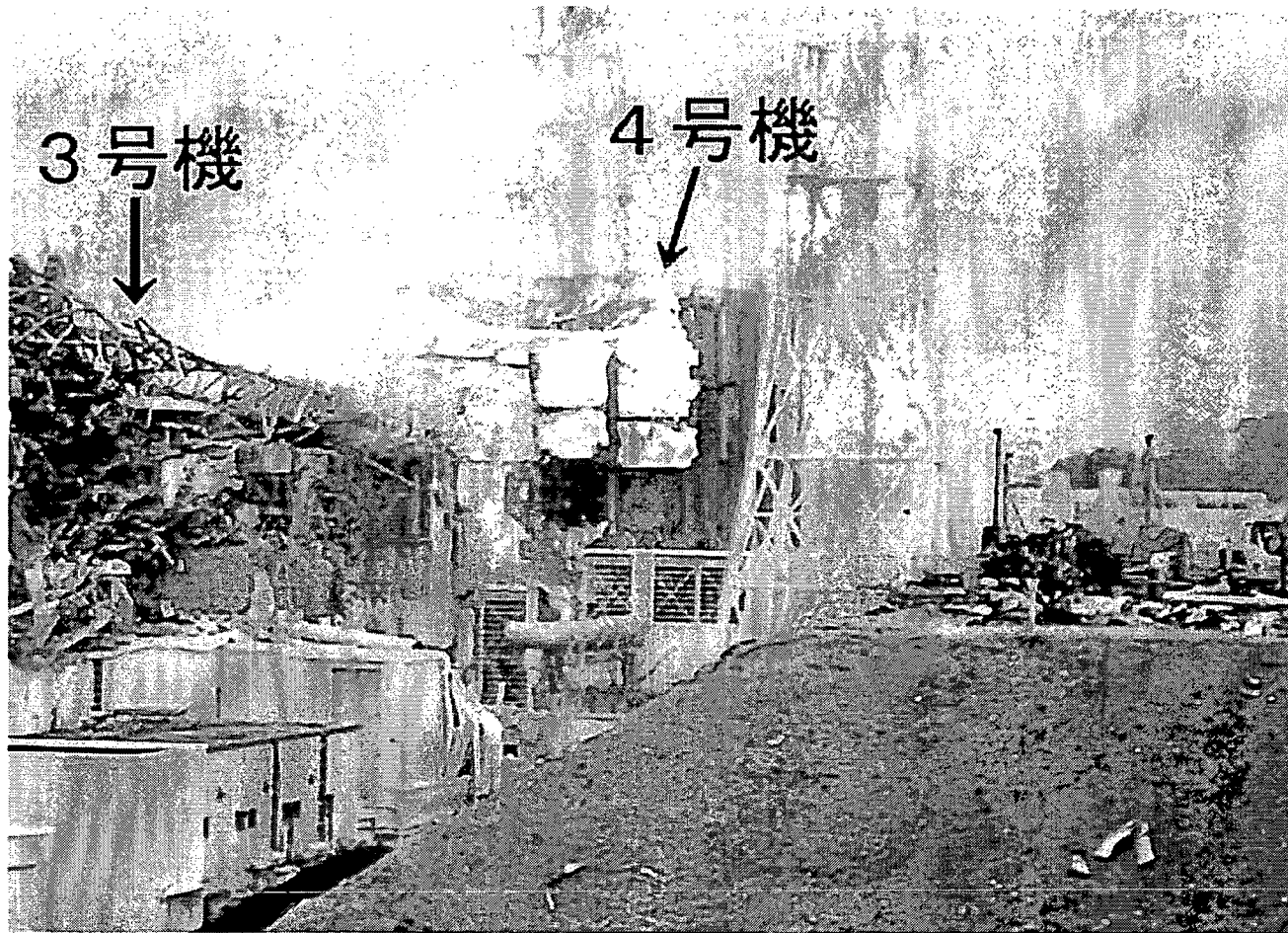


# BWR with Mark 1 Containment



Boiling Water Reactor Design

## Most Recent View of Units 3 & 4





## Where to Learn More at This Time

The NRC will not provide information on the status of Japan's nuclear power plants. Check the NRC web site or blog for the latest information on NRC actions. Other sources of information include:

USAID -- [www.usaid.gov](http://www.usaid.gov)

U.S. Dept. of State -- [www.state.gov](http://www.state.gov)

FEMA -- [www.fema.gov](http://www.fema.gov)

"

White House -- [www.whitehouse.gov](http://www.whitehouse.gov)

Nuclear Energy Institute -- [www.nei.org](http://www.nei.org)

International Atomic Energy Agency -- [www.iaea.org/press/](http://www.iaea.org/press/)

**Weber, Michael**

---

**From:** Weber, Michael  
**Sent:** Friday, March 18, 2011 6:16 PM  
**To:** OST02 HOC  
**Cc:** LIA05 Hoc  
**Subject:** FYI - my contact info

Contact information for Annie Caputo on the boron request that I just discussed with the ET

---

**From:** Caputo, Annie (EPW) <[Annie\\_Caputo@epw.senate.gov](mailto:Annie_Caputo@epw.senate.gov)>  
**To:** Weber, Michael  
**Sent:** Fri Mar 18 17:50:43 2011  
**Subject:** my contact info

Office: 202-224-7844

Cell: (b)(6)

Home (b)(6)

0000/95

**Weber, Michael**

---

**From:** Weber, Michael  
**Sent:** Friday, March 18, 2011 6:36 PM  
**To:** Powell, Amy; Schmidt, Rebecca  
**Subject:** FYI - my contact info

Annie called with a deal on Boron from OK for Japan. Ops Center is working and should close out with her.

---

**From:** Caputo, Annie (EPW) <[Annie\\_Caputo@epw.senate.gov](mailto:Annie_Caputo@epw.senate.gov)>  
**To:** Weber, Michael  
**Sent:** Fri Mar 18 17:50:43 2011  
**Subject:** my contact info

Office: 202-224-7844

Cell: (b)(6)

Home: (b)(6)

0000/96

---

**From:** RMTFACTSU\_ELNRC <RMTFACTSU\_ELNRC@ofda.gov>  
**Sent:** Friday, March 18, 2011 9:25 PM  
**To:** LIA08 Hoc; LIA06 Hoc  
**Subject:** RE: (b)(6)  
**Attachments:** Fw: Travel Reservation March 19 for (b)(6)

Flight arrangements have been made through USAID. He has a ticket arranged for 4:10pm local time.  
Please see attached email.

Bob Kahler

**From:** LIA08 Hoc [mailto:LIA08.Hoc@nrc.gov]  
**Sent:** Friday, March 18, 2011 9:21 PM  
**To:** RMTFACTSU\_ELNRC; LIA06 Hoc  
**Subject:** RE: (b)(6)

Chuck Castro just indicated in a conference call with the ET that the US Embassy can get him home with 1.5 hours of notice.

Rani

---

**From:** RMTFACTSU\_ELNRC [mailto:RMTFACTSU\_ELNRC@ofda.gov]  
**Sent:** Friday, March 18, 2011 9:11 PM  
**To:** LIA08 Hoc; LIA06 Hoc  
**Subject:** FW: (b)(6)

FYI, USAID is working on arranging for departure on a commercial flight as a start. But, they would need to need if they need to elevate based on his condition.

Bob Kahler

---

**From:** RMTFACTSU\_DMO  
**Sent:** Friday, March 18, 2011 9:08 PM  
**To:** Sink, Amy (BFS) [USAID]; Brown, Courtney; Hughart, Joe  
**Cc:** Hughart, Joseph (FOH); RMTFACTSU\_RM; RMTFACTSU\_DMP; RMTFACTSU\_ELNRC; Berger, William  
**Subject:** (b)(6)

Dear Joe, Amy, and Courtney,

Our NRC liaisons here have informed us that (b)(6) isn't well and needs to be flown out as soon as possible. I've asked their team members to find out how ill he is and if he needs assistance from the medical unit at post but it might be a good idea to check in with someone on the NRC on your team to make sure.

Natalya is working to get him a reservation as soon as possible. She will advise as soon as she hears back from our travel office regarding a reservation. Hopefully we can make this happen soon.

If he needs assistance beyond commercial air travel please call the RMT so that we can escalate this. We are working off of the assumption that he is well enough to fly commercial and could wait a day if need be.

Chris Leonardo  
Deputy Manager for Operations

0000/97

Pacific Tsunami Response Management Team

RMTPACTSD.DMO@ofda.gov

202-712-0039

**Matakas, Gina**

---

**From:** McKinley, Raymond  
**Sent:** Friday, March 18, 2011 9:48 PM  
**To:** Dean, Bill; Lew, David; Wilson, Peter; Weerakkody, Sunil; Henderson, Pamela; McDermott, Brian; Morris, Scott; Marshall, Jane  
**Subject:** Ready to Serve  
**Attachments:** ResumeMarch2009.doc

All,

Volunteering for duty to Japan or HQ at your discretion. I do not have a passport, but I have cleared it with my wife. I have attached my resume, but in a nutshell:

- Over 26 years of industry and NRC experience
- Shift Technical Advisor at Peach Bottom (BWR-3, Mark 1 Containment)
- On BWR Owner's Group for EOP/SAMG procedure development
- Spent 2 years writing Peach Bottom Station Blackout Procedures and Lead Engineer for Peach Bottom SBO source installation
- Peach Bottom Emergency Diesel Generator and Limerick Station Battery System Engineer
- Licensed SRO at Limerick
- Operator License Examiner on 3 reactor types
- Senior Emergency Response Coordinator
- Significant experience with Ingestion Pathway Outreach / Exercises and interactions with DOE / FRMAC
- Government Liaison experience in support of Ingestion Pathway Exercises
- Private pilot with Instrument Airplane Rating
- USMC infantry
- Wash windows. What else do you need done?

Ray

0000/98



**RAYMOND R. MCKINLEY JR.**

(b)(6)

**EDUCATION:**

The Pennsylvania State University, University Park, PA  
Degree: Bachelor of Science, Nuclear Engineering  
Graduation: (b)(6)

Eastern University, St. Davids, PA  
Degree: MBA, Management  
Graduation: (b)(6)

**LICENSES & SPECIAL CERTIFICATIONS:**

- Lean Six Sigma Black Belt Certification
- U.S. NRC Senior Reactor Operator License, Limerick
- U.S. NRC GE BWR, Westinghouse PWR, and B&W PWR Licensed Operator Examiner Certification
- U.S. NRC Reactor Inspector Certification
- PECO Energy Supervisory Development Academy
- Shift Technical Advisor and Simulator Certification, Peach Bottom
- System Manager Certification at Peach Bottom, Salem, and Limerick
- U.S. FAA Licensed Private Pilot with Instrument Airplane Rating

**EXPERIENCE:**

**United States Nuclear Regulatory Commission**

**Senior Emergency Response Coordinator**

Region I Headquarters, 475 Allendale Road, King of Prussia, PA 19406  
(July 2008 – Present)

Serve as the Region I subject matter expert for incident response, continuity of operations, and pandemic planning and coordination. In addition, I obtained certification as an agency Lean Six Sigma Black Belt to lead continuous process improvement initiatives throughout the NRC. For example, I managed a Black Belt project to reduce the cycle time of the 10 CFR 50.55a ASME Code rulemaking process from more than 48 months to less than 24 months.

**Operations Engineer**

Region I Headquarters, 475 Allendale Road, King of Prussia, PA 19406  
(July 2006 – July 2008)

Developed and wrote the written and operating examinations for initial Operator License candidates. Administered NRC Operator License examinations. Performed Operator License requalification inspections as well as other types of NRC inspections including Resident Inspector backfill.

**Exelon Corporation**

**Nuclear Duty Officer, Senior Operations Specialist**

Corporate Headquarters, 200 Exelon Way, Kennett Square, PA 19348  
(July 2005 – July 2006)

Performed as a liaison between the corporate executive leadership team and the senior plant leadership teams across the Exelon Nuclear fleet of seventeen plants. Monitored daily fleet operational activities in order to keep the corporate executives informed of emerging issues and unit outage status. Coordinated and scheduled nuclear unit outages with power marketers and grid system operations personnel. Supported nuclear unit outages by serving in the role of Shift Outage Director at various plants in the fleet. Conducted fleet governance and oversight assessments in the Operations, Work Management, and Outage Management functional areas to help drive fleet performance improvement.

**Outage Manager**

Cromby Generating Station, Phoenixville, PA, 19453  
(October 2004 - July 2005)

Accountable for the planning, scheduling, and execution of all outage and online work for one coal fired unit and one oil/gas unit. Responsible for a \$3 million O&M budget and a \$12 million capital budget. Reduced the fleet best coal unit major maintenance outage duration from over 25 days to less than 18 days. This was accomplished by leading a team to develop innovative ways to shorten the cycle time needed to perform a coal mill overhaul, which was the outage critical path constraint.

**Cycle Manager, Work Management**

Limerick Generating Station, Sanatoga, PA, 19464-0920  
(April 2003 - October 2004)

Responsible for ensuring that all work on the assigned reactor unit was scheduled and executed such that unit capacity factor was maximized while nuclear safety was maintained. The position required the ability to manage multiple conflicting priorities while communicating up, down, and across the organizational structure to facilitate goal achievement. Supported nuclear unit outages by serving in the role of Shift Outage Director.

**Nuclear Operations Shift Supervisor**

Limerick Generating Station, Sanatoga, PA, 19464-0920  
(March 1997 - April 2003)

Obtained a Senior Reactor Operator's License. Provided leadership for four Reactor Operators and nine Plant Equipment Operators. Ensured the safe and reliable operation of two nuclear generating units while on shift.

**Senior Electrical Systems Engineer**

Limerick Generating Station, Sanatoga, PA, 19464-0920  
(January 1996 - March 1997)

Responsible for the Main Generator System and the Safeguard DC System. Acted as a mentor to junior engineers in the group. Functioned as the Project Manager for the first online replacement of an entire safeguard battery division at Limerick. The innovative online battery replacement averted a forced outage and saved 2.5 million dollars in replacement power costs.

**Public Service Electric and Gas Company**

Salem Generating Station, Hancocks Bridge, NJ, 08038

**Emergency Core Cooling Systems Senior Staff Engineer**

(July 1995 - January 1996)

**PECO Energy Company**

Peach Bottom Atomic Power Station, Delta, PA, 17314

**Lead Engineer, Turbine Generator Maintenance Division**

(September 1994 - July 1995)

**Main Generator System Engineer**

(April 1993 - September 1994)

**Emergency Operating Procedure Program Manager**

(April 1992 - April 1993)

**Operations Shift Technical Advisor**

(October 1989 - April 1992)

**Diesel Generator System Engineer**

(March 1985 - October 1989)

**MILITARY EXPERIENCE:**

United States Marine Corps Reserve

(b)(6)

**From:** Sangimino, Donna-Marie  
**To:** Sheron, Brian; Evans, Michele; Case, Michael; Gibson, Kathy;  
**Cc:** Wiggins, Jim  
**Subject:** RE: Staff for Potential Support in Japan  
**Date:** Monday, March 21, 2011 8:33:10 AM

---

I'll call this morning to let them know Syed cannot attend.

Donna-Marie

**From:** Sheron, Brian  
**Sent:** Friday, March 18, 2011 5:44 PM  
**To:** Evans, Michele; Case, Michael; Gibson, Kathy  
**Cc:** Wiggins, Jim; Sangimino, Donna-Marie  
**Subject:** RE: Staff for Potential Support in Japan

Mike, ask Donna to call NEA and cancel the meeting, or at least tell them that Syed can't attend.

**From:** Evans, Michele  
**Sent:** Friday, March 18, 2011 5:42 PM  
**To:** Case, Michael; Gibson, Kathy  
**Cc:** Sheron, Brian; Wiggins, Jim  
**Subject:** RE: Staff for Potential Support in Japan

Mike,

Jim and I discussed the issue with Syed and we want to support Chuck's efforts the best we can so we are proposing to send Syed Ali and Abdul Sheikh along with Ralph Way to cover the Structural Engineering and Bomb Damage Assessment expertise.

I discussed this with Brian and he indicated that the support to Japan comes before CSNI in this case.

FYI – the team hasn't been finalized/approved at this point, but you may want to let Syed know that his name is now being considered.

Thanks

Michele

**From:** Case, Michael  
**Sent:** Friday, March 18, 2011 3:42 PM  
**To:** Gibson, Kathy; Evans, Michele  
**Subject:** RE: Staff for Potential Support in Japan

The other alternative I had is extremely good structural, good people skills but not a lot of plant and agency experience so I don't think it would be the best fit. If the agency really needs a structural person to make it work, I could try some sort of Plan B with Syed.

0000/99

**From:** Gibson, Kathy  
**Sent:** Friday, March 18, 2011 2:06 PM  
**To:** Evans, Michele  
**Cc:** Case, Michael  
**Subject:** Re: Staff for Potential Support in Japan

No he is not, Mike Case is considering alternatives.

---

**From:** Evans, Michele  
**To:** Gibson, Kathy  
**Sent:** Fri Mar 18 14:04:02 2011  
**Subject:** RE: Staff for Potential Support in Japan

A question came up from Wiggins whether Syed Ali was available for structural since he was so involved in the post 911 work

**From:** Gibson, Kathy  
**Sent:** Friday, March 18, 2011 1:39 PM  
**To:** Evans, Michele  
**Cc:** Uhle, Jennifer; Coyne, Kevin; Huffert, Anthony; Rubin, Stuart; Yarsky, Peter; Salley, MarkHenry; Elkins, Scott; Case, Michael; Bush-Goddard, Stephanie; Scott, Michael  
**Subject:** Staff for Potential Support in Japan  
**Importance:** High

Michele,

I am following up on your request to Jennifer for staff to potentially go to Japan beginning around March 24 for about 2 weeks.

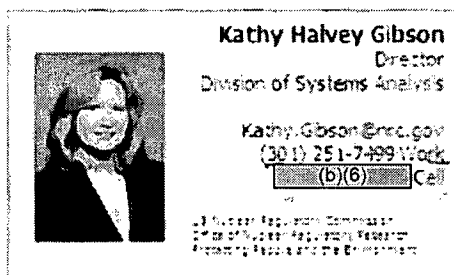
I don't have a name for structural as yet, but will provide it when DE gets back to me.

For the other areas of expertise:

Protective Measures – Tony Huffert  
Engineers with good people skills – Stu Rubin, Peter Yarsky  
Infrared Imaging – Mark Salley

Please let me know if you need anything else.

Kathy



**From:** Couret, Ivonne  
**To:** McIntyre, David  
**Subject:** FW: WSJ inquiry on radiation numbers  
**Date:** Monday, March 21, 2011 9:08:28 AM  
**Importance:** High

---

Can you handle this or shall I get someone else, if so who can? Ivonne

Ivonne L. Couret  
Public Affairs Officer  
Office of Public Affairs  
Media Desk  
opa.resource@nrc.gov  
301-415-8200

Visit our online photo gallery. Incorporate graphics and photographs to tell your story!  
<http://www.nrc.gov/reading-rm/photo-gallery/>

2010-2011 Information Digest - Where you can find NRC Facts at a Glance  
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/>

-----Original Message-----

**From:** Janbergs, Holly On Behalf Of OPA Resource  
**Sent:** Monday, March 21, 2011 9:06 AM  
**To:** Couret, Ivonne  
**Subject:** FW: WSJ inquiry on radiation numbers

-----Original Message-----

**From:** Carl Bialik [mailto:(b)(6)]  
**Sent:** Sunday, March 20, 2011 11:33 PM  
**To:** OPA Resource  
**Subject:** WSJ inquiry on radiation numbers

OPA,

I write a column about numbers for the Wall Street Journal:

<http://blogs.wsj.com/numbersguy/>

In light of the nuclear plant's problems in Japan, I'm interested in writing a piece that explains aspects of radiation math, for instance:

The various units of radiation -- sieverts, rems, curies, grays, rads, etc. -- and the difference between what they measure, between radioactivity, absorbed dose, dose equivalent and exposure.

The difference between absolute readings and exposure over time.

How this is all measured, and how reliable it is.

How well the health effects are understood -- and does the risk increase linearly with exposure, or what is the relationship? How much does it differ by body weight, age, general health levels and other factors?

Is there someone with NRC who is available to answer questions about these sorts of issues, by phone or email?

Is there anyone else you'd suggest I contact?

Thanks,  
Carl Bialik

(b)(6)

0000/100

From:

(b)(6)

To:

Subject:

LLW Forum News Flash: Prepared Remarks from NRC Public Meeting re Japan Events

Date:

Monday, March 21, 2011 11:24:57 AM

**U.S. Nuclear Regulatory Commission**

**NRC Releases Prepared Remarks from Public Meeting  
re Response to Recent Japanese Event**

The U.S. Nuclear Regulatory Commission released the following prepared remarks from this morning's briefing on the agency's response to the ongoing nuclear event in Japan during a public meeting at NRC headquarters:

*Good morning. The Commission meets today to discuss the tragic events in Japan and consider possible actions we may take to verify the safety of the nuclear facilities that we regulate in the United States. This meeting will—without a doubt—be one of the most heavily watched meetings in the history of this agency.*

*People across the country and around the world who have been touched by the magnitude and scale of this disaster are closely following the events in Japan, and the repercussions in this country and in many other countries. I would first like to offer my condolences to all those who have been affected by the earthquake and tsunami in Japan. Our hearts go out to all who have been dealing with the aftermath of these natural disasters, and we are mindful of the long and difficult road they will face in recovering. We know that the people of Japan are resilient and strong, and we have every confidence that they will come through this difficult time and move forward, with resolve, to rebuild their vibrant country.*

*I believe I speak for all Americans when I say that we stand together with the people of Japan at this most difficult and challenging time. The NRC is a relatively small agency, with approximately 4000 staff, but we play a critical role in protecting the American people and the environment. We have inspectors who work full-time at every nuclear plant in the country, and we are proud to have world-class scientists, engineers and professionals representing nearly every discipline.*

*Since Friday, March 11, when the earthquake and tsunami struck, the NRC's headquarters Operations Center has been operating on a 24-hour basis to monitor and analyze events at nuclear power plants in Japan. At the request of the Japanese government, and through the United States Agency for International Development (USAID), the NRC sent a team of its technical experts to provide on-the-ground support, and we have been in continual contact with them. And, within the United States, the NRC has been working closely with other Federal agencies as part of our government's response to the situation.*

*We have a responsibility to the American people to undertake a systematic and methodical review of the safety of our own domestic nuclear facilities, in light of the natural disaster and the resulting nuclear emergency in Japan. Beginning to examine all available information is an essential part of our effort to analyze the event and understand its impact on Japan and implications for the United States. Our focus is always on keeping plants and radioactive materials in this country safe and secure.*

*As this immediate crisis in Japan comes to an end, we will look at any information we can gain from the event and see if there are changes we need to make, to further protect the public. Together with my colleagues on the Commission, we will review the current status and identify the steps we will take to conduct that review. In the meantime, we will continue to oversee and monitor plants to ensure that U. S. reactors remain safe.*

*On behalf of the Commission, I want to thank all of our staff for maintaining their focus on our essential safety and security mission throughout these difficult days. I want to acknowledge their tireless efforts and their critical contributions to the U.S. response to assist Japan. In spite of the evolving situation,*

*0000/101*

*the long hours, and the intensity of efforts over the past week, staff has approached their responsibilities with dedication, determination and professionalism, and I am incredibly proud of their efforts.*

*The American people also can be proud of the commitment and dedication within the Federal workforce, which is exemplified by our staff every day. Before we begin our meeting with Mr. Borchardt's presentation, would any of my fellow Commissioners like to make opening comments?*

-----  
March 21, 2011

Todd D. Lovinger, Esq.  
Executive Director  
LLW Forum, Inc.  
(202) 265-7990

*The preceding information was provided to you on behalf of the LLW Forum, Inc. It may not be reproduced or distributed without the express written approval of the organization's Executive Director. To view other communications and documents of the LLW Forum, Inc., visit the LLW Forum's web site at <http://www.llwforum.org>.*

**From:** McIntyre, David  
**To:** Harrington, Holly; Burnell, Scott  
**Subject:** Re: FAQ questions posted  
**Date:** Monday, March 21, 2011 9:26:25 AM

---

Oh yeah, I forgot about that - Scott should handle that one as he had the original file.

David McIntyre  
NRC Office of Public Affairs  
(b)(6) (mobile)  
301-415-8200 (office)  
Sent from my BlackBerry, which is wholly responsible for all typos.

---

**From:** Harrington, Holly  
**To:** McIntyre, David; Burnell, Scott  
**Sent:** Mon Mar 21 08:56:32 2011  
**Subject:** RE: FAQ questions posted

This is what Annie wanted changed as of yesterday:

I just opened your pdf at <http://www.nrc.gov/npas/faq-related-to-japan.pdf> and found a major error in the answer to question 1. At the bottom of the answer, "ten times" should be replaced by "approximately 32 times":  
"Magnitude is measured on a log scale and so a magnitude 9 earthquake is ten times larger than a magnitude 8 earthquake."

Revised to read:

"Magnitude is measured on a log scale and so a magnitude 9 earthquake produces about ten times stronger shaking and releases about 31 times more energy than a magnitude 8 earthquake."

**From:** McIntyre, David  
**Sent:** Monday, March 21, 2011 8:48 AM  
**To:** Harrington, Holly; Burnell, Scott  
**Subject:** Re: FAQ questions posted

I will handle this afternoon. I only have this email tho Annie mentioned a blank page as well.

David McIntyre  
NRC Office of Public Affairs  
(b)(6) (mobile)  
301-415-8200 (office)  
Sent from my BlackBerry, which is wholly responsible for all typos.

---

**From:** Harrington, Holly  
**To:** McIntyre, David; Burnell, Scott  
**Sent:** Mon Mar 21 08:42:44 2011  
**Subject:** RE: FAQ questions posted

There's a second thing that needed to get changed as well. Maybe this afternoon you can do both at the same time? Let me know if you don't have the e-mail with the Annie-suggested revision wording related to seismic measuring

**From:** McIntyre, David  
**Sent:** Monday, March 21, 2011 4:51 AM  
**To:** Kammerer, Annie; Harrington, Holly  
**Cc:** Brenner, Eliot; Hayden, Elizabeth; Munson, Clifford; Ake, Jon; Burnell, Scott  
**Subject:** Re: FAQ questions posted

Thanks Annie. We will update it.

David McIntyre  
NRC Office of Public Affairs  
(b)(6) (mobile)  
301-415-8200 (office)  
Sent from my BlackBerry, which is wholly responsible for all typos.

0000/102



**From:** Kammerer, Annie  
**To:** Harrington, Holly  
**Cc:** McIntyre, David; Brenner, Eliot; Hayden, Elizabeth; Munson, Clifford; Ake, Jon; Burnett, Scott  
**Sent:** Sun Mar 20 22:10:52 2011  
**Subject:** RE: FAQ questions posted

I just saw a second document entitled, "**Frequently Asked Questions About the Japan Nuclear Crisis: 'Can It Happen Here?'**"

There is an error in the question.

**Are nuclear power plants along the coasts vulnerable to tsunami?**

Large tsunami such as the one that hit Japan typically are caused by "subduction" faults, where one tectonic plate slides under another. There is only one such fault near the U.S. coastline – off the northern part of the West Coast, from northern California up past Oregon and Washington. There are no coastal nuclear power plants in this region. The closest plant, in southern California, is well protected against tsunami. Along the Gulf Coast and the Atlantic Coast, storm surge from hurricanes poses a greater threat than tsunami to nuclear power plants. The plants in these regions are well protected against hurricane storm surge.

The closest plant is Diablo canyon. Most people from California (myself included) would not call the region that Diablo is in "southern California", but rather the central California coast. SONGS is in So. Cal. We can't really say that SONGS is "well protected against tsunami"...it's adequately protected. Also, this makes it seem like hurricanes are always a greater threat than tsunami. The NRC's tsunami research program is showing that this is not true on the north Atlantic coast. As you get toward the moderate seismic zone in coastal Canada, the tsunami exceeds the storm surge due to the potential for large local tsunami from seismically-induced landslides.

A better answer is:

Large tsunami such as the one that hit Japan typically are caused by faults located in "subduction" zones, where one tectonic plate slides under another. There is only one such fault near the U.S. coastline – off the northern part of the West Coast, from northern California up past Oregon and Washington. There are no coastal nuclear power plants in this region. The closest coastal plant, located along the central California coastline is the Diablo Canyon nuclear plant. This nuclear plant is well protected against tsunami. Along the Gulf Coast and the Atlantic Coast, storm surge from hurricanes generally poses a greater threat to nuclear plants than tsunami. The plants in these regions are well protected against hurricane storm surge.

**From:** Harrington, Holly  
**Sent:** Sunday, March 20, 2011 11:34 AM  
**To:** Kammerer, Annie  
**Cc:** McIntyre, David; Brenner, Eliot; Hayden, Elizabeth; Munson, Clifford; Ake, Jon; Burnett, Scott  
**Subject:** RE: FAQ questions posted

Thanks Annie.

Eliot/Beth: Do we think this can wait until Monday to be updated on the Web?

Holly

**From:** Kammerer, Annie  
**Sent:** Sunday, March 20, 2011 11:31 AM  
**To:** Harrington, Holly  
**Cc:** McIntyre, David; Brenner, Eliot; Hayden, Elizabeth; Munson, Clifford; Ake, Jon  
**Subject:** RE: FAQ questions posted

Change it to this...

"Magnitude is measured on a log scale and so a magnitude 9 earthquake produces about ten times stronger shaking and releases about 31 times more energy than a magnitude 8 earthquake."

I was trying to keep things simple to be more user friendly. I thought that people would find this confusing a little. People feel wave amplitude, not energy. so I chose the thing that people could relate to. But engineers, like Christine, think about energy absorption in structures.

Anyway, just so you know, Christine is a good friend of mine and she is supported as full time staff (the project manager) on a major research project funded by NRC, DOE, EPRI and the USGS (called NGA-East). So, she's very protective of the NRC and is on the lookout for anything that may related to us and is inaccurate, or can be misinterpreted. She's one of the many people out there who have our backs when it comes to what is going out in the press.

Annie

P.S. This is straight from a USGS fact sheet. "Because of the logarithmic basis of the scale, each whole number increase in magnitude represents a tenfold increase in measured amplitude; as an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value."

**From:** Harrington, Holly  
**Sent:** Sunday, March 20, 2011 10:50 AM  
**To:** Kammerer, Annie  
**Cc:** McIntyre, David; Brenner, Eliot; Hayden, Elizabeth  
**Subject:** RE: FAQ questions posted

Please see comment below. Please let me know if this document needs to be changed.

**From:** Christine Goulet [<mailto:mgoulet@berkeley.edu>]  
**Sent:** Saturday, March 19, 2011 5:54 PM  
**To:** OPA Resource  
**Subject:** ERROR in your answers to faqs related to Japan document

Good afternoon,

I just opened your pdf at <http://www.nrc.gov/japan/faq-related-to-japan.pdf> and found a major error in the answer to question 1. At the bottom of the answer, "ten times" should be replaced by "approximately 32 times".  
"Magnitude is measured on a log scale and so a magnitude 9 earthquake is ten times larger than a magnitude 8 earthquake."

I hope this can be corrected soon!

Sincerely,

Christine Goulet, PhD  
Assistant Researcher  
NGA East TI team co-chair  
Pacific Earthquake Engineering Research Center (PEER),  
University of California, Berkeley

---

Tel (510) 374-4620  
[cgoulet@berkeley.edu](mailto:cgoulet@berkeley.edu)

**From:** Kammerer, Annie  
**Sent:** Saturday, March 19, 2011 5:25 PM  
**To:** Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc  
**Cc:** Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Niles; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candia, Hernando; Murphy, Andrew; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castleman, Patrick; Sharkey, Jeffry; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas; Webb, Michael; Manoly, Kamal; Khanna, Meena; Screndi, Diane; Thomas, Eric; Nguyen, Quynh; Meighan, Sean; [FOIAResource.hoc@nrc.gov](mailto:FOIAResource.hoc@nrc.gov)  
**Subject:** FAQ questions posted

All,

For your reading enjoyment, and in anticipation of the end of cycle meetings in the regions next week, the NRC has issued a press release announcing a publically available set of FAQs on the earthquake and tsunami.

I hope people find it helpful!

Cheers,  
Annie

PS special thanks to Jennifer Uhle who stayed after her overnight shift in the Ops Center to review and provide outstanding comments that really improved the document.

**From:** Kammerer, Annie  
**Sent:** Saturday, March 19, 2011 9:00 AM  
**To:** Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc  
**Cc:** Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Niles; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon;

Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castleman, Patrick; Sharkey, Jeffry; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas; Webb, Michael; Mandly, Kamal; Khanna, Meena; Screndi, Diane; Thomas, Eric; Nguyen, Quynh; Meighan, Sean; FOIAResource.hoc@nrc.gov  
**Subject:** Seismic Q&As March 19th 8am update

All,

Here is today's updated version. Lot of new fact sheets have been prepared for various briefings and for Monday's public meeting!

However, the big news of the day is that we just sent off a 6 page, 22 question, much better edited version for a public Q&A set. It's all in OPA's capable hands now. I think it's pretty good...but then I'm biased.

Cheers,  
Annie

**From:** Kammerer, Annie

**Sent:** Friday, March 18, 2011 6:51 AM

**To:** Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc

**Cc:** Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Nilesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castleman, Patrick; Sharkey, Jeffry; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas; Webb, Michael; Mandly, Kamal; Khanna, Meena; Screndi, Diane; Thomas, Eric; Nguyen, Quynh; Meighan, Sean

**Subject:** RE: Seismic Q&As March 18th 5am update

All,

Please see the updated version of the Seismic Q&As.

Among today's highlights:

\*We added a Terms and Definitions section at the end of the document. (We know that an acronyms list would be helpful too, but it will have to wait a little)

\*The "additional information" section has been split into tables, plots, and fact sheets

\*A high-level draft fact sheet on NRC's seismic regulations has been added

\*We added a section to track outstanding questions that have come in from congress. This will support those who get the tickets in the short terms (most likely NRR). The questions will be moved to the appropriate sections long term (as long as they are not duplicates.)

I'm sure we all agree this has been a crazy week! We're hoping that the weekend workload is lighter (if only because we won't get as many email from in house) and we can clean up this document and fill in some of the missing answers in preparation for the news story changing. We're trying hard to get out in front of the next wave.

Cheers,  
Annie

**From:** Kammerer, Annie

**Sent:** Thursday, March 17, 2011 2:36 AM

**To:** Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc

**Cc:** Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Nilesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Glitter, Joseph; Howe, Allen; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Munson, Clifford; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castleman, Patrick; Sharkey, Jeffry; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas

**Subject:** Seismic Q&As March 17th 2am update

All,

As promised, a sharepoint site has been set up where our friends in NRR will be posting the latest version of the Seismic Q&A document on an ongoing basis. If someone would prefer to use the sharepoint site, instead of being on this distribution list, please let me know...

<http://portal.nrc.gov/ego/nrr/NRR%20TA/FAQ%20Related%20to%20Events%20Occurring%20in%20Japan/Forms/AllItems.aspx>

This latest update has a number of new questions (not many with answers today, but we are working hard). A high priority question we are working on is "how many plants are near a mapped active fault". We're focusing on anything within 50 miles. We're also pulling relevant questions from the congressional inquiries we just received; and will also give these high priority to support any needs by NRR.

Many new figures and some draft fact sheets have added to the "additional information" section. These include the NRO half of a tsunami fact sheet...a description of the tsunami research is still to come from RES

Some good news: Yesterday's version seems to have been widely forwarded around the agency. So, we are also starting to get some excellent questions from staff looking forward. This is allowing us to feel that we are finally getting out in front of things to a small degree. Also, our team has grown and we now have someone acting as source of seismic expertise for the 11pm to 7 am shift. This means that we now have seismic experts available to the RST and OPA at the Op Center 24 hours, with 2 people during the day. That extra support is allowing us to get this out at least an hour earlier today ☺

We are continuing to compile the questions that come in and update the seismic Q&A document. If you have suggested changes, or want to provide missing answers, please forward them to me for compilation

This is a living document and will be updated daily in the foreseeable future.

Happy St. Paddy's Day. May the world (especially our friends in Japan) have the luck of the Irish today.

Cheers,  
Annie

Dr. Annie Kammerer, PE  
Senior Seismologist and Earthquake Engineer  
US Nuclear Regulatory Commission  
Office of Nuclear Regulatory Research  
Washington DC 20555  
(b)(6) mobile  
(b)(6) 88

**From:** Kammerer, Annie  
**Sent:** Tuesday, March 15, 2011 3:41 AM  
**To:** Hiland, Patrick; Skeen, David  
**Cc:** Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Kammerer, Annie; Chokshi, Nitesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Glitter, Joseph; Howe, Allen; Case, Michael; Rutland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Munson, Clifford; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael  
**Subject:** latest version of Q&As

All,

This is the first draft of the seismic-specific Q&As. It is pretty rough and there are many answers still missing, but people have contributed a lot and we thought it may be useful for many people trying to answer questions coming in.

We are continuing to compile the questions that come in and update the seismic Q&A document. If you have suggested changes, or want to provide missing answers, please forward them to me for compilation.

This is a living document and will be updated daily in the foreseeable future.

Annie

Dr. Annie Kammerer, PE  
Senior Seismologist and Earthquake Engineer  
US Nuclear Regulatory Commission  
Office of Nuclear Regulatory Research  
Washington DC 20555  
(b)(6) mobile  
(b)(6) 88

**Rihm, Roger**

---

**From:** Rihm, Roger  
**Sent:** Monday, March 21, 2011 11:23 AM  
**To:** Barkley, Richard  
**Subject:** RE: I plan to Share This List with You and my Management Every Monday Going Forward

No attachment....

---

**From:** Barkley, Richard  
**Sent:** Monday, March 21, 2011 11:19 AM  
**To:** Rihm, Roger  
**Cc:** Landau, Mindy  
**Subject:** I plan to Share This List with You and my Management Every Monday Going Forward

It gives us a big picture of what all is out there. I'll fill in any blanks as the EDATS items come to me.

Any corrections, please let me know.

Richard S. Barkley, PE  
Nuclear & Environmental Engineer  
(610) 337-5065 Work  
(b)(6) Cell

0000/103

From: Munson, Clifford  
To: Kammerer, Annie; Harrington, Holly  
Cc: McIntyre, David; Brenner, Eliot; Hayden, Elizabeth; Ake, Jon; Burnell, Scott  
Subject: FAQ questions posted - Corrections to Answer #12  
Date: Monday, March 21, 2011 12:14:59 PM

---

#### My corrections to Answer #12

12) What is the likelihood of the design basis or "SSE" ground motions being exceeded over the life of a nuclear plant?  
The ground motions that are used as seismic design bases at US nuclear plants are called the Safe Shutdown Earthquake ground motion (SSE). In the mid to late 1990s, the NRC staff reviewed the potential for ground motions beyond the design basis as part of the Individual Plant Examination of External Events (IPEEE). From this review, the staff determined that seismic designs of operating nuclear plants in the US have adequate safety margins for withstanding earthquakes. Currently, the NRC is in the process of conducting GI-199 to again assess the resistance of US nuclear plants to earthquakes. Based on NRC's preliminary analyses to date, the mean probability of ground motions exceeding the SSE over the life of the plant for the plants in the Central and Eastern United States is less than about 1%, ~~with values ranging from a low of 0.1% to a high of 6%.~~

It is important to remember that structures, systems and components are required to have "adequate margin," meaning that they must continue be able withstand shaking levels that are above the plant's design basis

From: Munson, Clifford  
Sent: Monday, March 21, 2011 12:05 PM  
To: Kammerer, Annie; Harrington, Holly  
Cc: McIntyre, David; Brenner, Eliot; Hayden, Elizabeth; Ake, Jon; Burnell, Scott  
Subject: FAQ questions posted

The edits that were made to Question 12) in the Public FAQ now make the answer inaccurate. I will see if I can fix it.

Cliff  
Clifford Munson, Ph.D.  
Senior Level Advisor  
U.S. NRC - Office of New Reactors  
Division of Site and Environmental Reviews  
301-415-6947  
clifford.munson@nrc.gov

From: Kammerer, Annie  
Sent: Sunday, March 20, 2011 10:11 PM  
To: Harrington, Holly  
Cc: McIntyre, David; Brenner, Eliot; Hayden, Elizabeth; Munson, Clifford; Ake, Jon; Burnell, Scott  
Subject: RE: FAQ questions posted

I just saw a second document entitled, "**Frequently Asked Questions About the Japan Nuclear Crisis: 'Can It Happen Here?'**"

There is an error in the question

#### **Are nuclear power plants along the coasts vulnerable to tsunami?**

Large tsunami such as the one that hit Japan typically are caused by "subduction" faults, where one tectonic plate slides under another. There is only one such fault near the U.S. coastline - off the northern part of the West Coast, from northern California up past Oregon and Washington. There are no coastal nuclear power plants in this region. The closest plant, in southern California, is well protected against tsunami.  
Along the Gulf Coast and the Atlantic Coast, storm surge from hurricanes poses a greater threat than tsunami to nuclear power plants. The plants in these regions are well protected against hurricane storm surge.

The closest plant is Diablo canyon. Most people from California (myself included) would not call the region that Diablo is in "southern California", but rather the central California coast. SONGS is in So. Cal. We can't really say that SONGS is "well protected against tsunami"...it's adequately protected. Also, this makes it seem like hurricanes are always a greater threat than tsunami. The NRC's tsunami research program is showing that this is not true on the north Atlantic coast. As you get toward the moderate seismic zone in coastal Canada, the tsunami exceeds the storm surge due to the potential for large local tsunami from seismically-induced landslides.

A better answer is:

Large tsunami such as the one that hit Japan typically are caused by faults located in "subduction" zones, where one tectonic plate slides under another. There is only one such fault near the U.S. coastline - off the northern part of the West Coast, from northern California up past Oregon and Washington. There are no

0000/104

coastal nuclear power plants in this region. The closest coastal plant, located along the central California coastline is the Diablo Canyon nuclear plant. This nuclear plant is well protected against tsunamis. Along the Gulf Coast and the Atlantic Coast, storm surge from hurricanes generally poses a greater threat to nuclear plants than tsunamis. The plants in these regions are well protected against hurricane storm surge.

**From:** Harrington, Holly  
**Sent:** Sunday, March 20, 2011 11:34 AM  
**To:** Kammerer, Annie  
**Cc:** McIntyre, David; Brenner, Eliot; Hayden, Elizabeth; Munson, Clifford; Ake, Jon; Burnell, Scott  
**Subject:** RE: FAQ questions posted

Thanks Annie.

Eliot/Beth: Do we think this can wait until Monday to be updated on the Web?

Holly

**From:** Kammerer, Annie  
**Sent:** Sunday, March 20, 2011 11:31 AM  
**To:** Harrington, Holly  
**Cc:** McIntyre, David; Brenner, Eliot; Hayden, Elizabeth; Munson, Clifford; Ake, Jon  
**Subject:** RE: FAQ questions posted

Change it to this...

"Magnitude is measured on a log scale and so a magnitude 9 earthquake produces about ten times stronger shaking and releases about 31 times more energy than a magnitude 8 earthquake."

I was trying to keep things simple to be more user friendly. I thought that people would find this confusing a little. People feel wave amplitude, not energy...so I chose the thing that people could relate to. But engineers, like Christine, think about energy absorption in structures.

Anyway, just so you know, Christine is a good friend of mine and she is supported as full time staff (the project manager) on a major research project funded by NRC, DOE, EPRI and the USGS (called NGA-East). So, she's very protective of the NRC and is on the lookout for anything that may related to us and is inaccurate, or can be misinterpreted. She's one of the many people out there who have our backs when it comes to what is going out in the press.

Annie

P.S. This is straight from a USGS fact sheet "Because of the logarithmic basis of the scale, each whole number increase in magnitude represents a tenfold increase in measured amplitude; as an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value."

**From:** Harrington, Holly  
**Sent:** Sunday, March 20, 2011 10:50 AM  
**To:** Kammerer, Annie  
**Cc:** McIntyre, David; Brenner, Eliot; Hayden, Elizabeth  
**Subject:** RE: FAQ questions posted

Please see comment below. Please let me know if this document needs to be changed.

**From:** Christine Goulet (<mailto:mgoulet@berkeley.edu>)  
**Sent:** Saturday, March 19, 2011 5:54 PM  
**To:** OPA Resource  
**Subject:** ERROR in your answers to faqs related to Japan document

Good afternoon,

I just opened your pdf at <http://www.nrc.gov/japan/faqs-related-to-japan.pdf> and found a major error in the answer to question 1. At the bottom of the answer, "ten times" should be replaced by "approximately 32 times":  
"Magnitude is measured on a log scale and so a magnitude 9 earthquake is ten times larger than a magnitude 8 earthquake."

I hope this can be corrected soon!

Sincerely,

Christine Goulet, PhD  
Assistant Researcher

NGA East TI team co-chair  
Pacific Earthquake Engineering Research Center (PEER),  
University of California, Berkeley

Tel (510) 374-4620  
[gsujet@berkeley.edu](mailto:gsujet@berkeley.edu)

**From:** Kammerer, Annie  
**Sent:** Saturday, March 19, 2011 5:25 PM  
**To:** Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc  
**Cc:** Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Nitesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castleman, Patrick; Sharkey, Jeffry; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas; Webb, Michael; Manoly, Kamal; Khanna, Meena; Screndi, Diane; Thomas, Eric; Nguyen, Quynh; Meighan, Sean; [FOIAResource.hoc@nrc.gov](mailto:FOIAResource.hoc@nrc.gov)  
**Subject:** FAQ questions posted

All,

For your reading enjoyment, and in anticipation of the end of cycle meetings in the regions next week, the NRC has issued a press release announcing a publically available set of FAQs on the earthquake and tsunami.

I hope people find it helpful

Cheers,  
Annie

PS special thanks to Jennifer Uhle who stayed after her overnight shift in the Ops Center to review and provide outstanding comments that really improved the document.

**From:** Kammerer, Annie  
**Sent:** Saturday, March 19, 2011 9:00 AM  
**To:** Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc  
**Cc:** Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Nitesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castleman, Patrick; Sharkey, Jeffry; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas; Webb, Michael; Manoly, Kamal; Khanna, Meena; Screndi, Diane; Thomas, Eric; Nguyen, Quynh; Meighan, Sean; [FOIAResource.hoc@nrc.gov](mailto:FOIAResource.hoc@nrc.gov)  
**Subject:** Seismic Q&As March 19th 8am update

All,

Here is today's updated version. Lot of new fact sheets have been prepared for various briefings and for Monday's public meeting!

However, the big news of the day is that we just sent off a 6 page, 22 question, much better edited version for a public Q&A set. It's all in OPA's capable hands now. I think it's pretty good...but then I'm biased.

Cheers,  
Annie

**From:** Kammerer, Annie  
**Sent:** Friday, March 18, 2011 6:51 AM  
**To:** Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc  
**Cc:** Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Nitesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castleman, Patrick; Sharkey, Jeffry; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas; Webb, Michael; Manoly, Kamal; Khanna, Meena; Screndi, Diane; Thomas, Eric; Nguyen, Quynh; Meighan, Sean  
**Subject:** RE: Seismic Q&As March 18th 5am update

All,



Please see the updated version of the Seismic Q&As.

Among today's highlights:

- \*We added a Terms and Definitions section at the end of the document. (We know that an acronyms list would be helpful too, but it will have to wait a little)
- \*The "additional information" section has been split into tables, plots, and fact sheets
- \*A high-level draft fact sheet on NRC's seismic regulations has been added
- \*We added a section to track outstanding questions that have come in from congress. This will support those who get the tickets in the short terms (most likely NRR). The questions will be moved to the appropriate sections long term (as long as they are not duplicates.)

I'm sure we all agree this has been a crazy week! We're hoping that the weekend workload is lighter (if only because we won't get as many email from in house) and we can clean up this document and fill in some of the missing answers in preparation for the news story changing. We're trying hard to get out in front of the next wave.

Cheers,  
Annie

---

From: Kammerer, Annie

Sent: Thursday, March 17, 2011 2:36 AM

To: Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc

Cc: Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Nilesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Glitter, Joseph; Howe, Allen; Rutland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Munson, Clifford; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernandez; Murphy, Andrew; Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Sanbago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castleman, Patrick; Sharkey, Jeffry; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas

Subject: Seismic Q&As March 17th 2am update

All,

As promised, a sharepoint site has been set up where our friends in NRR will be posting the latest version of the Seismic Q&A document on an ongoing basis. If someone would prefer to use the sharepoint site, instead of being on this distribution list, please let me know...

<http://portal.nrc.gov/edo/nrr/NRR%20TA/FAQ%20Related%20to%20Events%20Occuring%20in%20Japan/Forms/AllItems.aspx>

This latest update has a number of new questions (not many with answers today, but we are working hard). A high priority question we are working on is "how many plants are near a mapped active fault". We're focusing on anything within 50 miles. We're also pulling relevant questions from the congressional inquiries we just received, and will also give these high priority to support any needs by NRR.

Many new figures and some draft fact sheets have added to the "additional information" section. These include the NRO half of a tsunami fact sheet...a description of the Tsunami research is still to come from RES.

Some good news. Yesterday's version seems to have been widely forwarded around the agency. So, we are also starting to get some excellent questions from staff looking forward. This is allowing us to feel that we are finally getting out in front of things to a small degree. Also, our team has grown and we now have someone acting as source of seismic expertise for the 11pm to 7 am shift. This means that we now have seismic experts available to the RST and OPA at the Op Center 24 hours, with 2 people during the day. That extra support is allowing us to get this out at least an hour earlier today ☺

We are continuing to compile the questions that come in and update the seismic Q&A document! If you have suggested changes, or want to provide missing answers, please forward them to me for compilation.

This is a living document and will be updated daily in the foreseeable future.

Happy St. Paddy's Day. May the world (especially our friends in Japan) have the luck of the Irish today.

Cheers,  
Annie

Dr. Annie Kammerer, PE  
Senior Seismologist and Earthquake Engineer  
US Nuclear Regulatory Commission  
Office of Nuclear Regulatory Research  
Washington DC 20555  
(b)(6) mobile  
1 (301) 873-3923 BB

From: Kammerer, Annie

Sent: Tuesday, March 15, 2011 3:41 AM

To: Miland, Patrick; Skeen, David

Cc: Howe, Allen; Nelson, Robert; Stutzke, Martin; Gitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Kammerer, Annie; Chokshi, Nitesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Gitter, Joseph; Howe, Allen; Case, Michael; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Munson, Clifford; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael  
Subject: latest version of Q&As

All,

This is the first draft of the seismic-specific Q&As. It is pretty rough and there are many answers still missing, but people have contributed a lot and we thought it may be useful for many people trying to answer questions coming in.

We are continuing to compile the questions that come in and update the seismic Q&A document. If you have suggested changes, or want to provide missing answers, please forward them to me for compilation.

This is a living document and will be updated daily in the foreseeable future.

Annie

Dr. Annie Kammerer, PE

Senior Seismologist and Earthquake Engineer

US Nuclear Regulatory Commission

Office of Nuclear Regulatory Research

Washington DC 20555

(b)(6) mobile

(b)(6) 88

**From:** Ahlers, Mike  
**To:** Brenner, Eliot; McIntyre, David  
**Subject:** CNN -- Cuomo Meeting  
**Date:** Monday, March 21, 2011 4:07:27 PM

---

Eliot, David,

NY Gov. Cuomo put the announcement below on his web site.

Can you confirm that senior members of the NRC staff are meeting with Cuomo's staff? Do you know who those members are, and if this is, as Cuomo says, at the request of the White House?

Thanks - Mike

Mike Ahlers  
Senior Producer, Homeland Security  
CNN Washington  
202-898-7917 (o)  
(b)(6) (cell)  
[mike.ahlers@turner.com](mailto:mike.ahlers@turner.com)

## Statement From Governor Andrew M. Cuomo

Albany, NY (March 19, 2011)

"In light of the catastrophe in Japan, New Yorkers must know the facts regarding Indian Point and its latest risk assessment.

"After watching the events in Japan and having previously opposed the Indian Point plant, this past Tuesday, I requested the White House schedule a meeting between my staff and senior members of the Nuclear Regulatory Commission. That meeting has now been scheduled for **Tuesday, March 22** with, among others, Lieutenant Governor Robert Duffy and Director of State Operations Howard Glaser.

"The purpose of the meeting will be to discuss the risks facing Indian Point in the event of an earthquake, how prepared Indian Point is to handle an earthquake, as well as what risk assessments have been completed regarding Indian Point.

"We are looking forward to a productive dialogue with the NRC."

0000/105

## Landau, Mindy

---

**From:** Landau, Mindy  
**Sent:** Monday, March 21, 2011 4:38 PM  
**To:** Muessle, Mary  
**Cc:** Ellmers, Glenn  
**Subject:** RE: Illinois Briefing

Mary,

Glenn will do what he can with the one-day turnaround time but some of this is totally within RIII's knowledge, i.e. safety of Illinois plants, and they can certainly put their finger on this more quickly than we can. I'm not sure where we can get info on the Japanese licensing process, as I haven't heard this discussed at all. Glenn will check a few sources to see if we can get any information.

My suggestion is that he pull together a cogent outline of the types of items Bill discussed at the Commission meeting and then I think they will need to fill in the blanks. I also need to have him sit down with Ann tomorrow and Wednesday (since these may be the only days she is around) to get up to speed on the Reporter, and Bill needs him to prepare an EDO Update to go out tomorrow or Wednesday as well.

Mindy

-----Original Message-----

**From:** Muessle, Mary  
**Sent:** Monday, March 21, 2011 3:21 PM  
**To:** Ellmers, Glenn  
**Cc:** Schmidt, Rebecca; Landau, Mindy; Pederson, Cynthia  
**Subject:** Illinois Briefing

Glen

Per our quick discussion, here are the facts I know. Thanks for agreeing to put something together for Cindy to start with. OCA is looking for a draft tomorrow. Hopefully we have some things to pull from.

Topics

Safety of Illinois Plants

Potential Risks

How to mitigate

Differences between US and Japanese licensing process

Safety priorities in US license renewals.

Sent from NRC BlackBerry

Mary Muessle

(b)(6)

0000/106

**From:** McIntyre, David  
**To:** Brenner, Eliot  
**Subject:** RE: Letter from AG Coakley and Senate President Murray to US Department of Energy and NRC on Storage of Spent Nuclear Fuel  
**Date:** Monday, March 21, 2011 5:56:00 PM

---

How's this:

Our position has been that spent fuel storage – both in pools and in dry casks – is safe and provides adequate protection of public health and the environment. Therefore, there is little or no increase in safety by moving the fuel from the pool to casks. Of course, the safety of spent fuel pools will be included in our review of the Japan crisis for lessons that can be applied here in the United States.

**From:** Brenner, Eliot  
**Sent:** Monday, March 21, 2011 5:03 PM  
**To:** McIntyre, David  
**Subject:** Fw: Letter from AG Coakley and Senate President Murray to US Department of Energy and NRC on Storage of Spent Nuclear Fuel

Want to make something up?  
Eliot Brenner  
Director, Office of Public Affairs  
US Nuclear Regulatory Commission  
Protecting People and the Environment  
301 415 8200  
C: (b)(6)  
Sent from my Blackberry

---

**From:** Power, Stephen <Stephen.Power@wsj.com>  
**To:** Mueller, Stephanie <Stephanie.Mueller@hq.doe.gov>; OPA Resource; Brenner, Eliot  
**Sent:** Mon Mar 21 16:56:42 2011  
**Subject:** FW: Letter from AG Coakley and Senate President Murray to US Department of Energy and NRC on Storage of Spent Nuclear Fuel

Would anyone at DOE/NRC like to respond to this?

---

**From:** Breton, Amie (AGO) [mailto:Amie.Breton@state.ma.us]  
**Sent:** Monday, March 21, 2011 4:28 PM  
**To:** Breton, Amie (AGO)  
**Subject:** Letter from AG Coakley and Senate President Murray to US Department of Energy and NRC on Storage of Spent Nuclear Fuel

Good Afternoon,

Attached please find a letter that Attorney General Coakley and Senate President Murray sent this afternoon to the U.S. DOE and the NRC regarding spent fuel rods.

Thanks,

0000/107

Amie

**From:** Richards, Stuart  
**To:** Case, Michael  
**Subject:** RE: Seismic Q&As March 20th 8pm update  
**Date:** Monday, March 21, 2011 7:26:00 PM

---

Very Extensive!!

**From:** Case, Michael  
**Sent:** Monday, March 21, 2011 6:38 AM  
**To:** Richards, Stuart  
**Subject:** FW: Seismic Q&As March 20th 8pm update

FYI

**From:** Kammerer, Annie  
**Sent:** Sunday, March 20, 2011 11:00 PM  
**To:** Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc  
**Cc:** Howe, Allen; Nelson, Robert; Stutzke, Martin; Gitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Nilesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Sherron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castelman, Patrick; Sharkey, Jeff; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas; Webb, Michael; Manoly, Kamal; Khanna, Meena; Sreendi, Diane; Thomas, Eric; Nguyen, Quynh; Meighan, Sean; FOIA Response.hoc Resource; Bensi, Michelle  
**Subject:** Seismic Q&As March 20th 8pm update

All,

Here's today's version. It includes updates on related topics for tomorrow's briefing. Also, some of the sections have been streamlined and some (though not all) of the answers have been updated.

The biggest news from the seismic team's perspective is that starting tomorrow a very bright young risk analyst (Michelle Bensi) who recently joined us from UC Berkeley (my beloved alma mater) will be helping with the compilation of this document. That will allow our team to spend more time cleaning and streamlining it, which inevitably will make it more user friendly...and shorter! Starting with tomorrow's version her name will start to show up on the front.

Best of luck to everyone with the briefing tomorrow!

Annie

**From:** Kammerer, Annie  
**Sent:** Saturday, March 19, 2011 9:00 AM  
**To:** Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc  
**Cc:** Howe, Allen; Nelson, Robert; Stutzke, Martin; Gitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Nilesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Sherron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castelman, Patrick; Sharkey, Jeff; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas; Webb, Michael; Manoly, Kamal; Khanna, Meena; Sreendi, Diane; Thomas, Eric; Nguyen, Quynh; Meighan, Sean; FOIA Resource.hoc@nrc.gov  
**Subject:** Seismic Q&As March 19th 8am update

All,

Here is today's updated version. Lot of new fact sheets have been prepared for various briefings and for Monday's public meeting!

However, the big news of the day is that we just sent off a 6 page, 22 question, much better edited version for a public Q&A set. It's all in OPA's capable hands now. I think it's pretty good...but then I'm biased.

Cheers,  
Annie

**From:** Kammerer, Annie  
**Sent:** Friday, March 18, 2011 6:51 AM  
**To:** Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc  
**Cc:** Howe, Allen; Nelson, Robert; Stutzke, Martin; Gitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Nilesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Sherron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castelman,

0000/108

Patrick; Sharkey, Jeffrey; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas; Webb, Michael; Manoly, Kamal; Khanna, Meena; Scrandi, Diane; Thomas, Eric; Nguyen, Quynh; Meighan, Sean  
**Subject:** RE: Seismic Q&As March 18th Sam update

All,

Please see the updated version of the Seismic Q&As.

Among today's highlights:

\*We added a Terms and Definitions section at the end of the document. (We know that an acronyms list would be helpful too, but it will have to wait a little)

\*The "additional information" section has been split into tables, plots, and fact sheets

\*A high-level draft fact sheet on NRC's seismic regulations has been added

\*We added a section to track outstanding questions that have come in from congress. This will support those who get the tickets in the short terms (most likely NRR). The questions will be moved to the appropriate sections long term (as long as they are not duplicates.)

I'm sure we all agree this has been a crazy week!. We're hoping that the weekend workload is lighter (if only because we won't get as many email from in house) and we can clean up this document and fill in some of the missing answers in preparation for the news story changing. We're trying hard to get out in front of the next wave.

Cheers,  
Annie

---

**From:** Kammerer, Annie

**Sent:** Thursday, March 17, 2011 2:36 AM

**To:** Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc

**Cc:** Howe, Allen; Nelson, Robert; Stutzke, Martin; Gitter, Joseph; Rihn, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Nitesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Gitter, Joseph; Howe, Allen; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Munson, Clifford; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pius, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castleman, Patrick; Sharkey, Jeffrey; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas

**Subject:** Seismic Q&As March 17th 2am update

All,

As promised, a sharepoint site has been set up where our friends in NRR will be posting the latest version of the Seismic Q&A document on an ongoing basis. If someone would prefer to use the sharepoint site, instead of being on this distribution list, please let me know.

<http://portal.nrc.gov/edo/nrr/NRR%20TA/FAQ%20Related%20to%20Events%20Occurring%20in%20Japan/Forms/AllItems.aspx>

This latest update has a number of new questions (not many with answers today, but we are working hard). A high priority question we are working on is "how many plants are near a mapped active fault". We're focusing on anything within 50 miles. We're also pulling relevant questions from the congressional inquiries we just received, and will also give these high priority to support any needs by NRR.

Many new figures and some draft fact sheets have added to the "additional information" section. These include the NRO half of a tsunami fact sheet.. a description of the tsunami research is still to come from RES.

Some good news: Yesterday's version seems to have been widely forwarded around the agency. So, we are also starting to get some excellent questions from staff looking forward. This is allowing us to feel that we are finally getting out in front of things to a small degree. Also, our team has grown and we now have someone acting as source of seismic expertise for the 11pm to 7 am shift. This means that we now have seismic experts available to the RST and OPA at the Op Center 24 hours, with 2 people during the day. That extra support is allowing us to get this out at least an hour earlier today ☺

We are continuing to compile the questions that come in and update the seismic Q&A document. If you have suggested changes, or want to provide missing answers, please forward them to me for compilation.

This is a living document and will be updated daily in the foreseeable future.

Happy St. Paddy's Day. May the world (especially our friends in Japan) have the luck of the Irish today.

Cheers,  
Annie

Dr. Annie Kammerer, PE  
Senior Seismologist and Earthquake Engineer  
US Nuclear Regulatory Commission  
Office of Nuclear Regulatory Research



Washington DC 20555

(b)(6) mobile

(b)(6) 88

**From:** Kammerer, Annie

**Sent:** Tuesday, March 15, 2011 3:41 AM

**To:** Hiland, Patrick; Skeen, David

**Cc:** Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Kammerer, Annie; Chokshi, Nitesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Glitter, Joseph; Howe, Allen; Case, Michael; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Munson, Clifford; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Usoiding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Marley, Michael

**Subject:** latest version of Q&As

All,

This is the first draft of the seismic-specific Q&As. It is pretty rough and there are many answers still missing, but people have contributed a lot and we thought it may be useful for many people trying to answer questions coming in.

We are continuing to compile the questions that come in and update the seismic Q&A document. If you have suggested changes, or want to provide missing answers, please forward them to me for compilation.

This is a living document and will be updated daily in the foreseeable future.

Annie

Dr. Annie Kammerer, PE

Senior Seismologist and Earthquake Engineer

US Nuclear Regulatory Commission

Office of Nuclear Regulatory Research

Washington DC 20555

(b)(6) mobile

(b)(6) 88

**From:** Kammerer, Annie  
**To:** McIntyre, David; Burnell, Scott  
**Subject:** RE: earthquakes ...  
**Date:** Monday, March 21, 2011 9:31:31 PM

---

I do. It relates to a type of seismic equipment called seismic isolators or base isolators (they are the same thing). I am actually writing a NUREG on them. There are a few Q&As on them....

The answer is as follows:

"The NRC would not require isolators for the next generation of plants. However, it is recognized that a properly designed isolation system can be very effective in mitigating the effect of earthquake. As a result, currently the NRC is preparing guidance for plant designers considering the use of seismic isolation devices. It is the understanding of the NRC that several vendors are considering seismic isolation in their designs. The use of seismic isolation systems in any plant design is a decision of the plant vendor."

Cheers,  
Annie

P.S. a website with pictures showing what they look like is at  
<http://www.seismicisolation.com/>

They basically use the building's own inertia to hold it in place, while the isolators allow the soils to move underneath.

Here's a video in action...

<http://www.youtube.com/watch?v=Fw7aQwMmBNM&feature=related>

**From:** McIntyre, David  
**Sent:** Monday, March 21, 2011 9:21 PM  
**To:** Kammerer, Annie; Burnell, Scott  
**Subject:** Fw: earthquakes ...

I don't even understand this question.

David McIntyre  
NRC Office of Public Affairs  
(b)(6) (mobile)  
301-415-8200 (office)

Sent from my BlackBerry, which is wholly responsible for all typos.

---

**From:** Gordon, Greg <ggordon@mcclatchydc.com>  
**To:** McIntyre, David  
**Sent:** Mon Mar 21 19:43:40 2011  
**Subject:** RE: earthquakes ...

We've got the 2006 memo - 7/26/06; I think it's referenced in the FAQs.

Here's a question:

Is it likely that any newly licensed plants will be "seismically isolated" - on shock absorbers? (OEM, of

0000/109

course; no after market stuff here!).

Thanks,

Greg

Greg Gordon

National Correspondent

McClatchy Newspapers Washington Bureau

202-383-0005

[ggordon@mcclatchydc.com](mailto:ggordon@mcclatchydc.com)

See McClatchy news at <http://news.mcclatchy.com>. Our 30 daily newspapers include the Miami Herald, Sacramento Bee, Ft. Worth Star-Telegram, Kansas City Star, Charlotte Observer, Raleigh News & Observer and others.

---

**From:** McIntyre, David [mailto:David.McIntyre@nrc.gov]

**Sent:** Monday, March 21, 2011 5:07 PM

**To:** Gordon, Greg

**Subject:** RE: earthquakes ...

Didn't mean to ignore the wastewater question, just can't really predict what the Japanese will do. At Three Mile Island, as I am told, the water was filtered several times to get as much material out of it as possible, leaving essentially tritium. That water was allowed to evaporate.

What "2006 earthquake memo" were you referring to?

**From:** Gordon, Greg [mailto:ggordon@mcclatchydc.com]

**Sent:** Monday, March 21, 2011 4:45 PM

**To:** McIntyre, David

**Subject:** RE: earthquakes ...

Okay, thanks. So obviously, I didn't read the FAQ's carefully enough, since I missed or forgot that line.

I do much appreciate your replies today, little digs aside. And in fairness, I've been involved in two other complicated projects, and then have had to try to get my head around this stuff as a sort of troubleshooter.

Rene and I will look this over and we'll get back to you. Yes, I saw Dedman's headline.

Can you respond to my questions about the wastewater at Fukushima and what would happen in a similar situation here? This question came from a nuclear safety expert who has served on government panels, so I think it's legit and warrants a reply.

Thank you,

Greg.

Greg Gordon

National Correspondent

McClatchy Newspapers Washington Bureau

202-383-0005

[ggordon@mcclatchydc.com](mailto:ggordon@mcclatchydc.com)

See McClatchy news at <http://news.mcclatchy.com>. Our 30 daily newspapers include the Miami Herald, Sacramento Bee, Ft. Worth Star-

Telegram, Kansas City Star, Charlotte Observer, Raleigh News & Observer and others.

---

**From:** McIntyre, David [mailto:David.McIntyre@nrc.gov]  
**Sent:** Monday, March 21, 2011 4:34 PM  
**To:** Gordon, Greg  
**Cc:** Schoof, Renee  
**Subject:** RE: earthquakes ...

Greg – If you had read the FAQs carefully, you would know that we do not rate the plants by earthquake magnitude. We use ground speed and acceleration. The attached table gives the “g” rating for the various plants to describe their “safe shutdown earthquakes”. This cannot be translated to magnitude, and should not be used to rank the plants in any spurious way (like MSNBC.com did).

**From:** Gordon, Greg [mailto:ggordon@mcclatchydc.com]  
**Sent:** Monday, March 21, 2011 4:10 PM  
**To:** McIntyre, David  
**Cc:** Schoof, Renee  
**Subject:** earthquakes ...

Dave,

I had read through the FAQs and just skimmed 'em again. I see no reference to the 1850s; just general comments about being built to withstand “extreme” events, etc. If I missed it, I'm sorry, but I've just read through 22 responses for a 2<sup>nd</sup> time in my search for an answer to a specific question.

Let me try a different tack:

Specifically, what magnitude earthquake are U.S. plants in the most worrisome earthquake zones built to withstand? Could we see a chart showing exactly what level earthquakes various plants are built to withstand; or what level SSEs they must withstand? And what level can plants that aren't in the most vulnerable zones required to withstand?

Surely there are specific NRC data/figures on the degree of earthquake engineering in these various plants.

Thanks,  
Greg

Greg Gordon  
National Correspondent  
McClatchy Newspapers Washington Bureau  
202-383-0005  
[ggordon@mcclatchydc.com](mailto:ggordon@mcclatchydc.com)

See McClatchy news at <http://news.mcclatchy.com>. Our 30 daily newspapers include the Miami Herald, Sacramento Bee, Ft. Worth Star-Telegram, Kansas City Star, Charlotte Observer, Raleigh News & Observer and others.

---

**From:** McIntyre, David [mailto:David.McIntyre@nrc.gov]  
**Sent:** Monday, March 21, 2011 3:39 PM  
**To:** Gordon, Greg  
**Subject:** RE: Still no answers to any of my questions ...

Again, I believe the Qs&As we posted over the weekend address the 1800s quakes.

**From:** Gordon, Greg [mailto:ggordon@mcclatchydc.com]  
**Sent:** Monday, March 21, 2011 3:09 PM  
**To:** McIntyre, David  
**Subject:** RE: Still no answers to any of my questions ...

This helps a lot. Rene was on the call, but she read her notes to me quoting Lyman as saying something to that effect, but I suspect it was more nuanced. Just rushed to get the question to you. We've got an editor pointing us to a massive earthquake in Ohio circa 1854 (I may have the date wrong) and saying it was the biggest on record – in other words, the question is whether the regulations cover the big Enchilada, one like Japan's, even if interior U.S. plants are not in "subduction zones."

Greg Gordon  
National Correspondent  
McClatchy Newspapers Washington Bureau  
202-383-0005  
[ggordon@mcclatchydc.com](mailto:ggordon@mcclatchydc.com)  
See McClatchy news at <http://news.mcclatchy.com>. Our 30 daily newspapers include the Miami Herald, Sacramento Bee, Ft. Worth Star-Telegram, Kansas City Star, Charlotte Observer, Raleigh News & Observer and others.

**From:** McIntyre, David [mailto:David.McIntyre@nrc.gov]  
**Sent:** Monday, March 21, 2011 3:04 PM  
**To:** Gordon, Greg  
**Subject:** RE: Still no answers to any of my questions ...

Check the list below. 27 units at 17 sites.

The "seismic scrutiny" new plant applications are undergoing is different from the scrutiny existing plants faced decades ago. That's because risk assessment and seismology have evolved into different disciplines in the meantime. We are using state of the art techniques to analyze new plant applications. If Dr. Lyman is somehow intimating that we are ignoring seismic issues for new plants, as your question inferred, then he is being totally irresponsible.

**From:** Gordon, Greg [mailto:ggordon@mcclatchydc.com]

**Sent:** Monday, March 21, 2011 2:58 PM  
**To:** McIntyre, David  
**Subject:** RE: Still no answers to any of my questions ...

Thanks. We've seen your Japan earthquake FAQs. I'm trying to download the 2006 earthquake memo from ADAMS and having problems. Any advice?

The follow-on question relates to a comment by Ed Lyman of UCS this a.m., when he said at their daily briefing that new plants somehow don't undergo the same seismic scrutiny as the original plants. Is there a grain of truth to that?

The question about the 17 plants relates to a line in a NY Times story last week stating that NRC asked 17 plants to review their ability to withstand earthquakes. The relevant paragraph:

Officials with the Nuclear Regulatory Commission say the site is safe and that its earthquake threat is on the lower end nationally and in the Northeast. But it is one of 17 nuclear sites being asked to review and reassess seismic issues. Still, said Scott Burnell, a commission spokesman, "The N.R.C. continues to believe that all U.S. plants are capable of withstanding the strongest earthquakes that can be expected at any given site."

May we know the identities of the other 16 plants?

Could Rene and I speak to someone at NRC about this whole issue of preparedness for earthquakes?

Also, as to the sea water being pumped into Fukushima, after it gets hot and is drained off, replaced by cooler water ... where does the now-radioactive waste sea water go? Back into the ocean? If so, where would cooling waste water go in the event of a U.S. accident? Into a river or lake? Or how is this covered?

Greg Gordon  
National Correspondent  
McClatchy Newspapers Washington Bureau  
202-383-0005  
[ggordon@mcclatchydc.com](mailto:ggordon@mcclatchydc.com)  
See McClatchy news at <http://news.mcclatchy.com>. Our 30 daily newspapers include the Miami Herald, Sacramento Bee, Ft. Worth Star-Telegram, Kansas City Star, Charlotte Observer, Raleigh News & Observer and others.

---

**From:** McIntyre, David [mailto:David.McIntyre@nrc.gov]  
**Sent:** Monday, March 21, 2011 2:44 PM  
**To:** Gordon, Greg  
**Subject:** RE: Still no answers to any of my questions ...

Hi Greg - I apologize for you not getting replies from us. Please realize we have responded to hundreds of media requests daily since the earthquake, and quite honestly, long laundry lists of questions like these are more difficult for us to respond to.

I'll take a stab at some of these below.

**From:** Gordon, Greg [mailto:ggordon@mcclatchydc.com]  
**Sent:** Monday, March 21, 2011 12:16 PM  
**To:** McIntyre, David  
**Subject:** Still no answers to any of my questions ...

Hi Dave,

Hope you got at least some of your weekend. I suspect I'm not alone, but I've yet to get a single answer from NRC since I started work on the Japan nuclear power crisis. Today, we're turning toward earthquakes and sure would like someone to assist us.

In addition to the questions below:

--Could someone send us the list of Mark I plants in the U.S.?

All the plants and their types are listed in Appendix A of our Information Digest.

--Again, which are the 17 plants that are currently under review?

Not sure I understand this question. All US plants will be reviewed as part of the process being worked out by the Commission today. (See below)

--Does the NRC know whether any spent fuel pools at Japan's Tokyo Electric Daiichi plant are leaking? Are any domestic nuclear plants' spent fuel pools leaking? If so, which ones?

We do not know for certain the status of those pools. I'm checking on ours.

--What specific events in Japan's Tokyo Electric Daiichi plant, if any, are most likely to prompt retrofitting of U.S. plants or what is being considered along those lines?

Probably too early to say, as we begin our review.

--Regardless of the events in Japan, has improved knowledge about global seismic activity over the last 40 years prompted your agency to recommend specific design changes

to lessen the threat that a major earthquake could knock out power, breach a reactor containment vessel, cause a leak in a spent fuel pool or cause other damage?

We have reviewed recent seismological data for the central and eastern US for how it might affect plants in those areas. We posted a lot of info on seismic questions on our website Saturday. On our Japan Information page linked from our website, there are two other documents on seismic issues linked under "Related Information."

Thanks.

Greg Gordon  
National Correspondent  
McClatchy Newspapers Washington Bureau  
202-383-0005  
[ggordon@mcclatchydc.com](mailto:ggordon@mcclatchydc.com)  
See McClatchy news at <http://news.mcclatchy.com>.  
Our 30 daily newspapers include the Miami Herald, Sacramento Bee, Ft. Worth Star-Telegram, Kansas City Star, Charlotte Observer, Raleigh News & Observer and others.

---

**From:** Gordon, Greg  
**Sent:** Friday, March 18, 2011 1:21 PM  
**To:** David.mcintyre@nrc.gov  
**Subject:** questions

Hi Dave,

First, please say hello to Eliot, with whom I worked at UPI many years ago.

I had to huddle with my colleague and an editor to see where we're headed before messaging you.

Here are some questions on behalf of myself and Rene Schoof:

--After the 9/11 attacks, didn't NRC take action to move backup generators away from the power plants? If this is true, could someone provide details? Were the diesel generators situated in a vulnerable position at Fukushima?

Several "mitigating measures" were prescribed, including staging some emergency equipment near, but not at the plant site.

--Aren't the controls for the Fukushima Mark I plants' water pumps in the basements of the plants, and didn't they get flooded by the tsunami? What are the chances they'll work? Is this another design lesson?



This is something we will be looking at in our review of US plants.

--Could someone walk me through all the steps that can be taken to contain the Fukushima radiation leaks? Can they pour sand on the reactors, or would that worsen prospects for an explosion if a meltdown hit the water table and triggered a hydrogen explosion? I think we've seen a number of attempts over the past few days; we are not in a position to critique or otherwise comment on what the Japanese are trying.

What is the worst-case scenario? When projections on potential worst-case radiation are made, do they include more than one reactor melting down, or just a single reactor?

Over the past week, we've been confronted with a number of possible scenarios, including multiple reactor core damage and multiple spent fuel pool loss of cooling.

----Can you please identify or point me to a list of the 17 plants being asked to reassess seismic issues?

The plants currently under review for Generic Issue

199 are:

**Region I**

Indian Point 2  
Indian Point 3  
Limerick 1  
Limerick 2  
Peach Bottom 2  
Peach Bottom 3  
Seabrook 1

**Region II**

Crystal River 3  
Farley 1  
Farley 2  
North Anna 1  
North Anna 2  
Oconee 1  
Oconee 2  
Oconee 3  
Saint Lucie 1  
Saint Lucie 2  
Sequoyah 1  
Sequoyah 2

Summer  
Watts Bar 1  
**Region III**  
Dresden 2  
Dresden 3  
Duane Arnold  
Perry 1  
**Region IV**  
River Bend 1  
Wolf Creek 1

How many and which of those plants are boiling water plants?

--Have there ever been instances in which the understanding of earthquake risks changed and a U.S. plant was reinforced? Can you provide details?

--Is the strength of the reactor core containment vessels an issue in the review of Mark I plants? Can it withstand the pressure of a partial meltdown like Three-Mile Island?

Again, I'd love to have a background briefing on the worst-case scenario and the backup systems.

Many thanks for your assistance, Dave.

Greg Gordon  
National Correspondent  
McClatchy Newspapers Washington Bureau  
202-383-0005  
[ggordon@mcclatchydc.com](mailto:ggordon@mcclatchydc.com)  
See McClatchy news at <http://news.mcclatchy.com>.  
Our 30 daily newspapers include the Miami Herald, Sacramento Bee, Ft. Worth Star-Telegram, Kansas City Star, Charlotte Observer, Raleigh News & Observer and others.

**From:** McIntyre, David  
**To:** White, Bernard  
**Subject:** RE: Platts media -- question  
**Date:** Tuesday, March 22, 2011 8:07:00 AM

---

Thanks.

**From:** White, Bernard  
**Sent:** Tuesday, March 22, 2011 8:05 AM  
**To:** McIntyre, David  
**Subject:** RE: Platts media -- question

Dave,

You are spot on with your answers. At this time, we have nothing that we are working on to order or make utilities move spent fuel to storage casks. It is entirely up to them when they do it.

Bernie

**From:** McIntyre, David  
**Sent:** Tuesday, March 22, 2011 7:55 AM  
**To:** White, Bernard  
**Subject:** FW: Platts media -- question

Bernie – I believe I can answer these questions, but I thought I'd check with you just to make sure I'm not missing anything or spouting old talking points when something might be changing. Am I correct in repeating the agency's determination that SNF is safe in pools or casks and that NRC does not make a determination of when a plant should transfer it; that licensees may transfer fuel at any time without specific NRC approval provided they use NRC-certified casks and are operating the ISFSI under general or specific license (ie, we don't have to approve each transfer); and that we aren't working on anything that would change these answers (though of course everything will be looked at under our post-Japan review)?

I don't know how to answer the "what if" question, other than to refuse to speculate. I imagine we could issue an Order or work up a guidance that would have licensees reconfigure the fuel in pools, driving them to load more into cask.

Any thoughts from you would be most appreciated.

Thanks,  
Dave

**From:** McIntyre, David

*Handwritten signature: OOOO/HO*

**Sent:** Monday, March 21, 2011 9:19 PM  
**To:** 'james\_ostroff@platts.com'  
**Cc:** Brenner, Eliot  
**Subject:** Re: Platts media -- question

Jim + these are very good questions. As your deadline is tomorrow I will wait to answer them, as I am really hating my BlackBerry at the moment.

David McIntyre  
NRC Office of Public Affairs  
(b)(6) (mobile)  
301-415-8200 (office)

Sent from my BlackBerry, which is wholly respnsble for all typos.

---

**From:** Ostroff, James <james\_ostroff@platts.com>  
**To:** McIntyre, David  
**Sent:** Mon Mar 21 18:53:49 2011  
**Subject:** Platts media -- question

Hi David,

I wanted to check with you regarding an issue raised today by several Union of Concerned Scientists officials.

Their points:

Nuclear plant operators on their own should move as much spent fuel as possible from pools to storage casks.

This would mitigate the entire issue of loss of power and water for cooling that is an issue at the Fukushima plants, they said.

If operators are reluctant to step up cask storage, UCS officials say the NRC should issue a directive to operators to do so, they said.

If you have a comment on the UCS officials' points that's fine; I'd like to have them.

But if not..., I would appreciate some factual information.

Do operators have leeway, on their own, to move nuclear fuel waste from pools to dry casks--assuming the casks meet NRC standards?

Or, do operators need some type of NRC approval--or have to file documents with the agency?

Does NRC have any proceeding in progress that would in any way affect bear on the use of fuel pools vs. dry casks?

If NRC made a determination that some amount, or percentage of spent fuel at nuclear power units should be moved

from pools to storage casks, would it have to issue a regulation, or revise an existing one to effect this change? Perhaps NRC has a specific authority that would it to order this unilaterally.

This article came up a bit earlier this evening. I have a 4 p.m. deadline Tuesday.

I don't need voluminous replies! Just the essentials will do. An e-mail reply is fine, but we could talk on the phone, too.

Many thanks for your help,  
--Jim

**Jim Ostroff**  
Senior Editor  
Platts Nuclear Publications  
202 383-2249  
james\_ostroff@platts.com

---

The information contained in this message is intended only for the recipient, and may be a confidential attorney-client communication or may otherwise be privileged and confidential and protected from disclosure. If the reader of this message is not the intended recipient, or an employee or agent responsible for delivering this message to the intended recipient, please be aware that any dissemination or copying of this communication is strictly prohibited. If you have received this communication in error, please immediately notify us by replying to the message and deleting it from your computer. The McGraw-Hill Companies, Inc. reserves the right, subject to applicable local law, to monitor and review the content of any electronic message or information sent to or from McGraw-Hill employee e-mail addresses without informing the sender or recipient of the message.

---

**From:** McIntyre, David  
**To:** Geoffrey Brumfiel; Couret, Ivonne  
**Subject:** RE: MEDIA \_ NPR \_ spoke with you FW: Robots at reactors?  
**Date:** Tuesday, March 22, 2011 12:43:00 PM

---

No worries!

**From:** Geoffrey Brumfiel [mailto:GBrumfiel@npr.org]  
**Sent:** Tuesday, March 22, 2011 12:43 PM  
**To:** McIntyre, David; Couret, Ivonne  
**Subject:** RE: MEDIA \_ NPR \_ spoke with you FW: Robots at reactors?

Thanks Dave,

Sorry to bug you again about it, but I just wanted to be sure...

Best,  
Geoff

Geoff Brumfiel  
National Public Radio  
P: +1 (202) 513-2794  
C: (b)(6)  
E: gbrumfiel@npr.org

---

**From:** McIntyre, David [mailto:David.McIntyre@nrc.gov]  
**Sent:** Tuesday, March 22, 2011 12:42 PM  
**To:** Couret, Ivonne; Geoffrey Brumfiel  
**Subject:** RE: MEDIA \_ NPR \_ spoke with you FW: Robots at reactors?

Geoff - we are unaware of NRC or other US Govt agency sending robots to Japan to help with the nuclear situation there.

As for our plants, they can be used in situations where radiation, space or temperature make it impossible for humans. These would primarily be for maintenance during a refueling outage.

Dave Mc

---

David McIntyre  
Public Affairs Officer  
U.S. Nuclear Regulatory Commission  
(301) 415-8206 (direct)  
(b)(6) (mobile)  
*Protecting People & the Environment*

0000/111

**From:** Couret, Ivonne  
**Sent:** Tuesday, March 22, 2011 12:25 PM  
**To:** McIntyre, David  
**Subject:** MEDIA \_ NPR \_ spoke with you FW: Robots at reactors?

Can you follow up ...Ivonne

Ivonne L. Couret  
Public Affairs Officer  
Office of Public Affairs  
Media Desk  
opa.resource@nrc.gov  
301-415-8200

Visit our online photo gallery. Incorporate graphics and photographs to tell your story!  
<http://www.nrc.gov/reading-rm/photo-gallery/>

2010-2011 Information Digest - Where you can find NRC Facts at a Glance  
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/>

**From:** Janbergs, Holly **On Behalf Of** OPA Resource  
**Sent:** Tuesday, March 22, 2011 12:20 PM  
**To:** Couret, Ivonne  
**Subject:** FW: Robots at reactors?

**From:** Geoffrey Brumfiel [mailto:GBrumfiel@npr.org]  
**Sent:** Tuesday, March 22, 2011 11:54 AM  
**To:** OPA Resource  
**Subject:** Robots at reactors?

Hi guys,

I'm working on a story for tomorrow morning about some robots that have been to shipped to the site at Fukushima Daiichi to possibly look at the reactors. I spoke informally to David McIntyre about this, but now that we're officially doing a story, I wanted to know the following:

A) Do US nuclear facilities use robots as part of normal operations? If so for what?

B) Do the companies or you guys have any emergency robots to investigate accidents?

C) Has the government sent any robots to the site? I see several reports that private companies have.

I'm on deadline for the end of the day, feel free to get in touch by phone or e-mail.

Thanks!

Geoff Brumfiel  
National Public Radio  
P: +1 (202) 513-2794  
C: (b)(6)  
E: [gbrumfiel@npr.org](mailto:gbrumfiel@npr.org)

**From:** McIntyre, David  
**To:** Hannah, Roger  
**Subject:** RE: MEDIA \_ NPR \_ spoke with you FW: Robots at reactors?  
**Date:** Tuesday, March 22, 2011 12:29:00 PM

---

Thanks.

**From:** Hannah, Roger  
**Sent:** Tuesday, March 22, 2011 12:29 PM  
**To:** McIntyre, David  
**Subject:** RE: MEDIA \_ NPR \_ spoke with you FW: Robots at reactors?

I'll try to track it down...

**From:** McIntyre, David  
**Sent:** Tuesday, March 22, 2011 12:28 PM  
**To:** Couret, Ivonne; Hannah, Roger  
**Subject:** RE: MEDIA \_ NPR \_ spoke with you FW: Robots at reactors?

Roger - Scott is giving one of his 40-minute answers to a yes or no question; could you perhaps ask the Reactor Safety Team (Fred Brown is the team leader right now I think) whether we've sent any robots over, and perhaps they can tell you what role our mechanical brethren play in regular ops at our NPPs as well?

If you're really busy, I can come back over and chase this myself.

Thanks,  
Dave

**From:** Couret, Ivonne  
**Sent:** Tuesday, March 22, 2011 12:25 PM  
**To:** McIntyre, David  
**Subject:** MEDIA \_ NPR \_ spoke with you FW: Robots at reactors?

Can you follow up ...Ivonne

Ivonne L. Couret  
Public Affairs Officer  
Office of Public Affairs  
Media Desk  
opa.resource@nrc.gov  
301-415-8200

Visit our online photo gallery. Incorporate graphics and photographs to tell your story!  
<http://www.nrc.gov/reading-rm/photo-gallery/>

2010-2011 Information Digest - Where you can find NRC Facts at a Glance  
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/>

**From:** Janbergs, Holly **On Behalf Of** OPA Resource  
**Sent:** Tuesday, March 22, 2011 12:20 PM  
**To:** Couret, Ivonne  
**Subject:** FW: Robots at reactors?

0000/112



**From:** Geoffrey Brumfiel [mailto:GBrumfiel@npr.org]  
**Sent:** Tuesday, March 22, 2011 11:54 AM  
**To:** OPA Resource  
**Subject:** Robots at reactors?

Hi guys.

I'm working on a story for tomorrow morning about some robots that have been shipped to the site at Fukushima Daiichi to possibly look at the reactors. I spoke informally to David McIntyre about this, but now that we're officially doing a story, I wanted to know the following:

- A) Do US nuclear facilities use robots as part of normal operations? If so for what?
- B) Do the companies or you guys have any emergency robots to investigate accidents?
- C) Has the government sent any robots to the site? I see several reports that private companies have.

I'm on deadline for the end of the day, feel free to get in touch by phone or e-mail.

Thanks!

Geoff Brumfiel  
National Public Radio  
P: +1 (202) 513-2794  
C: (b)(6)  
E: gbrumfiel@npr.org

**From:** Couret, Ivonne  
**To:** Hayden, Elizabeth; Harrington, Holly; McIntyre, David; Burnell, Scott; Brenner, Eliot; Janbergs, Holly  
**Subject:** Japan info provided by Richard Barkley Region 1  
**Date:** Tuesday, March 22, 2011 2:00:38 PM

---

FYI – Link to Japan Nuclear folks and how they are illustrating information. Ivonne

Ivonne L. Couret  
Public Affairs Officer  
Office of Public Affairs  
Media Desk  
opa.resource@nrc.gov  
301-415-8200

Visit our online photo gallery. Incorporate graphics and photographs to tell your story!  
<http://www.nrc.gov/reading-rm/photo-gallery/>

2010-2011 Information Digest - Where you can find NRC Facts at a Glance  
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/>

**From:** Barkley, Richard  
**Sent:** Tuesday, March 22, 2011 1:49 PM  
**To:** Couret, Ivonne; Mitleyng, Viktoria; Rakovan, Lance; Ryan, Michelle; Salter, Susan; Screnci, Diane; Steger (Tucci), Christine; Virgilio, Rosetta  
**Subject:** FW: Good Discussion Today - Thanks for Such a Group Effort!!

[http://www.mext.go.jp/component/english/\\_icsFiles/afieldfile/2011/03/22/1303997\\_2219.pdf](http://www.mext.go.jp/component/english/_icsFiles/afieldfile/2011/03/22/1303997_2219.pdf)

Take a look at the cute Japanese radiological pictorial graph on Page 5 – We should use something like this going forward.

This information was forwarded from someone in Research, and has radiological data from Japan post-Fukushima.

At least the Japanese have been lucky in one big way – The wind at Fukushima Daiichi has been almost always out to sea.

Most of the readings outside of the 20 km radius around the plant (~12 miles) are less than 10 microsieverts per hour (= to 1 millirem/hour).

**From:** Carpenter, Gene  
**Sent:** Tuesday, March 22, 2011 1:27 PM  
**To:** Barkley, Richard; Adelstein, Patricia; Anderson, Brian; Bafundo Crimm, Nina; Bailey, Kenneth; BowdenBerry, Elva; Burton, William; Daniel, Richard; Fehst, Geraldine; Fuller, Michael; Glenn, Nichole; Heck, Jared; Kotra, Janet; Krsek, Robert; Leslie, Bret; Maier, Bill; Meeting\_Facilitation Resource; Mroz (Sahm), Sara; Rakovan, Lance; Rivera, Alison; Rodriguez, Michael; Salter, Susan; Smith, George; Stuyvenberg, Andrew; Wright, Lisa (Gibney)  
**Subject:** RE: Good Discussion Today - Thanks for Such a Group Effort!!

0000/113

FYI:

This is what our Japanese equivalent (NISA) is saying:

<http://www.nisa.meti.go.jp/english/index.html>

Gene

**From:** Barkley, Richard

**Sent:** Tuesday, March 22, 2011 13:26

**To:** Adelstein, Patricia; Anderson, Brian; Bafundo Crimm, Nina; Bailey, Kenneth; Barkley, Richard; BowdenBerry, Elva; Burton, William; Carpenter, Gene; Daniel, Richard; Fehst, Geraldine; Fuller, Michael; Glenn, Nichole; Heck, Jared; Kotra, Janet; Krsek, Robert; Leslie, Bret; Maier, Bill; Meeting\_Facilitation Resource; Mroz (Sahm), Sara; Rakovan, Lance; Rivera, Alison; Rodriguez, Michael; Salter, Susan; Smith, George; Stuyvenberg, Andrew; Wright, Lisa (Gibney)

**Subject:** Good Discusssion Today - Thanks for Such a Group Effort!!

<http://www.nrc.gov/japan/japan-info.html>

The above link takes you to the NRC's external website location for the events related to Japan. The agency has gone from having almost nothing on our website on Fukushima to a very healthy list of Frequently Asked Questions. I suspect the materials provided to the Regions in advance of their Annual Assessment Meetings will rely heavily on this material.

Richard S. Barkley, PE  
Nuclear & Environmental Engineer  
(610) 337-5065 Work

(b)(6) Cell

**From:** McIntyre, David  
**To:** Brenner, Eliot  
**Cc:** Casto, Chuck  
**Subject:** RE: Interview request for Chuck Casto  
**Date:** Tuesday, March 22, 2011 2:33:00 PM

---

Understood. Thanks.

**From:** Brenner, Eliot  
**Sent:** Tuesday, March 22, 2011 2:18 PM  
**To:** McIntyre, David  
**Cc:** Casto, Chuck  
**Subject:** RE: Interview request for Chuck Casto

Chairman wants the team focusing on the job at hand. If this is a documentary, there's nothing pressing and they can do the interview anywhere.

Chuck: let me know when you feel ready and I'll check with the chairman. I understand we had a hand in sketching out the initial design for the pumper that is being taken up to the plant area. That would be a good point for us to be talking about.

Eliot

**From:** McIntyre, David  
**Sent:** Tuesday, March 22, 2011 2:06 PM  
**To:** Brenner, Eliot  
**Cc:** Casto, Chuck  
**Subject:** Interview request for Chuck Casto

Eliot and Chuck - there's a British documentary film company working for the Discovery Channel that is eager to interview Chuck regarding the NRC team's work in Japan. Their crew is in Tokyo for the next few days. I referred them to the US Embassy, but apparently that request has gone nowhere. Any chance our folks - especially Chuck - would be willing/able to be interviewed?

Thanks,  
Dave

---

David McIntyre  
Public Affairs Officer  
U.S. Nuclear Regulatory Commission  
(301) 415-8206 (direct)  
(b)(6) (mobile)  
*Protecting People & the Environment*

0000/114

**From:** McIntyre, David  
**To:** Tristan G. Ahlone  
**Subject:** NRC team in Japan  
**Date:** Tuesday, March 22, 2011 2:34:00 PM

---

Tristan – At this time, the US team in Japan is not granting interviews. Chairman Jaczko wants them to remain focused on the job at hand. Perhaps once this thing is resolved they will be able to take a breath and talk about their efforts.

---

David McIntyre  
Public Affairs Officer  
U.S. Nuclear Regulatory Commission  
(301) 415-8206 (direct)  
(b)(6) (mobile)  
*Protecting People & the Environment*

0000/115

Landau, Mindy

---

**From:** Landau, Mindy  
**Sent:** Tuesday, March 22, 2011 4:21 PM  
**To:** Barkley, Richard  
**Cc:** Rihm, Roger  
**Subject:** RE: Need Anything?

Thanks Rich – we met with Becky this morning and have a good path forward for the correspondence and the hearings and I think Roger feels in control. If things change, we'll be sure to call you!

---

**From:** Barkley, Richard  
**Sent:** Tuesday, March 22, 2011 3:51 PM  
**To:** Landau, Mindy  
**Subject:** Need Anything?

I got through a Facilitator Lunch and Learn today without Lance. Scheduling so far is going pretty well for the facilitators.

Need any help down there? While I am quite busy, you sound swamped given 5 pending hearings and all the other correspondence.

Let me know if you are in a bind.

Richard S. Barkley, PE  
Nuclear & Environmental Engineer  
(610) 337-5065 Work  
(b)(6) Cell

0000/116

**From:** McIntyre, David  
**To:** Burnell, Scott; Harrington, Holly  
**Cc:** Anderson, Brian  
**Subject:** RE: Media Inquiry From USAID  
**Date:** Tuesday, March 22, 2011 4:41:00 PM

---

Or OIP.

**From:** Burnell, Scott  
**Sent:** Tuesday, March 22, 2011 4:31 PM  
**To:** Harrington, Holly; McIntyre, David  
**Cc:** Anderson, Brian  
**Subject:** RE: Media Inquiry From USAID

Brian took a look at this and correctly noted the Ops Ctr would be the most likely source. I suggest ping the Liason Team.

**From:** RMTFACTSU\_ELNRC [mailto:RMTFACTSU\_ELNRC@ofda.gov]  
**Sent:** Tuesday, March 22, 2011 4:27 PM  
**To:** Harrington, Holly; McIntyre, David; Burnell, Scott  
**Cc:** RMTFACTSU\_PRO  
**Subject:** Media Inquiry From USAID

Holly, David, Scott:

Below, I have enclosed a media inquiry that was sent to USAID by Jessica Jung of the Japanese Daily News. Can you help answer her questions? Thanks! ☺

**From:** Mainichi LA [mailto:mainichila@mainichi.com]  
**Sent:** Tuesday, March 22, 2011 3:28 PM

I spoke with your colleague Brett and received your email from him. My name is Jessica Jung with Japanese Daily News (Mainichi), working out of our Los Angeles bureau.

I have a couple questions regarding the nuclear crisis in Japan - Did the U.S. Agency for International Development assist with communicating information between the NRC and NISA? If so, can you give us information on the initial communication, so we document the first contact between U.S. and Japan's counterparts. Or refer us to someone who may know this information.

We hope that you can get back to us in a timely manner, as our time is limited. I appreciate any help you can provide us with.

With regards,

0000/117

--  
Jessica Jung  
The Mainichi Newspapers  
Los Angeles Bureau  
o: 310-396-7547  
c: [REDACTED] (b)(6)



## Cassidy, John

---

**From:** Krsek, Robert  
**Sent:** Tuesday, March 22, 2011 5:02 PM  
**To:** Cassidy, John  
**Cc:** Barclay, Kevin; Kunowski, Michael; Jandovitz, John  
**Subject:** Licensee Confirmed I-131 . .

So, the RP/Chem Manager stopped by. They have confirmed the rainwater is I-131, they hit 25+ peaks on the spectrum.

They also had a chemistry technician grab water samples from his home rain barrel at lunch and it had the same I-131 spectrum.

The licensee will continue to monitor and sample rain water so that they can establish adequate background readings for the site.

If you would like, I can keep updating you if and when they start finding other isotopes...

Thanks,

Robert G. Krsek  
Senior Resident Inspector  
Kewaunee Power Station  
Office: 920.388.3156  
Cell: (b)(6)

0000/118

**From:** Harrington, Holly  
**To:** Burnell, Scott; McIntyre, David  
**Cc:** Anderson, Brian  
**Subject:** RE: Media Inquiry From USAID  
**Date:** Tuesday, March 22, 2011 4:51:04 PM

---

No, we're the source of this. I'll handle.

**From:** Burnell, Scott  
**Sent:** Tuesday, March 22, 2011 4:31 PM  
**To:** Harrington, Holly; McIntyre, David  
**Cc:** Anderson, Brian  
**Subject:** RE: Media Inquiry From USAID

Brian took a look at this and correctly noted the Ops Ctr would be the most likely source. I suggest ping the Liason Team.

**From:** RMTPACTSU\_ELNRC [mailto:RMTPACTSU\_ELNRC@ofda.gov]  
**Sent:** Tuesday, March 22, 2011 4:27 PM  
**To:** Harrington, Holly; McIntyre, David; Burnell, Scott  
**Cc:** RMTPACTSU\_PRO  
**Subject:** Media Inquiry From USAID

Holly, David, Scott:

Below, I have enclosed a media inquiry that was sent to USAID by Jessica Jung of the Japanese Daily News. Can you help answer her questions? Thanks! ☺

**From:** Mainichi LA [mailto:mainichila@mainichi.com]  
**Sent:** Tuesday, March 22, 2011 3:28 PM

I spoke with your colleague Brett and received your email from him. My name is Jessica Jung with Japanese Daily News (Mainichi), working out of our Los Angeles bureau.

I have a couple questions regarding the nuclear crisis in Japan - Did the U.S. Agency for International Development assist with communicating information between the NRC and NISA? If so, can you give us information on the initial communication, so we document the first contact between U.S. and Japan's counterparts. Or refer us to someone who may know this information.

We hope that you can get back to us in a timely manner, as our time is limited. I appreciate any help you can provide us with.

With regards,

--

0000/119

Jessica Jung  
The Mainichi Newspapers  
Los Angeles Bureau  
o: 310-396-7547  
c: (b)(6)

**From:** Makela, Katy  
**To:** Valentin, Andrew; Ellis, Jennifer; Case, Michael; Eshen, Brian  
**Subject:** Re-evaluation of Safety at US NPPs  
**Date:** Tuesday, March 22, 2011 5:25:47 PM  
**Attachments:** makea001.docx  
makea002.docx

---

Dear Directors,

I have just had a meeting with Barry Elliot, recently retired from the NRC (again), who I believe you all know. He has signed up to be a consultant for my company, ATL. He suggested that I get in touch with the four of you to offer our services and ideas for the review of the domestic reactors that NRC is undertaking in light of the Japanese situation. To that end, I would like to share a letter that I sent to the NRC yesterday (see below).

I would like to have an opportunity to discuss some ideas that Barry has, and possibly bring along another member of our staff, Dr. P.T. Kuo, who is a former Director of NRR/DLR and has considerable seismic engineering experience. I will be calling you in the next couple of days to see if you are receptive to a short meeting.

In the meantime, thank you for any consideration you can give us.

Katy Makeig

**Advanced Technologies and  
Laboratories International, Inc.**

555 Quince Orchard Rd., Suite 500  
Gaithersburg, MD 20878-1461  
Phone: 301.972.4430  
Fax: 301.972.6904  
[www.ATLINTL.com](http://www.ATLINTL.com)

March 21, 2011

Dr. R. William Borchardt, Executive Director for Operations  
Dr. Eric Leeds, Director, Office of Nuclear Reactor Regulation (NRR)  
Dr. Brian Sherron, Director, Office of Nuclear Regulatory Research (RES)  
Dr. Catherine Haney, Director, Office of Nuclear Material Safety and Safeguards (NMSS)

U.S. Nuclear Regulatory Commission  
11555 Rockville Pike  
Rockville, MD 20852

Subject: President Obama's Request for U.S. Nuclear Reactor Safety Reviews

Last Thursday it was reported that President Obama asked the NRC for a comprehensive review of the safety of U.S. nuclear power plants in light of the events in Japan's Fukushima Dai-ichi plant. Senator Bernie Sanders, a member of the Environment and Public Works Committee, has called for an independent review by a special presidential commission with broad authority and a mandate to independently review the safety of every existing nuclear reactor and waste site in the United States. He also has called for the suspension of any new license renewal approvals. This will put a monumental burden on NRC resources.

Advanced Technologies and Laboratories International, Inc. (ATL) also is concerned about how events in Japan will affect the public's perception regarding the safety of nuclear power, the planned construction of new plants, and the approval of licenses to continue operation – beyond 40 and 60 years. We have been supporting the NRC for over 17 years. *We stand poised to assist the NRC in their time-critical efforts to reassure the public of the safety of the domestic fleet.*

Our engineers are experienced in nuclear power plant construction, operation, aging, and decommissioning. Many of

0000/120

these experts are retired from the NRC, the Department of Energy, the utility industry, or the National Laboratories. They are subject matter experts in the areas of nuclear engineering, risk assessment, nuclear safety, health physics, nuclear physics, criticality, mechanical engineering, electrical engineering, structural engineering, materials science, corrosion, fatigue, fire safety engineering, spent fuel, time-limited aging analysis, failure analysis, metallurgy, instrumentation and controls, and chemistry. We also have expertise in seismic engineering and hydrology/hydrogeology that is specifically geared to the generation of nuclear power.

We just helped NRC/DLR complete the update to the Generic Aging Lessons Learned (GALL) Report. ATL has been performing safety audits of plants in the license renewal process for the last five years, with reviews of 12 plants and associated contributions to the Safety Evaluation Reports (SERs). In fact, our engineers recently have performed these safety reviews at Pilgrim, Beaver Valley, Diablo Canyon, and Three Mile Island, four of the top ten plants that NRC has ranked as sites with the highest risk of core damage from an earthquake. In addition, ATL engineers with probabilistic risk assessment (PRA) expertise were involved in the Independent Assessment of the Implementation of Corrective Actions at the Davis-Besse Nuclear Power Station (DBNPS) Unit 1 that concluded with a report in 2009 regarding the effectiveness of the actions taken to correct the issues associated with the reactor vessel head corrosion.

Our corporate offices are located in Gaithersburg, Maryland, which makes us immediately accessible to the NRC staff. I would be happy to meet with you at your convenience to discuss how we might be of assistance. Please contact me at my office at 301-515-6799 or by email at [kmakeig@atlintl.com](mailto:kmakeig@atlintl.com). I look forward to hearing from you.

Sincerely,

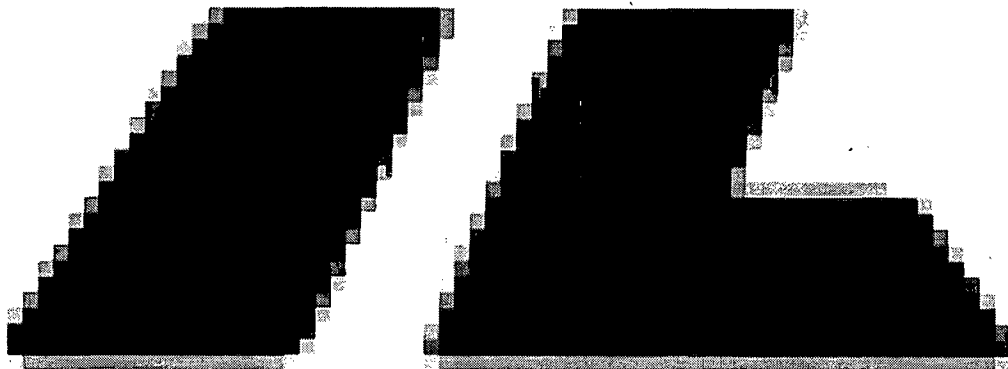
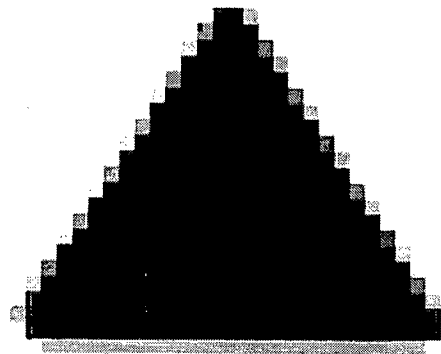
*Kathryn S. Makeig*

Kathryn S. Makeig, Director  
Environment and Nuclear Services  
ATL International, Inc.

Cc: Brian Holian, Director, NRC/DLR

**Katy Makeig**  
**Director of Nuclear and Environmental Services**  
**ATL International, Inc.**  
**555 Quince Orchard Road, Suite 500**  
**Gaithersburg, MD 20878**  
**301-515-6799 office**  
**(b)(6) cell**  
**301-972-6904 fax**  
**[kmakeig@atlintl.com](mailto:kmakeig@atlintl.com)**  
**[www.atlintl.com](http://www.atlintl.com)**

Attachment image001.emz (1272 Bytes) cannot be converted to PDF format.



**From:** Gibson, Kathy  
**To:** BES, DSA  
**Cc:** Sharon, Brian; While, Jennifer; Flory, Shirley; Rini, Brett; Armstrong, Kenneth; Ramirez, Annie; Case, Michael; Richards, Stuart; Cos, David; Coyne, Kevin  
**Subject:** Staff Adjustments for Japan Response  
**Date:** Tuesday, March 22, 2011 7:09:35 PM  
**Attachments:** Kathy Halvey Gibson.vcf

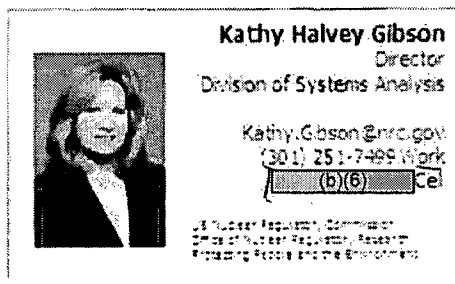
---

While Mike Scott is in Japan, Scott Elkins will be acting DSA deputy director this week, and Chris Hoxie will be acting deputy director next week (Mar 28-Apr 1).

While Ken Armstrong is supporting SPB with Japan event response and SOARCA, Annie Ramirez will be acting DSA technical assistant.

Richard Lee is our POC for Operations Center support.

Katie Wagner is the POC for information requests related to the Japanese events.



0000/121



Attachment Kathy Halvey Gibson\_7.vcf (5196 Bytes) cannot be converted to PDF format.

**From:** Burnell, Scott  
**To:** Kammerer, Annie; McIntyre, David; Harrington, Holly  
**Cc:** Ake, Jon; Munson, Clifford  
**Subject:** Re: EERI national reconnaissance reports - request to produce some information  
**Date:** Wednesday, March 23, 2011 5:55:02 AM

---

Annie;

My two cents -- you're quite right that EERI's focus lies outside our expertise and they should therefore avoid attempting to interpret or even summarize quake/tsunami effects on Fukushima, etc. I'm not sure we'd be the proper source, however, since we're dealing with a lot of second- and third-hand info. Properly attributing "public" sources could resolve that concern. If you have any spare time left, it'd be worthwhile from my point of view.

Scott

Sent from an NRC Blackberry  
Scott Burnell

(b)(6)

---

**From:** Kammerer, Annie  
**To:** Burnell, Scott; McIntyre, David  
**Cc:** Ake, Jon; Munson, Clifford  
**Sent:** Tue Mar 22 21:17:28 2011  
**Subject:** EERI national reconnaissance reports - request to produce some information

Not sure who to send this to...

The Earthquake Engineering Research Institute is funded by NSF to coordinate and lead US efforts in earthquake reconnaissance and the documentation of lessons learned. It's done through the EERI Learning from earthquakes (LFE) program. They do an excellent job at it and are exceptionally well respected globally. The participants are earthquake experts who are also members of the US earthquake reconnaissance team (like myself) who pitch in on a rotating pro-bono basis.

Of course, rarely does the earthquake impact (and therefore the reconnaissance effort) involve damage to a nuclear plant.

I was called by the EERI Board earlier today, because they were arguing over whether or not to report on the NPP. I strongly encouraged them not to because I don't think there's any chance they will get all the info right and (given their standing) that would be bad. But, it is the biggest story of the quake and so not adding something is nearly impossible for them. I said I'd ask if we could instead submit a section of our own so that they could be more complete and we could get our preferred message out to the earthquake engineers out there.

I want to stress that the EERI LFE program is the clearing house for the entire earthquake engineering community globally; not just another publication

Do you think this is possible to given them a factual write up of public information? I'm happy to write it, but I feel that I should get permission from someone if it's actually written

0000/122

by the NRC.

Advice?

Annie

See info at <http://www.eeri.org/site/projects/learning-from-earthquakes>

Dr. Annie Kammerer, PE  
Senior Seismologist and Earthquake Engineer  
US Nuclear Regulatory Commission  
Office of Nuclear Regulatory Research  
Washington DC 20555

(b)(6) mobile

(b)(6) BB

## Huffert, Anthony

---

**From:** Huffert, Anthony  
**Sent:** Wednesday, April 20, 2011 5:20 AM  
**To:** Meighan, Sean  
**Cc:** Gepford, Heather  
**Subject:** FW: INFORMATION ONLY: Heads up on discussions on LLRW  
**Attachments:** RE: LLRW Disposition; FW: LLRW Disposition; RE: LLRW Disposition, LLRW Disposition (2)

Sean - info on LLW - Tony

**From:** LIA08 Hoc  
**Sent:** Wednesday, April 13, 2011 5:20 PM  
**To:** Blamey, Alan; Wittick, Brian  
**Subject:** INFORMATION ONLY: Heads up on discussions on LLRW

Hi Guys! I wasn't sure exactly who might want to know this so I am sending this to the two guys that I know are in Country!

Just a HEADS UP for the Site Team on a series of Emails that the NRC has been working with Julie Benz (Director for Nuclear Defense Policy National Security Staff in the White House on Low Level Rad Waste Issues.

Our PMT provided answers back ( found in the *second* attachment FW: LLRW Disposition) and there were a host of other agencies that weighed in also.

In the spirit of keeping the Japan Team in the loop, I am sending this email "package" of the emails sent on the issues of which regulations /who's jurisdiction might apply to any waste that might come out of the Japan event . It appears as though there was a meeting with MOFA on April 14<sup>th</sup> according to the *email below* from Dr. Idar of OSD—

Again, the email strings attached are simply for your awareness.

Thanks

Lisa

Lisa Gibney Wright  
Liaison Team Coordinator  
US Nuclear Regulatory Commission  
email: [lia08.hoc@nrc.gov](mailto:lia08.hoc@nrc.gov)  
Desk Ph: 301-816-5185

*From Dr. Idar:*

Hi All:

Please accept my heartfelt thanks for your great IA assistance on applicable regulations and requirements regarding LLRW disposition.

We have been notified that an initial discussion has been scheduled with the MOFA tomorrow (14 April), and I've requested specific POC information regarding those who are participating in the meeting there.

0000/123

Please allow me to also note, per Mr. Dan Schultheisz e-mail, that we have had the DoD Environmental Executive (Army) in the loop with respect to our LLRW questions. There is a set of guidance, Japanese Environmental Governing Standards (JEGS), that provide environmental compliance criteria; however, radioactive materials are not included.

Thanks!  
Deanne

Deanne J. Idar, Ph.D.  
Senior Science Advisor  
OSD(P)-GSA/CWMD/ CBRN Defense Policy  
Office: Rm 5C746 Pentagon  
Phone: 703-571-2327  
Blackberry: (b)(6)

**Landau, Mindy**

---

**From:** Landau, Mindy  
**Sent:** Wednesday, March 23, 2011 8:28 AM  
**To:** Wittick, Brian  
**Cc:** Andersen, James; Muessle, Mary; Rihm, Roger; Elmers, Glenn; Wyatt, Melissa  
**Subject:** RE: NYS delegation visit

Great, these would be appropriate to give to RI for the MA briefing, along with the list of commitments NRR provided to New York State. Let's keep all these materials in a file on the G: drive (or on the Sharepoint site - contact Melissa for help) so we have access to them for future requests.

Thanks, Brian.

Mindy

---

**From:** Wittick, Brian  
**Sent:** Wednesday, March 23, 2011 8:18 AM  
**To:** Landau, Mindy  
**Subject:** FW: NYS delegation visit

FYI

Brian Wittick  
Executive Technical Assistant for Reactors  
Office of the Executive Director for Operations  
U.S. Nuclear Regulatory Commission  
301-415-2496 (w), (b)(6) (c)

---

**From:** Wittick, Brian  
**Sent:** Tuesday, March 22, 2011 5:18 PM  
**To:** Castleman, Patrick; Warnick, Greg; Marshall, Michael; Hipschman, Thomas; Snodderly, Michael; Orders, William; Franovich, Mike  
**Cc:** Andersen, James; Bowman, Gregory  
**Subject:** NYS delegation visit

Attached please find the brief that was prepared for this morning's meeting with NYS LtGov Duffy and delegation. Due to last minute meeting changes from the NYS delegation the planned brief was little used.

Please let me know if you have questions.

Thanks  
Brian Wittick  
Executive Technical Assistant for Reactors  
Office of the Executive Director for Operations  
U.S. Nuclear Regulatory Commission  
301-415-2496 (w), (b)(6) (c)

0000/124

**From:** Giantelli, Adelaide  
**To:** McIntyre, David  
**Subject:** FW: RE: BLOOD COMPONENT IRRADIATION QUESTIONS  
**Date:** Wednesday, March 23, 2011 9:40:24 AM

---

Dave,

We received a question from Paul Mintz who is writing an article for TRANSFUSION. Please see the email chain below. He asked about what are Orders, and what's their enforceability. A quick answer - Orders are equivalent to regulations and if a licensee is non-compliant - we have a range of options for taking enforcement action against the licensee up to and including revocation of a licensee.

Do you have a standard answer that can be provided to him? Or do you have advice on how to answer him? Should we point him to our public website on enforcement? Should I send this to OE for their buy-in before responding? I know you are swamped, but your advice is appreciated.

Thanks,  
Adelaide

-----Original Message-----

**From:** Burgess, Michele  
**Sent:** Wednesday, March 23, 2011 9:01 AM  
**To:** Giantelli, Adelaide  
**Cc:** Luehman, James; White, Duane; Villamar, Glenda  
**Subject:** RE: RE: BLOOD COMPONENT IRRADIATION QUESTIONS

NRC Orders are enforceable.

I don't know of any "canned" answer for this, but the range of enforcement actions that can be taken are in the NRC Enforcement Policy, which is on the NRC public website. If this isn't sufficient, then we can see if OE wants to field detailed Q on the NRC enforcement process (in particular if this is going to be quoted in an article).

From the NRC Enforcement Policy on the NRC public website:  
<http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>

The U.S. Nuclear Regulatory Commission (referred to as the NRC, Commission, or Agency) Enforcement Policy sets forth the general principles governing the NRC's enforcement program and the Commission's expectations regarding the process to be used by the NRC to assess and disposition violations of NRC requirements. However, this is a policy statement and not a regulation. The Commission may deviate from this statement of policy as appropriate under the circumstances of a particular case. The Policy also describes how organizations and individuals subject to NRC enforcement actions can provide input to the process.

#### 1.1 Purpose

The NRC Enforcement Policy supports the NRC's mission to ensure adequate protection of public health and safety, promote the common defense and security, and protect the environment. Compliance with NRC requirements, including regulations, technical specifications, license conditions, and Orders, provides reasonable assurance to the NRC and the public that safety and security are being maintained. The application of this Policy ensures that associated enforcement actions properly reflect the safety or security significance of such violations. Consistent with this objective, the Enforcement Policy endeavors to do the following:

- a. Deter noncompliance by emphasizing the importance of compliance with NRC requirements.
- b. Encourage prompt identification and prompt comprehensive correction of violations of NRC requirements.

0000/125

## 2.3 Disposition of Violations

This section describes the various ways that the NRC can disposition violations.

### 2.3.1 Minor Violation

Violations of minor safety or security concern generally do not warrant enforcement action or documentation in inspection reports but must be corrected

### 2.3.2 Noncited Violation

Severity Level IV violations and violations associated with green ROP findings are normally dispositioned as noncited violations (NCVs). Inspection reports or inspection records document NCVs

### 2.3.3 Notice of Violation

A Notice of Violation (NOV) (see 10 CFR 2.201) is a written notice setting forth one or more violations of a legally binding requirement and may require the recipient to provide a written response ...

### 2.3.4 Civil Penalty

### 2.3.5 Orders

An Order is a written NRC directive to modify, suspend, or revoke a license; to cease and desist from a given practice or activity; or to take such other action as may be proper (see 10 CFR 2.202, "Orders"). Orders may be issued in lieu of, or in addition to, civil penalties, as appropriate, for Severity Level I, II, and III violations.

## 3.0 USE OF ENFORCEMENT DISCRETION

The NRC may choose to exercise discretion and either escalate or mitigate enforcement sanctions or otherwise refrain from taking enforcement action within the Commission's statutory authority. The exercise of discretion allows the NRC to determine what actions should be taken in a particular case, notwithstanding the guidance contained in this statement of policy. After considering the general tenets of this Policy and the safety and security significance of a violation and its surrounding circumstances, judgment and discretion may be exercised in determining the severity levels of violations and the appropriate enforcement sanctions to be taken.

-----Original Message-----

From: Giantelli, Adelaide  
Sent: Tuesday, March 22, 2011 10:50 AM  
To: Burgess, Michele  
Subject: FW: RE: BLOOD COMPONENT IRRADIATION QUESTIONS

Michele,

Do we have a standard answer when someone asks about the enforceability of orders? Please see the question we received below. Thanks.

Adelaide

-----Original Message-----

From: Jones, Cynthia  
Sent: Tuesday, March 22, 2011 8:15 AM  
To: Jankovich, John; Giantelli, Adelaide  
Subject: RE: RE: BLOOD COMPONENT IRRADIATION QUESTIONS

Short answer: Yes- its enforceable.

Depending on the violation, loss of license, CPenalty, etc...

---

From: Jankovich, John  
Sent: Tuesday, March 22, 2011 7:49 AM  
To: Giantelli, Adelaide



Cc: Jones, Cynthia  
Subject: FW: RE: BLOOD COMPONENT IRRADIATION QUESTIONS

Adelaide,  
I am forwarding the e-mail below because it is about security.  
Please have your staff answer the question below about the Orders.  
John

From: pdmintz@gmail.com [mailto: (b)(6)]  
Sent: Tuesday, March 22, 2011 7:43 AM  
To: Jankovich, John  
Subject: Re: RE: BLOOD COMPONENT IRRADIATION QUESTIONS

Dr. Jankovich:

Thank you very much for your helpful response.

I have a theoretical question. Do the NRC "orders" such as those issued Nov. 14 2005 carry the force of law? If an institution was not compliant with them, what are the possible penalties? Loss of license? Civil? Criminal? My colleagues and I are uncertain. This is just for completeness in my editorial.

Thanks,

Paul Mintz

On Mar 22, 2011 7:21am, "Jankovich, John" <John.Jankovich@nrc.gov> wrote:

> Mr. Mintz, I am responding to your e-mail for Cyndi Jones because she is working now on nightshifts in the NRC Operations Center as related to the reactor events in Japan. All documentation related to the CsCI Policy Statement and the public meeting is accessible at: <http://www.nrc.gov/materials/miau/licensing.html#cc> I hope that this link will work. If not, please contact me again by e-mail or call at 301 415-7904. John P. Jankovich, Ph.D. Team Leader Sealed Source and Device Registrations Office of Federal and State Materials and Environmental Management Programs U.S. Nuclear Regulatory Commission Washington, DC 20555

> From: Paul Mintz (b)(6)  
> To: Jones, Cynthia  
> Sent: Fri Mar 18 15:02:38 2011  
> Subject: Re: BLOOD COMPONENT IRRADIATION QUESTIONS

> Cyndi:

>  
> The upper link just won't connect to anything, whether I click or copy/paste.

>  
> The lower one works great.

>  
> Can you confirm the upper one is correct?

>  
> Thanks,

>  
> Paul

>  
> Can you On Fri, Mar 18, 2011 at 12:16 PM, Jones, Cynthia Cynthia.Jones@nrc.gov> wrote:

> Paul- Sorry for not answering sooner as I am currently working in our Operations Center on shift work in response to the events in Japan at their nuclear power stations. We are currently in the process of developing a Commission paper which included the suggested revisions to the Policy Statement from the stakeholders that attended the workshop and provided written comments to us from the Federal register notice (see <http://webwork.nrc.gov:300/materials/miau/licensing.html#cc>). The requirements for a license pertain to the ownership and use of the radioactive material in the irradiator (Cs-137). 10 CFR Parts 30, 32, 33 are the most applicable for these self-shielded irradiators (see the requirements on page 4-1 of the following NUREG-1556, Vol. 5): <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1556/v5/> If you have other questions, please don't hesitate to ask- Cyndi Cynthia G. Jones, Ph.D., Sr. Technical Advisor for Nuclear Security U.S. Nuclear Regulatory Commission Office of

Nuclear Security & Incident Response Mail Stop T4-D22A, Washington, D.C.

20555cynthia.jones@nrc.gov cynthia.jones@nrc.gov Work: 301-415-0298 Blackberry: (b)(6) From:

Paul Mintz [mailto:(b)(6)]

> Sent: Wednesday, March 16, 2011 9:15 AM

> To: Jones, Cynthia

> Subject: BLOOD COMPONENT IRRADIATION QUESTIONS

> Cyndi:

>

> A few months ago you kindly pointed me to the NRC requirements for CsCl-source blood irradiators for an editorial I am writing about this matter for TRANSFUSION. These have been very helpful.

>

> Please excuse my ignorance as an MD, but I would appreciate your affirming that these requirements have the force of law. Is there anything in the CFR yet?

>

> Can you briefly confirm that a license is required by law as well for establishments that irradiate blood?

>

> I have the clinical and technical aspects down but obviously I am on a learning curve with respect to the NRC.

>

> Thanks for any further help you can provide.

>

> Kind regards,

>

> Paul Mintz

>

> (b)(6)

>

>

>

>

>

>

>

>

From: Bacuta, George C Jr MVN  
To: Case, Michael; Rosenberg, Stacey  
Cc: Imboden, Andy; Attard, Anthony; Mendiola, Anthony  
Subject: The M9.0 Great Tohoku Earthquake (northeast Honshu, Japan) of March 11, 2011  
Date: Thursday, March 24, 2011 12:34:50 PM

---

Great USGS diagrams plans and x-section, slab definition, focal mechanism, ground acceleration and slip estimates in link below!

<http://hazards.cr.usgs.gov/maps/signets/20110311/20110311.pdf>

-----Original Message-----

From: Bacuta, George C Jr MVN  
Sent: Tuesday, March 22, 2011 12:04 PM  
To: 'Case, Michael'; 'Rosenberg, Stacey'  
Cc: 'Imboden, Andy'; 'Attard, Anthony'; 'Mendiola, Anthony'  
Subject: RE: Atlantic Ocean Tsunamis

Resend: Maybe cut and paste of the youtube video link would work .... note horizontal and vertical displacements : Left frame Japan archipelago being displaced (horizontally) towards the right (Pacific Ocean); Right frame, ground surface and ocean bottom surface (vertically) displacing upward (Japan archipelago) and downward (Pacific ocean submarine surface/bottom).

From: Neil Chapman (mailto: [REDACTED] (b)(6))  
Sent: 21 March 2011 22:36  
To: Charles McCombie; Ian McKinley; TTC  
Subject: Real time GPS ripple

This 30 second interval GPS record for the whole of Japan is quite astonishing:

<http://www.youtube.com/v/1QCCvqZgNKw>

amazing!

\*\*\*\*\*  
Professor Neil Chapman

Principal

MCM McCombie Chapman McKinley Consulting

Postfach, 5405 Baden/Dättwil, Switzerland

[www.mcm-international.ch](http://www.mcm-international.ch)

\*\*\*\*\*

0000/126

-----Original Message-----

From: Bacuta, George C Jr MVN  
Sent: Tuesday, March 22, 2011 11:53 AM  
To: 'Case, Michael'; 'Rosenberg, Stacey'  
Cc: 'Imboden, Andy'; 'Attard, Anthony'; 'Mendiola, Anthony'  
Subject: RE: Atlantic Ocean Tsunamis

Mike: Amazing horizontal and vertical motions (GPS recorded) of the Japan EQ.

This 30 second interval GPS record for the whole of Japan is quite astonishing:

<http://www.youtube.com/v/1QCcVqZgNKw>

amazing!

\*\*\*\*\*  
Professor Neil Chapman

Principal

MCM McCombie Chapman McKinley Consulting

Postfach, 5405 Baden/Dättwil, Switzerland

[www.mcm-international.ch](http://www.mcm-international.ch)

-----Original Message-----

From: Bacuta, George C Jr MVN  
Sent: Tuesday, March 22, 2011 11:06 AM  
To: 'Case, Michael'; Rosenberg, Stacey  
Cc: Imboden, Andy; Attard, Anthony; Mendiola, Anthony  
Subject: RE: Atlantic Ocean Tsunamis

Hi Mike: Thanks for the NRC's info on tsunamis in the Atlantic and Caribbean ponds. Glad to see NRC's robust tsunami analyses with Woods Hole and NOAA (Seattle) involved.

The recent (2010) Haiti fault as well the 1918 Puerto Rico event interest me most as proximally they are at a striking distance for Turkey Point and St. Lucie in Florida (though magnitudes are more likely not comparable to western Pacific).

I went to Cornell for Grad School in the 80's, and I have been tutored by Geophysicists including Jack Oliver and Brian Isacks and structural/marine geologist Daniel Karig. Jack and Brian are considered as one of the many fathers of plate tectonics, mainly due to their work in subduction zones in the Pacific and Chile while Dan investigated plate margin tectonics / interactions (mainly accretion and jostling of plates) in the Philippines, Marianas, Indonesia, Turkey and Iran. These folks are heavy into plate motions, interactions and coupling.

Attach is my recent communication yesterday with one of their students, Dr. Eric Fielding (a geophysicist), who now works at NASA-JPL at Caltech. He

studied the 2010 Haiti earthquake and noted some thrust component (i.e. some vertical slip). He also studied the plate motions on last week Japan's M9 and I happen to read his opinion below in one of the news clips (so I googled him and e-mailed him):

"...But last week's tremor changed the coastal landscape-and not just above sea level. It created a trench in the sea floor 380 km long and 190 km wide as one tectonic plate dove nine meters beneath another, said Eric Fielding of NASA's Jet Propulsion Laboratory."

This is huge motion (underthrusting) ~ 9 meters or 27 feet.

These geophysicists coming out of Cornell in the 80's know their plate and microplate motions (and can define possible coupling of blocks/plates/microplates). Their data can provide the tsunami experts some info (e.g. re-energy or magnitude, coupling of blocks, plate /micro-plate motions for wave propagation/generation) resulting from plate/fault block interactions. Eric indicated that Eric Calais at Perdue (or Purdue) and Paul Mann at UT Austin work on Caribbean tectonics but he is not sure if they look at tsunami issues (see attach e-mail). Another Cornell product that is very good in plate interactions is Dr. Michael Hamburger, now a Professor at Indiana University, he did a lot of research in the Philippines (western Pacific), a country so tectonically active it looks like Japan (subduction zones and volcanoes) and California (San Andreas Fault) combined; recently one of Mike students had published a very comprehensive paper that investigated coupling, movement and relative (micro)plate motions in the Philippines.

George

-----Original Message-----

From: Case, Michael [mailto:Michael.Case@nrc.gov]  
Sent: Tuesday, March 22, 2011 6:14 AM  
To: Bacuta, George C Jr MVN; Rosenberg, Stacey  
Cc: Imboden, Andy; Attard, Anthony; Mendiola, Anthony  
Subject: RE: Atlantic Ocean Tsunamis

Thanks George. Attached is some info on some of our latest research on Tsunamis on the Atlantic side to support new reactor licensing.

-----Original Message-----

From: Bacuta, George C Jr MVN [mailto: (b)(6)]  
Sent: Monday, March 21, 2011 10:46 AM  
To: Rosenberg, Stacey  
Cc: Imboden, Andy; Attard, Anthony; Mendiola, Anthony; Case, Michael  
Subject: FW: Atlantic Ocean Tsunamis

Hi Stacey: Saw your pic at Operation Center, glad to know you are on the case. Saw the link also of NRC's FAQs on seismicity/subduction zones around CONUS.

You may want to add to address in a FAQ also on possible Atlantic tsunamis. In particular are the October 11, 1918 Puerto Rico (historical) and possible those transform faults at the Cuba/Haiti(recent)-Dominican Republic plates or micro-plates. Puerto Rico's is related to subduction zone tectonics as well a dip component at the Haiti transform faults may render the power plants in Florida (Miami-Homestead/Turkey Point area and Indian Point/Jupiter Area) and SE US vulnerable (see link below from the Geology Journal <http://geology.com/ncaa/atlanctic-ocean-tsunami/>). I cc-copy Mike Case since the FAQs (<http://www.nrc.gov/japan/faqs-related-to-japan.pdf>) may be coming

from Research and NRO, and may miss the atlantic ocean tsunamis.

George

-----Original Message-----

From: George Bacuta (mailto:[REDACTED])  
Sent: Friday, March 18, 2011 8:22 PM  
To: Bacuta, George C Jr MVN  
Subject: Atlantic Ocean Tsunamis

Atlantic Ocean Tsunamis  
Maps of Atlantic Tsunami Travel Times  
Travel Time Maps Composed by NOAA using Tsunami Travel Time Software.

<http://geology.com/noaa/atlantic-ocean-tsunami/>

#### Atlantic Ocean Tsunamis: Rare but Possible

A tsunami in the Atlantic Ocean is a rare event. Part of the reason for this low incidence of tsunamis is the lack of subduction zones - the most common source of tsunami-causing earthquakes.

Although the incidence of Atlantic tsunamis is low the threat should be taken seriously because millions of people live in low-elevation locations around the rim of the Atlantic basin. The travel time maps below show that once a tsunami is generated the response time for mass evacuation can be uncomfortably short.

#### Subduction Zones

The only subduction zones in the Atlantic basin are along the eastern edge of the Caribbean Plate and the eastern edge of the Scotia Plate in the South Atlantic. These subduction zones are small, they are not exceptionally active and that accounts for the low incidence of earthquake-generated tsunamis.

The magnitude 7.3 earthquake that occurred off the northwest coast of Puerto Rico on October 11, 1918 was a subduction zone earthquake. It generated a tsunami with a run-up height of 6 meters that cause extensive damage and killed over 100 people. A travel time map for this tsunami can be seen below.

#### Lisbon, Portugal - 1755

The most widely known Atlantic Ocean tsunami struck Lisbon, Portugal on November 1, 1755. It was caused by a magnitude 8.6 earthquake beneath the floor of the Atlantic about 100 miles offshore. This earthquake and associated tsunami destroyed most of the city of Lisbon. Waves up to 12 meters high hit the coastlines of Spain and Portugal just minutes after this earthquake. Over nine hours later waves with seven meter runup heights arrived in the Caribbean and caused significant damage. The earthquake and tsunami killed between 60,000 and 100,000 people. A travel-time map for this tsunami is shown below.

### Submarine Landslides

Submarine landslides have caused tsunamis in the Atlantic Ocean. On November 18, 1929, an earthquake on the southern edge of the Grand Banks, south of Newfoundland, triggered a large submarine landslide that generated a tsunami. That tsunami was recorded all along the eastern coast of the United States and in the Caribbean. At least 28 people were killed in Newfoundland. A travel time map for this tsunami is shown below.

Some researchers believe that a large landslide in the Canary Islands could generate a tsunami with basin-wide impact. Faults on the southwest side of La Palma Island associated with Cumbre Vieja Volcano could be the detachment surface of a mega-landslide (see image at right).

## Nelson, Robert

---

**From:** Nelson, Robert  
**Sent:** Wednesday, March 23, 2011 10:04 AM  
**To:** Broaddus, Doug; Campbell, Stephen; Carlson, Robert; Chernoff, Harold; Kulesa, Gloria; Markley, Michael; Pascarelli, Robert; Salgado, Nancy; Simms, Sophonia; Wall, Scott  
**Cc:** Gitter, Joseph; Howe, Allen; Cox, Linda  
**Subject:** Action: Work Schedule and Pay Guidance for Responders to Japan Events  
**Attachments:** FW: Work Schedule and Pay Guidance for Reponders to Japan Events; image001.png

See below and ensure all staff are aware of applicability. See me if you have any Qs.

## NELSON

---

**From:** Davidson, Lawrence  
**Sent:** Tuesday, March 22, 2011 5:45 PM  
**To:** Nelson, Robert  
**Cc:** Thomas, Eric; Givvines, Mary; Ferrell, Kimberly; Gitter, Joseph; Markley, Michael; Oesterle, Eric; Chernoff, Harold; Johns, Nancy; Scott, Tracy; Tallarico, Alison  
**Subject:** RE: Query: Work Schedule and Pay Guidance for Responders to Japan Events

Individuals who perform work directly in support of the events in Japan are covered, even if they don't physically perform that work in the Ops Center or in Japan.

---

**From:** Nelson, Robert  
**Sent:** Tuesday, March 22, 2011 4:21 PM  
**To:** Davidson, Lawrence  
**Cc:** Thomas, Eric; Givvines, Mary; Ferrell, Kimberly; Gitter, Joseph; Markley, Michael; Oesterle, Eric; Chernoff, Harold  
**Subject:** Query: Work Schedule and Pay Guidance for Responders to Japan Events

Several NRR staff are working in support of our response to the Japan events but are not working shifts in the Ops Center. For example, staff are providing ongoing support: for the development of Qs & As; meetings with state officials and Congressional staff; Commission meetings and related taskings, etc. This support has, and will continue to require, some late nights and weekend work. Please clarify if these individuals are within the scope of the attached guidance. If not, consideration should be given to expanding its scope.

*Robert A. Nelson*

Robert A. Nelson  
Deputy Director  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation



E-mail: [robert.nelson@nrc.gov](mailto:robert.nelson@nrc.gov) | Office: (301) 415-1453 | Cell: (b)(6) | Fax: (301) 415-2102



From: Kammerer, Annie  
To: Burnell, Scott; Hilland, Patrick; Skeen, David; Case, Michael; RST01 Hoc  
Cc: Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Chokshi, Niles; Munson, Clifford; Karas, Rebecca; Ake, Jon; Uhle, Jennifer; Uselding, Lara; Hayden, Elizabeth; Dricks, Victor; Warnick, Greg  
Subject: Re: Seismic Q&As March 22th 10pm update  
Date: Wednesday, March 23, 2011 11:55:52 AM

Yes. But, It's consistent with both the NOAA estimates with the 5m bathymetric line and presentations on the tsunami assessments that I've seen TEPCO make, and also their plant elevations.

Cheers,  
Annie

Sent from an NRC blackberry

Annie Kammerer

mobile (b)(6)

bb (b)(6)

annie.kammerer@nrc.gov

----- Original Message -----

From: Burnell, Scott

To: Kammerer, Annie; Hilland, Patrick; Skeen, David; Case, Michael; RST01 Hoc

Cc: Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Chokshi, Niles; Munson, Clifford; Karas, Rebecca; Ake, Jon; Uhle, Jennifer; Uselding, Lara; Hayden, Elizabeth; Dricks, Victor; Warnick, Greg

Sent: Wed Mar 23 05:45:06 2011

Subject: Re: Seismic Q&As March 22th 10pm update

Thanks Annie!

We'll give these a once-over and get them posted today.

It probably goes without saying, but NEI quoting TEPCO isn't the sort of "definitive" info we should be repeating outside the agency. They could well be right, but it's always better to be able to refer to the direct source instead of going through intermediaries. Thanks.

Scott

Sent from an NRC Blackberry

Scott Burnell

(b)(6)

----- Original Message -----

From: Kammerer, Annie

To: Kammerer, Annie; Hilland, Patrick; Skeen, David; Case, Michael; RST01 Hoc

Cc: Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Niles; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castleman, Patrick; Sharkey, Jeffry; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas; Webb, Michael; Manoly, Kamal; Khanna, Meena; Screndi, Diane; Thomas, Eric; Nguyen, Quynh; Meighan, Sean; FOIA Response.hoc Resource; Bens, Michelle

Sent: Wed Mar 23 03:14:31 2011

Subject: Seismic Q&As March 22th 10pm update

All,

Attached please find an updated set of Q&As. I also included some new Q&As for SONGS and Diablo Canyon, just in case anyone is interested.

This version has an expanded set of definitions and new sections on station blackout, spent fuel, flooding and some other topics. It also has fewer duplicate questions.

Let me also pass on a tidbit of info. According to TEPCO (via an NEI press release), the tsunami at Fukushima was 14 meters and the design tsunami level was 5.7 meters. The reactors and backup power sources were at 10 meters and at 13 meters. Ouch.

Cheers,

0000/128

Annie

---

From: Kammerer, Annie  
Sent: Sunday, March 20, 2011 11:00 PM  
To: Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc  
Cc: Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Niles; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castleman, Patrick; Sharkey, Jeffry; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas; Webb, Michael; Manoly, Kamal; Khanna, Meena; Screnci, Diane; Thomas, Eric; Nguyen, Quynh; Meighan, Sean; FOIA Response.hoc Resource; Bensi, Michelle  
Subject: Seismic Q&As March 20th 8pm update

All,

Here's today's version. It includes updates on related topics for tomorrow's briefing. Also, some of the sections have been streamlined and some (though not all) of the answers have been updated.

The biggest news from the seismic team's perspective is that starting tomorrow a very bright young risk analyst (Michelle Bensi) who recently joined us from UC Berkeley (my beloved alma mater) will be helping with the compilation of this document. That will allow our team to spend more time cleaning and streamlining it, which inevitably will make it more user friendly. and shorter! Starting with tomorrow's version her name will start to show up on the front.

Best of luck to everyone with the briefing tomorrow!

Annie

---

From: Kammerer, Annie  
Sent: Saturday, March 19, 2011 9:00 AM  
To: Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc  
Cc: Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Niles; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castleman, Patrick; Sharkey, Jeffry; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas; Webb, Michael; Manoly, Kamal; Khanna, Meena; Screnci, Diane; Thomas, Eric; Nguyen, Quynh; Meighan, Sean; FOIAResource.hoc@nrc.gov  
Subject: Seismic Q&As March 19th 8am update

All,

Here is today's updated version. Lot of new fact sheets have been prepared for various briefings and for Monday's public meeting!

However, the big news of the day is that we just sent off a 6 page, 22 question, much better edited version for a public Q&A set. It's all in OPA's capable hands now. I think it's pretty good...but then I'm biased.

Cheers,  
Annie

---

From: Kammerer, Annie  
Sent: Friday, March 18, 2011 6:51 AM  
To: Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc  
Cc: Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Niles; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castleman, Patrick; Sharkey, Jeffry; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Dogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas; Webb, Michael; Manoly, Kamal; Khanna, Meena; Screnci, Diane; Thomas, Eric; Nguyen, Quynh; Meighan, Sean  
Subject: RE: Seismic Q&As March 18th 5am update

All,

Please see the updated version of the Seismic Q&As.

Among today's highlights:

- \*We added a Terms and Definitions section at the end of the document. (We know that an acronym list would be helpful too, but it will have to wait a little)
- \*The "additional information" section has been split into tables, plots, and fact sheets
- \*A high-level draft fact sheet on NRC's seismic regulations has been added
- \*We added a section to track outstanding questions that have come in from congress. This will support those who get the tickets in the short terms (most likely NRR). The questions will be moved to the appropriate sections long term (as long as they are not duplicates.)

I'm sure we all agree this has been a crazy week! We're hoping that the weekend workload is lighter (if only because we won't get as many email from in house) and we can clean up this document and fill in some of the missing answers in preparation for the news story changing. We're trying hard to get out in front of the next wave.

Cheers,  
Annie

---

From: Kammerer, Annie

Sent: Thursday, March 17, 2011 2:36 AM

To: Kammerer, Annie; Hiland, Patrick; Skeen, David; Case, Michael; RST01 Hoc

Cc: Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Chokshi, Nilesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Glitter, Joseph; Howe, Allen; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Munson, Clifford; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael; Orders, William; Santiago, Patricia; Snodderly, Michael; Baggett, Steven; Sosa, Belkys; Davis, Roger; Franovich, Mike; Castleman, Patrick; Sharkey, Jeffry; Boska, John; Ma, John; Tegeler, Bret; Patel, Pravin; Shams, Mohamed; Morris, Scott; Brenner, Eliot; Harrington, Holly; Seber, Ogan; Ledford, Joey; Johnson, Michael; Virgilio, Martin; Holahan, Vincent; Bergman, Thomas

Subject: Seismic Q&As March 17th 2am update

All,

As promised, a sharepoint site has been set up where our friends in NRR will be posting the latest version of the Seismic Q&A document on an ongoing basis. If someone would prefer to use the sharepoint site, instead of being on this distribution list, please let me know...

<http://portal.nrc.gov/edo/nrr/NRR%20IA/FAQ%20Related%20to%20Events%20Occurring%20in%20Japan/Forms/AllItems.aspx>

This latest update has a number of new questions (not many with answers today, but we are working hard). A high priority question we are working on is "how many plants are near a mapped active fault". We're focusing on anything within 50 miles. We're also pulling relevant questions from the congressional inquiries we just received, and will also give these high priority to support any needs by NRR.

Many new figures and some draft fact sheets have added to the "additional information" section. These include the NRO half of a tsunami fact sheet...a description of the tsunami research is still to come from RES.

Some good news: Yesterday's version seems to have been widely forwarded around the agency. So, we are also starting to get some excellent questions from staff looking forward. This is allowing us to feel that we are finally getting out in front of things to a small degree. Also, our team has grown and we now have someone acting as source of seismic expertise for the 11pm to 7 am shift. This means that we now have seismic experts available to the RST and OPA at the Op Center 24 hours, with 2 people during the day. That extra support is allowing us to get this out at least an hour earlier today ☺

We are continuing to compile the questions that come in and update the seismic Q&A document. If you have suggested changes, or want to provide missing answers, please forward them to me for compilation.

This is a living document and will be updated daily in the foreseeable future.

Happy St. Paddy's Day. May the world (especially our friends in Japan) have the luck of the Irish today.

Cheers,  
Annie

Dr. Annie Kammerer, PE  
Senior Seismologist and Earthquake Engineer  
US Nuclear Regulatory Commission  
Office of Nuclear Regulatory Research  
Washington DC 20555

(b)(6) mobile

(b)(6) 88

From: Kammerer, Annie

Sent: Tuesday, March 15, 2011 3:41 AM

To: Hiland, Patrick; Skeen, David

Cc: Howe, Allen; Nelson, Robert; Stutzke, Martin; Glitter, Joseph; Rihm, Roger; McDermott, Brian; Hasselberg, Rick; Kammerer, Annie; Chokshi, Nilesh; Munson, Clifford; Cook, Christopher; Flanders, Scott; Ross-Lee, MaryJane; Brown, Frederick; Glitter, Joseph; Howe, Allen; Case, Michael; Ruland, William; Dudes, Laura; Karas, Rebecca; Ake, Jon; Munson, Clifford; Hogan, Rosemary; Uhle, Jennifer; Marshall, Michael; Uselding, Lara; Randall, John; Allen, Don; Burnell, Scott; Hayden, Elizabeth; Pires, Jose; Graves, Herman; Candra, Hernando; Murphy, Andrew; Murphy, Andrew; Pires, Jose; Hogan, Rosemary; Sheron, Brian; Dricks, Victor; Warnick, Greg; Reynoso, John; Lantz, Ryan; Markley, Michael  
Subject: latest version of Q&As

All,

This is the first draft of the seismic-specific Q&As. It is pretty rough and there are many answers still missing, but people have contributed a lot and we thought it may be useful for many people trying to answer questions coming in.

We are continuing to compile the questions that come in and update the seismic Q&A document. If you have suggested changes, or want to provide missing answers, please forward them to me for compilation.

This is a living document and will be updated daily in the foreseeable future.

Annie

Dr. Annie Kammerer, PE  
Senior Seismologist and Earthquake Engineer  
US Nuclear Regulatory Commission  
Office of Nuclear Regulatory Research  
Washington DC 20555

(b)(6) mobile

(b)(6) BB

**From:** Harrington, Holly  
**To:** OST05 Hoc; McIntyre, David  
**Cc:** Noonan, Amanda  
**Subject:** RE: HHS-organized calls - 2 call types...  
**Date:** Wednesday, March 23, 2011 12:29:46 PM

---

Can someone from state liaison give me a call at 301-415-8203? We sat in on HHS calls with the state early on when no federal agency was stepping forward vigorously with radiation health information. Since that particular issue has been apparently solved, we have not been sitting in. I do occasionally sit in on some call held at 11 a.m., but do not participate. Sometime this week I heard Jeff Temple representing the NRC on that call.

**From:** OST05 Hoc  
**Sent:** Wednesday, March 23, 2011 12:17 PM  
**To:** McIntyre, David; Harrington, Holly  
**Cc:** Noonan, Amanda  
**Subject:** FW: HHS-organized calls - 2 call types...

Dave and Holly:

Fyi.....

**From:** Noonan, Amanda  
**Sent:** Wednesday, March 23, 2011 12:09 PM  
**To:** OST05 Hoc  
**Subject:** RE: HHS-organized calls - 2 call types...

Didn't Dave McIntyre ask to be informed about these calls? Hopefully he will lead off....

Amanda Noonan  
Management Analyst, FSME/DILR  
301-415-2551  
[amanda.noonan@nrc.gov](mailto:amanda.noonan@nrc.gov)

**From:** OST05 Hoc  
**Sent:** Wednesday, March 23, 2011 12:03 PM  
**To:** Maier, Bill; LIA04 Hoc; Easson, Stuart; Flannery, Cindy; Lukes, Kim; Maupin, Cardelia; Noonan, Amanda; OST05 Hoc; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtill, Richard; Virgilio, Rosetta  
**Subject:** HHS-organized calls - 2 call types...  
**Importance:** High

Note that HHS has organized 2 "recurring" call types, one with all 50 Governors/their staff, and one with just Western Governors and the Pacific Island Countries.

**All 50 States and invited Federal Agencies:**

Each Tuesday and Thursday evening – 5:00 pm EDT; NRC is often asked to lead off as to current status. The next call is tomorrow (Thursday) at 5:00. Mr. Natarajan of HHS has provided

0000/129

tomorrow's bridge line information which is located taped between LIA04 and OST05: 877-855-4797; Passcode: (b)(6) HQ State Liaison should determine who will speak to that call.

**Western States and Pacific Island Countries and invited Federal Agencies:**

Tonight – 8:00 EDT – HHS holds a call with Western States and Pacific Island Countries. Not certain how often. BILL: If we are asked to provide summary information, I believe RIV should do the speaking. Your thoughts?

Rich Turtil

NRC State Liaison – Liaison Team  
Incident Response Center

**Rihm, Roger**

---

**From:** Rihm, Roger  
**Sent:** Wednesday, March 23, 2011 12:30 PM  
**To:** Barkley, Richard  
**Subject:** RE: Did You Get Any Other Letters Relative to Region I The Past Few Days??  
**Attachments:** COMMISSION E-READER... WEDNESDAY, MARCH 23, 2011

Letter from Blumenthal in the ereader today. I wouldn't get a letter from AG Coakley and can't say I recall seeing one in the ereader, but RI is meeting with Mass gov, right?

---

**From:** Barkley, Richard  
**Sent:** Wednesday, March 23, 2011 9:19 AM  
**To:** Rihm, Roger  
**Subject:** Did You Get Any Other Letters Relative to Region I The Past Few Days??

My press pack says that Mass. Attorney General Martha Coakley sent the Chairman a letter about spent fuel storage at Pilgrim.

Thanks - I'll get you a concurrence on the Markey letter this afternoon.

Richard S. Barkley, PE  
Nuclear & Environmental Engineer  
(610) 337-5065 Work  
(b)(6) Cell

0000/130