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| 2011/03/14<br>02:05:36 | Jim Trapp                    | Received communication from Jim Trapp that cooling has been lost to all three units at Fukushima Daiichi.  |
| 2011/03/14<br>03:01:57 | Jim Trapp and Tony<br>Ulises | From Jim and Tony in Tokyo at 2:30 AM EDT: It appears that Fukushima-Daiichi has lost the "capability to cool." On Units 1 and 3, this is because the ability to refill the cooling water ponds they were taking a suction on to inject seawater into the reactor vessel and primary containment has been lost. For Unit 2, it appears that they have lost the ability to operate RCIC. All three units have been in this state for the past 12 hours. Currently, all cores remain covered. However, reactor vessel level at all three units is trending in a downward direction at this time.                     |
| 2011/03/14<br>04:16:05 | Jim Trapp and Tony<br>Ulises | Received clarification to the status update posted at 3:01 AM on March 14: Reactor vessel water level was only reported for Unit 2. Level is above the TAF, but trending downward. Trends for Units 1 and 3 are unknown.   |
| 2011/03/14<br>05:55:42 | Jim Trapp and Tony<br>Ulises | Jim and Tony contacted the Operations Center to notify the team that Japan had requested assistance from the U.S. Assistance will be needed urgently. Ambassador Roos will be initiating coordination of assistance, including possible assistance from the military. NRC will prepare for coordination call by preparing ideas for re-initiating core injection, establishing core cooling, and recovering electrical power. NRC plans to reach out to GE and others in advance of a coordination call. Jim indicated that, based on time without injection, he believes it is unlikely the cores remain covered. |
| 2011/03/14<br>06:17:36 | Jim Trapp                    | Jim called to notify the ET that he had received a request to embed NRC staff with Japan's EOCs, which will require more staff being sent to Japan.  |
| 2011/03/14<br>07:10:40 | Chairman                     | Chairman Confirmed 7:30am briefing in Operations Center. He wants to know status of situation and any issues with getting assets organized.  |
| 2011/03/14<br>08:07:29 | Ambassador Roos<br>office    | Call with Ambassador Roos' office. Tepco and US Forces in Japan are working together to allocate firefighting equipment that is capable of pumping water from the ocean into the pits. ACTION: NRC is confirming that USFJ and Tepco are processing this request ASAP.   |
| 2011/03/14<br>08:26:17 |                              | NRC looking into b.5.b measures to come up with recommendations in case it comes to that. NRC also confirming whether tech assistance is needed in getting seawater from pit into the core. Will have this information ready in case it is requested.  |
| 2011/03/14<br>08:30:47 |                              | Request for US NRC experts embedded in Japanese EOCs: NRC estimates a need for 6 individuals. NRR is creating a list of names. Request to have this list ready by the 9:30 conference call.  |
| 2011/03/14<br>08:43:54 |                              | Request for a list of Q and A responses to future media questioning.   |
| 2011/03/14<br>08:55:52 | NEI                          | There is indication that Unit 2 has restored some level of sea water injection.  |
| 2011/03/14<br>09:40:41 | Jim Trapp                    | Confirmation by Jim- there is no current issue with spent fuel pools.  |
| 2011/03/14<br>09:44:42 | Mike Dudek                   | (b)(5)   |
| 2011/03/14<br>10:03:51 | Jim Trapp                    | They need 6 NRC experts. <This contradicts the USAID request>.   |
| 2011/03/14<br>10:14:30 | Eric Leeds                   | Eric Leeds is going to identify four reactor safety experts by 11am. Margie suggests (b)(5)  |
| 2011/03/14<br>10:32:33 | Laura Dudes                  | Emailed initial equipment list to Jim Trapp.   |
| 2011/03/14<br>10:47:47 | Jeff Temple                  | President said that responding to this event is the highest priority in the country.   |
| 2011/03/14<br>10:55:34 | Mark                         | (b)(5) that 2 meters of fuel in Unit 2 is uncovered.   |
| 2011/03/14<br>10:58:49 | Marty                        | Marty spoke with EDO, they agreed on a list of four potential experts to fill the incident command position.   |
| 2011/03/14<br>11:02:38 | Nadar                        | USAID's legal issue with sending NRC experts to Japan- taken care of.  |
| 2011/03/14<br>11:06:12 |                              | From 10am meeting: want to know if radiation leaking on the ground? Marty- we cannot support dose assessments from the ground at this time.  |
| 2011/03/14<br>11:08:52 | Bill Borchardt               | Tell USAID that Chuck Casto will be arriving from Atlanta. USAID wants to know his arrival time.   |
| 2011/03/14<br>11:12:18 |                              | Chuck and the team need to be briefed and understand the expectations of their mission before they leave.  |
| 2011/03/14<br>11:14:48 |                              | 12:30 PM EST, White House press briefing.  |
| 2011/03/14<br>11:17:16 | Bill Borchardt               | Get OIP assistance to help define mission expectations are.  |
| 2011/03/14<br>11:19:16 | Nadar                        | The General of the USFJ is coordinating movement of equipment. The Ambassador and the General should determine who is in charge of this effort, NRC will support.  |
| 2011/03/14<br>11:54:55 | Chairman                     | Wants bottom line to communicate to Ambassador Roos: Based on RES SOARCA Analysis: Core could drop but we don't think containment will fail; not predicting a large release; nothing challenging their evacuation strategy. Assumption: containment will remain intact. This assumption depends on seawater level pumped in, and status of explosion.  |
| 2011/03/14<br>12:05:58 | Dept. of State               | Unit 2: confirmed that core uncovered about 2 m.   |
| 2011/03/14<br>13:09:00 | White House                  | Chairman speaks at White House press conference.   |
| 2011/03/14<br>13:40:41 |                              | Press conference is officially over. Chairman on his way back to NRC HQ.   |
| 2011/03/14<br>13:56:11 | Marty                        | Marty briefing Hill Staffers.  |
| 2011/03/14<br>13:57:44 |                              | Considering extending offer to Ambassador to speak with the Chairman on the phone to discuss any questions/ concerns.  |
| 2011/03/14<br>14:08:03 | Tony                         | Unit 2 may have sea water restored. Mixed reports.   |
| 2011/03/14<br>14:16:08 |                              | FEPCO provides new release. Should say TEPCO, not FEPCO EST Chronology Officer - Jessica Kratchman at 14:21:42 on 3/14/2011  |
| 2011/03/14<br>14:16:08 |                              | FEPCO provides new release.  |
| 2011/03/14             | Laura                        | USAID looking for equipment specs  |

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| 2011/03/11<br>14:59:12 | ET - LT update             | Several Inquiries from Congressional offices about status of NRC activities; NRC staff are sharing information  |
| 2011/03/11<br>15:06:58 | ET - RIV Update            | 1505 EST - HQ takes lead for monitoring   |
| 2011/03/11<br>15:08:57 | ET - OPA update            | Request from USAID - identify potential group of federal government staff to deploy to Japan if they request help   |
| 2011/03/11<br>15:23:23 | ET                         | Discussion of staffing for ops center; will need to continue monitoring for the near term   |
| 2011/03/11<br>15:33:56 | ET                         | Chairman is being requested to support White House briefing - needs information about current status of Japanese plants which were affected.  |
| 2011/03/11<br>15:36:27 | ET                         | IAEA update - 1.3 meters water level in Fukushima Unit 1 Vessel   |
| 2011/03/11<br>15:59:05 | ET                         | Chairman requested NRC staff to attend USAID Meeting at Reagan Building   |
| 2011/03/11<br>16:10:54 | ET                         | SITREP updated from R-IV and IAEA information; will be incorporated into Executive briefing book  |
| 2011/03/11<br>16:32:55 | ET                         | Chairman briefing scheduled for 1715EST Commissioner Assistant Brief at 1700 EST EST Chronology Officer - Kevin Witt at 16:41:06 on 3/11/2011   |
| 2011/03/11<br>16:32:55 | ET                         | Chairman briefing scheduled for 1715EST   |
| 2011/03/11<br>16:42:07 | ET - NRCC Update           | NRCC fully staffed 1700 briefing Level 1 status - potential deescalation to Level 2 or 3 (everybody but emergency personnel at 1800)  |
| 2011/03/11<br>16:53:43 | ET - RST Update            | News report that radiation is 1000x normal - possible venting of containment; hard to know for sure what the situation is without direct communication from Japanese Potential mix up in Unit identification; Unit 1 should be inherently safe EST Chronology Officer - Kevin Witt at 16:56:12 on 3/11/2011 Fukushima Unit 1 EST Chronology Officer - Kevin Witt at 16:56:56 on 3/11/2011   |
| 2011/03/11<br>16:53:43 | ET - RST Update            | News report that radiation is 1000x normal - possible venting of containment; hard to know for sure what the situation is without direct communication from Japanese  |
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| 2011/03/11<br>17:30:10 | ET - CA brief              | Commissioners Assistants Brief -Deputies Meeting Call by White House supported by Chairman -RST briefed assesment for station blackout and info obtained from TEPCO and IAEA press releases -NRC supporting meeting at USAID and Department of State -Exelon supporting GE with simulation using Dresden and Quad Cities models (source: RIII) -INPO and NEI communicating with counterparts in Japan - NRC Operations Center preparing for reduced staff monitoring overnight  |
| 2011/03/11<br>18:14:20 | ET - CA Brief              | Next CA Briefing scheduled for 2315 EST   |
| 2011/03/11<br>18:19:01 | ET                         | Report from TEPCO that pressure control is lost in three units - unconfirmed  |
| 2011/03/11<br>18:23:03 | ET - Update from USAID Mtg | USAID looking for intpretation of technical data and reports from TEPCO and other sources; need to understand how to communicate thorough established mechanisms (such as NRCC)   |
| 2011/03/11<br>18:31:59 | ET                         | WANO report - containment pressure at 140 psi, failure is possible at 120 psi   |
| 2011/03/11<br>18:33:30 | ET                         | Report - 10 km radius evacuation at Fukushima Small amount of radiation leaking 8x normal rad levels at plant gate  |
| 2011/03/11<br>18:45:53 | HOO                        | Diablo Canyon has been removed from NOUE due to cancellation of tsunami warning   |
| 2011/03/11<br>18:59:34 | ET - Update from NRCC      | b5 How to facilitate information sharing DOE preparing to respond with radiation monitoring supplies - Communications plan will be developed - NRCC is scaling down, skeleton crew overnight and through the weekend NRC Rep at NRCC and is planning to leave; Will leave contact info at NRCC EST Chronology Officer - Kevin Witt at 19:04:08 on 3/11/2011   |
| 2011/03/11<br>18:59:34 | ET - Update from NRCC      | b5 How to facilitate information sharing DOE preparing to respond with radiation monitoring supplies - Communications plan will be developed - NRCC is scaling down, skeleton crew overnight and through the weekend  |
| 2011/03/11<br>19:09:57 | ET - Chairman update       | Chairman requests information about current status and FAQs by 11pm   |
| 2011/03/11<br>19:10:54 | ET - Chairman call         | Update from Deputy call b5 b5   |
| 2011/03/11<br>19:12:50 | ET - Chairman call         | Chairman requests next briefing between 2200 and 2300 EST   |
| 2011/03/11<br>19:17:40 | ET                         | FEMA Region IX and X are receiving questions about large radiation release at Fugushima site  |
| 2011/03/11<br>19:30:56 | ET                         | RST and LT working on general questions and answers   |
| 2011/03/11<br>19:34:16 | ET                         | Conference call with GE Support and VP of Exelon scheduled for 1945 to provide their knowledge of the situation   |
| 2011/03/11<br>19:50:31 | ET Call with GE and Exelon | - Aware that Exelon is running some situations for GE (operating procedures and severe accident guidelines) - GE is staffing to run 24 hour support for Fugushima - GE has 70 staff at reactor site for refueling support - Fugushima is similar to Quad Cities and Dresden - No offsite power within 1 hour of shutdown due to earthquake damage - Severe accident manahgement guides were provided to Fugushima - Simulator was run with certain parameters - was not close to actual containment response -Exelon is offering any type of support to Fugushima if they receive updated simulator info -Nobody is at the site providing useful parameters |
| 2011/03/11<br>19:58:36 | ET Call with GE and Exelon | - Engineering building at Fugushima is collapsed - Communications are difficult, no land lines, some cell phones, but difficult to reach people - Wave when it hit the site was approximately 35 feet - All equipment is above grade (no buried tanks or piping) EST Chronology Officer - Kevin Witt at 20:01:45 on 3/11/2011 - Site has Event based EOPs (not system based) EST Chronology Officer - Kevin Witt at 20:07:49 on 3/11/2011   |
| 2011/03/11<br>19:58:36 | ET Call with GE and Exelon | - Engineering building at Fugushima is collapsed - Communications are difficult, no land lines, some cell phones, but difficult to reach people   |
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|                        |                                   | pping) EST Chronology Officer - Kevin Witt at 20:01:45 on 3/11/2011   |
| 2011/03/11<br>20:13:19 | ET - LT update                    | NRC to send rep to Japan on flight scheduled for 3/11 organized by USAID  |
| 2011/03/11<br>20:27:11 | ET Call with<br>D'Agostino        | - General Cartwright discussion with Japan's Chief of Defense - No need for assistance with aerial measurements - Need engineering assistance from US (request will come through ambassador); Very important that it comes to NRC and DOE, but NRC may have more relevant experience - DOE does not have expansive civil nuclear expertise Offered to coordinate assistance with GE, NRC to take lead with coordination EST Chronology Officer - Kevin Witt at 20:33:09 on 3/11/2011  |
| 2011/03/11<br>20:27:11 | ET Call with<br>D'Agostino        | - General Cartwright discussion with Japan's Chief of Defense - No need for assistance with aerial measurements - Need engineering assistance from US (request will come through ambassador); Very important that it comes to NRC and DOE, but NRC may have more relevant experience - DOE does not have expansive civil nuclear expertise  |
| 2011/03/11<br>20:34:22 | ET update with<br>Chairman        | - Chairman request staff to reengage Exelon and GE - OIP offered NRC support to NISA and JNES   |
| 2011/03/11<br>20:36:21 | ET                                | LT to coordinate with Department of State to coordinate assistance with Japans request for engineering support  |
| 2011/03/11<br>21:21:25 | ET Brief from OPA                 | - Q&A are getting closer to completion - more technically oriented - Memo from White House about communication with public - White House request for Chairman participation in morning conference   |
| 2011/03/11<br>21:25:44 | ET                                | Request from French Nuclear Regulator (ASN) for information about situation at Japanese power plant. ET request contact be handled through OIP  |
| 2011/03/11<br>21:28:08 | ET Brief from RST                 | - Communication with GE still being pursued - Status updates being generated  |
| 2011/03/11<br>22:09:02 | ET update from LT                 | All commercial flights to Japan are cancelled at this time Military flight will be departing to Japan tonight at approximately 2300 EST Will not be able to send NRC rep on that flight due to travel from R-III site and passport planning to send NRC Rep to Japan morning of 3/12 on commercial flight   |
| 2011/03/11<br>22:13:25 | ET brief from RST                 | Situation has been assigned on the International Event Scale (INES) a 3 Maximum is 7  |
| 2011/03/11<br>22:29:10 | ET - Brief for<br>Chairman        | Briefing for Chairman commencing  |
| 2011/03/11<br>22:29:31 | ET - Chairman<br>Brief            | - Discussed communication strategy - Not much technical information received regarding plant status - RST communicating with GE; GE not in touch with Japanese - No formal request from Japanese government for engineering assistance  |
| 2011/03/11<br>22:39:32 | ET - Chairman<br>update           | - With current status and no intervening actions, potential for release at 0000 on 3/12 - GE says that there is no power around the plant site (unconfirmed) - Chairman requests that we confirm status of the reactor and power availability   |
| 2011/03/11<br>22:42:31 | ET - Chairman<br>Brief            | Chairman requests summary of plant status and current evaluation activities being done by NRC and GE  |
| 2011/03/11<br>22:43:38 | ET Brief for<br>Chairman          | - Jim Trap is NRC rep to be sent to Jap - Part of US team for USAID - Military Flight to depart within the hour and NRC rep cannot make the flight (Wheels up at 1130) - Chairman requests NRC rep to be on the flight/team   |
| 2011/03/11<br>22:49:26 | ET Briefing for<br>Chairman       | - Alternate NRC rep identified to be on flight to Japan tonight - Chairman requests staff to do everything possible to get the alternate rep on the flight  |
| 2011/03/11<br>22:51:56 | ET Brief for<br>Chairman          | b5  |
| 2011/03/11<br>22:54:36 | ET Brief for<br>Chairman          | - Discussion on doing analysis for Unit 1 vs Unit 2, Unit 1 is closer to Oyster Creek; Unit 2 is more likely to have significant damage; Staff still analyzing whether to do Unit 1 or 2  |
| 2011/03/11<br>22:56:50 | ET Brief for<br>Chairman          | CA Brief scheduled for 2315 EST   |
| 2011/03/11<br>22:58:25 | ET Brief for<br>Chairman          | General assessment that the situation is deteriorating although limited information from site, although the belief is that no good information indicates things are trending worse.   |
| 2011/03/11<br>23:00:19 | ET Briefing for<br>Chairman       | Chairman requests next Chairman Briefing at 0700 EST  |
| 2011/03/11<br>23:16:06 | CA brief                          | Units shut down, loss of offsite power, EDGs started and ran for some time. 35 foot wave hit site. EDG fuel oil tanks above ground and not swept away. SBO. Unit 1 isocondenser plant. Unit 2 has RCIC. Been in SBO for 14 hours. Containment pressure rise substantially 80 psig in containment building. Excess of design pressure. Operators venting containment. Not clear whether successful. RST spoken with GE support facility and Exelon. Running simulator scenarios to get handle on timing. RST determined that if SBO continues unabated, there will be core damage. If containment pressure worsens, will need to vent to prevent catastrophic failure. Hypothesize will rate at INES Level 3. Number of meetings at White House level. USAID putting together team of tech assistants from federal family to get on military flight to travel to Japan. Tony Ulises will attempt to make military flight that leaves tonight. Japanese govt interested in getting engineering assistance from US. Developed series of Q&As. Staff working shift work. Just completed turnover at 11 pm. Will do another at 7 am. Will continue to support event. |
| 2011/03/11<br>23:59:03 | Chairman of JAEC                  | Unit 1 has core damage. In process of venting containment. Wind direction blowing to sea. Using fire trucks and batteries from vehicles to power pumps to get water into core.  |
| 2011/03/12<br>00:05:23 |                                   | Dan Dorman relieved Mike Weber  |
| 2011/03/12<br>01:00:04 |                                   | Tony Ulises is on plane to Japan  |
| 2011/03/12<br>03:36:26 | IAEA                              | Held phone call with IAEA to exchange facts as we know them. Explained that we have no contact with Japan. IAEA asked for our assessment. We stated that we cannot provide assessment without more facts.   |
| 2011/03/12<br>03:43:46 | DOE - Dave Young<br>& Dave Bowman | Held call with DOE. Asked for verification of DOE Tokyo email describing explosion. DOE said they were passing on information they saw in the media. DOE is not in contact with Japanese. They are getting information from media as well.  |
| 2011/03/12<br>03:51:56 | IAEA                              | Resumed call with IAEA. Requested that IAEA let NISA know that we are standing by to provide assistance.  |
| 2011/03/12<br>04:02:54 | Media                             | News images show what appears to be containment exploding. Calling Chairman.  |
| 2011/03/12<br>04:12:40 |                                   | Informed Chairman of the loss of containment  |
| 2011/03/12<br>04:26:53 |                                   | Sent situation report to DHS  |
| 2011/03/12<br>04:50:03 |                                   | Briefed Chairman on status  |
| 2011/03/12<br>04:54:43 | LT debrief from 4<br>am call      | NISA conducted press conference. No discussion of rad leaks. NISA expanded evacuation zone to 20 km. NOAA still tsunami advisory. Disaster Assistance Response Team on ground in Tokyo. Working with Japanese govt to prioritize search and rescue.   |

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| 2011/03/12<br>05:06:31 |   | NISA called IAEA and reported an explosion in the reactor building. NISA called IAEA and reported an explosion at the plant EST Chronology Officer - Margie Kotzalas at 06:11:07 on 3/12/2011   |
| 2011/03/12<br>05:06:31 |   | NISA called IAEA and reported an explosion in the reactor building.   |
| 2011/03/12<br>06:10:53 |   | ET briefed (b) from White House staff   |
| 2011/03/12<br>06:30:43 |   | ET briefed EDO  |
| 2011/03/12<br>07:10:45 | ET  | ET briefed NRC Chairman (briefed on video analysis of explosion, appeared to be steam explosion)  |
| 2011/03/12<br>07:12:28 | ET  | 1 NRC staff member en route to Japan, another member preparing to travel  |
| 2011/03/12<br>07:12:28 | ET  | 1 NRC staff member en route to Japan  |
| 2011/03/12<br>07:34:28 |   | Held CA brief   |
| 2011/03/12<br>08:58:05 | LT  | Mike Dudek reported to USAID. Jason Kozal reported to NOC   |
| 2011/03/12<br>09:06:28 | (b)(6) INPO                                   | Held call with (b)(6) INPO. INPO has established link through WANO Tokyo and London Center. INPO will provide update to CNOs. No request for assistance from WANO Tokyo or TEPCO. INPO incident response center is staffed and ready to assist if requested. CNOs indicated that they are ready to provide assistance.  |
| 2011/03/12<br>09:17:12 | INPO (b)(6)                                   | U1 SBO using isocondenser plant, reached heat capacity limit of suppression pool, drove pressure up to 120 psi, dose rates to CR went up 1000 time and 8 times at site boundary, batteries hooked up, requested 4 FDGs, none hooked up yet. Hydrogen explosion. Inside secondary containment, outside primary containment. Successfully vented primary containment. Reduced pressure by 50%. Dose rate 100mR/hr at boundary. Dropped to 7 mR/hr. Spent and Cs which indicates fuel melt. In process of filling containment with borated sea water. Maintaining below design pressure of containment. U2 has not reached cold shutdown yet. Working to reduce temperature. Has RCIC system. Suppression pool at saturated temp. No indication that they are cooling suppression pool. No AC power. |
| 2011/03/12<br>12:40:41 | ET  | Senior Management status update. New Information: 40 GE Employees on site helping with outage. 4 contaminated. DOS working to assist with evacuations. CA Brief scheduled for 3:30pm  |
| 2011/03/12<br>12:43:30 | Chairman                                      | (b)(5)  |
| 2011/03/12<br>15:54:49 | ET  | CA Brief. Status update. Information we have is still focused on Unit 1. Disaster response team in route, 2 NRC members. Outreach to IAEA. DHS interactions regarding consequence modeling. DOE assets staged in Las Vegas to do air monitoring. EPA monitoring west coast. May need to develop talking points for State liaisons.  |
| 2011/03/12<br>17:36:19 | TEPCO   | Status of Fukushima Daiichi NPS as of 2am JST (12pm EST) March 13: Unit 1 Reactor shutdown, subsequent explosion. Injecting sea water and boric acid into core. Unit 2 Reactor and RCIC shut down. Water level lower than normal but steady. Preparing to reduce vessel pressure. Unit 3 Reactor shut down. Continue to inject water by High Press Core Injection System. Preparing to reduce vessel pressure. No coolant leakage inside containment. Units 4-6 Reactors had been shut down with sufficient coolant. No coolant leakage inside containment.   |
| 2011/03/12<br>19:22:55 | ET  | Chairman Update. No progress with IAEA high-level contact but receiving updates. Developing high-level Q&As for 8pm review by Chairman. Next Chairman update 10pm. Next CA brief 11:30pm.   |
| 2011/03/12<br>19:33:45 | NISA US Rep.                                  | Daiichi Unit 1 may be losing water level. Possible problem with pump. NISA US Rep. Michael Chinworth. EST Chronology Officer - Alan Frazier at 19:33:50 on 3/12/2011  |
| 2011/03/12<br>19:48:21 | ET  | (b)5  |
| 2011/03/12<br>19:33:45 | NISA US Rep.                                  | Daiichi Unit 1 may be losing water level. Possible problem with pump.   |
| 2011/03/12<br>21:18:18 | Japan Chief Cabinet Secretary News Conference | TEPCO informed Japanese Cabinet that Unit 3 water injection stopped and water level decreased exposing fuel. At 9:05pm JST start to inject water (not sea water). Added boric acid at 9:25pm JST and vented containment.  |
| 2011/03/12<br>21:46:21 | DOE Dep. Sec. Poneman                         | Will arrange a multi-agency call to share information and align messages. Time TBD.   |
| 2011/03/12<br>21:48:37 | Ambassador Roos                               | (b)5  |
| 2011/03/12<br>22:14:21 | ET  | Chairman contacted (b)5   |
| 2011/03/12<br>23:15:00 | ET  | White House Situation Room call expected at 11:30 PM EST. No change from last Situation Room briefing. Uncertainty remains on Unit 3 status. ET will send talking points to the Chairman for the 11:30 briefing.  |
| 2011/03/12<br>23:47:21 | ET  | Conducted briefing of Commission offices and other NRC staff. Next briefing will be at 7:30 AM EST.   |

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| 2011/03/13<br>00:37:06 | Chairman                   | b5  |
| 2011/03/13<br>01:26:31 | ET                         | OIP identified appropriate NISA contact (Nei) and per discussion with the Chairman, will provide this contact to b6 for coordination.   |
| 2011/03/13<br>03:00:30 | OIP                        | Received confirmation that Tony Ulises has arrived in Japan at 14:23 local time.  |
| 2011/03/13<br>05:20:07 | TEPCO Update               | Update from TEPCO (12:00 PM JST): At Fukushima Daiichi Unit 3, TEPCO took action to reduce containment pressure and then reactor vessel pressure, and began injecting sea water and boric acid.   |
| 2011/03/13<br>06:16:38 | LT/OIP                     | Interagency teleconference held. The Disaster Assessment Response Team (DART) has arrived in Japan. The NRC learned that Tony Ulises is being flown to Tokyo for a meeting with Japanese authorities (NISA, JNES, etc.). He will then meet with Ambassador Roos to discuss messages to Americans in Japan. DART will decide on deployment of NRC staff in Japan after meetings tonight.   |
| 2011/03/13<br>06:57:43 | Naval Reactors             | Received call from Admiral Donald, Director of Naval Reactors. Coordinated call with Deputy Secretary Poneman. Navy ships operating approximately 50 miles offshore identified airborne contamination in excess of what they believe would be expected given available information ( $2.5 \times 10^{-9}$ uCi/ml). Also, Navy personnel who ferried equipment to a Japanese ship came back contaminated on their shoes (2500 cpm). Navy indicates they believe this indicates the plume is greater than expected. NRC PMT and NR agreed to coordinate to provide information to Japanese officials. |
| 2011/03/13<br>07:41:23 | ET                         | Conducted briefing of Commission offices and other NRC staff.   |
| 2011/03/13<br>08:30:34 | LT                         | Received confirmation that Jim Trapp arrived in Japan. Working on establishing contact between Jim and the U.S. Embassy.  |
| 2011/03/13<br>09:06:24 | Chairman/ET                | Conducted 9:00 AM briefing with the Chairman to discuss status, including plans for White House and NRC press releases, the call with Admiral Donald and Deputy Secretary Poneman, and staff priorities.  |
| 2011/03/13<br>09:14:06 | Naval Reactors             | Steve Troutman (NR) contacted the ET to discuss data obtained from the U.S.S. Ronald Reagan. The Navy obtained three portable air sample measurements at different times at 100 nautical miles with the following results: $7.5 \times 10^{-9}$ uCi/ml (13:00), $3 \times 10^{-9}$ uCi/ml (14:30), and $7.5 \times 10^{-9}$ uCi/ml (17:00). In addition, at 130 nautical miles, beta/gamma shine was measured at 0.6 mrem/hr.   |
| 2011/03/13<br>09:46:10 | ET                         | Tony Ulises will not be able to make it to Tokyo until tomorrow due to a plane malfunction. Jim Trapp is working on getting to Tokyo now and meeting up with Ambassador Roos.   |
| 2011/03/13<br>10:16:49 | IAEA Update                | Received update from IAEA indicating reactor vessel water level for both Daiichi Units 1 and 3 below the top of active fuel (Unit 1 below indicating range and Unit 3 between 150 and 200 cm below the top of active fuel).   |
| 2011/03/13<br>11:25:50 | DOE Naval Reactors         | Navy informed Japanese Foreign Ministry of contamination encountered on US Navy and Japanese ships. Trying to find mechanism to get same information to METI, Japanese Ministry of Economy, Trade, and Industry. NR will try to work through US Embassy.  |
| 2011/03/13<br>13:21:24 | White House Situation Room | b5  |
| 2011/03/13<br>13:34:59 | Jim Trapp                  | US Disaster Response Team and US Ambassador request list of questions to ask Japanese government. RST and PMT will provide on e-mail. Trapp en route to Ambassadors residence for call with Japanese regulator and technical experts. Possible meeting later today. EST Chronology Officer - Alan Frazier at 13:41:55 on 3/13/2011  |
| 2011/03/13<br>13:34:59 | Jim Trapp                  | US Disaster Response Team and US Ambassador request list of questions to ask Japanese government. RST and PMT will provide on e-mail.   |
| 2011/03/13<br>14:22:46 | OPA                        | Press release issued 2pm. No harmful levels of radiation expected to reach US. EST Chronology Officer - Alan Frazier at 14:32:32 on 3/13/2011   |
| 2011/03/13<br>14:22:46 | OPA                        | Press release issued 2pm.   |
| 2011/03/13<br>14:39:29 | Chairman                   | DOE Secretary Chu suggests we send email requesting information to assess the situation. Make air sample data (from Navy) and analysis available in next situation report. (b)(5)   |
| 2011/03/13<br>15:22:13 | Jim Trapp & Amb. Roos      | Provided confirming information regarding Fukushima Daiichi Unit 1 - 3 after discussion with Japanese engineer. Unit 3 is of the most concern. Face to face meeting with Japanese engineer/regulators scheduled for 8:30am JST.   |
| 2011/03/13<br>15:25:51 | White House and DOE        | b5  |
| 2011/03/13<br>15:32:51 | CA Brief                   | Status summary Fukushima Daiichi Units 1-3. USS Reagan air sample data indicates contamination 100 nautical miles. Preparing for Congressional hearing Wednesday. Jim Trapp in Tokyo Tony Ulises delayed until Monday. Press release issued, another in the works.  |
| 2011/03/13<br>16:23:20 | Jim Trapp                  | Provided some dose information from Japanese. Data from Daiichi site. Will fax tomorrow from Embassy. Next meeting with Japanese counterparts Monday 8:30am JST.  |
| 2011/03/13<br>19:00:41 | Tony Ulises                | Tony called in from Tokyo, confirmed he received list of DOE questions. Will consider the questions during interactions with Japanese counterparts at 8:30am JST.   |
| 2011/03/13<br>19:22:13 | Jim Trapp and Tony Ulises  | Meeting with Japanese regulator has been postponed, new time TBD. Jim was able to confirm that last night Unit 3 lost cooling water due to a "transportation problem," and pressure increased. The Japanese believe they have now restored cooling and decreased pressure. May be having instrumentation issues with Unit 3. Unit 3 remains their biggest concern.  |
| 2011/03/13<br>22:24:30 | Jim Trapp                  | Reports of explosion at Fukushima Unit 3 reactor building at 11am JST. Possible Hydrogen explosion.   |
| 2011/03/13<br>23:25:38 | LT                         | Confirmed hydrogen explosion in the reactor building at Fukushima Unit 3.   |
| 2011/03/13<br>23:38:19 | ET                         | Completed briefing for the Commission TAs and other NRC staff. Next briefing will be at 7:30 AM.  |
| 2011/03/13<br>23:42:12 | RST                        | Completed call with Jim Trapp and Tony Ulises. Status update with the U.S. Embassy and Japan has been postponed as a result of the hydrogen explosion at Fukushima Daiichi Unit 3. The containment was confirmed to be intact. Japan continues to inject sea water to Units 1 and 3.  |

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| 2011/03/14<br>02:05:36 | Jim Trapp                   | Received communication from Jim Trapp that cooling has been lost to all three units at Fukushima Daiichi.  |
| 2011/03/14<br>03:01:57 | Jim Trapp and Tony<br>Uises | From Jim and Tony in Tokyo at 2:30 AM EDT: It appears that Fukushima-Daiichi has lost the "capability to cool." On Units 1 and 3, this is because the ability to refill the cooling water ponds they were taking a suction on to inject seawater into the reactor vessel and primary containment has been lost. For Unit 2, it appears that they have lost the ability to operate RCIC. All three units have been in this state for the past 12 hours. Currently, all cores remain covered. However, reactor vessel level at all three units is trending in a downward direction at this time.                     |
| 2011/03/14<br>04:16:05 | Jim Trapp and Tony<br>Uises | Received clarification to the status update posted at 3:01 AM on March 14: Reactor vessel water level was only reported for Unit 2. Level is above the TAF, but trending downward. Trends for Units 1 and 3 are unknown.   |
| 2011/03/14<br>05:55:42 | Jim Trapp and Tony<br>Uises | Jim and Tony contacted the Operations Center to notify the team that Japan had requested assistance from the U.S. Assistance will be needed urgently. Ambassador Roos will be initiating coordination of assistance, including possible assistance from the military. NRC will prepare for coordination call by preparing ideas for re-initiating core injection, establishing core cooling, and recovering electrical power. NRC plans to reach out to GE and others in advance of a coordination call. Jim indicated that, based on time without injection, he believes it is unlikely the cores remain covered. |
| 2011/03/14<br>06:17:36 | Jim Trapp                   | Jim called to notify the ET that he had received a request to embed NRC staff with Japan's EOCs, which will require more staff being sent to Japan.  |
| 2011/03/14<br>07:10:40 | Chairman                    | Chairman Confirmed 7:30am briefing in Operations Center. He wants to know status of situation and any issues with getting assets organized.  |
| 2011/03/14<br>08:07:29 | Ambassador Roos<br>office   | Call with Ambassador Roos' office. Tepco and US Forces in Japan are working together to allocate firefighting equipment that is capable of pumping water from the ocean into the pits. ACTION: NRC is confirming that USFJ and Tepco are processing this request ASAP.   |
| 2011/03/14<br>08:26:17 |                             | NRC looking into b.5.b measures to come up with recommendations in case it comes to that. NRC also confirming whether tech assistance is needed in getting seawater from pit into the core. Will have this information ready in case it is requested.  |
| 2011/03/14<br>08:30:47 |                             | Request for US NRC experts embedded in Japanese EOCs: NRC estimates a need for 6 individuals. NRR is creating a list of names. Request to have this list ready by the 9:30 conference call.  |
| 2011/03/14<br>08:43:54 |                             | Request for a list of Q and A responses to future media questioning.   |
| 2011/03/14<br>08:55:52 | NEI                         | There is indication that Unit 2 has restored some level of sea water injection.  |
| 2011/03/14<br>09:40:41 | Jim Trapp                   | Confirmation by Jim- there is no current issue with spent fuel pools.  |
| 2011/03/14<br>09:44:42 | Mike Dudek                  | bs   |
| 2011/03/14<br>10:03:51 | Jim Trapp                   | They need 6 NRC experts. <This contradicts the USAID request>.   |
| 2011/03/14<br>10:14:30 | Eric Leeds                  | Eric Leeds is going to identify four reactor safety experts by 11am. Margie suggests bs  |
| 2011/03/14<br>10:32:33 | Laura Dudes                 | Emailed initial equipment list to Jim Trapp.   |
| 2011/03/14<br>10:47:47 | Jeff Temple                 | President said that responding to this event is the highest priority in the country.   |
| 2011/03/14<br>10:55:34 | Mark                        | NSA is reporting that 2 meters of fuel in Unit 2 is uncovered.   |
| 2011/03/14<br>10:58:49 | Marty                       | Marty spoke with EDO, they agreed on a list of four potential experts to fill the incident command position.   |
| 2011/03/14<br>11:02:38 | Nadar                       | USAID's legal issue with sending NRC experts to Japan- taken care of.  |
| 2011/03/14<br>11:06:12 |                             | From 10am meeting: want to know if radiation leaking on the ground? Marty- we cannot support dose assessments from the ground at this time.  |
| 2011/03/14<br>11:08:52 | Bill Borchardt              | Tell USAID that Chuck Casto will be arriving from Atlanta. USAID wants to know his arrival time.   |
| 2011/03/14<br>11:12:18 |                             | Chuck and the team need to be briefed and understand the expectations of their mission before they leave.  |
| 2011/03/14<br>11:14:48 |                             | 12:30 PM EST, White House press briefing.  |
| 2011/03/14<br>11:17:16 | Bill Borchardt              | Get OIP assistance to help define mission expectations are.  |
| 2011/03/14<br>11:19:16 | Nadar                       | The General of the USFJ is coordinating movement of equipment. The Ambassador and the General should determine who is in charge of this effort, NRC will support.  |
| 2011/03/14<br>11:54:55 | Chairman                    | Wants bottom line to communicate to Ambassador Roos: Based on RES SOARCA Analysis: Core could drop but we don't think containment will fail; not predicting a large release; nothing challenging their evacuation strategy. Assumption: containment will remain intact. This assumption depends on seawater level pumped in, and status of explosion.  |
| 2011/03/14<br>12:05:58 | Dept. of State              | Unit 2: confirmed that core uncovered about 2 m.   |
| 2011/03/14<br>13:09:00 | White House                 | Chairman speaks at White House press conference.   |
| 2011/03/14<br>13:40:41 |                             | Press conference is officially over. Chairman on his way back to NRC HQ.   |
| 2011/03/14<br>13:56:11 | Marty                       | Marty briefing Hill Staffers.  |
| 2011/03/14<br>13:57:44 |                             | Considering extending offer to Ambassador to speak with the Chairman on the phone to discuss any questions/ concerns.  |
| 2011/03/14<br>14:08:03 | Tony                        | Unit 2 may have sea water restored. Mixed reports.   |
| 2011/03/14<br>14:16:08 |                             | FEPCO provides new release. Should say TEPCO, not FEPCO EST Chronology Officer - Jessica Kratchman at 14:21:42 on 3/14/2011  |
| 2011/03/14<br>14:16:08 |                             | FEPCO provides new release.  |
| 2011/03/14             | Laura                       | USAID looking for equipment specs  |

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| 14:23:51               |                           |  |
| 2011/03/14<br>14:27:25 | Chairman/ EDO             | Team going to Japan is setup. Trying to get them airborne, but not sure when; not later then tomorrow morning.   |
| 2011/03/14<br>14:29:32 | Chairman                  | White House said it was good the NRC was represented at the Press Conference.  |
| 2011/03/14<br>14:31:15 |                           | Invitation from <b>b5</b><br><b>b5</b> Chairman has not heard much about this. EDO suggests we send someone of the SES level.  |
| 2011/03/14<br>14:34:52 | Erin Jackson              | Team has been established: Chuck Casto, John Monninger, Brooke Smith, Kirk Foggie, Tony Nakanishi, Tim Kolb, Jack Foster, Bill Cook, and Richard DeVerceley.   |
| 2011/03/14<br>14:41:12 | Marty                     | Briefing for Hill staff: Questions were raised about spent fuel pools and injuries/ over exposure of workers.  |
| 2011/03/14<br>15:22:12 | ET                        | White House called and asked if seawater injection restored: Answer provided: as of 2200, U1, 2 and 3 have seawater being injected.  |
|                        | <b>b5</b>                 | <b>b5</b><br><b>b6</b>   |
| 2011/03/14<br>15:38:29 | Status Briefing           | Marty gives status overview: Unit 1: 6 hours ago, restored seawater injection. Believe core damage, but situation more stable. Unit 2: Have made a hole in the roof of containment so a combustible hydrogen limit doesn't build up. RCIC failed, but restored cooling via seawater injection. Unit 3, restored seawater injection. Containments functional for all 3 units. No concerns with SFP. Without AC and limited DC, need to keep eye on SFPs. Plant information via Tony onshift supporting ambassador in Japan. Working with USAID to coordinate on what additional equipment (like for B5B) might be useful for mitigation. Developed list. Also are sending staff from NRC led by Casto. Chuck will also coordinate the U.S. activities as it relates to the reactors. Haven't issued any press releases today. Have been developing accident progression estimates. Developing Q&As, including addressing U.S. reactor safety. |
| 2011/03/14<br>15:46:59 | ET                        | Batkin: A senator is asking if someone can talk to Queen Noor (Jordan) about radiation levels in Japan. Going to ask OIP to see if State Dept. can/should handle request. RST needs to send SOARCA information to OSTP. EST Chronology Officer - Rebecca Karas at 15:50:22 on 3/14/2011  |
| 2011/03/14<br>15:46:59 | ET                        | Batkin: A senator is asking if someone can talk to Queen Noor (Jordan) about radiation levels in Japan. Going to ask OIP to see if State Dept. can/should handle request.  |
|                        | <b>b6</b>                 | <b>b5</b>  |
| 2011/03/14<br>16:52:44 | RST                       | Continue to try and get a "what if" analysis of what equipment could be needed by Japanese. Were asked for equipment specs by military official. Took list of possible equipment and sent to GE. They have as-builts for when they built plant. They will help flesh out details so we can get it to people who could get them equipment. We are also getting ready to forward postulated worst case scenario to <b>b6</b> . Also going to condense and provide to OPA to attach to back of briefing status document. Continue to maintain plant status. Getting emails from Jim Trapp asking for information. Working with Liaison Team. Maintaining RST plant status info. SFPs not on status update: going to add, including projection of how long before need makeup to SFP. We are not sure where exactly the fire water is being pumped in. We believe it is coming in from fire trucks.  |
| 2011/03/14<br>17:05:59 | PMT                       | Been getting calls from health unit services. Working it through Liaison Team. Getting questions on what U.S. citizens in Japan would see in terms of radiation, what medical treatment needed, etc. Having problems staffing up PMT. Didn't staff up PMT completely over weekend. Wind direction is going to shift inland in next 6 hours. Need to staff PMT.   |
| 2011/03/14<br>17:17:04 | Call with Chairman        | Actions by Japanese seem consistent with ours, except we haven't heard anything on ingestion pathway issues, but we may just not be hearing it, or it may be because the wind direction has been out to sea.   |
| 2011/03/14<br>17:20:51 | Chairman call with Dudeck | Coordinating flights of additional NRC employees to Japan. They will be going out tonight out of various airports in coordination with USAID.  |
| 2011/03/14<br>17:22:54 | Liaison Team              | Getting misc. congressional Q's, also from FEMA. What is NRC doing? What reactors near fault zones, etc. Farming them out across agency.   |
| 2011/03/14<br>17:24:08 | ET                        | Discusses possible press release on NRC people going to Japan. Team of 9 people, 3 OIP, 6 technical. Casto will be working with Ambassador Roos as a single point of contact on reactor safety. Was charter developed for team and approved by Chairman. Borchardt will issue charter to Casto. Will prepare press release draft with this info. Q&As prepared to date have been shared to other agencies involved in this. Discussing making it more widely available throughout the agency.  |
| 2011/03/14<br>17:29:41 | Chairman Jaczko call      | Discuss need for full PMT due to wind shift. Chairman concerned that we should not put out projections that could be wrong later.  |
| 2011/03/14<br>17:35:36 | Liaison Team              | Jim Trapp got request from company, Millintech, initiated contact to donate neutron absorbers. ET: keep them on list, if Japan asks for that material, we will coordinate at that time.  |
| 2011/03/14<br>17:37:54 | Chairman Jaczko call      | To Casto: Very important role for Japan and U.S. With team are there to help ambassador with anything needed.  |
| 2011/03/14<br>17:47:50 | Marty                     | Source called and said higher pressure in reactor building could be from lifting of the drywell flange. Ask Liaison Team reach out to USACE - Colonel Tom Smith - see if they can support us.  |
| 2011/03/14<br>17:51:19 | USAID staffers            | Confirmed Casto's flight for 8:05pm, arriving in Japan at 1:30pm Wed. Car will take him directly to Embassy. Working on departures - probably 11:15 flight out of Dulles, arriving Wed. pm. Working on RI and TTC folks now. Brenner working on press release.   |
| 2011/03/14<br>19:13:12 | ET                        | Reports of new explosion at Daiichi - Unit 2.  |
| 2011/03/14<br>19:33:49 | TEPCO news brief          | Unit 2: 6:14 am pressure began to fall in suppression pool. continuing injection into suppression pool, but operators not directly involved have been evacuated.   |
| 2011/03/14<br>19:37:20 | ET w/ Chairman            | All dose projections have been from intact containment - damaged containment changes that. Still valid that PARs they have taken are consistent with ours. Question for PMT: now that it's going inland, has Japan taken measures to protect injection pathways? RST is going to try and figure out how failure could have happened.   |

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| 2011/03/14<br>19:45:24 | TEPCO                   | 2.7m of fuel rods are exposed at Unit 2. No. 1 and 3 reactors, operators have been ordered to evacuate.  |
| 2011/03/14<br>19:51:26 | TEPCO news brief        | Unit 2: Water injection operations will continue. Have heard that water level is not stable. Pumps are being used to inject seawater into reactor. Difficult to pump water into vessel, so pressure valve opened to permit water injection. Was explosive sound heard around suppression chamber, and pressure went down. Radiation up significantly in the area, so personnel were evacuated. Up to 965 micro-Sv in the immediate vicinity. Evacuees are ones not involved in water injection. Degree of leakage depends on whether it's liquid or vapor. Fuel rods were exposed for some period of time.   |
| 2011/03/14<br>20:04:37 | ET                      | Discusses whether to evacuate embassy personnel, given wind change. We also have Americans living in Tokyo. We have aircraft carriers in the vicinity. The Japanese have issued no orders for Tokyo. PMT - we have some air sample values, plus navy reactors readings. Will try and see if they correlate. Chairman - need answer whether we concur with the protective action recommendations of Japan.  |
| 2011/03/14<br>20:09:33 | Jason, USAID            | Jason, USAID wants to know whether to remove their people who are north of the area out. Jack: We're trying to understand the information we're getting from the aircraft carrier, and also the Japanese. Based on earlier indications, the Japanese protective measures seemed reasonable, but the situation is evolving.   |
| 2011/03/14<br>20:12:58 | Japan Prime Minister    | Radioactive materials have been dispersed. People should take precautions if they need to go outside. Radiation- guidelines are that at 5 microSv or above, you have to evacuate or stay indoors.  |
| 2011/03/14<br>20:16:32 | Jim Trapp call          | Have an admiral with a Navy base at Yokosaka believes he has measured a TEDE of 1.5mR/hr, thyroid 10mR/hr, 7e-9 microCi contamination. Wants to recommend sheltering for his population. He believes he has confirmed on multiple measurements. <u>he believes due to wind shift, Tokyo and other population centers are actually between his base and the plant</u> b5  |
| 2011/03/14<br>20:20:55 | PMT                     | Problem is our model does not really work well out that far. We may need to reach out to DOE.  |
| 2011/03/14<br>20:21:52 | Jim Trapp               | Got information from Admiral from Navy base - indicates substantive detectable radiation at his base. We don't understand the information - can we contact the admiral or someone on his staff? b5<br>b5   |
| 2011/03/14<br>20:40:05 | EDO bridge call         | EDO is briefed on current situation. Aircraft carrier is 10 miles SW of Tokyo b5<br>b5<br>Chip Purdie (Exelon) is in DC area, helping NEI, and can get to the people to help with analysis. b5 if doses are as significant as the admiral is saying. b5  |
| 2011/03/14<br>20:52:37 | TEPCO press brief       | Unable to measure wind direction nearby, due to quake. Northerly wind expected around NPP this morning. We do not know what has happened at U2 exactly.  |
| 2011/03/14<br>20:56:05 | PMT                     | Chairman: Have lots of conflicting information. We have consistently followed advice of Japanese govt. This could lead us to make a different recommendation to American people. We have some indication of U2 high dose readings at Daiichi - 3x background at front gate. Edit to information: Chairman: Have lots of conflicting information. We have consistently followed advice of Japanese govt. This could lead us to make a different recommendation to American people IN JAPAN. We have some indication of U2 high dose readings at Daiichi - 3x background at front gate. EST Chronology Officer - Rebecca Karas at 20:58:39 on 3/14/2011  |
| 2011/03/14<br>20:56:05 | PMT                     | Chairman: Have lots of conflicting information. We have consistently followed advice of Japanese govt. This could lead us to make a different recommendation to American people. We have some indication of U2 high dose readings at Daiichi - 3x background at front gate.  |
| 2011/03/14<br>21:01:38 | Japanese media          | Radiation was 8217 microSv after blast. Some workers at Unit 2 now evacuating plant. Those leaving are not directly involved with injection.   |
| 2011/03/14<br>21:07:07 | Chip Pardee             | Getting info from Navy Base that they are getting 20 mR TEDE and 120 mR thyroid in a 12 hour time period. We are running calculations to see what dose would be close to site. Seems to us that dose would be very high close to the site, and what PAR would be appropriate. Wondering if we could get in contact with some Exelon protective measures folks and run numbers by them.   |
| 2011/03/14<br>21:15:15 | RST                     | Admiral Donald's staff has called - they see it the same we do - he believes they have contacts over there that they can nudge to get water into containment in addition to reactor vessel.  |
| 2011/03/14<br>21:39:39 | PMT                     | Getting new numbers from the navy now. Trying to reconcile numbers. But RASCAL only calculates out to 50 miles. New numbers are 820-850 mR/hr at the gate. From 7pm to now it's pretty stable. We don't know if they are actually new measurements, or if the source is repeating the old measurements.  |
| 2011/03/14<br>21:42:51 | RST                     | Navy contact recommends filling containment. He was suggesting he could lift fire trucks to site and fill containment. Chairman - get Trapp to confirm if that's an issue for them or not. But tell Naval contact to go ahead and push it if they can, because we agree injection should go into vessel also.  |
| 2011/03/14<br>21:49:16 | TEPCO request via State | Unit 4 fuel on fire. Requesting boron.   |
| 2011/03/14<br>21:53:03 | PMT                     | Correction: Higher readings from base were from helicopter en route to base, but not at base itself. HEPA filter reading was from base.  |
| 2011/03/14<br>21:55:20 | ET                      | Need to start thinking about what equipment might be needed more long-term, like a couple of weeks from now.   |
| 2011/03/14<br>22:04:15 | Prime Minister of Japan | asking people to remain indoors. Unit 2. Workers are putting themselves in very dangerous situation - doing that so we can avoid further radiation leakage. Sheltering from 20-30 km. EST Chronology Officer - Rebecca Karas at 22:07:29 on 3/14/2011  |
| 2011/03/14<br>22:04:15 | Prime Minister of Japan | asking people to remain indoors. Unit 2. Workers are putting themselves in very dangerous situation - doing that so we can avoid further radiation leakage.  |
| 2011/03/14<br>22:07:48 | japan official          | #4 reactor is seeing a fire. At time of quake, #4 was out of operation. No fuel rods in reactor, but spent fuel still inside #4 reactor. Rods were heated and hydrogen generated. Hydrogen explosion has occurred on #4 reactor. Currently burning. UO2 also being released. #4 is housed on the outer building, so substances are coming from #4 reactor. #2 reactor: a blast heard this morning, 30 min after incident at #4 reactor. Hole was observed in #2 reactor, so we have been saying there was little possibility of hydrogen explosion. Part of the suppression chamber seems to have caused the sound of blast, and a little radioactive substance is thought to have escaped. 1, 2, 3 reactors water injection continuing and so far all 3 reactors cooling is effectively done. Next problem is maintaining cooling and dealing with #4. As of 1022am, between #2 and 3, 38 milliSv and 100 mSv at #4. So these are levels that can impact human health. Readings taken near are where release is happening. All but 50 directly involved in injection have been evacuated. Populace: 20 km radius evacuate, 30km radius, stay indoors. EST |

| Chronology Officer - Rebecca Karas at 22:25:53 on 3/14/2011 |  |
|---|--|
| 2011/03/14<br>22:07:48                                      | #4 reactor is seeing a fire. At time of quake, #4 was out of operation. No fuel rods in reactor, but spent fuel still inside #4 reactor. Rods were heated and hydrogen generated. Hydrogen explosion has occurred on #4 reactor. Currently burning. UO2 also being released. #4 is housed on the outer building, so substances are coming from #4 reactor. #2 reactor: a blast heard this morning, 30 min after incident at #4 reactor. Hole was observed in #2 reactor, so we have been saying there was little possibility of hydrogen explosion. Part of the suppression chamber seems to have caused the sound of blast, and a little radioactive substance is thought to have escaped. 1, 2, 3 reactors water injection continuing and so far all 3 reactors cooling is effectively done. Next problem is maintaining cooling and dealing with #4. As of 1022am, between #2 and 3, 38 milliSv and 100 mSv at #4. So these are levels that can impact human health. Readings taken near are where release is happening. All but 50 directly involved in injection have been evacuated. Populace: 20 km radius evacuate, 30km radius, stay indoors.   |
| 2011/03/14<br>22:28:50                                      | Japan official<br>Small amount of neutron radiation detected at #3. 400 mSv around #4 reactor. This is likely to cause some impact to human health.  |
| 2011/03/14<br>22:47:12                                      | ET<br>Unit 4 zirc fire. Unit 2 is now ex-vessel.   |
| 2011/03/14<br>22:56:09                                      | ET turnover info<br>10 R/hr outside Unit 4.  |
| 2011/03/14<br>22:56:54                                      | Jim Trapp<br>Unit 1, believe stable core cooling, no indication of SFP level issues. U2 do not have stable core cooling. Haven't had quite a while. <b>b5</b><br>They did not directly tell us ex-vessel, but that is our judgement based on what we heard. Unit 2 - lost all AC, no injection, problems controlling SRV. They said 4mPA in vessel, so fire pump cannot push into that. They probably melted some fuel, got SRV open, melted more fuel. Loud sound we believe since it wasn't like sound on other units. Guess is probably when core went ex-vessel and landed outside in water in containment - steam explosion. Would make sense with containment pressure decreasing at same time. Unit 3: Have core cooling and too busy to confirm pool level. <b>(b)(5)</b><br><b>(b)(5)</b> Conf call with white house in 10 min. Unit 4: in refueling outage. Believe had loud noise - not sure if U2 or U4 or both. Have fire in U4 SFP. Grobe: Prime minister said fuel is not on fire. Trapp: They don't have water level in SFP. Grobe: 10R/hr at site boundary near U4, Trapp: no known problems with 5 and 6. Grobe: This is no longer INES Level 4. Field <b>b5</b><br><b>b5</b> Casto is in air, other guys in air. Guys from RI and TTC should be in air, or shortly. Trapp: we might want to think about sending our people back home, or not sending. |
| 2011/03/14<br>23:18:00                                      | <b>b6</b><br><b>b5</b> spent fuel fire and heard about 40 rem/hr near Unit 3. NRC provided unit status to <b>b5</b> NRC monitoring protective measures NRC performing bounding analyses winds reported toward Tokyo  |
| 2011/03/14<br>23:30:33                                      | Commissioners Assistants Telecon<br>Jack Grobe provided info: Unit 1: core cooling stable, SFP cooling, fairly stable Unit 2: core cooling not existed for some time, pumps have been deadheaded, loud sound inside drywell, primary containment 3 to 1 atm, primary containment not intact, possible substantial core melt, possible ex-vessel Unit 3: stable core cooling, no SFP info, Unit 4: SFP dry and appears to be zirc fire in SFP Units 5 and 6: no problems reported Japan govt: 20 miles evac and 30 km shelter winds now toward Tokyo Unit 3: 2 to 4 R/hr site boundary Unit 4: 10 R/hour site boundary 9 NRC staff dispatched to Japan Chuck Casto will lead team in Japan upon arrival Chairman on call with White House DOE rad monitoring 7 hours before arrival in Japan NRC has limited field monitoring information   |
| 2011/03/14<br>23:54:29                                      | State Dept Telecon with staff<br>State Dept requests 1. Will release last hours, days or weeks? 2. Any plume projections with wind toward Tokyo? 3. Any NRC evacuation recommendations?  |
| 2011/03/15<br>00:02:18                                      | Chairman<br>Contact AID to request help in providing KI to NRC team in Japan. NRC will recommend 50 mile evac to <b>b5</b>   |
| 2011/03/15<br>01:27:22                                      | PMT Brief<br>SFP: OK with Japan recommendations. Unit 2: Do not concur with Japan recommendations based on our evaluation. Ask Japan to tell us why we are wrong.  |
| 2011/03/15<br>04:29:37                                      | Chuck Casto<br>Chuck Casto will stop at Region IV office to obtain KI for delivery to NRC staff in Japan   |
| 2011/03/15<br>04:40:30                                      | IAEA<br>IAEA reported in press release that fire in spent fuel pool at Fukushima Daiichi Unit 4 extinguished at 2200 EDT March 14  |
| 2011/03/15<br>04:58:55                                      | Staff<br>Staff tracking down possible source of diesel pumps in Japan. Will check on fuel oil supply for those pumps.  |
| 2011/03/15<br>05:48:36                                      | CNN<br>at 2:30 am EDT March 15, Fukushima Daiichi gate readings were 600 microsieverts per hour  |
| 2011/03/15<br>06:02:13                                      | Commissioners TA Brief<br>Dan Dorman: Wind direction toward Tokyo but slowly shifting toward west over next 24 hours. Fukushima Daiichi: Units 1 and 3: Stable core cooling. Unit 2: Loud noise within containment followed by pressure drop from 3 to 1 atm and increasing radiation levels. Staff believes noise might indicate vessel failure but no official notification. Staff performed dose calculations based on ex-vessel core. Dose projections indicate 50 miles for Protective Actions Recommendations if wind remains in same direction. Less if wind shifts toward west. Previous 3 to 4 rem/hr levels near unit. Unit 4: Fire in SFP but reported out. Staff believes might have been zirconium fire. Previous 10 rem/hour level near unit. New gate level is 60 mrem/hr. No SFP level information. Japan protective actions: Evac 20 km Shelter 30 km No fly zone 30 km <b>b5</b><br><b>b5</b> DOE rad team will arrive shortly. Defense Threat Agency reports several diesel pumps 75-150 psi available in Japan. Staff informing TEPCO.   |
| 2011/03/15<br>06:31:55                                      | Jim Trapp/Tony Ulises<br>Japan sources report: Fukushima Daiichi Unit 2: cooling established, SRV repaired, water injected into core, containment integrity maintained Unit 4 SFP: level reduced and hydrogen explosion, fire caused by lube oil, fire burnt out, 40 R/hr between Units 2 and 4 earlier today. No info on other SFPs. Dan Dorman indicated possible diesel pump availability. Tony and Jim will work issue from their end. Ambassador is waiting on decision for protective action measures based on Japan reports on plant status. Front gate levels spiked at 11,000 microsieverts and now about 600 microsieverts. Switchgear damage at site might make additional pump hookup difficult. Report of 5 TEPCO employees received fatal exposure. Additional possible from explosions.   |
| 2011/03/15<br>07:10:42                                      | Differing reports, micro versus milliseverts.  |
| 2011/03/15<br>07:12:25                                      | *Fire due to lube oil not zirconium. * Hi dose rates measured between Units 3 and 4. Source is from the Unit 4 spent fuel pool. *Unit 2 is in better shape than they previously thought it was. *Unit 2 containment thought to be in tact. *50 mi PARs for Americans in Japan was based on a loss of containment, since this is not confirmed this action will not be taken yet.   |
| 2011/03/15<br>07:17:09                                      | Microseverts has been confirmed by PMT as correct.   |
| 2011/03/15<br>07:49:31                                      | Chairman briefing begins.  |
| 2011/03/15<br>07:58:44                                      | Chairman briefing<br><b>b5</b>   |

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| 2011/03/15<br>08:01:23 | Chairman briefing    | OPA- the Q&As are being updated; recommended launching the Sharepoint site so Staff have a common product to refer to. NRC State and Local Liaisons were provided with information over the weekend that Chairman still considers valid. However, they are interested in getting the next version of the information. The chairman is still comfortable communicating that there is a low likelihood of harmful radiation. |
| 2011/03/15<br>08:19:19 | OCA                  | OCA will be coordinating talking points for the EDO at his Congressional Briefing at 2pm today.  |
| 2011/03/15<br>08:34:15 | EDO                  | 1). Op Center should remained staffed as long as there are Staff in Japan. 2). Op Center technical staff should be supplemented while it is day time in Japan. 3). Need to consider on site transfers for staff in-country.  |
| 2011/03/15<br>08:44:58 | Mike                 | HR should identify Staff that can speak Japanese.  |
| 2011/03/15<br>08:45:38 | State Department     | Wants a press release saying we agree with PARs the Japanese are issuing. PMT will run calculations creating a basis for this determination. France has classified this event as a 6. Japan is still calling it a 4. EST Chronology Officer - Jessica Kratchman at 13:38:13 on 3/15/2011   |
| 2011/03/15<br>08:48:06 |                      | Staffing issues in the Op Center- may need to reach out to other NRC areas. May need to implement a shadowing approach for OJT.  |
| 2011/03/15<br>08:56:46 | PMT                  | French and UK call at 9:30 AM EDT; NRC will participate but keep information at a high level.  |
| 2011/03/15<br>09:04:47 | PMD                  | PMD should consider if the core on the floor or the spent fuel pool status would influence the NRC to make different PARs then the Japanese are issuing.   |
| 2011/03/15<br>09:09:41 |                      | ET support staff calling Miriam Cohen/ Glen Tracey to identify Staff fluent in Japanese. Also, consider health and expertise of Staff members.   |
| 2011/03/15<br>09:15:52 | Mike to EDO          | Staff is working on possible ways to get water to the spent fuel pool.   |
| 2011/03/15<br>09:33:49 |                      | PMT staffed with a fluent Japanese speaker, He will aid in reading rad level maps when it is posted on the news.   |
| 2011/03/15<br>09:42:38 | EDO mtg with<br>INPO | INPO is staffing their Op Center. INPO Chief Nuclear Officers meeting today. INPO and NRC to set up Op Center to Op Center meetings.   |
| 2011/03/15<br>09:53:29 | EDO/ INPO<br>Meeting | Commissioner Ostendorf will be coming to Op Center at 11:30am.   |
| 2011/03/15<br>09:55:47 |                      | INPO issuing guidance to US Plants to verify status of b.5.b equipment, and station blackout preparations.   |
| 2011/03/15<br>10:03:51 | Chairman             | Chairman wants data showing that we support Japanese PARs ASAP.  |
| 2011/03/15<br>10:22:25 | Josh                 | Press release will be issued after White House briefing; PARs are on target; supporting data will be attached.   |
| 2011/03/15<br>10:46:37 | RMT                  | Concern we are not getting all the information for Japanese Government.  |
| 2011/03/15<br>10:47:06 |                      | Japanese asked for 2 fire trucks; they were delivered this morning; other equipment has been staged.   |
| 2011/03/15<br>10:50:05 | Mike                 | Q&A updated to support briefings today and tomorrow. Need prompt review.   |
| 2011/03/15<br>11:06:51 | EDO Briefing         | Concern that the large scale release calculations should not be included in press release because it will give the wrong impression. NRC is trying to get better dose assessment data (b)(5)   |
| 2011/03/15<br>11:23:33 | EDO Briefing         | OIP- emphasize that Japan is in the best position to judge the situation; make sure not to undermine their efforts.  |
| 2011/03/15<br>11:24:44 | EDO briefing         | Tony and Jim Provided an update:it is still difficult to obtain information; and this is making it difficult to trust the information they are being given.  |
| 2011/03/15<br>11:33:21 |                      | Call from DHS- wants NRC to share our models with them.  |
| 2011/03/15<br>11:50:24 | CNN                  | CNN: dangerous levels of radiation leaking.  |
| 2011/03/15<br>11:52:17 |                      | CNN: US Navy is providing support.   |
| 2011/03/15<br>12:31:16 | State Department     | New earthquake near Hamaoka Reactors- no damage to reactors (5 units total, 2 decommissioned, 1 shutdown for inspection, 2 operating are OK).  |
| 2011/03/15<br>12:52:30 | PMT                  | (b)(4)<br>This does not seem correct.  |
| 2011/03/15<br>12:59:06 | GE                   | Confirmed that Unit 4 spent fuel pool definitely did not have a zurc fire. Correction: zirc EST Chronology Officer - Jessica Kratchman at 13:17:50 on 3/15/2011  |
| 2011/03/15<br>13:14:38 |                      | CA briefings will be at 8am and 8pm.   |
| 2011/03/15<br>12:59:06 | GE                   | Confirmed that Unit 4 spent fuel pool definitely did not have a zurc fire.   |
| 2011/03/15<br>13:32:06 | IAEA                 | Japan upped the rating from a 4 to a 6. This is inaccurate. The IAEA site continues to say Japan has classified as a 4. EST Chronology Officer - Rebecca Karas at 18:10:41 on 3/15/2011  |
| 2011/03/15<br>08:45:38 | State Department     | Wants a press release saying we agree with PARs the Japanese are issuing. PMT will run calculations creating a basis for this determination.   |
| 2011/03/15<br>13:58:58 |                      | Trying to set up 24 hour Japanese translation.   |
| 2011/03/15<br>14:07:33 | IAEA                 | Includes a table of pressures and water levels. A comparison of these figures indicates water level in Unit 2 has dropped below fuel.  |
| 2011/03/15<br>14:40:24 |                      | 2pm meeting with Congressional Staffers.   |
|                        |                      | Hearing at 9am tomorrow. Senator Boxer having meeting at 3pm (thinks it's meeting with public?). GE working with TEPCO. Trying to secure 10 portable generators in US and get them to Japan. US working on providing equipment to Japanese. We   |

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| 2011/03/15<br>15:13:30 | ET                             | provided 2 fire engines as requested. Liaison Team does briefings with USAID early in the am. ESF8 has call at 8 that Liaison Team does. RST setting up daily call with INPO at 10:30, since they are having daily call with CNOs at noon. INPO will tell CNOs to: Confirm continued effectiveness of B5B for all us plants, and w/in 30 days, confirm SBO readiness. Ambassador issued press release, and tells Americans to follow Japanese govt. instructions. We issued press release that is corrected. PMT analyzing spike for reasonability, and why went down so drastically. We still have conflicting informations with levels measured on George Washington.   |
| 2011/03/15<br>15:42:38 | ET                             | USAID mentioned that there are 174 members of USAID DART in Japan. DOD said attempting to keep vessels out of plume, but trying to continue to provide assistance needed by Japanese. Winds offshore next couple days, then onshore Sunday and Monday. EPA is continuing to use rad monitoring network, and continue to see nothing on it.  |
| 2011/03/15<br>15:45:38 | PMT                            | Got call from WH asking for 1-pager by 6:00 on RSO duties we're taking on in Japan. What dosimetry would our team need, what doses they likely to see, what is protocol for dosimetry, and what would we recommend for members of the public (US citizens in Japan). Once teams are in place, can the NRC team serve as RSO for the US contingent. We said we could do if they need. Jack Foster is only HP going though. ET decides RSO function would come from HQ ops center. They want to know who is going to provide dosimetry to the entire US contingent. ET: DOD should handle. Also USAID may also have that covered. Need to check on whether we have KI or have to mail it? Naval Reactors is giving all their pilots KI each day, and admin limit of 300 mR/day. 160,000 US citizens there, in addition to DOD also. Heard airport now closed in Japan, not sure why. Will check with FAA. |
| 2011/03/15<br>15:56:30 | Borchardt call                 | Jack updates: Continuing to work issues, no substantive change in plant conditions. Continue to have issues with 1-4. 4 is SFP level. Other 3 units appear more stable than yesterday. Continue to work rad support for our team. Trying to get more info on rad conditions.  |
| 2011/03/15<br>16:06:10 | Liaison Team                   | Narita is open. Our team should arrive at 9-10 tonight (delay at Heathrow).   |
| 2011/03/15<br>16:15:38 | ET                             | DHS wants update to questions by 4:00. We were supposed to respond by now. Question for us is do we still believe no impact to US citizens in the US. Grobe: Tell them do not anticipate any health impacts. Just tell him answer is still yes.   |
| 2011/03/15<br>16:18:40 | ET                             | Rest of Commissioners want package provided to Borchardt & Chairman ASAP.   |
| 2011/03/15<br>16:23:33 | ET                             | Starting to get data from AFB. Most of data is upwind, though. Flyover data should help, though.  |
| 2011/03/15<br>17:14:36 | ET                             | ET turnover mentions needing to consider onsite transfers for our staff in-country. Seeking clarification on "onsite transfers".  |
| 2011/03/15<br>17:23:43 | ET                             | Going to check to make sure we are supplementing Ops Center staff during daytime in Japan consistent with turnover instructions.  |
| 2011/03/15<br>17:28:46 | ET                             | Teams are not aware of any plans to augment staff during daytime in Japan.  |
| 2011/03/15<br>17:38:46 | Discussion with<br>Michelle E. | Had conference call with Office Directors to support staffing in general. Want people to make commitment to support 4 days in a row. Getting mixed signals on who they need. Have Marty supplementing, but that is all now. Grobe: could use another leadership person for PMT. Should talk through staffing with Marty. Talking about switching out people in Japan every 2 weeks.   |
| 2011/03/15<br>13:32:06 | IAEA                           | Japan upped the rating from a 4 to a 6.   |
| 2011/03/15<br>18:11:48 | ET                             | Need to make sure the Status update and Talking Points are consistent. Need to make sure we are still comfortable with the worst case analysis. Chairman needs this updated at 7:00.  |
| 2011/03/15<br>18:22:49 | ET                             | New fire at Unit 4 reported on CNN. Requested by State Dept. to comment on.   |
| 2011/03/15<br>18:38:40 | CNN Live                       | TEPCO says another fire burning in Unit 4. in northeastern corner of 4 reactor building. Discovered 5:45am local time. Helicopter being prepared to fight fire.   |
| 2011/03/15<br>18:42:14 | CNN Live                       | Fire has not yet been contained.  |
| 2011/03/15<br>18:43:20 | State Dept.                    | State Dept. has confirmed fire on Unit 4.   |
| 2011/03/15<br>18:50:30 | TEPCO via TV                   | TEPCO is saying they haven't yet started fire extinguishing Unit 4 fire. Fuel rods have been exposed and generating hydrogen in Unit 4. Some of roof is damaged, so helicopters could be used to inject water, or by fire engines. Not decided yet for sure because of difficulties. 30R/hr in area, so difficult for personnel to fight fire in area. EST Chronology Officer - Rebecca Karas at 18:54:55 on 3/15/2011 The 30R/hr is inside Unit 4. EST Chronology Officer - Rebecca Karas at 19:27:40 on 3/15/2011   |
| 2011/03/15<br>18:50:30 | TEPCO via TV                   | TEPCO is saying they haven't yet started fire extinguishing Unit 4 fire. Fuel rods have been exposed and generating hydrogen in Unit 4. Some of roof is damaged, so helicopters could be used to inject water, or by fire engines. Not decided yet for sure because of difficulties.  |
| 2011/03/15<br>19:15:24 | ET                             | INPO has issued document to industry, asking for 4 actions: confirm b5b, adequacy of SBO, and other two are related to safe flooding.   |
| 2011/03/15<br>19:19:59 | ET                             | Flight for staff got delayed. Most are 10pm. Casto about 12pm. Last person about 3am.   |
| 2011/03/15<br>18:50:30 | TEPCO via TV                   | TEPCO is saying they haven't yet started fire extinguishing Unit 4 fire. Fuel rods have been exposed and generating hydrogen in Unit 4. Some of roof is damaged, so helicopters could be used to inject water, or by fire engines. Not decided yet for sure because of difficulties. 30R/hr in area, so difficult for personnel to fight fire in area. EST Chronology Officer - Rebecca Karas at 18:54:55 on 3/15/2011  |
| 2011/03/15<br>19:31:48 | PMT                            | 4-5 hours before RAP teams get in the air. Teams on ground have not gotten permission from govt to take readings in places other than by air, in embassies and US bases.  |
| 2011/03/15<br>19:33:59 | PMT                            | Trapp says command from Navy is asking questions what we should do for bases. His recommendation is we think about doing something prior to Sunday when wind shifts. What would we do if we don't agree with Japanese recommendations.  |
| 2011/03/15<br>19:35:47 | Borchardt via<br>phone         | Finishing up hearing process with Chairman, and need 2 things prepared and ready by 0630 tomorrow. Need 10 copies of each, Bill will pick up at 0700. 1: update of NRC talking points (Chron ones). Also 10 copies of ops center status update.   |
| 2011/03/15<br>19:47:04 | ET                             | Japanese have requested KI. US through DOE is tasked to do this. They have accepted our offer of aerial and ground monitoring. EST Chronology Officer - Rebecca Karas at 19:51:58 on 3/15/2011  |
| 2011/03/15<br>19:47:04 | ET                             | Japanese have requested KI. US through DOE is tasked to do this.  |
| 2011/03/15             |                                | Need to start thinking about recommendations for what we should do domestically. Need to look at GSI-199 and when it's  |

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| 19:56:24               | Marty                     | due.  |
| 2011/03/15<br>19:59:11 | ET                        | Will be Commission meeting next week on this - high level as it's public. Closed meeting afterwards on agenda planning. Start out with status of Japan as background.   |
| 2011/03/15<br>20:00:23 | Commission TA<br>Briefing | Grobe: Status not changed since last update for Units 1-3. all have some fuel damage, and sea water being injected. Unit 2 being viewed as less stable. All 3 have lost secondary containment, but primary believed intact. Dose rates at gate 60mR/hr. Unit 4 experienced a lube oil fire yesterday. Reports of another fire. 30R/hr in building due to shine from fuel due to reduced shielding. Complicates fighting fire. TEPCO contemplating fighting fire from external locations. 80 deg C in other pools. Team will be arriving over next several hours. Many at 10pm, others at 12 and 0300. Priority is getting in communication with our team. Japan has accepted support with equipment. Military facilitating. Monitoring by DOE. And requested KI. Monitoring land and air-based. Want to get connected with that data stream. Still struggle with access to information, trying to enhance. INPO has issued highest level event doc. Level 1 event report. Required of each US utility to: assess and evaluate readiness/adequacy of B%B, SAMG, SBO and issues with internal and external flooding similar to that which could happen from seismic event. Marshall: IAEA table: on SP pressure line, what is D/S stand for? What is distinction between A and B on pressure. Grobe: information is somewhat dated. Need to clean up reports a bit. Information is about 10pm yesterday. Not sure what relevance information has today. Franovich: Are we considering taking action like INPO? Grobe: not contemplating any prompt action at this time. It's days or weeks out, not near-term. IAEA table useful, but would be better in our country's units. Grobe: our ability to validate or have confidence in this information is very limited. We are trying to enhance data stream. Trying to do through WANO. Marshall: Unit 2, seem to be more comfortable primary cont. is not breached. Why? Grobe: it is retaining pressure. RST has indicated they have a higher level of confidence it's retaining pressure. Vacuum breakers between torus and drywell, and also torus and Rx bldg. it could be that one vacuum breaker opened briefly. Noise heard at time. Possibly localized detonation. We don't know what happened. Has been reported to us that Prim. Cont is retaining pressure, though, so appears intact. Fire on Unit 4 is being reported as fire that may have initiated due to hydrogen gas from low levels of water in SFP. No indication what is burning. Media indicates fire started and being reported by a TEPCO person that they are not taking actions to extinguish at this time due to dose rates in reactor building. Previous fire was lube oil. Monitoring to get more info. Marshall: Is TEPCO cycling operators in and out. Grobe: Know evacuated non-essential personnel. 50 remain onsite. Have reports that 5 individuals received lethal doses. If dose rates were 40-60R/hr for several hours, than is possible. Having difficulty confirming information. Chairman: CNN reporting fire. Grobe: repeats fire info. We believe 30R/hr is shine dose from lower SFP levels. Chairman: need to remember to consider if we need to make different recommendations from Japan. Grobe: not now. |
| 2011/03/15<br>20:22:35 | Trapp via PMT             | Conflicting reports: One story is that Fire in 4 was SFP area hydrogen fire. Separate story is that it was oil fire. Another thought is that reports of new fire are just restatement of old fire. But one other thought is that it is in fact a new fire. Trying to validate (b)(4)  |
| 2011/03/15<br>20:29:02 | Trapp                     | Grobe and Trapp discuss logistics of arrival team. We need to update table to add cell phone numbers. Trapp continuing to have problems with consistent high quality data stream. Reaching out to any channel to get steady stream of info. Grobe: considering talking to INPO about getting plugged in. Yesterday went to press conference with PM. They gave us information, and throughout day information decreased. Disappointed that confirmation of information was very poor. If we can get in touch with WANO, that would help. Ambassador has tried to get desk at seat of NI, and has not been successful. Also trying to get into TEPCO EOC. Have been working about 20 hour days. Other groups are on way though. Marty: want to engage with all of team soon when Chuck is there and is briefed up. Chuck will offer to provide coordination for all US nuclear activities to ambassador.   |
| 2011/03/15<br>20:39:58 | ET                        | Discusses expanded team during Japan daytime hours. RST believes may need fewer people. PMT may need one more dose assessor. Do need to expand Liaison Team (1-2 people). Shortage of directors for Liaison Team. Working to solve through Michelle. Also shortage of State Liaison people. Grobe: get needs specified so filling those positions happens automatically. Expect this to continue next couple of weeks. ETST feels understaffed. Few people supporting all briefing books. Need to also think about swapping out people in Japan in 2 weeks. If Chuck establishes himself as POC, shouldn't swap him out, but others could, especially Jim and Tony. Nader is going to reassess needing 2 OIP people. Kirk will probably come back first in about a week, and we can assess whether need replacement. Have asked Office Directors to identify people.  |
| 2011/03/15<br>20:47:38 | Chairman bridge<br>call   | Grobe: team is arriving - most arriving now. Casto in a few hours later. They go to hotel across from embassy. Casto will be at embassy in about 4 hours. As soon as he is briefed, he will get on phone with us. Should have functioning team in morning. We don't know if they will get access to information they need. Still do not have good stream of information on what we need. Putting together snippets from brief interactions and news media. We're going to try and enhance data stream. Govt of Japan has accepted US offer for equipment (DOD), land and air monitoring (DOE) - we will get info real time, KI pills. INPO has established Level 1 document. Fire in Unit 4. About 4 hours ago, fire detected in Unit 4. Not clear if this was instantaneous hydrogen burn, or lasting fire. Fire yesterday was lube oil and extinguished. Dose rates are 30R/hr inside U4. TEPCO thinking about ways to fight fire. Jaczko: need to call him if we expect/recommend any changes to Japanese PARs for our people. Expect long lead time to implement, so he wants to know ASAP if we would recommend something different.   |
| 2011/03/15<br>20:47:38 | Chairman bridge<br>call   | Grobe: team is arriving - most arriving now. Casto in a few hours later. They go to hotel across from embassy. Casto will be at embassy in about 4 hours. As soon as he is briefed, he will get on phone with us. Should have functioning team in morning. We don't know if they will get access to information they need. Still do not have good stream of information on what we need. Putting together snippets from brief interactions and news media. We're going to try and enhance data stream. Govt of Japan has accepted US offer for equipment (DOD), land and air monitoring (DOE) - we will get info real time, KI pills. INPO has established Level 1 document. Fire in Unit 4. About 4 hours ago, fire detected in Unit 4. Not clear if this was instantaneous hydrogen burn, or lasting fire. Fire yesterday was lube oil and extinguished. Dose rates are 30R/hr inside U4. TEPCO thinking about ways to fight fire. Jaczko: need to call him if we expect/recommend any changes to Japanese PARs for our people. Expect long lead time to implement, so he wants to know ASAP if we would recommend something different.   |
| 2011/03/15<br>21:06:05 | Chairman                  | Need to call him if we expect/recommend any changes to Japanese PARs for our people. Expect long lead time to implement, so he wants to know ASAP if we would recommend something different.  |
| 2011/03/15<br>21:07:47 | ET                        | Surgeon General is recommending KI for everyone on West Coast.  |
| 2011/03/15<br>21:08:27 | ET                        | Liaison Team to get ahold of Surgeon General's office on what is rationale.   |
| 2011/03/15<br>21:11:00 | Grobe                     | For briefing books, should make up initial set of "go" books, and then just email updates on some set duration to their secretaries to update.  |
| 2011/03/15<br>21:29:08 | ET                        | Discuss restructuring talking points and status summary into 1 document with different sections.  |
| 2011/03/15<br>21:38:03 | Liaison Team              | USAID reps went to OPA at State Dept. Understand our concern on KI rec from Surgeon General. They wanted us not to contact them directly. They will deal with it. Marty: We should go out to our SLOs and tell them we've initiated these actions in response to what came out from Surgeon General.  |
|                        |                           | Wants quick status update. Grobe: Much better than last night. U1-3, best info is that nothing has changed. U2 less stable - concern with stability of core cooling on Unit 2. Best information is they all have primary containment integrity. Dose rate at  |

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| 2011/03/15 Eric Leeds via<br>21:52:42 Bridge     | <p>site boundary is 60mR/hr. U4 had another fire about 5 hrs ago. Cause is not clear. Smoke was seen. Appears fire self-extinguished. Dose rates are 30R/hr. Believe is shine, not contamination or release, from decreased SFP water level. News media continuing to show footage from fire in the morning. Fire is out as best we understand. Most of team is on the ground. Casto a little later, as well as 1 other team member. Trapp will brief Casto and then get ahold of us. Japanese govt has accepted help from US - 1 doz generators and other equipment, rad monitoring, KI. WANO Japan is getting access to TEPCO briefings. <b>b5</b></p>   |
| 2011/03/15 PMT<br>22:06:36                       | <p>Surgeon General is recommending West Coast residents procure KI. We have said we agree with the Japanese recommendations, and we do not anticipate rad materials affecting US and its territories. USAID is going to get with Surgeon General and has asked us not to engage directly. Also trying to become more predictable as an Ops Center. Have updated 2-pager to be more consistent. Will be producing go-books. Will be updated at 0600 and 1800 electronically. Revisited staffing of various teams and right-sized it. We will be at this for several weeks. Periodic briefings list is maintained by Liaison Team. Chairman briefed Cmsrs, and they agreed want Cmsn meeting early next week to hear from staff on what is going on and what Agency's response is. Open meeting and then closed one afterwards.</p>  |
| 2011/03/15 NHK<br>22:15:38                       | <p>Fire about 5 hours ago in Unit 4, low in reactor building <b>(b)(5)</b><br/><b>(b)(5)</b> TV also shows smoke rising from site. Difficult to tell which units it is from.</p>   |
| 2011/03/15 Cabinet Secretary<br>22:17:45 (JP)/TV | <p>Fuel pools may have heated in #3 and produced steam (TEPCO).</p>  |
| 2011/03/15 Cabinet Secretary<br>22:21:21 (JP)/TV | <p>TEPCO #3 has been seeing white smoke coming out - looking for cause. Near flood gate radiation reading is fluctuating hour by hour, but on whole it poses no real hazard. At one time last night, we had reading of 1000mSv, but now 800-600 mSv. Radiation near flood gate at 10am started to increase rapidly and has reached to unit of mSv. All workers there have suspended operations, and have asked them to evacuate to safe area. As of 1054 reading began to drop, and we are right now conducting expert analysis, but most probable is that part of the vessel evaporation is coming out and that is cause of white smoke. EST Chronology Officer - Rebecca Karas at 22:35:47 on 3/15/2011</p>  |
| 2011/03/15 Cabinet Secretary<br>22:26:45 (JP)/TV | <p>At 834 am got report that white smoke rising from #3, but no report of blast. Part of debris could be coming out of containment vessel. We don't have detailed information - we are investigating, but part of containment is broken and it seems that vapor is coming out from the broken part. We have decided no need to change evacuation instruction. #4 has SFP, and we are preparing to pump water into reactor. Rising rad levels mainly due to #3 reactor. Temp rising in 4, 5 and 6 reactors. We have joint taskforce between govt and TEPCO who will report whether water will be sprayed from above. May cause some risk if we pour large amounts of water in very short time. Gradual addition of water is more safe to do. When we make final decision we will announce. EST Chronology Officer - Rebecca Karas at 22:35:30 on 3/15/2011</p>  |
| 2011/03/15 TEPCO<br>22:21:21                     | <p>#3 reactor needed to have water injected, so needed to release air. In releasing air, radiation could have leaked. Possible radiation coming out through that process. We are working to inject water in #4, have not implemented yet. Have high rad from #3, so are standing by and want to see how #3 is doing before decide to inject water in #4. TEPCO people can't even go inside compound. We might need help of US military. Have been offered help, and will think about the specifics. We are in process of coordination with US. We are supplying water from ground, but supplying from above requires pumping large amount of water, which involves risk, plus have to consider risk of helicopter operation. Restoration of ECCS will be better - stable supply of power would make it easier to carry out operation. Radiation was in microSV level yesterday, and today is mSv. At 1054, rad level has been coming down rapidly, though. Would like to tell public that we are exposed to radiation in our daily lives, like when you get an Xray or when you fly by airplane.</p> |
| 2011/03/15 TEPCO media<br>22:17:45 briefing      | <p>At 834 am got report that white smoke rising from #3, but no report of blast. Part of debris could be coming out of containment vessel. We don't have detailed information - we are investigating, but part of containment is broken and it seems that vapor is coming out from the broken part. We have decided no need to change evacuation instruction. #4 has SFP, and we are preparing to pump water into reactor. Rising rad levels mainly due to #3 reactor. Temp rising in 4, 5 and 6 reactors. We have joint taskforce between govt and TEPCO who will report whether water will be sprayed from above. May cause some risk if we pour large amounts of water in very short time. Gradual addition of water is more safe to do. When we make final decision we will announce.</p>  |
| 2011/03/15 RST<br>22:39:53                       | <p>TEPCO #3 has been seeing white smoke coming out - looking for cause. Near flood gate radiation reading is fluctuating hour by hour, but on whole it poses no real hazard. At one time last night, we had reading of 1000mSv, but now 800-600 mSv. Radiation near flood gate at 10am started to increase rapidly and has reached to unit of mSv. All workers there have suspended operations, and have asked them to evacuate to safe area. As of 1054 reading began to drop, and we are right now conducting expert analysis, but most probable is that part of the vessel evaporation is coming out and that is cause of white smoke.</p>  |
| 2011/03/15 Wash Post quoting<br>22:45:23 JP      | <p>#4, entire secondary containment appears gone worse than #3. Active smoke coming out of 3, plus #4 issues. GE-Hitachi getting briefing from TEPCO.</p>  |
| 2011/03/15 TEPCO<br>22:45:23                     | <p>Pulling all workers from damaged nuclear plant. EST Chronology Officer - Rebecca Karas at 22:45:50 on 3/15/2011</p>   |
| 2011/03/15 Trapp<br>22:47:47                     | <p>Pulling all workers from damaged nuclear plant.</p>   |
| 2011/03/15 RST<br>22:54:49                       | <p><b>b5</b> Grobe: We have some indication substantial damage to Unit 4 secondary containment. Trapp has also heard that. Rad levels are very high. <b>b5</b><br/><b>b5</b> Marty: We'll put together something on what we see. Trapp <b>b5</b><br/><b>b5</b></p>   |
| 2011/03/15 TEPCO press<br>23:10:12 conference    | <p>If you look at hydrogen generation, at units, and we have no containment for Unit 4. Marty: let's get it written down and go to DOD to validate facts. Grobe: run SFP modeling - use fuel damage at 50 or 75% and see what it gets you with no containment or water in pool.</p>  |
| 2011/03/15 Jack Grobe<br>23:36:10                | <p>Unit 2: Suppression chamber is damaged. Unit 3: suppression chamber pressure instrument is downscale</p>  |
| 2011/03/15 Jim Trapp<br>23:47:02                 | <p>Prepare recommendations for Chairman on NRC position on Fukushima reactors</p>  |
| 2011/03/16<br>00:02:56                           | <p>Dan Dorman: Conflicting reports for possible site abandonment. TEPCO said only essential actions being taken onsite. Washington Post says site personnel being removed. Jim Trapp <b>b5</b> Dan told <b>b5</b> Ambassador's Special Asst <b>b5</b> will speak to Ambassador about <b>b5</b> TEPCO requested GE for gas turbine generators <b>(b)(6)</b> needs to send approval to US govt. Dan Dorman <b>b5</b><br/><b>b5</b></p>   |
| 2011/03/16                                       | <p>Discussion of approval for gas turbines from GE. Provided phone number for turbine specs (Jeff K <b>b5</b>) will take action for approval.</p>  |
| 2011/03/16                                       | <p>GE turbines are massive (5 MW). Logistical issues with heavy equipment. 200 tons estimated weight. 1 generator per C5</p>   |

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| 00:32:07               | Tony Ulises                      | plane. Tony needed to hang up to talk to Ambassador.  |
| 2011/03/16<br>01:03:51 | Jim Trapp                        | Jim Trapp reports that [b5] Jim Trapp not surprised by conflicting information [b5]   |
| 2011/03/16<br>02:53:50 | Pat Hiland                       | [b5] Amy confirmed that 7 members of Casto's team heading to hotel. ET asked Amy to set up telecon with Chuck and team following their arrival. Plan telecon for 5 pm Tokyo time.   |
| 2011/03/16<br>03:07:43 | Dan Dorman                       | Unit 5: RX vessel water level has dropped 40 cm in last 5 hours. TEPCO plans to use diesel generator at Unit 6 to supply water to Unit 5.<br>IAEA report did not specify if Unit 5 water level applied to Rx vessel or SFP. Report indicated that water was 200 cm above fuel 5 hours ago, but had dropped recently.  |
| 2011/03/16<br>04:04:40 | Chuck Casto                      | Dan Dorman informs Chuck that NRC staff sent plant summary and recommendation to (b)(6) Chuck has not seen it yet. ET information needs relayed to Chuck: Current condition at Unit 4? Decreasing level at Unit 5 (Rx vessel or SFP?) with use of diesel generator to provide water. Chuck stated that Ambassador very concerned about 170,000 US citizens in Japan. Chuck does not want to [b5] PM but wants to let information percolate. Chuck recommends planning one or two steps ahead in the event. Chuck recommends stabilizing our path. ET agrees and indicates one-pager sent to [b6] provides a bounding analysis and recommendation. DOD was initially only allowed to fly over base for monitoring. ET recommends that DOD be allowed full flight capability for monitoring. Chuck has learned that rad. monitoring flight planned 15 hours from now from Tokyo to plant. ET will send to Chuck (1) Ops center update, (2) NRC talking points, and (3) flyover recommendation. Previously sent summary and bounding analysis to [b6] Chuck will work to obtain more accurate information from Japan sources. Chuck indicates that it would be best to have access to TEPCO EOC for most accurate information. Chuck wants plant info directly to his team from Japan sources. Chuck recommends NRC interact with US partners, INPO, and IAEA to combine information and knowledge. Chuck recommended bringing in BWR experts such as from Exelon. Chuck indicates NRC severe accident NUREG/CR-6150 tracks this event very closely. DOE lab INL could provide code scenario assistance. Pat Hiland indicates that Ops Center team has been reviewing the NUREG. ET informed Chuck that 4 pumps are available for TEPCO to be picked up. ET and Chuck discussed thinking about long-term needs. Chuck said team has KI. Chuck saw a letter from [b5] Chuck recommends coordination of the members of our Federal family. ET will address the issue. ET indicates that GE-Hitachi has EOC in Tokyo. Chuck suggests contacting upper levels of GE if necessary for access. |
| 2011/03/16<br>05:28:41 | John Monninger<br>(Chuck's team) | NRC team invited to meeting with TEPCO at 8 p.m. SFP Status: Unit 1 and 2 boiling down Unit 3 and 4 zirc water reaction No SFP walls in Unit 4 so no ability to retain water. TEPCO discussing dropping sand on Unit 4 SFP. Pat Hiland said his group will research best approach for Unit 4 SFP. John indicated that team charter indicated recommendations must be routed through Ambassador. ET stated that team should establish protocol with Ambassador for technical issues. ET will provide more guidance at 7:15 prior to team meeting with TEPCO. ET requested that team also check on Unit 5 SFP status. Tom Blount reports that Naval Reactors only intended to provide talking points to begin dialog [b5] Message appears to have been lost in translation.   |
| 2011/03/16<br>05:55:28 | Chuck Casto                      | Chuck reported on telecon with Naval Reactors (Admiral Mueller) and Ambassador about Naval Reactor e-mail to Ambassador. Naval Reactors e-mail: Need more personnel on site. Need more pumping power on site now (b)(5) Ambassador concerned about strong statements in e-mail. NRC memo referred to 50 miles for evacuation based on Unit 4 SFP issue. Ambassador concerned that NR e-mail and NRC memo appear to be different recommendations. ET says that NR e-mail and NRC memo not necessarily different. (e.g., NRC memo based on one unit) [b5] ET also working on Unit 4 SFP recommendation.   |
| 2011/03/16<br>06:25:08 | Jack Foster<br>(Chuck's team)    | [b5] ET working to contact Chairman. ET used RASCAL to develop NRC talking points. ET sent recommendations on SFPs to [b6] If cannot get water, then dump anything into SFPs based on NUREG used by Pat Hiland's group (b)(5)   |
| 2011/03/16<br>06:31:32 | Naval Reactors<br>Telecon        | Coordination of NR and NRC approaches: NRC sent evacuation recommendations based on one unit. NR sent e-mail with additional recommendations for specific actions. NR does not consider the recommendations different. ET agrees with this view (b)(5) ET states that NRC has provided recommendations to TEPCO on SFPs. NR wants to ensure we are on same page and notify Ambassador, Chairman, Admiral Mueller, Admiral Donald, and Chuck Casto join discussion: (b)(5) Chairman indicates that NRC focus on whether we agree with TEPCO protective action recommendations. ET believes that this situation will degrade so TEPCO will need to provide additional protective action recommendations. ET says need more information. Chairman concerned that we might not receive additional information. Admiral Mueller reads his e-mail with detailed recommendations. Chairman states that situation will degrade to might have 6 reactors and/or SFPs. No one disagreed. Chairman states need to establish a call with the White House to discuss protecting American citizens [b5]   |
|                        |                                  | Chairman provides NRC [b5]  |
|                        |                                  | [b5]  |
|                        |                                  | They are providing two pumps (1000 gpm) from a truck approximately 700-800 miles away. 4 pumps arrived in port; not sure what port- checking on where.  |
| 2011/03/16<br>07:54:32 | Chairman                         | May not be able to attend Hill meeting in person, if not he will attend via phone.  |
| 2011/03/16<br>08:31:21 |                                  | Japanese translator in ELT room.  |
| 2011/03/16<br>08:43:56 |                                  | Communication plan: most importantly- needs to address why we are confident in our reactors.  |
| 2011/03/16<br>08:54:45 | Chuck Casto                      | TEPCO new information: List of equipment; move to closest American installation: *Four pumps are in country. *Need equipment for spent fuel pools. *Rocket launchers for water: can be mounted on the ground or on a latter truck. Needs to be able to launch water 30m in the air, from 50m away, 500 gal/ min. * Areal latter snorkel trucks (monitor nozzles) *Land based pumps *(Booster pumps by the ocean) *Needs to include strainers so seawater does not clog. *Lots of rubble in the way, need equipment to clear a pathway. Bulldozers. *Sand- RST recommends for Unit 3 and 4 spent fuel pools, instead of water.   |

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| 2011/03/16<br>09:36:01 | Casto                         | Need to use a combination of water and sand for SFP. Water- Units 1,2; Sand Units 3,4   |
| 2011/03/16<br>09:38:34 | EDO                           | (b)(5) <span style="margin-left: 100px;">b5</span>  |
| 2011/03/16<br>09:41:07 | PMT                           | Met people getting a forecast through the weekend because offshore winds may come back on shore.  |
| 2011/03/16<br>09:42:56 | PMT                           | Running RASCAL with different core, mel, and structural assumptions.  |
| 2011/03/16<br>09:57:28 | Mike Weber                    | White House is working on a communication plan. Areal readings will produce large amounts of available data. There needs to be a coordinated effort and unified opinion between Federal agencies.   |
| 2011/03/16<br>10:01:55 | Mike Weber                    | The White House has a Q&A document- the NRC wants to get a hold of this document.   |
| 2011/03/16<br>10:04:15 | CNN                           | Media reporting that containment vessel may be breached. We cannot confirm this.  |
| 2011/03/16<br>10:18:39 | EDO                           | Confirming that the US NRC recommendation of a 50 mi evacuation is still what NRC is confident in recommending. Op Center answer: with today's conditions (reactors, SPFs, meteorological), this is the appropriate recommendation. If the situation degrades or stays the same and the meteorological conditions change (as they are expected to on Sunday), the protective action may need to be revisiting.  |
| 2011/03/16<br>10:36:04 | EDO                           | Question: With three cores and four SFP potentially compromised, would this effect the US? Answer: would depend on the conditions, and this is something we are revisiting, but the "quick answer" is "NO". This needs to be confirmed.   |
| 2011/03/16<br>10:38:14 | PMT                           | RASCAL confirms that there would be no impact on US: Alaska, Hawaii, CA.  |
| 2011/03/16<br>10:40:15 |                               | Media on the ground in Japan (Scott Kelly) wants an interview with Chuck Casto. OPA is handling this request.   |
| 2011/03/16<br>10:42:53 | INPO                          | Japan needs Boron. Diablo Canyon has 20,000 tons of boron, it would need to be airlifted.   |
| 2011/03/16<br>10:55:46 | Texas                         | Texas State Radiation Board is requesting plume data.   |
| 2011/03/16<br>11:32:30 | John and Chuck                | TEPCO met with the NRC reps: Discussed possible specifications for cooling: Four train systems- seperated and independent for each SFP. *Need suction strainers. *Length of pipe from the ocean to the beach, (elevation change 10m). *Booster driven diesel pumps to get water 10m up from the ocean. *Unit 1, 4: need 500m of piping. *Units 2,3: need 700m of piping. *Diesel driven fire pumps. Ground mounted launch point nozzels. Must be movable and transportable. *Requesting assistance with installation with running and operation. *May eventually need to add boron, must be able to suck the boron from a tank. BACKUP system: *Four fire trucks with areal booms- must be able to lift 20-30m with water cannon on the end. <this is all at a minimum> (b)(5) Other concepts: implament remote control robots for use in high rad areas. |
| 2011/03/16<br>11:45:46 | TEPCO mtg with<br>Chuck/ John | Do not think the walls of Unit 4 SFP have been blown out; because there would be streaming radiation if that were the case.   |
| 2011/03/16<br>11:48:24 | TEPCO Meeting                 | All four Units have RCS continuing to inject via low pressure core spray. Unit 2 SFP: small blow out in the panel hole; loss of water inventory, but no walls have been knocked out. As bulldozers are clearing away rubble there is a radiation reduction of approximately 70%: this indicates that there has been a significant release.  |
| 2011/03/16<br>11:56:23 | TEPCO mtg                     | Having trouble accepting vehicles not licensed in their country: preference is to have vehicles airlifted to TEPCO site.  |
| 2011/03/16<br>11:59:56 | EDO                           | Confirmation- there are no changes to are four key recommendations.   |
| 2011/03/16<br>12:01:04 |                               | (b)(5)  |
| 2011/03/16<br>12:05:03 | John Monninger                | Concern: need to talk with NSIR Safeguards Team on how to knock a hole into the Unit 2 SFP so we can get water into it. Need to accomplish this from a distance. CORRECTION: knock a hole in SFP BUILDING. EST Chronology Officer - Jessica Kratchman at 12:09:37 on 3/16/2011  |
| 2011/03/16<br>12:05:03 | John Monninger                | Concern: need to talk with NSIR Safeguards Team on how to knock a hole into the Unit 2 SFP so we can get water into it. Need to accomplish this from a distance.  |
| 2011/03/16<br>12:16:11 | Josh                          | (b)(5)<br>(b)(5) Chairman- need within 10 minutes.  |
| 2011/03/16<br>12:32:21 |                               | It is our understanding that we are the lead in coordinating technical resources.   |
| 2011/03/16<br>12:36:09 |                               | Attach SFP run and reactor runs, don't need context. Want data to show that we have been continually working on this.   |
| 2011/03/16<br>12:40:11 | Steve Troutman,<br>NR         | Offered to send 1-2 staff and some of the lab staff to our Op Center; they have been brainstorming some options. (b)(5)<br>(b)(5) Steve feels, that this will be positively accepted by them. Mike indicated that NRC Staff in country are taking this approach as well.  |
| 2011/03/16<br>12:46:09 | conference                    | on phone: Mike, Cathy, Brian, and Eric Chairman wants to put together a group of Senior Managers who can communicate the basis of the press release that is about to be put out. Press release will be coming out soon (b)(5)<br>(b)(5)   |
| 2011/03/16<br>13:17:00 | RST                           | NR representative on his way here (Tom Roberts).  |
| 2011/03/16<br>13:19:44 | RST to GE                     | Robots are available; RST asked if there are GE contractors willing to help, however all GE contractors have left; may be some local GE workers who can be tapped.  |
| 2011/03/16<br>13:23:17 | CDC                           | Asked if a fire in the SFP would effect the primary containment. Answer: that is very unlikely based on the location of the SPF. CDC still wants to talk to our experts.  |
| 2011/03/16<br>13:25:15 | Josh                          | Email Rebecca Schmidt and Amy Powell a very quick summary on PAGs. Need quickly, and accurately.  |
| 2011/03/16<br>13:31:06 |                               | State department is issuing their press release, and we are in the process of issuing ours.   |

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| 2011/03/16<br>13:39:57 |                       | Preparing to enter the Unit 4 SFP to remove rubble; clearing debris field so they can get the fire trucks in. Discussing risks: high radiation fields; hydrogen rich environment.  |
| 2011/03/16<br>13:43:11 | TEPCO via Tony        | 20-30 millirem between Unit 3 and Unit 4. Flew over Unit 4- 247 millisi. There are still people in the control room, and still people in staging area; 200 millirem background.  |
| 2011/03/16<br>13:47:48 | OPA                   | NRC PRESS RELEASE IS ISSUED.   |
| 2011/03/16<br>13:50:13 |                       | PRESS RELEASE DATED WRONG.   |
| 2011/03/16<br>14:03:02 |                       | Chairman testimony in progress.  |
| 2011/03/16<br>15:20:02 | ET                    | GE says deal is off on generators they were going to supply. Our people are advising ambassador, meeting with various folks to understand plant status and troubleshoot. Had 3 meetings early this am. No info from IAEA all shift. Chairman has asked we continue to focus on whether the protective action recommendations are appropriate, and if not coordinate and move up chain. Medical/health subgroup will be set up with DHS/HHS on advise to states. Will be a protocol developed for interagency sharing. They are cooling all 4 units using LPCS with sea water. Got SRVs open and are maintaining pressure below mPA. Reactors in better shape than SFPs. 1, 3, 4 and SFPs open to air. 3 and 4 fuel exposed. TV: says almost have electrical line into site.  |
| 2011/03/16<br>16:01:50 | RST                   | About ready to transfer diagrams of systems to USAID. Know Diablo Canyon has 20,000 pounds of boron. Need to get on flight. Need to get question answered for Weber on status of SFPs (depending on status - liner or no, put water or sand in it). 20-30R/hr around buildings. At least one control room has 200mR/hr. Working with DTRA to provide us dose calcs. Working on structural integrity of SFPs. Working with Quad Cities, which has similar SFP. Unit 2: Secondary cont is intact, and working with GE on trying to find out where to put hole in top of containment to pour water or sand into top of SFP. We've asked Casto to get technical drawings from site. Sent action items list to WH today. Haven't had any feedback yet on what list was. Was equipment and action items. Brian: Was list discussed between INPO, DOD, etc. DOD was going off to get equipment. Second list - request from our USAID people on what else could we use. Administrator of USAID was going to use in conversation with WH. TEPCO is trying to install 60kV temp power supply to site, plus cubicle and offsite line. Want to supply high pressure CRD pump to Unit 2 and RHR pump for Unit 4. Getting about 1 email/5 minutes to respond to. Huge effort. This is fixed now with HOOs. NRR post-911 was comm team put together. NRR trying to establish. Nelson (DORL) is trying to establish whole framework on how answer/structure questions. Working for Commission meeting on Monday. |
| 2011/03/16<br>16:15:09 | PMT                   | Following up with NARAC on questions. Also following up with NR on information they were working on. Sent RASCAL run to NARAC and asked if they could assess beyond 50 miles. Asked about doses on CA coast. Sent same info to DTRA because they can do aerial view also. DOD wants to know where they can fly safely over site. Preparing Q&As for press inquiries on press release. JAIF info - trying to assess credibility. They noted at 5pm Japanese time, 3 rem outside U2, 40 rem by Unit 3, 10 rem besides Unit 4.  |
| 2011/03/16<br>16:19:49 | Liaison Team          | Currently have FEMA and DOE embedded with us. DOE indiv is requesting conf call with team members in Japan - they probably doing 8am or earlier flyover. Wants conf call between our staff and DOE staff over there to coordinate - probably later this pm. Going to keep our state liaison people on staff until 11pm, and will have contact # after that. Getting lots of questions now - asking for RASCAL input data - saying no so far. Asking how 50 mile evac compare with our normal 10-20 mile radius. Call going on with HHS now. They want to talk about steps they are taking about allowing stuff back into the country that has been in Japan.   |
| 2011/03/16<br>16:25:47 | OPA                   | Getting lots of interview requests - turning down now, because going to have Chairman available in rotunda after briefing ends.  |
| 2011/03/16<br>16:27:48 | Liaison Team          | Quite a few other countries in contact with us - lots of questions. French asking us for SFP info. Heard Chairman mention one was dry. RST was non-specific in answer.   |
| 2011/03/16<br>16:30:03 | PMT                   | Detecting contamination on incoming aircraft. Screening all packages - detected iodine on packages, plus airplane filter had iodine in it. Are rad monitoring stations - fixed - also doing car monitoring.  |
| 2011/03/16<br>16:32:25 | NY times              | Emailed white house and said getting ready to post to their website something showing first detected contamination in CA - admittedly small. White House said important to understand significance and suggested communicating on it.  |
| 2011/03/16<br>16:34:36 |                       | Request out to DTRA and ARAC is to look at full core melt for all units and fuel pools.  |
| 2011/03/16<br>16:37:50 | ET                    | Canadians asked about INES level - do we agree? Last official from Japan is 4. Also asking why we picked 50 miles? Referred to PMT.  |
| 2011/03/16<br>16:41:10 | ET                    | Our team shouldn't be there more than 2 weeks, and if they have to move, they will.  |
| 2011/03/16<br>16:48:54 | PMT/ET                | (b)(5) We told them to coordinate with DHS. Areva chartering plane with boric acid, neutron absorbers, charcoal filters, protective equipment, etc.  |
| 2011/03/16<br>16:59:55 | ET                    | Should call IAEA and tell them we issued PAG for US citizens in foreign country.   |
| 2011/03/16<br>17:06:56 | Casto                 | ET: Chairman and Borchardt have been before both houses and fielded many questions. Asked if we have anyone on site. Chuck: We are all in Tokyo. trying to get to EOF outside Tokyo. Chuck trying to get to site. This has really overwhelmed TEPCO. National emergency for them - like BP oil spill. This is too big for TEPCO. b5<br>b5<br>(b)(5)<br>(b)(5) TEPCO has been more receptive to us with advice and help.<br>(b)(5)<br>(b)(5) Vonna: asks if familiar with doses at site. Chuck: local EOC is what he's talking about going to. Don't know where it is at.   |
| 2011/03/16<br>17:16:11 | Bill, Chairman, Casto | Chairman: What is the source of our info? Chuck: TEPCO and Conte (govt). SFP indications coming from TEPCO. (b)(5)<br>(b)(5) Chairman: we believe pool #4 is dry, and another potentially structurally damaged? Chuck: yes, and #4 pool walls have collapsed. Can't maintain inventory at all. Mike: had call with John, and he said pool intact. Chuck: last we were told, walls were not there. We did not suggest sand. RST suggested sand. So decided prepare for water and sand. Ruland: (b)(5)<br>(b)(5)<br>(b)(5) Unit 2, believes drying out. Top of building has hole they created with steam coming out. Only pool might be OK is Unit 1. Daini has declared emergency evacuation. May want to help them maintain those units. Chuck: was talk on U3 of trying to get hole bigger so can push water in from outside. Not sure how make hole bigger. Tom: know about getting power line to site? Chuck: haven't heard. His understanding is not going to do any good. In some cases, switchgear damaged, and in other cases, can't get in there to manipulate anything. Power will help in Daini, but not Daiichi. TEPCO is overwhelmed. (b)(5) Don't   |

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|                        | (b)(5)   |
| 2011/03/16<br>17:30:39 | ET Should possibly contact State Dept, and let them know what Chuck said about TEPCO being overwhelmed.  |
| 2011/03/16<br>17:34:53 | ET 6 DOE people coming to help at ops center.  |
| 2011/03/16<br>17:51:12 | RST Trapp providing RST more info on SFPs.   |
| 2011/03/16<br>17:55:01 | ET FAA issuing statement of what they are doing for things coming into the country.  |
| 2011/03/16<br>17:59:46 | Casto/team<br>Have teams assembled: U4 SFP is likely dry, but structural integrity uncertain - not sure if will hold water. Can maybe do steam cooling. Other units have water, but don't know how much. (b)(5) looks like U3, U2 SFPs have steam coming out. U3 looks open to atmosphere, steaming heavily. By now likely dry. U4: photos look like some type of explosion. Looks like steam (b)(5) They seem to be confident that it may be structurally sound, but don't know if it can hold water. Gave Conte briefing - lots of people there. NISA, TEPCO. Trying to go through chronology. In general, open and forthcoming.<br>(b)(5)<br>(b)(5) On Unit 4, access road is blocked. An hour ago, they probably have started activity to remove debris around access. If goes as planned, will start to try and inject water into SFP. Were looking for NRC's feedback on risk issues that they should be considering. After consultation with ET and team, we are communicating that at this point, bottom line is to get pool cooled with water, and there are risks and potential criticality or hydrogen, but they should proceed as planned. They want to share more details on dose at 10:00 today. Strategy to get water in is right, but depending on amount of exposure and temp, could result in fuel damage as a result of cooling. Fragmentation of cladding. Some could be already melted. Bill: asks if sand would be more effective. team: they have not done analysis probably - trying to do anything they can. With sand, you're helping shine, but not cooling. U1 SFP, don't know status. But noone has been adding water, and probably doesn't have automatic makeup, but probably take a long time to evaporate - haven't seen steam out of U1. John: Joe Williams sent out conceptual design for equipment. Looking for update on equipment. Have 10am meeting to talk about design/equipment. Have 4 submersible pumps and diesel-driven pump at AFB. Scott: earlier today, request on U2, looking for ideas to remove walls to enable air drop/spraying. John: Weber tasked NSIR. Scott: concern is as other pools steam, rad levels go up, so could consider making sure inventories in 1 and 2 don't go below a certain point to keep rad levels stable. John: don't know level. right now only 1 blowout panel out. They need large hole to target. They need to vent reactor building to prevent hydrogen explosion. Thought about shooting rocket-propelled grenade. Scott: would be wise to work on pools that still have level Chuck: need to get stuff designed and there. Bill: what is water status going into cores. John: 6 hours ago, they said they had good injection through CS headers, diesel-driven pumps to all 4 units past 48 hours. Tony: At conte meeting, indication was level not of high confidence, but indicating 1/2 fuel uncovered at 1 and 3. Unit 2 is maybe couple days behind. With half uncovered, seawater injection stable. For unit 4, shutdown happened in November. |
| 2011/03/16<br>18:20:04 | Casto/team<br>Liaison Team: trying to set up call with DOE and team to coordinate flyover. wanted to do before 9:00 japan time when flight would take off. Going to try and figure out what going to do about Daini. Newspaper says 60mR at gate of Daiichi. Flew over and got 25 rem, but we don't know how high they flew. Better relationship now with TEPCO, moving closer to better and more information (b)(5)<br>(b)(5) (b)(5)<br>(b)(5) ET: other Japanese utilities helping? John: 2-300 resources available, including TEPCO and other licensees, police and civil defense, but undermanned. We can mock up equipment at American installation, and then let the Japanese install it. John: will we have info in next hour or less on what equipment is available? ET: don't know. Casto: get with DOD or whoever. INPO offered resources also. Told them to get equipment to nearest US facility possible - there is AFB on island of Japan. Someone needs to make sure everything fits together perfectly. ET: we have Ocone who has special spray nozzle to spray down SFP. John: people who know details have to get together. Need 2-3 miles of piping, 8 diesel-driven pumps. Nozzle won't do good if don't have pipe. Everything has to be transportable on truck. Can't have to play with it due to dose rates. Trish: Are we talking about doses? Casto: DOE is doing flyovers from Tokyo to site. When they get info, they have to download from laptop and get it to us. Areva is flying over boron, etc. Jack: we will collect data and get it to you when we hear something.  |
| 2011/03/16<br>18:37:44 | Casto<br>Want to re-emphasize need for equipment (b)(5)<br>(b)(5) We have to report status to him. Ruland: have Bechtel online, hooking them up with USAID. Casto: (b)(5)<br>(b)(5) Get on phone with DOD.   |
| 2011/03/16<br>18:44:48 | WH, State, DOD, etc<br>WH: At 8:00 they want latest Q&A updated (b)(5)   |
| 2011/03/16<br>18:46:07 | ET<br>Smoke going N to S (b)(5) Bill: lots of press in rotunda. WH wants confirmation whether there is water in pool 4. ET: likely dry, walls uncertain. WH asked Chairman if 50 miles evac was still good. 100-150 workers at Daiichi, so will use Japanese police and defense force also.  |
| 2011/03/16<br>18:52:07 | ET<br>Bill: what need to know for this evening. Bruce: water still going into vessel, no more explosions (b)(5)<br>(b)(5) they are adamant about us being able to get equipment into Japan so it can get to site when accepted and ready to go. Admiral impatient with us.   |
| 2011/03/16<br>18:55:02 | Weber email<br>4 points on protecting us personnel and actions needed for Dai-ichi: bs<br>bs bs<br>Chronology Officer - Rebecca Karas at 19:22:47 on 3/16/2011 #th item should be lined out. EST   |
| 2011/03/16<br>19:04:56 | ET<br>Q: how was 50 miles determined? Marty: Dose projections based on 4 SFP and 1 reactor melt with containment failure for typical US BWR. Monninger heard no integrity in 4 this morning. Japanese are challenging what the Chairman said. Bill: give us some evidence we are wrong. Information is from our US experts in Japan.   |
| 2011/03/16<br>18:55:02 | Weber email<br>4 points on protecting us personnel and actions needed for Dai-ichi: bs<br>bs   |
| 2011/03/16<br>19:23:11 | ET<br>60 Minutes wants to interview Casto. OPA needs to work that. Chuck cannot be interviewed. He is busy.  |
| 2011/03/16<br>19:35:11 | ET<br>Casto and others will be within 50 miles, but he believes they will be OK. We need to know where it is to be sure he will be OK.   |
| 2011/03/16<br>19:41:05 | ET<br>Scott: made contact with DOD. They delivered equipment to AFB as of 5-6 hours ago. TEPCO picked it up, but we don't know where it is. Was loaded onto flatbed. Those were just pumps and hoses. Still need strainers.  |

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| 2011/03/16<br>19:42:42 | Chairman on bridge | <p>Chairman: U1-3 seawater injection? yes U3 SFP has crack and possible loss of inventory? yes. U4 SFP has no water and possible zirc fire? We feel no water and structural integrity in question. Do not know about zirc fire. Any change to those 4 talking points? Bill: #4 valid, but previously removed. We still believe reasonable basis for #4. Bill: Casto says ops center #1 priority should be facilitating delivery of equipment. Ambassador is talking to govt, cannot fall flat. Need real fixes. Scott: NR received request for hoses and DD pumps. They processed request and delivered to Ocona, as of 6 hours ago, TEPCO picked it up on flatbed and drove away. Don't know when or if material arrived. No govt officials escorting. But equipment did not include suction strainers, nozzles, etc. working with Bechtel who has engineered solution. Last bit still working on facilitating. Chairman: interagency coordination issue. Will still have people to monitor plant status, but management team has to focus on equipment. Chairman agrees.</p>   |
| 2011/03/16<br>19:49:57 | ET                 | <p>Chuck clearly said #4 dry. We asked him point blank while walking into WH. He was on bridge. Said it is dry based on info from TEPCO. Bill: they were delivered 2 pumps and they turned them away. There was US fire truck that they would not let drive on the streets because it didn't have right certification. Marty (b)(5)</p> <p>(b)(5) Bill: <b>DS</b></p>  |
| 2011/03/16<br>19:53:56 | ET                 | <p>Bill: Don't worry too much about Commission meeting on Monday. 4 OD communication team, probably don't need. We are way out on a limb - no one else in govt has taken this position. We need a bunch of people to talk to subcommittees and staffers on the hill. The 4 ODs are home studying background info. Probably Friday not tomorrow we will need them. Pete Lyons sent email about 1pm meeting at DOE tomorrow - bunch of people to talk about possible support. Approaches to solve problem - looking for high level NRC people to go. Bill may go if Chairman doesn't need him - otherwise need someone in standby, maybe Sheron or Uhle.</p>   |
| 2011/03/16<br>20:01:06 | TA brief           | <p>Bruce: Unit 1 still has seawater injected, and stable cooling, functional cont. SFP level unknown, 2, seawater injecting, secondary cont hole cut, primary intact, u3, seawater injected, primary functional, sfp level maybe drained, some steam, u4 sfp likely dry with structural integrity in doubt, u5 sfp heating up, ac from DG. same for U6. Wind direction from west, and expected to continue until weekend, then front may change it, people continue to provide support, been in contact with team. priority is to continue to keep info flowing. getting better info at this time. would like to get closer to site. mindful of hazards.</p> <p>(b)(5) people left earlier, but supplemented now. have maybe 100 people now. Mike Franovich: U2 - containment intact - but thought heard last night tepco verified torus breach. nisa reported. wondering about unit 2 status - have we verified? Bruce, no - we'll get back to you. Priority shifted to getting equipment, not plant status. U3 we mention doses at site post, 60mR/hr - still current? that we can verify, yes. nisa says dose higher than that. U5: note says we believe reactor defueled. Another report says not defueled. nisa report says water dropped 1/2 meter. RST is verifying. Bill: key is to supply pumping system. Have to finalize list and get suppliers to collect equipment, do engineering and pre-assembly, then move to site, assemble and operate. know some equip - 5 pumps left air base about 6:00, 196 miles to Fukushima, defense forces are delivering, and it is just the pumps. Have been in contact with NR helping coordinate. Trying to locate truck. Bechtel has taken drawing, taken equip list and is doing engineering and procurement work to get it to site. Monninger says</p> <p>(b)(5) Do we ask military, do we go to TEPCO and Japanese? Would argue need to work out in near term. Need help to identify people to talk to to resolve. Trish, USPS and CBP - gave information. (b)(5)</p> <p>(b)(5) Gave them state information. Getting NARAC info not as rapidly as we'd like to. We sent them info and they deleted emails, so we resent - hoping to get info soon. Aerial flyover by doe at 8:00 tonight. Waiting to hear from NARAC. Thaggard: getting lots of calls on press release. Trish: we have Q&amp;As. Marshall: dose calcs that are posted linked to recent statement that don't make sense. Dose for 4 unit release is less than for 1 reactor release. Trish: Did 4 reactor assuming certain assumptions. Marshall: is confusing to public. Comes across wrong. thaggard: people asking for raw data. For 4 reactor release, assumed not all releasing at same time. Franovich: instead of water using sand? is that still part of approach? Bill: still under discussion, pros and cons of both. Bill: the onsite team is recommending water. They are still in Tokyo. Mike: Japanese govt increased worker dose limit yesterday. Are they considering raising again? Are we working to 25 rem limitation? Bill: NRC staff has not approached. And embedded with tepco is not accurate, they have talked to tepco. Mike: are we limiting strategies based on dose for individuals' limits? Bruce: <b>DS</b></p> <p>(b)(5) Bill: for us to ask US citizens to do that is huge deal. It is question we've asked, but not made decision. Mike: asked Chairman? Et: <b>DS</b> Trish: got NARAC info and are analyzing now. Asked them to do run beyond 50 miles, and asked them to do West Coast projections. Bruce: Casto says power would not help, need to get water in. Mike: heard there had been 5 lethal doses. Bruce: we don't have any info on fatalities. Would like to have this call at 7:30 tomorrow, plus 8pm tomorrow.</p> |
| 2011/03/16<br>20:25:42 | Bill               | <p>in 40 minutes we will have call with Monninger's team to listen in. Bechtel has no contract - we just told them to work it. At some point they will want money.</p>   |
| 2011/03/16<br>20:28:31 | Monninger          | <p>People are in conte - they are planning to show us video of U4 SFP. We believe they will show us video that it has water and has had water. Believe status is 1-2 are boiling. U3 Zr-water reaction. Meeting with NISA this morning. We are going to ask to be embedded in EOC. We don't know where it is. We will ask though. We will meet with TEPCO to talk about SFP cooling system. We want to tie in RST. Bruce: concern related to what leves we would subject our people to. John: we would follow NRC guidelines for emergency response. The 25 rem limit? We have dosimetry and KI. Bruce: <b>DS</b></p> <p>(b)(5) Bill: you would preclude us from assembling and operating equipment. John: absent dose issue, there are explosions out there too. Bill: raise the issue with tepco on their need to assemble and operate the equipment. John: we will raise it. They haven't asked for equipment or personnel support yet. Bill: we had report from air base - Ocona - soldiers from defense forces at 0600 picked up 5 pumps and are driving them 196 miles. John: (b)(5)</p> <p>(b)(5) Have not asked for help yet. (b)(5) Bill: military forces of Japan are bringin it, so they have accepted it. Major Mattuseck said personnel from defense forces of japan picked up 5 pumps. Equipment is incomplete. We are looking for where they are taking it - staging area - so Bechtel has cartoon drawing and is engineering it. Also in parallel, Jim Trapp is trying to find out what else Air Base can supply. Monninger: last night they asked for personnel. <b>DS</b> But that should be pretty basic. Bill: we will assemble it in staging area. We could have Americans assemble it with Japanese who will assemble at site. Japanese can write their own procedure. They can reassemble and operate it. John: we will find out staging area. Other issue is high rad field. Bill: <b>DS</b></p> <p>(b)(5) John: we are in agreement. They have to have it on truck and trailer, just unhook and get out. There is incredible dose rate issue when you bring it in. Some areas 20R/hr. Bill: we will make sure Bechtel understands this is design requirement. John: if go with hard pipe, really whacked on dose. Bill: engineers at Bechtel are working problem.</p>   |
| 2011/03/16<br>20:43:35 | ET                 | <p>Bill: very likely if they are showing video it is right that pool is wet on U4. RST: who is requesting this and paying for it so Bechtel will be reimbursed. Should call USAID.</p>   |
| 2011/03/16<br>20:53:40 | NHK World TV       | <p>Shows news story of helicopter dropping water on one of the reactor buildings.</p>  |
| 2011/03/16<br>21:01:28 | RST                | <p>USAID - they are trying to make sure we get everything in the right place to pay Bechtel. They have asked us to put together an extremely simplified procurement plan with just companies and simple list of what we need. Then (b)(6) onsite will approve it (USAID team). We have never mentioned money, but you can assume they will want to get paid at some point. USAID would pick up tab. Need someone to draft procurement plan. 250 engr hours, 22 seawater strainers, etc. Bill: have</p>   |

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|                        |                             | them develop procurement plan. They can make proposal, and we can put cover letter on it. Have them do RFP list, but we should not distract them. White House says Bechtel said would do even if free. We should have our contracts person interface with USAID and Casto and the Bechtel person. MJ: Just get the list and get it over there in simplified form.  |
| 2011/03/16<br>21:08:03 | Casto                       | Getting busy signals going into ops center. We viewed the video. It is not very clear. Helicopter in field. Tried to scan all 4 units. They claim reflection of water. Don't know if steel or water. But we do know it is steaming. That was at 5pm yesterday Japan time. Unit 3 is steaming at much greater rate. They are continuing to try helicopter drops which are highly ineffective. They are trying to shoot water with crowd control tanks. Believe also ineffective. No way to have effective cooling that way. Either way this is temporary fix. Can't drop enough efficiently into SFP. Still need to work on quasi-permanent fix of hard-piped system. Need to let Bill and Chm know that yesterday thought that with explosion, structural damage, we really don't know if there is integrity in SFP. Know as of 5pm yesterday, there is some water, because it is steaming. (b)(5)<br>(b)(5)<br>(b)(5) They claim it is special video file that takes special player and software, file too large.....not going to let us have the video. (b)(5) DOE was standing with us - just a split-second shot as helicopter flying by. Couldn't tell a thing. Bill: do we know Unit 4 SFP. Chuck: we don't even know it is SFP. Govt says TEPCO told them it is SFP. We can't tell anything. U3 steaming even louder. Chairman: what is source of believe of no water? Casto: govt showed us snapshots after explosion, and it looked like pool had lost structural integrity. Now they say pool is not associated with outer wall, so could be intact. Video was 14 hours ago. Chairman: have any view of change in condition of pool. Casto: 14 hours ago, had some water in it, today can't tell you. Their recovery methods are drop water from helicopter, and bring in crowd control tanks. Those are all highly inefficient methods. We're not even sure pump can pump to top of building. Chairman: so no longer believe pool was dry. Casto: it is very inconclusive, can't tell. Probably inaccurate to say dry. Marty: have 1 dose limit b5<br>Marty: John Monninger was told by tepco pool was dry, and they told trapp same thing. Now they say that was postulation only. Recording dose rates in rem/hr, so at minimum significant amount of fuel exposed. Latest is 30 rem between 3 and 4. |
| 2011/03/16<br>21:27:01 | Casto                       | Still trying to get hard piping, etc, to identify pumping system. Pushing hard to get equipment out there. Casto b5<br>b5 b5<br>Bruce: we may need b6 there to sign procurement for Bechtel.   |
| 2011/03/16<br>21:29:26 | ET                          | Working on Q&As - tasking from phone call. Waiting for President to get off phone with Prime Minister - he will make decision about whether or not it's appropriate to tell people to leave voluntarily vs. order them. Struggling with appropriate words to not cause widespread panic among Japanese. Other countries have left. French are challenging our analysis, but sending people out of Tokyo.   |
| 2011/03/16<br>21:38:11 | Brenner/DPA                 | Unless we have confirmation from Casto that there IS water in pool, we won't change. And then if there is, it's easy to put out press release saying there is, but we still recommend 50 miles.  |
| 2011/03/16<br>21:39:50 | Casto                       | Military has pumps on way. DOD moving equipment.   |
| 2011/03/16<br>21:55:00 | Chairman                    | Do we know status of worst case results for West coast? Vonna: just heard from Casto that he is very convinced there is no water in #4. Chairman: Jennifer Uhle said RES was going to run max worst case. Give call at home with worst case results.   |
| 2011/03/16<br>22:04:38 | Japanese official via TV    | Top priority trying to restore power with power lines from outside. Also cool down #3 and #4 SFPs. With power, can restore system using seawater. But have to install temporary pumps to resume supply of water. Pressure rising and water level lowering in #5. Have to secure the conditions of pools for #5 and 6.  |
| 2011/03/16<br>22:08:30 | ET                          | Admiral in NR is confused on evacuation instructions. Need to call.  |
| 2011/03/16<br>22:13:20 | Naval Reactors/Boroughs     | Heard Admiral wants clarity in evacuation. Discussion on clarity.  |
| 2011/03/16<br>22:25:32 | Japanese Defense Minister   | TV: Conducted helicopter operations dumping water. Water cannon trucks will inject water from ground. Yesterday am, didn't conduct because rad levels too high, however ground could not be done because of high rad on ground. Now cannot delay so have no choice. #3, decided early in morning that plan would be executed. Proliferation of rad would be funneled in SFP and would help cool down fuel. We can verify if it is successful by the taskforce. Those are our expectations. More aerial operations will be considered as necessary. Water sprayed into #3.  |
| 2011/03/16<br>22:32:16 | JP cab. secy                | Khan/Obama call: Obama expressed sympathy to Jp public and also offered support, including related to nuclear power plants and mid-term and long-term rehab initiatives. Khan expressed gratitude for support. All involved are doing their best - those in charge of disaster relief. 2 leaders agreed to cooperate on NPP issues. Have completed morning portion of spraying on NPP. Police are also going to start water spraying by cannon truck, so trying to combine 2 approaches to maximize effects. We are asking people in peripheral areas to evacuate, and those living in 20-30km from plant are told to stay indoors. Some of evacuees may need extra support, ill and pregnant. We will do our best to give all support to those in vulnerable situation. Seek cooperation from medical personnel. From site we understand prep is underway and investigation on effect of spraying. US in reference to #4 water loss - has been understood after such a statement, we have time to provide detailed data to experts from US, we are trying to coordinate the information, in interim providing information so analysis can be conducted based on more accurate information, but there is always a time lag, like in reference to #4, there has been a time lag in providing pertinent information to US authorities. Reporter: US embassy in Japan has issued evacuation notice to evacuate 80km - what are thoughts? Official: if there are circumstances that require such evacuation, including anything besides nuclear, it is to be understood that us govt has taken a more conservative approach to protect its nationals. As for radius, we have conducted monitoring nad have continued to gather data which will later be disclosed by science and tech agency. We conduct and issue advisories as appropriate. reporter: ines scale official: understand based on parameters that these institutions and countries have that is their assessment, but we are interested in protecting our people.   |
| 2011/03/16<br>23:55:16 | Josh (Chairman's assistant) | Telecon at 23:31 Requested ET to provide summary report to him at White House gate at 7:45 am Thursday morning. Josh relayed appreciation to ET for timely information   |
| 2011/03/16<br>23:59:04 | Chuck Casto                 | 23:34 Telecon: Chuck met with Japan Minister of Defense and Joint Chiefs. Chuck indicated (b)(5)<br>(b)(5)<br>(b)(5)<br>b5   |
| 2011/03/17<br>00:26:14 | Liaison Team                | 2354: Liaison Team reports that their Japanese interpreter has seen reports that TEPCO working on restoring offsite power to site  |
| 2011/03/17<br>00:27:49 | Bill Ruland                 | Bill provided status of Bechtel portable supportable pump system (4 pumps) for supplying sea water to SFPs. Logistics for delivery of pumps, fuel oil, and boron (boron supply at Diablo Canyon) being worked. Naval Reactors has provided report on sand vs. water. Eva Brown indicated that RST has recommended sand to NRC team for dry SFP. She stated NUREG-1353 recommends sand for this type of problem. RST continuing efforts.  |
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| 2011/03/17<br>01:13:24<br>Chuck Casto and<br>NRC Team    | (b)(5) Team told 5 pumps delivered to site with piping and tanks. Lethal dose rates outside unit buildings. Trying to get dose rates down so that workers can assemble pumping systems. TEPCO priority is Unit 3. TEPCO believes water in Unit 4 SFP. NRC team best estimate is that there is no Unit 4 SFP based on images. Unit 4 SFP stopped steaming so might be dry. 24 hours ago Japan took images from helicopter that Japan believed that showed water. NRC team could not see water. NRC team told Unit 2 primary containment intact. Some team members believe loud boom indicated possible loss of primary containment. Team not sure if status of Unit 2 primary containment matters at this point. NISA says pressure decreased in chamber following loud noise. Could say containment integrity uncertain. NISA reports Unit 6 DG providing power to Units 5 and 6. Japan working on providing offsite power to site. NRC team says effort not interfering with water supply effort. Chuck believes we should turn over logistics to US forces. Mike Case indicated his group working on Bechtel pump supply and will talk separately with NRC team in Japan. Chuck not sure if embedding in EOC necessary at this point based on team now directly interacting with Japan govt. NRC team believes spent fuel pellets scattered around plant site from building explosion. 20 rem/hour dose rates might suggest scattered fuel. Dose rates significantly reduced after bulldozer work to clear debris. Japan resources strained because of tsunami and earthquake recovery. More people needed to reduce individual doses. Chuck believes nuclear situation might be at its worst case at this time based on severe damage to reactors and buildings. Numerous flights underway to evacuate embassy personnel and US citizens. Chuck believes Japan working hard under difficult circumstances. (b)(5) Dose report from this morning indicated 30 to 40 rem/hr between buildings. Japan requested NRC team for help with site monitoring to allow personnel to work onsite. Japan requests (b)(5) robotics, and project management. Liaison Team will work with NRC team in Japan to help with US forces on logistics. Chuck said list of needs sent to WHO last night. Chuck will update list. Chuck indicated Ambassador OK with evacuation of embassy dependents and US citizens based on interactions with embassy personnel. |
| 2011/03/17<br>02:50:03<br>INPO (b)(6)                    | ET has list of needs from NRC team in Japan. Tom Blount will e-mail list of needs to INPO. Marty indicated that NRC team in Japan would appreciate embedded INPO assistance in Japan. ET will ask Chuck Casto to provide skill-set list to send to INPO. Marty said that (b)(6) of INPO offered to help to obtain better access. Marty asked that INPO to check to see if (b)(6) was successful with access effort. EST Chronology Officer - Thomas Scarbrough at 03:19:28 on 3/17/2011   |
| 2011/03/17<br>03:09:29<br>Chuck Casto                    | Chuck reported that DOE has offered to supplement NRC team in Japan. Chuck asked that Marty interact with DOE to discuss possible later team support. Chuck considers that current DOE personnel in Japan providing significant assistance to NRC team. Chuck believes that team is still activating so additional DOE support might be helpful later during response. NRC team will be checking additional site (b)(5) soon. Flyover dose data should be available within an hour.   |
| 2011/03/17<br>02:50:03<br>INPO                           | ET has list of needs from NRC team in Japan. Tom Blount will e-mail list of needs to INPO. Marty indicated that NRC team in Japan would appreciate embedded INPO assistance in Japan. ET will ask Chuck Casto to provide skill-set list to send to INPO. Marty said that (b)(6) of INPO offered to help to obtain better access. Marty asked that INPO to check to see if (b)(6) was successful with access effort.   |
| 2011/03/17<br>03:35:22<br>Chuck Casto                    | (b)(5)  |
| 2011/03/17<br>05:24:50<br>Chris Miller                   | Chris reported that he had sent an e-mail to INPO indicating that the NRC team in Japan would appreciate INPO providing a severe accident expert to participate on the team.  |
| 2011/03/17<br>05:31:21<br>ET brief to Brian<br>McDermott | ET provided summary of Fukushima status to Brian McDermott: No significant changes in status. TEPCO continuing efforts to restore offsite power. TEPCO continues to believe water in Unit 4 SFP. NRC team not sure about water in SFP. ET supporting NRC team in Japan. RST working on developing Bechtel pumping system for site. (b)(5)   |
| 2011/03/17<br>05:45:10<br>Tom Blount                     | Liaison Team has arranged interaction between John Monninger of NRC team with contacts in Japan for logistic issues.  |
| 2011/03/17<br>05:51:02<br>PMT                            | Press release yesterday for evacuation up to 50 miles attached a detailed RASCAL analysis. Discussed multiple assumptions for the analysis.   |
| 2011/03/17<br>07:21:53<br>Chairman briefing              | The Focus in on Units 3-4 SFP. (b)(5) Indication that SFP 5,6 temperature drop. Focus should be on Unit 3, more so than Unit 4. We do not yet have some of the data points that the Chairman requested: expected by the end of the day. RES and Sandia are working on getting 1000+ mile projections. (b)(5)  |
| 2011/03/17<br>07:30:49<br>Chairman briefing              | (b)(5)<br><br>(b)(5) Radiation is 150 millirem- 1 rem at the Fence. Units 1,2,3- Focus on SFP Zirc rxn- (b)(5)<br>(b)(5) Sea water still being injected. Japanese trying to bring AC power back to unit but NRC not sure about how they are going to achieve this. NRC recommends sand for SFPs with no geometry; Japan is not interested in using this approach. Unit 4- debate if SFP is dry. -Chuck could not see any water in the photos that the Japanese are basing their position on. - There is no conclusive information that there is water in there and the (b)(5) is such that we don't think water is there. Unit 3- vapor, but cannot tell if it is steam or smoke. Lots of US citizens are interested in the flights back to the US. Situation is reasonable calm. No change in the 50 mi recommendation. Carrier is bringing to the White House a new go-to binder for the Chairman. No confirmation that our list of equipment was given to someone.   |
| 2011/03/17<br>08:03:29<br>CA Briefing                    | Unit 3 SFP- possible zirc fire -helicopters dropping water- no help. Unit 1,2,3 Reaction and containment- same condition Seawater is being injected. PMT- in process of analyzing data from NARAC -in process- dose assessments for California - Looking at historical data from Chernobyl; using in dose calculations; 1-10 milliRem range; lower than DOE prediction  |
| 2011/03/17<br>08:12:22<br>CA Briefing                    | Commissioner Ostendorf Office- wants more information associated with the dose projections from the press release. -Wants clarification why US and Japan don't agree with levels in the SFB for Unit 4- clarification is that Chuck could not see conclusive evidence of water in the pool based on the photos of the SFP; we acknowledge that this is not consistent with the Japanese position.   |
| 2011/03/17<br>08:22:03                                   | Request to have RES stop running MAXX codes.  |
| 2011/03/17<br>08:47:13                                   | PMT has received word to stop MAXX runs.  |
| 2011/03/17<br>08:55:47<br>Josh                           | There are reports that power can be restored Units 3,5,6 today, and Units 1,2,4 by tomorrow. Where did we get this information? Answer: Laura spoke with Kolb at Embassy, he said they expect to get one power source on in Unit 2 and expect a possible second source tomorrow. This is not confirmed. The source is TEPCO. There is switchgear in the control building (basement) that is reportedly intact, but lower level may have been flooded. Safety related switchgear may be OK. Uncertain. Bottom line: This is information from TEPCO but there is uncertainty associate with these reports on the condition of the safety related electrical equipment.  |
| 2011/03/17<br>09:24:20<br>Tim kolb                       | b5  |
| 2011/03/17<br>09:29:37<br>Laura Dudes                    | Confirmation from NR representative in NRC Op Center, that pumps have been delivered yesterday are been used. This has not been confirmed by the NRC.   |

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| 2011/03/17<br>09:32:57 |                        | It should be emphasized that our priority list is based on limited information.  |
| 2011/03/17<br>09:52:26 | Laura Dudes- RST       | There are four plans on how to move water; Japan wants a a priority list, but RST is concerned providing this because we do not have complete information.   |
| 2011/03/17<br>10:41:31 | Op Center              | Our understanding is that direction we given by NRC is what the Japanese military is going to do (b)(5)  |
| 2011/03/17<br>10:46:50 | Mike Weber- briefing   | DOE current model status- they are going to reduce ground shine effects in models and use a much less conservative source term prediction-- result in more realistic model results, as per NRC concern. Monitoring of people who flew back from Japan; no significant dose. DOE models- 42 millirem to thyroid in Hawaii based on ground deposition ( i.e. no release above background). 4rem is off the table for CA. Weather forecast has not changed from what was predicted yesterday. Emphasis on model peer review; there needs to be a distinction between models based on measurements and predications; emphasis on one set of Federal government assumptions. Governors concerned that they are not being briefed by Feds but by industry representative.  |
| 2011/03/17<br>11:12:00 | Chairman               | Suggestion- NR, INPO, DOE, NRC meet once a day to discuss/ coordinate offers of assistance. Chairman wants OCA to organize a consistent congressional outreach. Confirmation of boron shipment from Diablo Canyon will arrive at 17 0900 March.  |
| 2011/03/17<br>11:16:12 |                        | (b)(5) HHS- came out with a fact sheet on health risks from radiation in Japan DHS using passive detectors at airports Jet in TX- 267 microR/hr; (b)(5)  |
| 2011/03/17<br>11:19:19 | Charlie                | It is key to understand that decisions will now be made in Japan based on our recommendations. Need to elevate issue of who is in charge of modeling/ recommendations of PARs- we don't want lots of views being sent to the Ambassador; want one unified Federal government view point.   |
| 2011/03/17<br>11:22:06 | Cyndi                  | Runs in press release are acceptable.  |
| 2011/03/17<br>11:22:36 | RST                    | Having difficulty getting trucks on site.  |
| 2011/03/17<br>11:24:10 | Chairman               | Update on mitigative strategies- there are 4 plans; they are being refined based on equipment needs/ logistics. Chuck received an initial briefing; we are also working with industry for solutions. Chairman is calling back at 11:30 EDT (17 1530z) to prep for White House Press Conference.  |
| 2011/03/17<br>11:33:40 | RST                    | Before sending recommendations to Japan, they will first be sent to US industry reps for review. Status of Plan 1: Equipment and logistics are included; all equipment are available in Perth, Australia; can be airlifted via US or Australian military; embassy will coordinate receipt; training will need to be provided to Japanese; needs to be like a kit; questions about who has robotic equipment are still relevant. Have to consider who can train on equipment. Other strategies: fire boats; concrete booms can be pumped with water; b5b spray pumpers available if needed.   |
| 2011/03/17<br>11:42:11 |                        | UK wants source term data to compare to their modeling results.  |
| 2011/03/17<br>12:06:44 | Chuck Casto            | (b)(5)   |
| 2011/03/17<br>12:24:18 | Chuck Casto            | Requested two research-type items: 1. Look over/ provide advice on b.5.b. air oxidation research in BWRs. Anything usable? 2. Wants some research about zirc fires. i.e. how to tell the difference between steam versus a zirc fire; if they put water on a zirc fire will it make matters worse?   |
| 2011/03/17<br>12:31:01 | Chuck                  | Would like to be included on distribution list. EmbassyNuclearEnergyTeam@nrc.gov   |
| 2011/03/17<br>12:54:29 | Mike Webber            | DOE tasked to create a message for governor's offices. The NRC has been providing information to the Embassy directly should the NRC remain the lead in this capacity? (b)(5)  |
| 2011/03/17<br>13:07:38 |                        | (b)(5)   |
| 2011/03/17<br>13:07:38 |                        | White House press briefing.  |
| 2011/03/17<br>13:18:25 |                        | Commissioner Ostendorf meets for a briefing.   |
| 2011/03/17<br>13:28:41 | Commissioner Ostendorf | Commissioner's main questions/ concerns: (b)(5) *Interested in how water is being restored. *Site boundary radiation levels. *Other agency employees in our Op Center. *Expected rad exposure for US territory.  |
| 2011/03/17<br>13:42:11 |                        | Liaison team tasked to coordinate dose projections assumptions with NEI.   |
| 2011/03/17<br>13:49:49 |                        | IAEA wants an NRC BWR technical expert and HP to go to Vienna.   |
| 2011/03/17<br>13:55:36 | RST update             | Need to consider how much we want to stag in Japan before we get word from them to start moving? RST- wants to stage things in country, but Mike not sure that is a good idea. Contacting Chuck Casto.   |
| 2011/03/17<br>14:00:48 | Chuck Casto            | (b)(5) so we want supplies in place, in-country for as soon as they decide to implement. DRT needs to pick up tab for equipment shipping (b)(6) (b)(6) head of DRT). RST- Bechtel is almost ready- all equipment has been located/ ready to deploy- however, US AID needs the nod for the team leader. This needs to happen. Obama told PM "we are ready". So when we can move, we need to. i.e. get equipment to Japan as soon as possible, ignore cost. don't wait. It is likely that all 4 pools are dry. Chuck is very concerned that application of water to completely dry fuel will result in radiation being carried away in the steam-- higher dose. Wants research done on results of application of dry versus wet to cool SFPs. Chuck wants to make sure this is an inter agency effort. All the "best minds" are included-- this should be an American nuclear effort, not just an NRC effort. Must have a measurable, mitigative strategy if exposing people to a dose. Japanese news is finally reporting that spent fuel pool has no water. (b)(5) |
|                        |                        | (b)(5)   |

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| 2011/03/17<br>14:37:50 |                                      | Update: Mike Dudek and USAID.  |
| 2011/03/17<br>14:39:49 | Charlie                              | (b)(5)   |
| 2011/03/17<br>14:45:40 | Chairman via Josh<br>via Jim Wiggins | Chairman wants (b)(5) included in Chairman briefings (b)(5)  |
| 2011/03/17<br>15:01:04 | Chairman                             | Wants a "gut check" on the following statement: even under the worst case scenario, we do not foresee any harmful levels of radiation reaching any part of the US or its territories. ET- that is consistent.  |
| 2011/03/17<br>15:19:30 | ET turnover                          | 300R/hr field by units. Priorities for PMT: worst-case scenario, coordinate with DOE on modelling and measurements. RST is pushing to determine that strategies are viable and could be successful. Also how to tell if it's a zirc fire. Have email says firefighting foam might work for Unit 4.   |
| 2011/03/17<br>15:28:30 | IAEA                                 | Confirmed external power line to U2.   |
| 2011/03/17<br>15:32:00 | PMT                                  | Heard on news that NHK website showing mSV is actually microSV. Talked to NARAC and agreed on source term. Would like to see NARAC runs.   |
| 2011/03/17<br>15:36:04 | Pres. Obama                          | bringing all available resources to bear to monitor situation. substantial risk to people nearby plant. Made 50 mile recommendation. Beyond 50 miles, authorized voluntary departures of family members. All US citizens in Japan should monitor situation carefully. We do not expect harmful levels to reach US. CDC do not recommend people in US take precautionary measures. Nuclear power important here. Our NPPs have undergone exhaustive studies, but have responsibility to learn from event. Have asked NRC to do comprehensive review of safety of NPPs. Working aggressively to support ally. S&R teams on ground in Japan. Disaster assistance team working. US military working round clock. Deployed some of our leading experts.   |
| 2011/03/17<br>15:43:01 | PMT                                  | Had NOAA information - originally coming from Japan to Aleutian chain. Now changed, and coming back, turning around and going south. EMS runs - very low.  |
| 2011/03/17<br>15:46:08 | PMT                                  | EMS are at 1000 ft projected to 1m above ground 20mR/hr, less than 4 miles west of reactor. Got request from UK on Tokyo numbers. We are showing background levels. UK has asked we be able to share information. We have agreements with France, Canada and UK to share source terms. Canada came up with similar numbers. France has only done simulated modeling. They plan to post simulated data on website. They are planning to post showing high values for inhalation to infant. ET (b)(5)  |
| 2011/03/17<br>15:55:01 | ET                                   | WH wanted 1 point of contact for giving Governors data/information. We need to explain why we are comfortable with what President just said. 2pm USAID call. 11:00 call - ESF8 call.   |
| 2011/03/17<br>15:58:39 | Chairman call                        | Shooting for Mon at 9am for Cmsn meeting.  |
| 2011/03/17<br>16:05:40 | ET                                   | EDO's office is getting requests from Cmsrs offices (such as equipment list provided to USAID, RASCAL runs - and they said they found error). Should discuss with Chairman. Question for Chuck on what expertise should next team in Japan have? CBS truck behind building for Commission meeting. Will be some discussion about rad levels, Mark I containment enhancements, integrated CEDE of 1 rem at 230 km (DOE projection) - so what dose are sheltered people getting. Apostolakis - RASCAL run - 0.5 miles shows 1000R. French are also posting video simulation of what they think happened. NEI wants to know basis/assumptions for 50 mile press release. We are going to convey those.  |
| 2011/03/17<br>16:42:09 | PMT                                  | EMS data: US evacuation conservative, Japan OK. Grobe: Not comfortable backing down until Unit 4 SFP stable.   |
| 2011/03/17<br>16:46:12 | ET                                   | U3 SFP is more problematic than U4 now. Some steam - boiling off. TEPCO continues to maintain there is water in 4. On ground there may be reason to question status of pools in 1 and 2. Concrete/steel construction. Unit 1 roof fell on SFP - no idea if has water. Unit 2, can't see through roof, so could be just as bad as 4, plus steam coming out of 2 - hole in side of building. Pushing to ensure mitigating strategies viable and likely to be successful. Team preparing for call. NRC will continue to protect US citizens in Japan. DOE will focus on protecting US citizens in US territories and states. Also need to know if sand/soil or water would work. (b)(5) How do they tell steam release vs. zirc fire. Grobe: should see thermal plume if zirc fire.   |
| 2011/03/17<br>18:56:29 | Grobe                                | During the 4pm Chairman briefing to the Commissioners, the Chairman requested assistance from the Commissioners to not visit the ops center, which would result in duplicative effort by the ops center staff in updating them. He will keep them informed on what's going on with the emergency response situation.   |
| 2011/03/17<br>17:12:17 | Grobe                                | We will continue with CA briefings twice daily, currently scheduled for 0730 and 2000. Should CAs need additional information outside of those briefings, they should contact the Chairman's office (Josh Batkin).   |
| 2011/03/17<br>17:28:54 | ET                                   | Prep for DOE call: Tell DOE we'd appreciate knowing what they are communicating with respect to US territories/states. Please do not communicate, other than to us, with respect to US Citizens in Japan. White House (b)(6) said DOE should craft message to Governors. We would be in on the call with Governors for informational purposes only.  |
| 2011/03/17<br>17:43:00 | Summary of DOE<br>call               | NNSA PA group working on setting up call now with Governors. Will keep us plugged in.  |
| 2011/03/17<br>17:44:19 | RST                                  | Bechtel/INPO status call: What they worked on will not get water where we need to get it. But have 3 fire boats motoring to site that will tie up to the site and have high capacity pumps. Will abandon once hooked up. Bechtel will run hose from discharge point from boats. They are laying out series of pumps, but missing how get to top of building without operator. Working to see what is available in Japan to do that.  |
| 2011/03/17<br>19:29:55 | ET                                   | Chuck mentioned they go to Conte meetings and MOD meetings. MOD meetings more helpful. After our press release, all of a sudden lots of other countries reaching out to us, and we have been able to cooperate on dose projections.  |
| 2011/03/17<br>19:48:35 | RST                                  | Tinkler, etc, say no real reason not to put water on the pool. NRR with NR is working on white paper. Their thought is to put water on pool. If you can put boron, too, great, but if not probably won't have critical geometry anywhere. Should be water regardless of situation. More upside than downside. Once you start with a zirc fire in progress, will have steam explosion.  |
| 2011/03/17<br>19:59:15 | CA call                              | Unit 1, core damage, fuel being cooled, but not completely covered. U2, fuel might be 1/3 uncovered. prim cont some damage. SFP 1 and 2, no indication of problem. U3, core damaged, 1/2 uncovered, prim cont some damage. Greatest concern U3 SFP - visually observed large plume, appears steam plume. Appears spent fuel is boiling water. U4, all fuel in SFP, substantial damage to rx bldg, and damage to rods. Attempted to drop water in by helicopter - not successful. Working on method to spray water in. 100mr - 1R/hr at site boundary. Closer, ranges from 30-300R/hr in immediate vicinity. Aerial monitoring systems - ran back and forth in serpentine pattern. Shows radioactive deposition to west and south of plant. Did not go into area of plume (blowing out to sea). 10-30 mR/hr 1 m above soil, E and S of plant. N about 1 - 0.1 - 0.01 mR/hr. Believe substantial ground deposition from explosions and material becoming airborne from material going inland instead of out to sea. PAGs not exceeded beyond 5 miles. Guidance US provided for evacuation is sufficient and conservative. 2 RASCAL runs attached to press release - based on best info we had at the time. Not what was happening, but of what were 2 sets of reasonable things that could happen. Team closely connected with Japanese govt and MOD. Having phone calls |

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|                        |                                   | multiple times per day. Holding with variety of experts in U.S. on dealing with SFPs. Have seen TV reports of workers suffering radiation effects. Have not yet done worst case analysis. Working to figure out how we would do. Have very limited information (b)(5) Clear evidence on U4 of very significant hydrogen explosion, so must have been very high temp zirc reacting with water. Were areas of debris around U4, which are contributing to very significant dose rates...were bulldozed under soil and dose rates went down substantially...must have been fuel (b)(5)  |
| 2011/03/17<br>20:40:56 | Sheron                            | Told IAEA to talk to Pete, and that Casto doesn't really want to take on more staff right now.   |
| 2011/03/17<br>21:16:02 | TEPCO                             | 6.9V cable will be installed, including temp distribution panel to 1 and 2 reactors.   |
|                        |                                   | Brooke is typing up a matrix of status of SFPs and Rx vessels. We need to update matrix at least once a day. Brief summary table of status of reactors and SFPs (b)(5)   |
|                        |                                   | (b)(5)   |
|                        |                                   | Need to give each nation a mission. Have 3 IP people going to that meeting. Will think about whether we need additional resources (b)(5) (b)(5)  |
|                        |                                   | (b)(5)   |
| 2011/03/17<br>21:26:53 | Casto                             | (b)(5) If doing water for SFPs, need to know if that is helping or hurting. Need to know what zirc fire looks like. Can't try any strategy that doesn't have verifiable success criteria (b)(5)  |
|                        |                                   | (b)(5) Fatal doses in control room and around facility (b)(5)  |
|                        |                                   | (b)(5) Grobe: people here trying to figure out what type of equipment they need to get water into SFPs. Have concluded water is right answer for all conditions. Lots of water. 3 fire tugs will be pulled up to plant site and docked and abandoned. Maybe put lead on a Humvee to reduce dose during transit times to where equipment would be hooked up. Between 2 and 3 is 450-600R/hr. The embassy is helping a lot. Anything we ask for is here immediately. Solution paths, equipment status tables - need.   |
| 2011/03/17<br>22:02:58 | Casto                             | Still need info on zirc fire - what looks like, how stop, how stop if we start one. Need from RES. Need to devise a list of top priorities. Actually ran tests at Sandia and burned up fuel bundle to get research on zirc fires. Unit 3 doesn't look like a zirc fire. Thought it is water vapor. If we put in a solution that sends out massive plume, need to know before we do it. Have stable environment now, don't want to disrupt. Jack: Don't have stable situation - it's slowly degrading. Need to know isotopes, etc. if start a zirc fire. Don't want to put in solution that makes matters worse. Marty: have you seen gaps in NRC program that need to address in near term? Chuck: no, not with B5B. May need to be rethought a little in terms of where we store equipment, etc. Lots of lessons learned on SAMGs. Nothing urgent, though. Also need list of people for relief. Strategy is that each individual team member look at list, and make a couple recommendations. |
| 2011/03/17<br>22:15:36 | Uhle                              | Jack: We've concluded water is right answer, but we need to get people information on whether they are succeeding or not. Jennifer: Need to know loading for SFP. Jack: have strong believe that putting water on is right thing. Industry and govt folks getting together to talk about whether this is the right thing. Jennifer: Need to know how fuel is racked and how old, then we can tell if you get to a zirc fire. Jack: If TEPCO says hot fuel is in a certain configuration, why would we believe that it is in any configuration similar to what it was before. Fred: have to shield fuel in Unit 4 so we can get to 1-3. Jack, don't even know if Unit 4 will hold water.  |
| 2011/03/17<br>22:28:07 | ET                                | Need status of equipment from Bechtel. Fred: waiting for Chuck to talk to Dart to get USAID to give authorization to Bechtel to move it. Need to get Chuck success criteria he needs. Need to assign manager to help make that call, given the uncertainties in the SFP information.   |
| 2011/03/17<br>23:24:59 | David Hermann<br>(Naval Reactors) | (b)(5)   |
| 2011/03/17<br>23:43:06 | Pat Hiland                        | RST will have a telecon at 1 a.m. with Bechtel, NR, INPO, and USAID to discuss status of pumping system. RST will brief ET after call.   |
|                        |                                   | (b)(5) Changes dynamic of interactions. Green light from DART and AID for equipment from Perth (b)(5)  |
| 2011/03/17<br>23:48:56 | Chuck Casto                       | (b)(5) MOD starting with Unit 3 SFP for fire trucks. MOD asking for any intel to help them. MOD thinks Unit 1 and 2 SFPs have 100 days and 40 days of water, respectively. Unit 3 SFP dry. MOD thinks Unit 4 SFP has water but uncertain. NRC team cannot tell if SFPs have lost integrity. Do not believe that any SFP has severe structural damage. Team believes that all SFPs can hold water, but might have cracks (b)(5) NRC team alerted MOD to potential energetic reaction when water sprayed on SFPs with significant source term. Casto leaves for meeting. Jim Trapp: No plume coming off Unit 3 (b)(5)  |
|                        |                                   | (b)(5)   |
| 2011/03/18<br>00:36:34 | Chuck Casto                       | ET and Casto discussed IAEA team coming to Japan. NRC team stated that, during a recent meeting, TEPCO focused on its historic safety culture in support of its capability to respond to this event. NRC team believes that offsite power effort might cause problems from electrical safety and questionable SFP pump/water availability. Also, power will be difficult to connect because of high radiation levels. NRC team does not consider offsite power effort to be a solution. Casto going to meeting with Ambassador. Might be with IAEA Amano.  |
| 2011/03/18<br>01:07:12 | News Outlets                      | NHK television shows water cannons spraying water on Unit 3. Steam appears to be rising from Unit 3 as water sprayed on building.  |
| 2011/03/18<br>01:34:37 | Pat Hiland                        | Results of RST telecon with NR, Bechtel, and others: Significant progress in effort. Bechtel will send detailed sketch. Bechtel indicated that about a week needed for completion effort because of difficulty of procuring material from vendors. GE Hitachi will pickup and assemble pump system on site. Prestage to minimize on-site assembly time. ET directs RST to ask Bechtel to begin calling vendors now with NRC calling if necessary. RST needs updated dose map to provide to GEH for planning on-site work. ET asked about verification of cooling success. RST will follow-up. 4 separate rigs with 3 pumps each. 500 gpm at 150 psi spec   |
| 2011/03/18<br>01:48:03 | PMT Briefing                      | Source term discussion: Each unit evaluated separately. PMT assumed 33% reactor core melt in Unit 2. PMT assumed 50% melt of fuel in Unit 3 SFP. PMT assumed 100% melt of fuel in Unit 4 SFP. RASCAL only calculates up to 48 hours duration. Use multiplier for longer time periods. Considered reasonably worst case assumptions without containment. ET asked that PMT perform another calculation for comparison.  |
| 2011/03/18<br>02:33:28 | John Monninger<br>(NRC Team)      | DOD has requested US General providing logistics support to participate in telecons with Chairman and ET. ET believes most effective to have calls with US General separate from ET briefings for Chairman. ET will inform Chairman of planned calls with US General. For initial call, ET ready right now to talk to US General. John Monninger will inform DOD.  |
| 2011/03/18<br>03:31:09 | Pat Hiland                        | USAID indicates paperwork problem with funding for pumping system. RST indicate (b)(6) in Japan needs to send approval to USAID for funding. John Monninger in Japan joins discussion (b)(5)   |
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|                        |                                   | (b)(5)   |

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|                        |                  | NRC Team Status update (John Monninger): Russian representatives to meet with NRC team at 7 pm Japan time and will link in RST by telephone. No word back from US General regarding telephone call with ET.  |
| 2011/03/18<br>04:02:52 | Marty Virgilio   | Provided update on (b)(5)  |
| 2011/03/18<br>04:11:53 | Leigh Trocine    | Leigh Trocine (NRC staff member at US-AID): Working on Bechtel pump system. US-AID needs confirmation from (b)(5) of use of equipment in Japan. ET indicated that costs include design, manufacture, transport, and operation of equipment.  |
| 2011/03/18<br>04:21:15 | PMT              | Telecon with French: French shared their analysis results on projecting site source term to Tokyo. Prediction result consistent with actual data. French offered to provide additional analyses assistance.  |
| 2011/03/18<br>05:04:22 | Pat Hilland      | Provided detailed sketch of pumping system being designed to provide cooling flow for 4 units at site.   |
| 2011/03/18<br>05:53:45 | Chuck Casto      | Chuck Casto will attend meeting with Minister of Commerce and CEO of TEPCO. US Embassy is contingency planning in the event that they need to evacuate embassy. (b)(5)<br>(b)(5)<br>(b)(5)<br>(b)(5)<br>ET indicates PMT<br>developing calculations regarding best and worst case radiation levels in Tokyo. ET indicates (b)(5)<br>(b)(5)<br>NRC team receiving suggestions from local Japanese organizations for actions to cool core. NRC team reviews suggestions and sends them to DOE or other groups as appropriate. (b)(5)<br>(b)(5)   |
| 2011/03/18<br>06:27:37 | Pat Hilland      | RST reports that Unit 3 SFP considered to have been dry when initially sprayed with water by fire trucks today because of large steam plume shown in photos. Pat indicated that John Monninger of NRC team in Japan agrees that Unit 3 SFP had been dry based on photos of water spraying operation.   |
| 2011/03/18<br>07:14:13 | PMT              | PMT is looking into the best way to consider a "worst case" model. The difficult part is in recognizing that the situation is continuously changing, therefore figuring out ONE single scenario is difficult. Therefore, looking into the most (b)(5)<br>(b)(5)<br>PMT working with the RST; Also working with NARAC to determine a source term. 33% core melt; 25% core available to release; no containment. 2 SFP; 100% inventory for release; no containment. NARAC is providing met data for Hawaii and Alaska. The runs are being done for Hawaii and Alaska   |
| 2011/03/18<br>07:42:58 | NEI              | NEI is concerned with the 50 mile evacuation and how this will undercut the USA 10mi EPZ.  |
| 2011/03/18<br>07:44:03 |                  | Considering the benefits of a PRA analysis. Consensus- there is little use for this type of analysis and it would not be a good use of time/ resources.  |
| 2011/03/18<br>07:45:27 | Chairman         | By 9am Chairman wants a list of the replacement team for in-country staff. Charlie suggests talking to Chuck about the skill sets that he need. Brian said that he needs people with dose assessment skills, liaison skills, knowledge of trip wires.  |
| 2011/03/18<br>07:56:28 | RST- Laura Dudes | RST focus for today: once supplies arrive in Japan, an operational plan needs to be determined; also, focus on the hand off of equipment in Japan; looking into if there is a point at which flooding it with water will be ineffective/ detrimental.  |
| 2011/03/18<br>07:59:37 | RST              | Australia is coordinating getting equipment to the port in Perth, and then the US military will fly there, pick it up and bring it to Japan.   |
| 2011/03/18<br>08:21:55 |                  | There is indication that the Tokyo Fire Department has some of the equipment we are shipping in from Australia; however, we will not slow out efforts down because the possibility exists that there can be significant aftershocks; if that is the case we want multiple trains in place, in which case having the extra equipment could be important.  |
| 2011/03/18<br>08:27:06 |                  | List of replacements for in country staff- Do not forget a dose expert! This person may need to advise on protective measures. As we shift to recovery, we may want to phase the in-country staff from primarily reactor experts to health physics experts.  |
| 2011/03/18<br>08:49:20 | NRC DART Team    | US NRC DART Team: Response Update  |
| 2011/03/18<br>08:58:41 | CA               | CA briefing to occur shortly. ET staff deciding where in the Op Center to take call.   |
| 2011/03/18<br>09:06:36 | Op Officer       | Brian wants the roster play back; Op officer informs there is no monitor phone to do a play back.  |
| 2011/03/18<br>09:16:12 | CA Briefing      | Update: Units 1,2,3 situation is the same. Seawater is attempting to be injected. There is a focus on SFPs, esp Unit 3; New reports- better success from fire truck water cannons- this is not confirmed. In-country team had questions about characteristics of zirc fires. The answer from NRC experts is that "if you had a zirc fire you would know it"; zirc fires are characterized with very bright light, so there would be no confusing it with steam; mitigation of zirc fires- water. Wind direction- east- out to sea.   |
| 2011/03/18<br>10:10:51 | CA Briefing      | Priorities: *Realistic cases- using areal data, and sparse Japanese data. *DOE (b)(5)<br>(b)(5) PMT is working on the input parameters; NRC is the lead for the in-country models; *In-country team is working with Bechtel operation; Bechtel is coming up with a pumping scheme also; there are signs that Japanese are moving to this end as well, however this is not confirmed.   |
| 2011/03/18<br>10:19:41 | CA briefing      | (b)(5) Working on providing in country replacements. CA's had numerous questions regarding the conflict between media reports and US AID/ NRC information.   |
| 2011/03/18<br>10:24:19 | John Monninger   | Could not get through to Chuck Casto; John Monninger provides update. In-country NRC staff were initially offered to be embedded in the EOF, but it turned out to be a meeting with the TEPCO president; they will try to have this meeting tomorrow, but are still interested in embedding in EOF. John does not think there is any change in plant status; Japanese government is also pursuing a pumping system- not confirmed.   |
| 2011/03/18<br>10:28:41 | Chairman         | Spoke with Admiral Donald (USFJ)- USFJ can support logistical efforts. Jaczko accepted and asked them to begin efforts; however, he said if the NRC in-country team does not need this support then he will halt it. John felt that the in-country team could really use this type support. Jaczko will communicate to Admiral Donald a sense of urgency. John communicated a need for politically astute individuals; technical experience is necessary however, this is a politically sensitive situation. Jaczko to John and Ambassador- consider other individuals who Jaczko should be communicate the importance of this situation to. |
| 2011/03/18<br>10:34:36 | Lockheed-Martin  | located a helicopter that is remote and can lift up to 5000 lbs; John said this was not one of our initial requests for robots, however this would be something very useful to have; ET will loop back through the DART team to request remote helicopter.   |
| 2011/03/18<br>10:38:45 | RST- Laura Dudes | C17 left and is on it's way to Perth.  |
| 2011/03/18             |                  |  |

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| 10:39:30               | Marty           | Suggests having an alignment meeting. Next step- have commission meeting.  |
| 2011/03/18<br>10:44:48 |                 | Mark thinks it would be helpful to discuss the fly over data with Jim Lyons, however Jim is not a Fed government employee. Ultimately this is a DOE decision, since it is their data.  |
| 2011/03/18<br>10:51:40 | NR              | NR is evacuating dependents from Japanese naval bases. This decision was made in a much more conservative manner than NRC determined PARs. It is important to characterize NR's decision as conservative, but not based on different data or information than the NRC based our decisions on.  |
| 2011/03/18<br>11:07:39 | Jim Wiggins     | May want to consider having Chuck remain "the face of the NRC" in Japan. That way we have a consistent person involved who has an established relationship.  |
|                        |                 | Meeting with TEPCO and Regulator (b)(5)  |
|                        |                 | (b)(5)   |
| 2011/03/18<br>11:30:58 | Chuck Casto     | (b)(5) he is going to email request to HQO.HOC@nrc.gov Overall message: TEPCO/ regulator willing to work and much more accepting of the situation. (b)(5)  |
|                        |                 | (b)(5)   |
|                        |                 | (b)(5) Trying to get Dan Doorman on the next flight; also working on long-term staffing. Chuck- update- NR voluntary departure; not an evacuation. Corrected spelling: Dan Dorman EST Chronology Officer - Jessica Kratchman at 12:12:16 on 3/18/2011  |
| 2011/03/18<br>11:55:55 |                 | FOIA request   |
| 2011/03/18<br>11:58:35 | DOE             | DOE Moscow just sent NRC Op Center a review of US-Russia meeting, held today in Japan.   |
| 2011/03/18<br>12:06:30 | PMT             | Getting ready for routine call to DOE.   |
|                        |                 | Meeting with TEPCO and Regulator (b)(5)  |
|                        |                 | (b)(5)   |
| 2011/03/18<br>11:30:58 | Chuck Casto     | (b)(5) he is going to email request to HQO.HOC@nrc.gov Overall message: TEPCO/ regulator willing to work and much more accepting of the situation (b)(5)   |
|                        |                 | (b)(5)   |
|                        |                 | (b)(5) Trying to get Dan Doorman on the next flight; also working on long-term staffing. Chuck- update- NR voluntary departure; not an evacuation.   |
| 2011/03/18<br>12:13:28 | Brain McDermott | Indicated a large attendance at the recent basic reactor concepts. people were standing along the walls and all chair were filled..  |
| 2011/03/18<br>12:36:12 | Commenter PAO   | Requested ET review NRR press release in the form of an Information Notice (IN).   |
| 2011/03/18<br>12:39:40 | EDO's Office    | ET reviews an EDO ticket pertaining to a FIOA request for current NRC operations, related to staffing, teams, emails, and shifts.  |
| 2011/03/18<br>13:07:02 | Chairman        | Chairman wants final assumptions before they are finalized.  |
| 2011/03/18<br>13:09:39 | Moscow          | Moscow is feels that SFP3 is disintegrating. They are concerned about MOX fuel.  |
| 2011/03/18<br>13:11:28 | PMT             | SOURCE TERM ASSUMPTIONS Email: between Chairman, PST, Wiggins. See attached.   |
| 2011/03/18<br>13:13:58 | Email           | PRA ANALYSIS EMAIL. See attached.  |
| 2011/03/18<br>13:39:12 | France          | France has shared technical data with us.  |
| 2011/03/18<br>13:42:36 | Media           | Detectors in Sacramento showed trace amounts of radiation.   |
| 2011/03/18<br>13:44:48 | PMT             | 6.35e-13 level detected. This is the lower limits of detection.  |
| 2011/03/18<br>13:45:40 |                 | Need KI supply for Headquarters because we will be sending people to Japan every two weeks.  |
| 2011/03/18<br>13:46:59 |                 | Probably sending Dan Doorman to Japan without KI. May need to FedEx it to him  |
| 2011/03/18<br>14:07:33 |                 | Trish Milligan is going to contact State of Pennsylvania to get a supply of KI. Op Center to send a courier. In an emergency they can advise staff who need KI to take a multi vitamin with hi dose of KI. Correction- multi vitamin should have high dose of Iodine. EST Chronology Officer - Jessica Kratchman at 14:10:54 on 3/18/2011  |
| 2011/03/18<br>14:07:33 |                 | Trish Milligan is going to contact State of Pennsylvania to get a supply of KI. Op Center to send a courier. In an emergency they can advise staff who need KI to take a multi vitamin with hi dose of KI.   |
| 2011/03/18<br>14:18:31 | Sally Billings  | If we need to there is a compounding company that can produce KI for us.   |
| 2011/03/18<br>14:33:12 | John Monninger  | ET expressed to him the request from Josh regarding a statement about the level of activity at the site. This statement is a result of reports that there is not as much site activity as expected given number of employees reportedly present. There is concern that TEPCO staff should not be hanging around the site unless there is a clear plan in place. John does not think this is an issue. He does not feel that people are hanging around the site unnecessarily (b)(5)                |
|                        |                 | (b)(5) TEPCO reported to John that Unit 3 is the priority and then they will reevaluate (b)(5)   |
|                        |                 | (b)(5)   |
| 2011/03/18<br>14:55:28 | ET turnover     | (b)(5) They are interested in NRC views and recommendations. They were offered to go to EOC, and it ended up being a meeting with TEPCO. (b)(5) that we are working with DOE to try and do. One of issues is assumption on source term. We have one from night shift. We haven't been able to figure out how that assumption became the one in play. Doesn't look very extreme. NRC is doing in-country work and DOE is doing US impact. Chairman has indicated he wants to see assumptions (b)(5) |
|                        |                 | (b)(5)   |
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|                        |                    | (b)(5)  |
|                        |                    | (b)(5) May get AC power Saturday Japan time.<br>May be able to do something with 5 and 6.   |
| 2011/03/18<br>15:06:21 | Chairman on bridge | Need to know: What equipment, exactly what Chuck is telling people in Tokyo to do. Very specific list of things that needs to be done. (b)(5)   |
| 2011/03/18<br>15:08:55 | ET                 | (b)(5)  |
| 2011/03/18<br>15:11:41 | Borchardt          | Discuss what Chairman needs. Bill will get Ambassador's secy's email address.   |
| 2011/03/18<br>15:15:00 | ET                 | Michelle is working on replacement team. Dorman will be on plane tomorrow to replace Chuck. Rest of team is partial right now. Admiral Donaldson, NR, has offered to use Navy connections to facilitate logistics support by US assets in Pacific area.   |
| 2011/03/18<br>15:21:20 | Japan team         | (b)(5)  |
| 2011/03/18<br>15:24:33 | Chairman telecon   | (b)(5)  |
| 2011/03/18<br>15:32:39 | Chuck              | (b)(5)  |
| 2011/03/18<br>15:42:21 | Monninger          | Shared Bechtel system. Japanese also shared their system. Discussion surrounded merits of both designs. In end, TEPCO said first time they had heard about US proposed system. Shared with them that last 4-5 days, had been shared. Did not give them any hardcopy pieces of paper. They gave us paper of proposed design. We talked them through ours. They understand all equipment coming from Australia. We told them includes 4 pumps, piping, etc, but didn't tell them they had to supply. We offered to provide assistance to them. We said in our opinion, it makes sense for them to continue their design, and us to continue to get equipment up. On Bechtel design, were no discussions on number of people required or where come from. Jim (b)(5) John, previously got info from ET on remote-control helicopter. We mentioned that that helicopter may be of interest to anyone. Chuck - told them they'd have to put up rad shield, and stage people to put up sections of pipe. Did talk to them about lead-lining fire trucks. TEPCO wouldn't meet with us all week. Only people show up all week are MEDI and the regulator. Have told MOD for days that we had design for pumping system. Casto: Don't know what Trapp or Tim have told Japanese. John (b)(5) |
|                        |                    | (b)(5) Jim: haven't told MOD to do anything (b)(5)  |
|                        |                    | (b)(5) Didn't have any design picture at these meetings.  |
| 2011/03/18<br>16:00:38 | ET                 | DOE/Budnitz sent email saying should do PRA on Bechtel system. RST assessed at very low value. Closing action.  |
| 2011/03/18<br>16:03:36 | ET                 | In call earlier, Cong. staffers talked about individuals who are MIA in Japan - asking to help out. Ruland - need to get NR working with us on logistics. Tom/NR - can get ahold of his contact to make that happen. Need to check if the 2 individuals ever got embedded with NR team.   |
| 2011/03/18<br>16:13:18 | ET                 | (b)(5) 4 is presumed dry. No steam coming out. On super-source scenario - begs question about missing units. Currently 5 units with fuel in reactor, plus pools for 1-6 and common pool. Is staging area for getting into dry cask storage. Should be old fuel. Vonna: what is cooling common pool? Wiggins: haven't seen any problem in common pool.   |
| 2011/03/18<br>16:20:23 | ET                 | (b)(5) Source term release. Need Chairman to review, then provide to DOE/NARAC. Josh wants electronic version of document given to Borchardt immediately. Diablo found 6.9 e-13 microCi iodine. Notifying EPA and DOE. San Onofre apparently picked something up on sampling. State dept just put out unclassified tables. Correcton: cable, not table. EST Chronology Officer - Rebecca Karas at 16:35:21 on 3/18/2011 EST Chronology Officer - Rebecca Karas at 16:35:45 on 3/18/2011   |
| 2011/03/18<br>16:32:41 | Chairman's office  | Never got 1-pager - needs email directly to him immediately.  |
| 2011/03/18<br>16:33:34 | ET                 | Cable should have been secret not unclassified. Going to talk to State Dept.  |
| 2011/03/18<br>16:20:23 | ET                 | (b)(5) Source term Need Chairman to review, then provide to DOE/NARAC. Josh wants electronic version of document given to Borchardt immediately. Diablo found 6.9 e-13 microCi iodine. Notifying EPA and DOE. San Onofre apparently picked something up on sampling. State dept just put out unclassified tables.   |
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| 2011/03/18<br>16:35:57 | ET                 | Need to identify set of experts for any of the subjects that might come up that can come to the microphone during Commission meetings. Need to make sure individuals identified are right people.   |
| 2011/03/18<br>16:40:34 | ET                 | Need to get better updates of dose and put in status update.  |
| 2011/03/18             |                    | We want to provide what we think is potential story behind questions. Bechtel worked design with HQ and NRC likes design. We moved forward with design through DTRA, etc. Embassy and DTRA and all - said stuff looks like it can be procured locally. Happened about 5-5:30 with ambassador here. The various agencies at embassy took list and started making phone calls. We don't know who they talked to. They were trying to pull together package in Japan to see if can be put together more quickly than Australia. Commerce attache in Tokyo called many suppliers. Contacted one company who put together pumping system for Tokyo fire dept. They said they were also working for TEPCO on system. Not sure if TEPCO - could have been requested by Japanese govt. In end it was determined we cannot rely on doing it locally - have to go with sure thing - Australia, and they gave go-ahead for Australia. It is correct that no NRC personnel gave Japanese the list. But good chance that discussions with Commerce Dept at embassy was taken that way. Our guidance to Bechtel was that you have to drive the system in and get out. Was meant to be very low manpower to install. Also, the helicopter in NE that can lift 5000#                                |

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| 16:59:59               | Monninger     | was mentioned. Were going to mention is available through Lockheed Martin, and if they take advantage of it, fine. We handed summary list to MOD yesterday, but discussions were that we were proposing to bring the assets in. Their idea is massive concrete pumping trucks. 65m boom. Have 2 in-country that are proposing to use. We told them try and get 4 here. They will have to move with dose, otherwise. They said 2 new ones in China with private company. We said we would see what we could do about that. Has been offer of assistance from Navy to use their assets to move things around. Embassy usually prefers to use DART. Bruce: heard TEPCO system might be ready sooner? John: probably because it's in-country and TEPCO is working it. Going to pump water instead of concrete. Casto: we have minister of trade and CNO/TEPCO, CEO/TEPCO meeting today. Also Japan general forces general. Vonna: heard Japanese ministry was going to give us dose rates. if can ask them. John: are many ministries. Can ask team, though. Had dose rates, but in a 40m x 40m area. Not fine granularity. Can't go in and suck up dose to do that right now. Need robots with rad sensors to map site. Chuck: before meet with CNO, CEO, minister, should have what we think message is to them.   |
| 2011/03/18<br>17:21:23 | PMT           | There is actually no green grass in Alaska right now, that the 35 rem is based on  |
| 2011/03/18<br>17:37:15 | ET            | Would like status of event (written product) from NRC since Congress is in recess next week. To be shared with constituents. Probably any products we have already are way too detailed. Could write something up in general - any concerns we have, what we are doing generally, etc. More than what's in OPA book, though. Then would send that out on a daily basis. Need draft by tomorrow.  |
| 2011/03/18<br>17:42:08 | ET            | Question of who will pay is now being discussed, even though had authorization from USAID.   |
| 2011/03/18<br>17:42:45 | RST           | Were questions on how to approach dry SFP - have completed tech analysis of going forward. Different scenarios for wet/dry. Also sand slurry scenario. Also info on SFP loading if have to go to sand slurry solution. Assessment on recriticality - no concern there from experts. Info is out with site team. Main activity was doing logistics support with Bechtel, INPO, NR, GE-Hitachi. Have the system drawing, equipment list that went to USAID. As of this am, Bechtel was given email from USAID to go forth. Staging at Royal airforce base in Australia. Awaiting status of American Airforce C-17 that is supposed to pick up from Australia. Talking about getting logistics team getting from AFB to GE-Hitachi in Japan (where will test and train personnel who will execute onsite). Lots of logistics so we can execute equipment arriving onsite. Goes beyond to MOD. Have contact at Yokota AFB. DART has given approval. Boger - Do we have sense of relative effectiveness of fire trucks? Laura (b)(5) Assuming 3+4 are dry. Site team was with TEPCO and they are sending us info on pumper truck. We have agreed to look at and send back any recommendations we have. No info on electric power. They had to bring in a temporary 6.9kV distribution panel, and had some problems getting that onsite. We don't know status. Going to make sure we have diesel fuel - multiple supplies - for pumps. Annie Caputo called, and she has a boron firm who would like to give Japanese boron. She's working with NEI to pay for it if AF can move it from Tulsa, OK to Japan. Laura - They have mountains of boron. Mike - No, it is the Areva boron that is in OK. They pulled out - were unable to get funding for boron. Trish - heard they already had the Areva boron. NR - we can make it happen if we determine we need it. Mike, need to ask site team if need, and then get back to Annie. Steve Troutman called. Admiral got call from (b)(6) who is frustrated because they are trying to get INPO folks involved with team in Japan. Suggested a call should happen. Mike, we have been trying to get INPO involved in DART team in Japan. boger - thought John said INPO engineer might be in Japan?? Laura - RST have been working with INPO on pumping process. |
| 2011/03/18<br>18:00:06 | PMT           | Shine dose would be 80mR way west in the islands of AK.  |
| 2011/03/18<br>18:05:47 | PMT           | Evaluating dose rates for various cities in Japan. Diablo Canyon detected iodine - only 1 of 4 air samplers picked up. SONGS also got on 1 air sample, a little lower - on border of ability to detect. AMS flyovers not very useful because they flew on side of site where wind was not blowing (west side of plant), so they will fly again, not sure when.   |
| 2011/03/18<br>18:07:40 | Chairman call | Talked to PMT before on DOE runs with iodine in Alaska, and we have good answer that there is no grass in Alaska right now. Trish, had call with WH, DOE and NARAC, and discussed. But since cows are not now eating grass, and housed internally, including water. Down to ground shine dose of 80mR. (b)(5) Vonna - still expecting results on worst case. Trish - we will ask NARAC about availability of cows eating outside. Give Chairman call if before 9. Trish - 3 reactors, 4 sfps. 100% core melt with cont failure, 4 sfps empty of water, and fuel melted. going to send isotopes assuming 100% core release. This would be worst case that is not really seemingly possible. Chairman - not sure why would we produce that Worst case - there is worst case and one that is possible. Should be worst case that is actually possible. Certain things just physically cannot happen. Should be source term that is worst case, but possible scenario. Don't know if that's feasible. Not going to volatilize everything in core? Bruce, some should stick to sides of wall, and some would still be solid. Iodines and CS would be what you'd worry about. Trish - also thinking about MOX. But should not be significantly contributing to dose. Chairman do worst case physically possible. Don't think you can eject entire core. Think the agency ruled out as physical possibility.  |
| 2011/03/18<br>18:18:12 | ET            | Should see if WNP-2 sampled anything. Or Humboldt Bay.   |
| 2011/03/18<br>18:18:49 | Liaison Team  | Working on summary for Congressionals. Talked to Margerie Doane on unclassified cables - working to communicate to State. Will be 7pm call that WH will put on with states. Call last night was just western states. Today expanded to all of them. Communicating with states: been trying to funnel information to RSOs. MJ: what about pushing state communications to DOE since they are responsible now.   |
| 2011/03/18<br>18:33:44 | NR            | People here in RST burning a lot of time on logistics. Site team has been connected with a Major at the AFB, so team feels like they have someone, so not sure if they can track down things like the boron in Kansas, etc. Maybe can turn more logistics over to military folks.  |
| 2011/03/18<br>18:38:51 | Chairman      | Want to emphasize with team - just met with Japanese ambassador. He said if there is anything we need, just to tell him directly. He asked that any equipment that could help, robotics, remote equipment and/or anything for people to be able to get closer....He gave us his home and personal cell number. No delay on anything they need. Also give site team Chairman's home phone, cell phone, etc. Do not delay. There is not a lot of time. It's very serious in Japan. He asked if right now we need to go beyond 50 miles. Told him no don't think so. They are in a very difficult situation right now. If we're having problems paying for something or anything, let know.   |
| 2011/03/18<br>18:43:22 | Casto         | Have latest aerial monitoring results on EMWEB. Can see more contamination to west. Going to fly more west today. More important is that they shared us U3 parking lot photos. In process of having someone scan those and send to us. Angle they took from West side, we have taken east and top photos. Look at U3 photos. Need to talk about what photos showing. Preliminary - hard to see that there is a U3 SFP at all - appears like rubble. Does not appear to be integrity. But should look at first. Looks like severe damage on that side. Can only see vertical pillars there. Chairman: conveys conversation with Japanese ambassador to Chuck. NR: need plant technical data. (b)(5) Chuck: (b)(5) NR: do you get detailed info on plants? (b)(5) (b)(5)   |
|                        |               | Going to send photos and design diagram. Trish: have real-time dosimetry data from site? Chuck: talk to DOE. On CMWEB is all the results. Brandon has access to CMWEB. Rad levels onsite (b)(5)  |

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| 2011/03/18<br>18:51:30 | Casto   | (b)(5) Bruce: presuming too hot for people to even do surveys. Chuck 1R or more at gate. Will try and find out from TEPCO. Meeting with CEO and CNO - will put it in list of info we need. Trish: Chairman has asked if 50 mile is ok and we need doses. Jack is working on (b)(5) with DOE - (b)(5) Jack working with DOE and PMT. Need to have by 6 tonight Japan time. Need those thresholds. There are questions also on whether seawater fill is still working or stable.  |
| 2011/03/18<br>19:02:52 | Chuck   | Think there is at least a leak or rupture on Unit 4 SFP. Thinking about using mining mud. Not sure how much could put in without collapsing pool. If side or bottom has massive rupture, what do then? Think high volume water supply is good attempt. Other problem is worrying about zirc fires and making matters worse. Have equipment to put out if start? Finally at midnight got TEPCO guy in charge of pumping and discussed until 4am discussing design of system. Got together - doesn't matter whose system, just make sure it works. Also timing, which can get in place first? Dilemma is system they want to use - only have 2 in country, other 2 in china. They can remote control operate them - used in Chernobyl. Bechtel system is sitting in Australia in 2 pieces. 3rd path is that we broadcasted to Japanese companies to see if have. Don't want to make things worse, if have stable environment. Know we will cause plume when steam again. Will panic everyone. Have to tell people ahead of time. Bill - people outting in systems - heroic efforts (b)(5)<br>(b)(5)<br>(b)(5) Bruce: NR guy is interested in helping with logistics. DART responsible for logistics in embassy. They move lots of stuff everywhere. Can we point NR guy to someone in organization? Bill Berger in embassy. Someone might need to go into China to get the trucks. They should talk to Chuck passes naval rep number.   |
| 2011/03/18<br>19:27:50 | ET      | (b)(6)  |
| 2011/03/18<br>19:49:48 | ET      | Looking at photos of U3 from TEPCO - looks like pool elevation may be gone, and doesn't look like drywell head is where we would expect. but when look where cars are, looks like not many feet. Looks like drywell may be not where we would think.  |
| 2011/03/18<br>20:03:28 | TA call | Continue to coordinate with various agencies. Status of units remains fairly unchanged (b)(5)<br>(b)(5)<br>(b)(5) Trying to collect more information on doses around site (b)(5)<br>(b)(5)<br>Trish (b)(5)<br>(b)(5) Should have other projections done next half hour or hour. Will share with NARAC and can do calculations. Got AMS flyover results. NW of site had greatest concentration of contamination. 1 rem integrated 4 day doses. Has been some reports that San Onofre and Diablo have seen a small sample slightly above minimum detectable activity level for I-131. Have been contacted and they have increased their sampling. Don't know if was random sample. Being confirmed 2 places at Diablo and 1 at SONGS. Just received some photos of U3 reactor building that were taken from different perspective. From West looking east, they are showing quite a bit of damage couldn't see before. Working through the night to get some better understanding of elevations. Ruland: Got photos from TEPCO provided to in-country team. Unit 3 photos show significant damage to structure. Provided to GE. Turns out that U3 elevations are different from U1. What you can see exposed is refueling drywell head crane rides on. Building constructed at level below other structures. Hard to see drywell head. Asked them to provide their assessment of what they see. Cannot rule out or rule in whether SFP is still intact. Site team's initial impression was that SFP might not be here. Also will talk to site to make sure they know that initial view is different than what they might have thought. Still working logistics for system with Bechtel, GE, and in-country NRC team - INPO on call, including Japanese Defense Forces and NISA, Beth Hayden: expecting huge press presence at Cmsn meeting Monday. Hopefully can pull feeds to TVs. Created a place on web for Japan-related info. Castleman: flyover results? Trish: narrow band to nw beyond 13 miles where integrated 4 day doses approach or exceed 4 rem. Haven't completely mapped extent of concentration. Castleman: yesterday asked for list to USAID of equipment that could be provided, based on b5b - haven't gotten list yet. Need to know for Monday's Commission meeting. Do we have info on health effects - occupational and public? Do we know of fatalities? No. No confirmed info or data. Just from media. Do we still believe U4 pool is dry? Yes. Why still dry, since we have 2 indications is not? Japan and France say is not. Bruce, rad levels from helicopters significantly more than if water in pool. Josh - Japanese govt have said various things about water in pool, including very little water or they agree with us. Next call tomorrow am 730.                                 |
| 2011/03/18<br>20:45:29 | ET      | Goes over action items.   |
| 2011/03/18<br>20:56:10 | Casto   | Chairman gave assignment to get dose needs. Ruland - we are working on statement, but team is telling us they will get the dose rates. Casto - met with TEPCO chairman and CNO. Their concern and priorities is reduction of radiation and the reactors (b)(5)<br>talked about bottom head and reduction in heat transfer. Had immediate concern about seawater impacts on the reactors. Not thinking about cooling of SFPs. They said they were concerned with seawater in the reactors. They said very concerned with seawater deposition and impacts on the bottom head with salt and heat transfer on the fuel. They want to get in there and run systems to recover. Corrosion of bottom head. Need to establish EOC-based team. Going to have to stand up cooling water org on SFPs. Rad org, Research org, and projects org. Chairman: don't think we can stand up all those things. Casto: need research on vessels and seawater and consequence management. Research team at HQ. Projects team in Japan. Chairman: who? Chuck: RES and INPO on reactor vessels. Don't know who on rad levels, maybe DOE. And someone to manage all this. Major change in mission. EPA for dose projection. Chairman: we'll figure out who will do what. Need: Strategies for reducing rad at site, look at seawater impacts on vessel, projects group, dose projections and calculations. We promised AMF data. He promised to get us dose info off self-defense forces. Sample doses. Chairman: not from GE (b)(5)<br>(b)(5)<br>Chairman: do you need people for pm team? Yes, diplomacy, pm, need office space and facility. Bill: we talked to Paul Clifford - had no concerns about corrosion of zirc fuel. Chuck: ask multiple sources. Not corrosion, it's heat transfer rate. Bill: concern is you essentially have evaporator, putting in boric acid, salt, boiling steam. They want to get off of seawater and get to something else. Bill. can hit core spray in different direction. Could have fuel on bottom head. Shipped photos to GE (b)(5)<br>(b)(5) Chuck: debris bed could have punched hole through bottom. Bill: will forward assessment to team. Trish: will forward ams results. Chuck: how can get through RB through keyhole to find connection to RCS to pump in fresh water. Not going to be able to start pump. Need to drill gopher hole through plant to get connection to RCS - borated water connection. Might want to sarcophagus at this point. Would have to borate vessels first. Probably need lab to work on that. Bruce: Are they seeking boron? Chuck: have 38K pounds from Diablo, plenty of boron (b)(5)<br>(b)(5) Embassy has constant charter flights, so we can lift back. Chuck: standby on replacement team - will talk directly - with mission shift, skill set will change. |
| 2011/03/18<br>21:25:29 | ET      | If we get Bechtel, GE, industry, do they support TEPCO or MOD or who? Is PM listening to TEPCO anymore or not? If we leverage technical expertise of industry, then we can provide oversight. Someone who can build confidence and communicate - what team needs.   |

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| 2011/03/18<br>21:28:25 | Burnell          | Think it might need to be under our flag, this consortium. USAID already has ticket for (b)(5)<br>(b)(5)   |
| 2011/03/18<br>21:56:25 | ET               | Seawater may react into NaOH and HCl?? Should have chemist check. Blast in Unit 3 much bigger (at least twice) from Unit 1. Can see chunks of things falling back down, possibly fuel debris found by Unit 4.  |
| 2011/03/18<br>22:00:30 | Chairman         | INPO, NR - PM team   |
| 2011/03/18<br>22:10:57 | Casto            | Bechtel, NR, INPO - PM team, getting people here tomorrow am, gathering in NRC building (b)(6) There are satellite trucks everywhere at TEPCO. May shut embassy down tomorrow switching to another diesel. Going to stand up hotel conf room hopefully. TEPCO recovery manager wants us back at TEPCO. Quickly running out of soldiers - need to move people this way. Need people that are more - get things done, coordinate, carry out plans, etc. Monninger is perfect. HQ should pump ideas, and PM people should help logistically. More like base team management thing. Maybe go to BC level. Bruce - hard to maintain presence in this facility (ops center) - what if we have an event at our facility. Conf room isn't working. Someone at agency is working on 6 month lease here. Needs to be accelerated. AMS info went to Jack Foster. 2 admirals, 1 retired, 1 active. Matrix sending out - good feedback from govt. Beginning to wonder how stale some info is. Maybe add a little more explanatory info in boxes. Product is for ambassadors.  |
| 2011/03/18<br>22:26:47 | Marty            | Been working with Chairman and his counterparts in industry and other agencies. How Deepwater Horizon was finally brought to conclusion was an industry-to-industry consortium, so tomorrow will have kickoff meeting with reps from industry. INPO will organize. GE, AREVA, those types of people that we'll bring to bear on problem on more organized way. Will set up kickoff meeting for sometime tomorrow. Will engineer solutions that can be implemented. Key will be to get Japan to accept - will come through TEPCO. Will work through State that highest levels in Japan will accept. Chuck's input will be critical. PMT has been asked to explain rad levels at site. Will help engineer solutions that will work. Over next several days, consortium details will evolve. Now shifted around to reactors cooling, so says that TEPCO does not have firm set of priorities, and they are desperate. Opportunity for us to move in with right technical skills. This group will transition and evolve from recovery phase to another subset that will take over cleanup.   |
| 2011/03/18<br>22:52:10 | Marty            | Need block of rooms at Marriott. Guards primed and parking. Get in touch with (b) in morning. Shoot for around 2pm for kickoff meeting. Need 8 rooms. Plus conference room here for 30 people. Monday's commission meeting will be important. Not sure if roll out over weekend with press release, or at commission meeting. Public will get good view of how this will work and our plans. Commission meeting: Phase 1: what we're doing in Japan, Phase 2: JCO for our plants, Phase 3: Looking forward, what look at? b5b? severe accident management? training of operators? Then closed Cmsn meeting Mon afternoon on how sequence this (planning). Schedule future commission meetings on topics. May decide to delay EP rule issuance, for instance.   |
| 2011/03/18<br>22:57:55 | (b)( ) industry) | Marty: Understanding told admirals is that we would form consortium to get industry to industry support like Deepwater Horizon. DOE, Bechtel, Areva, others. GEH, etc. Who can identify and implement solutions. Have team from Exelon, GEH, EPRI, Bechtel, Areva and B&W. If need, QRS, Westinghouse, etc. Most people can be here tomorrow. 2pm for kickoff meeting. Will email names of people tomorrow morning. Will start moving through diplomatic channels in-country to make sure implementable. also get idea of rad fields. as of this pm, TEPCO folks have new concerns of reactor vessel and we can talk about that tomorrow - longer-term effects of putting seawater in reactor. Impacts on material or fuel. Have shifted their priorities often, though.   |
| 2011/03/18<br>23:45:37 | Chairman TA      | Meeting between Chairman and Japan Ambassador. NRC will provide detailed info regarding water. 1-pager Marty provided. Bechtel schematics, and other info. (b)(5)<br>(b)(5) TEPCO wants to know what affects salt has on cooling   |
| 2011/03/19<br>00:14:51 | Marty            | Meeting with Industry tomorrow. Not in ET room. Question: Do industry personnel need access to (b)(5) Roy: need to grant access to industry personnel. Contact Originator for permission for access.   |
| 2011/03/19<br>00:22:52 | Marty            | Logistics for Saturday meeting with industry reps. Need map of radiation boundaries around reactors. Situation reports. Develop agenda. Eng. diagram from Bechtel. Rad conditions. Extra security.   |
| 2011/03/19<br>00:30:04 | Roy              | Task for Info Sec (b)(5) to industry technical experts at Saturday's 2pm meeting to help make decisions.   |
| 2011/03/19<br>00:39:00 | Chuck            | Met with Japan Ambassador (b)(5)<br>(b)(5) Purpose to ask Prime Minister who primary point-of-contact should be in Japan gov. to ensure effective coordination of US support. Marty thought site map was being developed showing dose. NRC working does projections for Tokyo.   |
| 2011/03/19<br>01:03:13 | NNK World (TV)   | Two reactors resume cooling.   |
| 2011/03/19<br>01:08:38 | Cathy            | Source Term Comparison. One report sent to NARAC last night. New report to NARAC 3 reactors and 4 SFP. Lower ST for reactors based on station blackout v. LOCA. Preparing narrative. SFP release fractions based on age of fuel. Releases 16 hour durations. This report taking place of previous. Think task from last night realistic/optimistic source term v. worst case. Releases starting on March 12th.   |
| 2011/03/19<br>01:29:30 | Marty            | Question: Who NRC participants for tomorrow 2pm meeting.   |
| 2011/03/19<br>01:50:04 | Jennifer Uhle    | New information. (b)(5)  |
| 2011/03/19<br>02:12:35 | Phone Call       | USAID Bob Kayler NRC Employee calling. Kara Cristie - Response Manager on ERT. Kara made a request for information on projections beyond what we have currently on wind shifts on Sunday. Best and worst case scenarios, and the most probable scenarios. At the high level.... How would the humanitarian effort be affected, specifically with evacuations. They want to anticipate humanitarian effort within the next few days. Is this something that we can support? Roy - Are you looking for real time dose information over time or are you trying to get projections for the future? Kara - Less emphasis on dose information to date, and more of a step back and current situation at the plant, and what it might elevate to over the next several days or weeks. The humanitarian people are not used to aiding with nuclear problems. They are asking for help in what issues they should consider. Roy - It sounds like what you need is actual dose information to decide where you can get to and where you can't get to... Bob - We are more concerned with the evacuees, to predict the number of people will be evacuated, and when they may be evacuated. This will help them put together their contingency plans. Scott Morris - So there is an interest in understanding ... that should the event get worse, is there any likelihood that the protective actions might expand beyond the 20-30 kilometers. How likely is this to occur? Kara - Yes. How likely would this be, and how severe would this be? Scott Morris - Any response that we would give would be highly speculative, because we don't have access to a lot of information on the situation. Kara - A caveat could be included in the statement to show that. Scott - We have done worst case analysis, and we are continuing to refine it. This led to our protective action recommendation that we made pushing it out to 50 miles. Bob - We have been receiving some flyover data. We are trying to create a contingency plan for this, not necessarily take action on. It would help us plan for the impact that would occur on the population in the area. When |

would we predict this to happen, given current information that we have. Scott Moore - Are you referring to the US government or Japanese govt? Bob - The US Government. US AID. They are putting together the contingency plan. Scott Moore - We can't answer that. A lot of it is based on meteorology, wind direction, and other factors. Kara - If we could get a description of what goes into the analysis, that would help as well. If the plume cloud were to blow back over the population, what would that mean? I understand that the power supply is not likely the priority according to the NRC? If all of the efforts fail, what impact would we predict? If we don't know because of all of these factors, it would be good to know what the factors are. Roy - We will give you a call in a little bit. Our protective measures folks will get back with you. Bob - When the Liaison team is ready to talk, let us know and we can set up a conference call. Roy - I'm not sure how satisfying the information will be for you. We can't predict everything at the site with limited information. They are trying a variety of mitigating measures with likely limited effects. It's difficult to find out what the radiation levels are. We will try to support you as best as we can. Call ended.

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| 2011/03/19<br>02:30:59 | Marty                    | Agenda for 2pm meeting on Saturday. Send to 3 team leads for comment.  |
| 2011/03/19<br>02:55:37 | Tom Blount               | Consortium team member list provided (not yet complete) and logistics coordinated.   |
| 2011/03/19<br>03:16:52 | Jennifer Uhle            | New Zirc fire information. No answer on robotics. Call made to NASA last night.  |
| 2011/03/19<br>03:24:09 | Jennifer Uhle            | Zirc Fire Video shown. Fine powder remains. Sand may hold powder together. Water fission products into solution. 1 bundle used for test. Red glow and grey smoke result during zirc fire. More tests planned. Make video available for consortium.   |
| 2011/03/19<br>03:37:05 | Wayne                    | Sensitive briefing and documents.  |
| 2011/03/19<br>04:10:51 | Protective Measures Team | Closing out action item record #1562 - estimate altitude of possible plume the reactors can reach. Answer = 2.5 km. Source: NARAC EST Chronology Officer - Dennis Gordon at 04:14:06 on 3/19/2011  |
| 2011/03/19<br>04:10:51 | Protective Measures Team | Closing out action item record #1562 - estimate altitude of possible plume the reactors can reach. Answer = 2.5 km. Source: NARAC  |
| 2011/03/19<br>04:14:24 | Protective Measures Team | Closing out action item record #1562 - estimate altitude of possible plume the reactors can reach. Answer = 2.5 km. Source: NARAC  |
| 2011/03/19<br>04:15:00 | Marty                    | 7:45am phone conference. attendees EDO, Deputies, Office Directors, others. Send email of topics of discussion at 7:00am.  |
| 2011/03/19<br>04:28:34 | Scott Moore              | Available guidance identifies 10 REM for evacuation. Roy: Early evac, advisable  |
| 2011/03/19<br>04:40:06 | Marty V.                 | Marty to David Herman (b)(5)<br>(b)(5) David Herman, Naval Reactors EST Chronology Officer - Dennis Gordon at 05:23:50 on 3/19/2011  |
| 2011/03/19<br>05:13:18 | Brian McDermott          | Phone call. Brief from Marty to Brian. Consortium meeting.   |
| 2011/03/19<br>04:40:06 | Marty V.                 | Marty to David Herman. (b)(5)<br>(b)(5)  |
| 2011/03/19<br>05:24:34 | Brian McDermott          | E-mails sent from ET ET web can be easily identified for latter FOIA request. Rebecca provided email guidance to fwd: emails to FOIAresourc.hoc@nrc.gov  |
| 2011/03/19<br>05:49:57 | Cathy Gibson             | Websites are available to concerned citizens who want to know radiation levels in West.  |
| 2011/03/19<br>05:52:36 | Scott Moore              | Winds are expected to shift towards Toyko on Sunday 3/20/11  |
| 2011/03/19<br>06:01:19 | Cathy Gibson             | PMT believes that source term should be calculated over a 24 hour period and not over longer time period. Chairman asked for realistic does rates.   |
| 2011/03/19<br>06:16:26 | Kathy Gibson             | Is calculation for 3 reactors and 4 SFPs for release is required over a 24-hour period realistic? Does this answer Chairman? Provide calculation to Chairman.  |
| 2011/03/19<br>06:50:09 | Shift Turn-Over          | Briefings  |
| 2011/03/19<br>07:21:22 |                          | Marty V: who are the decision markers? Jim W: have a TA briefing. Larry C: trying to get info from site.   |
| 2011/03/19<br>07:23:09 |                          | weather forecast. Chairman or ET director to participate in briefing today.  |
| 2011/03/19<br>07:25:24 |                          | Briefing now: Jim W by phone. At 7:45 another briefing. Brain M: facilities status; unit 2 - Unity 2: power restored, control room; unit 3: spraying water from fire trucks; unit 4, 5 no change: fire fighting equipment. Diesel generator in unit 6; sfpool: inspections and no problems also with dry storage.  |
| 2011/03/19<br>07:33:47 |                          | Larry C: calculations being done; San Onofre; Japanese calculations; more on site data from on site team and TEPCO; weather forecast: winds on shore. Jim W: release to team in Japan; Dan D to go. Commission mtg on Monday to discuss b5b. Operators in Japan: TEPCO concerns with sea weather in components and RES looking into it. May have parallel effort focus on vessels not pool.<br>DS DS EPRI. AREVA, eng experience to analyze. Question: is there water in the pool? Jim W: we assume there is none. |
| 2011/03/19<br>07:42:50 |                          | 7:45 briefing with Japan: Jim W: Japanese ambassador request: how many people? Offices represented: RES, NRR, OPA, IP, OCA, OEDO, OGC, EDO. Marty V: providing info on team: Naval Reactors, DOE, AREVA, INPO: Technical and political issues.   |
| 2011/03/19<br>07:49:13 |                          | Marty V: industry and gov agencies to look into solutions. Discussion about ET participating on afternoon briefing.  |
| 2011/03/19<br>07:52:33 |                          | Marty V: leadership role - NRC x DOE. Need Chairman to help with NRC role. How about funds? To be discussed later. Meeting at 2:00 PM. Bill: NRC to provide assistance, not leadership? Marty V: 1) look for info - roles and responsibilities and wording (assistance). May need to do a press release today. We have rooms at Marriott, need security. EST Chronology Officer - Vanice Perin at 08:01:00 on 3/19/2011 EST Chronology Officer - Vanice Perin at 08:02:04 on 3/19/2011                             |
| 2011/03/19<br>07:52:33 |                          | Marty V: leadership role - NRC x DOE. Need Chairman to help with NRC role. How about funds? To be discussed later. Meeting at 2:00 PM. Bill: NRC to provide assistance, not leadership? Marty V: 1) look for info - roles and responsibilities and wording (assistance). May need to do a press release today. We have rooms at Marriott, need security.   |
| 2011/03/19             |                          | Marty V: leadership role - NRC x DOE. Need Chairman to help with NRC role. How about funds? To be discussed later. Meeting at 2:00 PM. Bill: NRC to provide assistance, not leadership? Marty V: 1) look for info - roles and responsibilities and   |

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| 07:52:33               |    | wording (assistance). May need to do a press release today. We have rooms at Marriott, need security. EST Chronology Officer - Vanice Perin at 08:01:00 on 3/19/2011  |
| 2011/03/19<br>08:16:13 |    | Discussing List: John Lubinsk - fof, White House request. Discussion on US doses. EST Chronology Officer - Vanice Perin at 08:23:41 on 3/19/2011  |
| 2011/03/19<br>08:16:13 |    | Disussing List: John Lubinsk - fof, White House request. Discussion on US doses.  |
| 2011/03/19<br>08:24:46 | ET | Call with Jim Dyer and Nader - Bill Borchard is here; airplane waiting to go with a train from Bechtel but cost is much higher. Nader to call USAID EST Chronology Officer - Vanice Perin at 08:52:17 on 3/19/2011 Call with Jim W and Nader - Bill Borchardt is here; airplane waiting to go with a train from Bechtel but cost is much higher. Nader to call USAID. EST Chronology Officer - Vanice Perin at 08:53:49 on 3/19/2011 Call with Jim W and Nader - Bill Borchardt is here; airplane waiting to go with a train from Bechtel but cost is much higher. Nader to call USAID. EST Chronology Officer - Vanice Perin at 08:54:59 on 3/19/2011  |
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| 2011/03/19<br>08:56:27 |    | Nader reporting: Chairman to contact USAID to get funds. Bill Cook at Embassy: get equipment on the ground is not urgent. TEPCO most likely will not use it in immediate future.  |
| 2011/03/19<br>09:06:49 | ET | Jim W talking Chuck in Japan: Jim W describing situation and significant cost increase. Bill Cook stated that equipment may not be used. Cost may end up being absorbed by NRC. Chuck says that is not urgent, but politically it is an issue. Leave it up to AID.  |
| 2011/03/19<br>09:17:10 | ET | Jim W on the phone with Bill Borchardt about plane in Australia waiting to take Bechtel equip (train) to Japan. Jim W on the phone with Josh: summarizing issue; tech point of view, equip not urgent, but political sense is more sensitive (negotiations with Japanese Defense Minister).   |
| 2011/03/19<br>09:22:45 | ET | Nader updating (Bill Borchardt, Josh (talking with Chairman) on line): DOD has authorized funds, but after that price went up. Questions: is equip urgent (hi priority)? And, is the price right?   |
| 2011/03/19<br>09:29:40 | ET | (b)(5) Jim W: per TEPCO and other sources, technical need is not urgent; look at cost more carefully. However, politically, Japan has accepted. Jim W related that USAID decision is no go, due to cost increase (per e-mail).  |
| 2011/03/19<br>09:37:40 | ET | Phone call from Joe Anderson asking for instr about the situation in Australia and Bechtel President is calling for demobilization. Brian McD and Jim W   |
| 2011/03/19<br>10:22:00 | ET | Phone Conf: Brian McD is on phone with Jim Dyer, to discuss Tokyo, (b)(5) Australia, ref. Bechtel equip: issues and TEPCO acceptance; also cost tremendous increase.  |
| 2011/03/19<br>10:30:22 | ET | Phone call with (b)(5) Jim W explains that the system was a backup; also, direction for USAID to hold on.   |
| 2011/03/19<br>10:36:21 | ET | (b)(5) reports that the Australian crew will rest for the night; may continue tomorrow.   |
| 2011/03/19<br>10:38:19 | ET | Phone call with DOS Coordinator of Japan Effort (b)(6) to discuss decision related to equip: handled by Jim W - political, and tech (priority) considerations.  |
| 2011/03/19<br>10:52:30 | ET | Jim W: The system is a third option for the Japanese and shipment may be reevaluated.   |
| 2011/03/19<br>10:54:19 | ET | Discussing press release: spent fuel, sf casks, tsunami analysis for NPPs on the coast.   |
| 2011/03/19<br>11:04:54 | ET | Jim W briefing Naval Reactors rep, Dave Herman, on latest decisions by USAID and NRC's situation.   |
| 2011/03/19<br>11:28:11 | ET | Bill Borchardt calling about 2 PM mtg at ACRS mtg room. Industry to meet among themselves but NRC is not the lead. Request from industry to use NRC meeting room - need to see if that is possible. However, they may have already something with the Marriott.   |
| 2011/03/19<br>12:06:59 | ET | Phone call Josh: Jim W explaining Bechtel equip (2nd or 3rd layer defense) situation, and (b)(5)  |
| 2011/03/19<br>12:49:12 | ET | Jim W requesting Liaison Team, Tom Bergman, to prepare phone call on AID decision, diplomatic consequences (DOS), Naval Reactors, Tokyo embassy.  |
| 2011/03/19<br>13:07:37 | ET | Phone call scheduled for 6PM EST.   |
| 2011/03/19<br>13:10:54 | ET | Jim Wiggins briefing Brian Sheron.  |
| 2011/03/19<br>13:27:36 | ET | Bill Borchardt explaining that 2PM brief is for industry, not directed by NRC - we may facilitate.  |
| 2011/03/19<br>14:34:48 | ET | Jim Wiggins briefing Bruce Boger.   |
| 2011/03/19<br>14:41:11 | ET | Trish Hollahan explained that NRC was to give the source term for dose calcs in Japan; DOE to use the source term for calcs in Hawaii, Guam, Alaska.  |
| 2011/03/19<br>15:01:15 | ET | AID setting up conf call with DOS, NRC, NR, DOE. AID had made a decision not to ship due to cost. No technical need now - components available in-country (b)(5) Went from \$750K for all 4 to \$2.4M each. Thought is to bring in the one that is in Australia, and then see if can use others.  |
| 2011/03/19<br>15:24:08 | ET | Discussion of TEPCO press release - restoration of RHR to Unit 5. Yesterday when talking about skills for replacement team, wanted civil/structural and explosive people. If put too much sand/water in there, could do more damage. Calc done for adding sand to pool. Experts are thinking that it is built so robustly that it should still be OK even with blast. Wiggins: could explosion have weakened structure? Laura - got off news that firefighting was successful. Was firefighters reporting. Skeen: doing flyovers with our folks? Trish: supposed to do another flyover today. NR people have data from DOE. Laura - have numerous agencies putting data together. Skeen - been trying until Sat to get them to agree to let us help, and now finally they will let us, and now (b)(5) Wiggins - if it's needed, the money will be found. But now it fails |

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|                        |                            | USAID's 3 criteria on whether it's needed, etc.  |
| 2011/03/19<br>15:43:32 | ET                         | AMS data shows path to NW, which is indicative of wind direction early on.   |
| 2011/03/19<br>15:53:54 | ET                         | Teams turn over.   |
| 2011/03/19<br>15:57:01 | ET                         | Chu going on talk show tomorrow. We provided 1 page summary. Secretary had 2 questions: 1. What is multiplier we use once we pick the ground acceleration, and on what earthquake basis (10-5, 10-6?) for conservatism. 2. What is the SSE (10-4 or what?). Email to pete lyons.   |
| 2011/03/19<br>16:30:53 | ET                         | Annie had already provided answers to Chu's questions - probably crossed in the email.   |
| 2011/03/19<br>16:36:01 | ET                         | Ultimate funding would be DOD, not USAID. Dyer: Issue is who is paying for our travel. Chairman's office says that USAID agreed that they would pick up the tab for our Japan team, but never got down past director of USAID. So USAID said they would facilitate Dan's travel, that is all, then need to get issue resolved. Our position is USAID should pick up funding for travel, as it is humanitarian. We provided the info to their general council, and they are going to work it. If we use our money, it gets billed to the industry. When we do lessons learned, then it should be funded by industry. But as long as on humanitarian effort, then should not be funded by industry. Whenever we pull back, then we find another source of funding.   |
| 2011/03/19<br>16:42:36 | ET                         | Call setup at 6 to talk about pumps. Could be useful for defense-in-depth. Also, State Dept thinks diplomatic thing is to deliver it.  |
| 2011/03/19<br>17:06:29 | ET                         | NISA is getting the impression that we are the solution. NISA is asking for recommendation - should go with Japan or Bechtel? Think people here still think it should be sent over. NR feels it should go based on defense in depth. <b>bs</b>   |
| 2011/03/19<br>17:15:15 | ET                         | Someone committed us to come up with list of how many people, what equipment they need. Not sure where request came from.  |
| 2011/03/19<br>17:45:23 | Conf. Call with USAID, etc | <p>Conf. call with USAID, NR, Japan NRC team, etc. Kathleen: got request yesterday for pumps - heard total amount was 750k, now heard not right amount. Heard DOD had \$\$ to pay 750k. Heard 9.6M is now total cost. Also, did not appear to be urgent need on the ground. Heard might be secondary/tertiary need. Decision is not USAID. Up to NRC to say what needs are. Our perspective - we had been told we just needed to find out from DOD that they have authority to approve more. DOD has gone ahead and said with consultation to NRC that it was a need on the ground. So DOD has authorized. This is not USAID funding, do not have authority, etc. We just link up different parties and say we don't object. \$750k was communicated to NRC by Bechtel, but was never a full figure. Q: has this been communicated to Perth? Pilots went to sleep. Do they know? Brian: understand Japanese don't need pumps as primary, but would be secondary. Didn't say weren't needed, just not primary anymore. Have copy of email from 9:26 from Bechtel that material should be offloaded and await further direction. State: not sure can say is actually backup if they don't have primary system up and running. USAID: Paycom, Michael Schiffer, has been coordinating. Main question is whether NRC and DOE are onboard and validate this. From the highest levels, DOD, they are happy to support if this is a request. John: there is technical and political aspect. Tech aspect changes over time as govt and TEPCO take action. Last week, when talked to Japan govt, they were very interested in this system. Since then, they've been continuing with fire trucks, have remote fire truck (last couple hours), and also have concrete pumping truck plan. From political point of view, we offered equipment, and they have accepted it. State: endorsed by defense minister and chief cabinet secretary. Should not pull out. Suggest go ahead getting first system here, get staged, put together, turn over and then await further request if they want more. C-17 is on ground in Perth, second one on way. Ready to send 2 sorties today. First 6 hours from now. Second 8 hours from now. Australians are confused and just want formal go-ahead. Need to call Bechtel and tell them to get other systems ready. Brian: <b>bs</b> John: have talked to them about using robotics to characterize site. They have been non-committal in wanting to accept that. Have also used inside building, also mentioned lead from hq about lockheed martin remote helicopter that can lift 5000lbs. Merits of using something like that for installing pumping systems. Bechtel thought had a lot of merit. Ministry didn't commit or respond to any of it, though. State: But, Japanese seem now willing to accept any and all aid. John: heard lockheed might have offered helicopter for free right now not pursuing anything more?? State: <b>bs</b></p> <p><b>bs</b> Can clarify what acceptance is for that was received. John: remote helicopter would actually probably be of most value. IR flyovers: Japanese have been doing overflights. They shared some of that info. (b)(5) LT: helicopter is in Bloomfield, CT. USAID would have to pay for/negotiate. John: next step is we would want additional feedback from MOFA - was yes limited to cooling system, or was for remote equipment also. Q: if we fund cost, need to find out price tag - don't want to run into same issue with USAID. John: Considerable consideration needs to go into who would operate helicopter. HQ: NASA has robot on platform with wheels. Can move things. John: might not be able to get through security doors <b>bs</b></p> <p><b>bs</b> Meeting with Chairman of TEPCO at 10am.</p> |
| 2011/03/19<br>18:45:11 | John                       | Need to talk about charter before Commission meeting. Last bullet on making recommendations has been difficult.  |
| 2011/03/19<br>19:19:08 | Sheron                     | Need list of equipment? <b>bs</b> briefing - they asked for list of equipment.   |
| 2011/03/19<br>19:33:04 | ET                         | Based on 6pm call, robotic equipment - not pursuing anymore. Flyover: John said not valuable. Pursuing request from DHS to sit with them to facilitate discussions. Seems duplicative since we have FEMA there. NARAC is doing runs with same supercore scenario, but using new meteorology. The case to support press release a couple days ago, 1/3 U2, certain percent spent 3, plus spent fuel 4. Running those sets with current met with RASCAL through 12 hours with meteorology forecast to verify PARS. DOE is asking NARAC to run the more japan local grid out to Tokyo with same source term, but with little more conservative met data. Will have in a few hours. But the worst case scenario is sent to NARAC for trans-pacific calc. Appears to be a second priority for them. Trish: <b>bs</b> Brian: if Steve luke made decision to make a second priority - they are in charge. We should not adjust priority. Trying to get new AMS runs. Marty: Josh says considerable concern at highest levels of DOE that we need to align on initial assumptions/parameters for runs. They want to form a management group to discuss. PMT: Thought we had alignment with them. Josh agreed that Marv will say he's supportive of the 50 mile decision, and then we need to share how we got to the 50 miles. They have 5 trucks spraying, 40T twice a day. Seawater. Units 5 and 6, got some power restored to Unit 5. Had seen drop in U5 level, but recovered now. They also ventilated roofs in 5 and 6. Still laying cable to restore power to 1-6. Hope to get elec back to 3 and 4 tomorrow. But then need to test pumps and cooling systems. 2 DGs operable on U6, had one of those is used to cool U6. Reactors maintaining level about 1/2 core. They are using core spray with seawater. SFP on 4, heard nothing more. NISA feels still water in 4. Efforts right now are to save 3.   |
|                        |                            | Meeting called at 2 by Bill - brought in reps from industry and other agencies. Purpose to try and discuss with industry the need for them to mobilize and interact with counterparts in Japan. NRC did not want to be seen as de facto lead/manager for accident. Industry has specialized expertise to cope with events, and should take a lead role in interacting with TEPCO and making recommendations or providing other support. Westinghouse and GE said they were interacting through their Japanese owners. When finished, industry stayed and used room. Were planning another meeting at INPO on Monday. Their actions would be measured in days. Will have to see what they propose <b>bs</b>   |

2011/03/19 TA Call  
20:03:04

At 6pm had call with USAID. Was issue about Bechtel was going to ship 4 trains of pumps and valves to pump seawater into reactor areas. Equipment was in Australia. Loaded on airplane, cost originally \$750k, then Bechtel said total would be \$9.6M. USAID stopped shipment. Held up - during conf call at 6pm, they looked to NRC to see if equipment needed, we said it was not a first line of defense, but would be backup or tertiary pumps in event first line didn't work. USAID said that's sufficient. USAID told us that DOD was in position to fund, but needed to get with DOD funding office to confirm. C420 is partially loaded. USAID has lead - when get DOD confirmation, at least 1 train will be initially shipped. Will ship over, set up, test, then will interact with Japan to determine if other 3 trains needed. On robotics and IR detection, understand. No new info on ground doses between buildings. One individuals positioning fire truck got 10R in 2 min. Met conditions shifting - wind out of West is shifting to SW-S and continuing clockwise, so onshore winds in next day or so. Continues to shift in clockwise direction, so will blow towards Tokyo for some period of time before returns back out to sea. DOE will use NARAC resources to do calc down to Tokyo. We will work to understand how they did that. U1-3 reactors, cores appear 1/2 covered at least with seawater. Believe U1 SFP still in good shape. In U2, believe pool is also covered. They did get reserve power hooked up to U2 substation, but power not into U2 at this time. Then will have to do checkout of pumps instrumentation, etc. U3 remains point of concern. Fire trucks supplied cooling spray, 40T twice during day. Seemed to have some effect, but not sure how much got into SFP. U4, they announced fire trucks began spraying. U5-6, although not as severely effected, U6 had DGs running, had heard U5 SFP level was lowering, they got power from a U6 DG to restore level in U5. Also ventilated rooftops in 5-6 just in case. U1, 2, 5, 6 still laying electric cables to try and reattach some power. Hoping to get elec power to U3-4 tomorrow.

2011/03/19 TA questions from  
20:20:04 call

Orders: was report that core was loaded on U5, but there are no parameters. What is margin to boiloff? That is margin to boiloff on SFP. Effort to reach out from Chairman's office to other Cmsrs related to 2pm meeting. Marty: I arranged meeting after getting instruction from Chairman Orders: Seems like policy issues Q: Iodine readings in US plants? No updates, just initial readings at west coast plants. Castleman: Heard on news that Fukushima site was designed for 16' tsunami, but they saw 20'. Q: ? Brian, heard from [b5] that majority of US citizens in Japan were not choosing to leave. Did see increase in # of military families that wanted to leave. But were empty seats on airplanes flying out, etc. Q: what doing with relief team Brian: second team - couple go out Monday. Marty [b5]

Still an ongoing effort to confirm. Brian: Industry pointed out (W and GE) (b)(5)  
(b)(5) Q: NARAC worst case scenario update? Don Cool: Have alignment on parameters and source term. Thought had alignment to start work, but OSTP and DOE/Steve Halopke sorted out priorities. Tokyo run will be done first, then Melcor transpacific run. May be as far as Monday morning. Trish (b)(5)  
(b)(5) Don: We're responsibility is Tokyo, so they are responsible for US, if they want to prioritize lower.... Q: has met changed since a few hours ago? Don: Sun-Mon will be variable but aimed south, then gradually move offshore again. Have at least 24 hours with wind directions that will take releases over land. Q: have plant conditions modified our source term? Don: In terms of runs asking team here to do, still anticipate things getting much worse. Are not attempting to model actual surveyed doses. Want to base on what could happen. Ours is realistically bad case. Worst case is for Melcor source term.

2011/03/19 ET  
20:40:14

Brian: maybe we should do a best-case scenario, since fire trucks are knocking down source term. should we have in our back pocket just in case someone asks. But does source term change that much. Did some tests at Sandia on spraying down aerosol. Had to go to real high flowrates until got an effect. RST: If spray from top, doesn't go all the way down, steam carries it back away. Don: do we know configuration of most recent fuel vs other fuel. Dave: should ask Wilmington emergency center - they were working there all the time. Would make huge difference if they checkerboarded new fuel with old fuel. If couldn't set off zirc fire. If a bunch of release was fuel already broken, and scattered around, and they buried it, then we area already counting it with AMS, and don't have to assume whole pool releases.

2011/03/19 RST  
20:58:56

DOD just approved all 4 pumps - want Bechtel contact. Brian: have email address for Bechtel. USAID knows phone number, so they know.

2011/03/19 ET  
21:03:48

Discusses email: Low level of salt will inhibit ability to keep cooling. Saltwater will increase corrosion of fuel cladding.

2011/03/19 Casto  
21:53:00

Need to talk with Marty and ET. Ambassador and staff had arranged meeting with TEPCO. Went to meeting and talked about salt/radiation, wanted to know. Told them there is lots of info, and we're working on it. Said would be better for us to give to NISA and NISA give to TEPCO. They didn't like idea. Said we need help immediately, so told embassy that we should meet with NISA and TEPCO to go over any info we have. NISA is a challenge right now. TEPCO is very anxious - (b)(6)  
(b)(6) they want to discuss details now. Issues are on salt that they are running 3 evaporators effectively. They have UK analysis that shows they are heavily concentrating salt on fuel and bottom head. they are very concerned. He has said this is urgent. Brian, we can get you articles on salt. One from NR - they should switch to fresh ASAP. Desalination - Navy has plant, can do, but how get into reactor. also concerned about rad levels. They think power supply going to solve anything. He admitted today they don't know if anything will work. Have to restore a plant that has had a major explosion. Told them pursue multiple options. Get desalination going. Try and get fresh water connection. Told them we could provide robotic equipment to cut gopher holes to key equipment.

[b5] We can

get info to everyone. With regard to industry, made no offers (b)(5)  
(b)(5) Industry said fine to work behind GE-Hitachi, though. Happy to support them. TEPCO CEO not aware about robotics - would love to have all that equipment. Marty - EDF, etc has sent 130T of robotic equipment (in trade press). Chuck: maybe sitting in warehouse in Japan, but not here. (b)(5) Told them maybe helicopter, but that's it. we will train people how to use, and then they can use it. SDF said they can transport anything necessary from AFB to site. Told embassy people we are not working the logistics stuff. DOD is good with that. They are fine with getting it to us. TEPCO is interested in unmanned helicopter. Should push that this way. Acceptable compromise to work with TEPCO and NISA. CEO said don't blame us if we don't use all equipment sent. chuck said fine, that's acceptable. Their command center includes NISA, TEPCO, GEH - massive, 250 people. Pulled main TEPCO contact aside, and said better working govt to govt with NISA. He said need stuff now. No time to wait. John - they provided us with site map, but rad fields are in huge areas, so would not help personnel access. 30mx30m, said to be 20R - want fine detailed mapping. Need to identify target sets of what equipment to power up. If can access suction for saltwater, can swap to freshwater suction, or put desalination in between. They wanted to open up another hole in U2 reactor building. worried about hole not being big enough. If have any thoughts how to open up bigger hole on Unit 2....Trish: FOF guys were asked to find a way to remove part of roof non-explosively. Hole is a floor lower than SFP, so not sure if is big enough. So still need to find that. Talked about dropping a bambi bucket through roof. Their roof is 3" plus of concrete. If make spark, could ignite it. their concern is also damage it would do politically if it went up.

Let me ask Brian or Marty, exercise for release whatever I have now, what's the worst case or the West Coast. We were talking now we got Reactor 3 today, if Reactor 3. Tempco has come to our staff in Japan, their worried about the bottom of the core vessel. They would like a conference call 1 hour our time. All the biological sludge is all over the place. Are you thinking it was because of the salt issue. What time is conference call at 1:30. After TMI they brought in flatbeds with water. Which person got (b)(6) Discussion on after they brought what was done after chernobyl, they brought in miners, where workers had to work under ground and was massively exposed. A quarter of the miners died, you could see people

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| 2011/03/19<br>23:27:26 ET                          | <p>exactly running. They needed people to drive close enough and the robotics had problems because of the field of exposure. Site team were challenged to keep people on site. Yesterday, were asking Chuck for on the ground dose exposure. What do we do with the dose reading? What will try to do tonight. Tempco will identify equipment would you want to restore the reactor and where's that equipment located. Assigned a reactor safety team, spoke with Chuck last night and he will get that word to Tempco. In terms of week 2 opposed we should not. I sent a note to our IP folks the efforts that we got to be wondering didn't we do a . What is IAEA going to do as a lessons learned. They got to look at the accuracy of all the programs. I hope our industry steps out, they will, to much on the table to not step out. the guys that were at this meeting, they didn't have a sense of urgency. That's unfortunate, like it or, this is going to carry over the U.S. If they're thinking down the road what if this happens here and we've played a leading role and a leadership role built on what we already knew, this position is better to let us know going forward. Bill is going to recommend a 30-day quick view report, they will be scheduling meetings around this milestone and other meetings around guidelines. They may come back and want a meeting and they're talking at about dropping ITEC, there are 3 meetings there planning on dropping. Discussion of management issues, I want hear from Jim Wiggins, we totally enhanced the ET, Jim's got to give me his response, it's up to the Chairman's office.</p>  |
| 2011/03/20<br>00:01:45 ET Team                     | Test  |
| 2011/03/20<br>00:01:45 RST Director                | <p>So, where hoping to get more information, Reactor core 1, 2 and 3 seems to be stable. As for Reactor 4 seems haven't gotten that information. The temperature in the coolant area, how are we getting that information. There's a variety of reports, were getting informatoin from federation of NEI, there's this thing called JIF. I'm not sure what this is, that all kinds of press releases. (b)(5)</p> <p>(b)(5)</p> <p>(b)(5)</p> <p>What happens next. Japanese has to worry about what they do with the sites and the amount of water and what's going in the ocean. Japanese doing head scans, we would do intradictions, 50 mile evacuation recommendation, not just the food thing but, so, there are or are not but, for US citizens, we would only evauate the keyhole recommendation amount of people. The concern was if we do this what would be the blow back, it didn't come back like the way we thought it would come back. Ask Jim Wiggins what would be the agency strategy, would we shut down the ops center and bring the staff home, some would be what the ambassador wants, don't leave me. A retreat plan for the 30th of March, a week from Wednesday. I cant say what the strategy would be for next week, we can't leave this with Chuck and team still in Japan, it will all have to happen together. I think that the thing we need to know the most can the pools still hold water in 3 and 4. So, what's the alternative, the one benefit that you can get from shielding, sand and twice water, now that think about using a bucket of sand, one of the problem is when you put water in and the water runs out, Tempco said, unit 4 has loss water, maybe if you put concrete not a lot and water. 4000 rems in unit 2, 7000 rems in unit 3, Constellation Energy C&amp;O saying that Unit 1 is being cooled by ocean water. Unit 3 spent fuel pool, they're expecting to have coverage by today. Unit 4 they're expecting to pump cooling water. Unit 5 RHR in service being cooled with cooling water, pumps in service but not cooling yet not restored. Marty do you know how they got that information, it's the best we got so, far, it's coming out of NEI. If they have water in spent pool 3 that would make sense. What do you mean you don't know the dose, does that mean you have it and don't want to tell us. I think they missed the tsunami. Wiggins coming on next. So, what is the difficulty with getting regular informatoin on things like the status of getting power what's the source of information. You would think with people with ours better then TEMPCO. There's a law in Japan, the government controls all the information that's released to the public. If that is true, it's a much more comforting picture of what's going on, it would be nice to have (b)(5) and we're not getting it from TEMPCO. Tokyo fire department (b)(6) mentioned that th. TEMPCO said, they have restored power to units 1 and 2. They are working to restore electrical power to units 3 and 4. Iodine Isotopes would reach France by March 23 or 24th, extremely low to be detected. Says, new pressure problems, GE and industry size industrial size having get it into the core into the pums right now, they can barely keep it up, the concern is that if it cools down to fast it will crystalize and if it goes solid it couldn't cool. We can pick up the phone in the room, on the ST bridge. Unit 3</p> |
| 2011/03/20<br>02:01:47 ET                          | <p>PMT: Here is a composite of the plant and the ocean is over here, what this represents is best of actual dose rates are on the ground right now, red is greater then 5 rem and gray is greater than 1 rem, 10 miles is here, 35 miles is here, this goes out to 50 miles radius, but, even at 35 miles is conservative. The decision is based on the 50 mile conservative and the conclusion is that there is no impact to the US. ET asked: What is the current conditions of the reactors right now.</p>   |
| 2011/03/20<br>04:30:22                             | <p>RST: Spent fuel pool 4 gone, completely destroyed. We already had a release on Unit #2. Should we have 3 options. ET: Best case scenario, no effects on US. Reactor cooling which is ongoing. Restoration of power is best to re-energize. Generally, we could say normal shutdown. RST: It seems like they stop and start adding more to it. We could have 3 options. Per RST Director: Comments above are hypothetical (not facts). EST Coordinator - Robert Ragland at 10:27:20 on 3/20/2011</p>  |
| 2011/03/20<br>04:40:41 RST and ET                  | <p>RST: 50% spent fuel pool #2 and 100% spent fuel pool #4. Unit 3 is not venting, got a call from TEPCO and they are concerned, with regard to the water in Unit #3, it just didn't hit the spent fuel pool, so, they will try with Unit #4. What is the condition of Unit 4 spent fuel pool, they just want to get water in it. IAEA website has TEPCO are saying that all of the reactors are not all the way covered ET: Looking at realistic worst case scenario, range of options #1 assumes that spent fuel pool (spf) #4 is intact. Units 3 and 4 are both uncovered and that's causing dose rates in the area.</p>   |
| 2011/03/20<br>06:59:40 James Vaughn                | Assumes duties as ET Chronologist   |
| 2011/03/20<br>07:00:13 Chronologist                | ET conducts shift change.   |
| 2011/03/20 ET - Commission<br>07:30:09 Update Call | <p>Jim Wiggins: Update No negative events. Condition stable for Units 1,2 3. Units 5 &amp; 6 stable. Unit 3 &amp; 4 watrere being added. Susnsess not sure TEPCO using water cannon on unit 3- effectiveness not clear Self Defense force should start adding water to unit 4. 3rd source to add water from Bechtel is still on plane - cost were a concern and a funding source. Bechtel expects to delpart in next 12 hours and arrive in Yacoda and then delivered by Defense Forces with associated equipment training. Still in progress with site team and TEPCO discussing how to use the system. TEPCO making progress with regard to power to unit 5 with HR pump operable. Cables being run to unit 3 and 4. Not clear what is usbale in the buildings. More to follow. Dose rate from NEI: DOE indicating trendina down. Off site source terms are being to move down now by NARAC. Running a worse case event. (b)(5) considers possible effects on U.S. west coast. Wind changing to the south/southwest. Support Japan team. Focus has been on the Bechtel system. TEPCO interested in in larging hole in hull of unit 2. Conducted meeting with industry to stand up an industry support group to Japan. NRC sees it as success with INPO taking a lead roll. This would be helpful. Would place experience in key rolls. We are short on skills regarding logistics. Mike Franer: Unit 3: Is pressure in unit 3 going up (50 lbs?) and need to vent? More info? Scource was NHK News from TEPCO -not clear why they need to vent. Weather condicions do not support venting at this time. Chris Miller: Other news source indicate no need to vent. More to follow. Jim Wiggins: Information flow is challenging due to time</p>  |

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|  | <p>zone differences. However NEI has being able to get information. Pehraps they possess a direct relation with TEPCO. Commenter: What is does rate at the gate. From NEI was 40 rem down to 15 rem/ hour. Plume going to west and out to sea. Further out to sea rates our closer to background. Commenter: Possible higher rate in northwest quaderant of Japan. More data from DOE fly-over pending. Jim Wiggins: More Information pending. Commenter: Need to have rates for tonight's call. Jim Wiggins: Nothing blowing up now, no steaming, possibly venting later to prevent loss of containment. Larry Camper: Winds to southwest? Changed? Current winds from southeast 7 am - 7pm moving to off shore at night. Pat Kasselam: Stean from units, SPF under 100 degrees? Please clarify. Where is steam coming from? Where are out NRC people? Jim Wiggins: Tokyo area not at site. Please send copy of Isat NEI one sheet statement. Jim Wiggins: Site team indicates thing on site are different somewhat than what Japan is reporting, as an example some water in the SFP versus no water. Brain McDormott: Information from the team are received from site team with out ability to independent ability to validate on site. Brain McDormott: Need to check information from INPO that we could benefilt from. Tasking out to RST 01.</p>  |
| <p>2011/03/20<br/>08:03:32 Jim Wiggins</p>                                     | <p>Update to the Chairman: Information coming from NEI on source info. 1,2,3 are stable, 5 &amp; 6 same. 3 &amp; 4 dumping water in the Rx building. Not much more than a mist over the top. How is information flow? About the same - rate it as poor - barely acceptable. No what we experience during our exercises. Generators running in 5 &amp; 6 with power line. Installing cables in 1 and 2. 3/4 by Monday. Not sure how helpful it will be. NEI data rates indicate rates dropping near units. What is source of high dose rate? Shine dose from pools. NARAC agreement from President. Running the source terms now. What is that? ET Commenter: Bounding , fuel in 3 RXs, and fuel in SPFs. Assumes release over 4 -5 period. Based on % of total core melt. Bechtel equipment still working due to cost (\$2 Mil). Conference call with USAID last night. Discuss value of one train begin sent. DOD to pay the freight. Bechtel expects to arrive in Dakota in 13 hours. Site team will address latter logistics and training. Opportunity for industry. Shipment included to vendor techs. Not clear if they will go to site. (b)(5) Josh: (?) Timing for getting the runs back?</p> <p style="text-align: center;">DS DS</p> <p style="text-align: center;">DS</p> <p>measure. Japan decided to move forward with shipment of equipment. DoD would fund shipment. DoD volunteered all 9.6.</p>   |
| <p>2011/03/20<br/>08:39:29 ET</p>  | <p>Energy Secretary Steve Chu speaks at 9am, 3/20/2011 on NBC. Correct spelling: Steven Chu EST Chronology Officer - James Vaughn at 08:42:31 on 3/20/2011</p>  |
| <p>2011/03/20<br/>08:39:29 ET</p>  | <p>Energy Secretary Steve Chu speaks at 9am, 3/20/2011 on NBC.</p>  |
| <p>2011/03/20 Rx Safety Dir: Laura<br/>09:51:12 Dudes</p>                      | <p>NEI &amp; INPO (GE) information comes from WANOTEMPCO.</p>   |
| <p>2011/03/20<br/>04:30:22</p>   | <p>RST: Spent fuel pool 4 gone, completely destroyed. We already had a release on Unit #2. Should we have 3 options. ET: Best case scenario, no effects on US. Reactor cooling which is ongoing. Restoration of power is best to re-energize. Generally, we could say normal shutdown. RST: It seems like they stop and start adding more to it. We could have 3 options.</p>   |
| <p>2011/03/20 U.S. Gov't. Industry Consortium Conference Call<br/>09:56:47</p> | <p>Purpose: Discuss follow-up actions from March 19, 2PM kick off meeting and industry plan for providing support to Japan. Participants: NRC/ET, DOE: Jim Vavosa (Naval RXs), Industry, INPO EPRI, GE, Bechtel, Utility Reps (b)(6) (Full Team), Pete Lyons (b)(6) INPO CEO) Bill Borchardt (EDO), NRC Overview: ET Dir: Jim Wiggins 2247/ ops with team on site. Team in Rockville Ops Center Spt team in Japan and comms with U.S. Facility status: Positive trend. No new info on RXs. Recovery step underway. Power lines to 1 &amp; 2. Power 3 &amp; 4 on Monday. Dose rates lower than before. No current issue with Pools. Unit 3 &amp; 4 are not clear. Unit 3 with water stream based on TEMPCO. Calculation running. No new info. Hotter area in the northwest of facility based on wind direction. Wind mostly easterly. Several over flights. Evaluating info now. Working with DOE regarding impact on west coast of U.S. NARAC running numbers. U.S. told Friday to evac. 50 miles from site. INPO: (b)(5)</p> <p>(b)(5)</p> <p>(b)(5) Bill Borchardt: What do need form U.S&gt; Gov't? Not sure now - will know more next 24 hours. Pete Lyons: Need to define capabilities of U.S. fed. How long will it be before industry will have senior people on group? Pete: Don't know yet. The on-site team is going to need Chairman and DOE Sec engagement. NRC on-site team may be a good for ogener. Bill Borchardt: 10 am phone call each day. Working to set up call with priciples at 2 pm Monday. Tom Vavosa</p> <p style="text-align: center;">DS DS</p> <p style="text-align: center;">DS DS</p> <p>Should be covered in the calls. Jim Wiggins: Need to establish protocols with Japan. Who does, says, what? Actions may be between the two industries. We can develop it one the next couple of days. (Commenter) is USAID the lead POC without technical understanding? Jim W. (b)(5)</p> <p>(b)(5) Bill Borchardt: U.S. Gov't lead needs to move to perhaps USAID. Tom Vavosa. U.S. Gov't. needs the be in lead in the technical regards. Also on the call was CMDR Chuck Good, of DoD Joint Staff, J-4. Contact Tom Vavosa who has a buisness card for CMDR Good. EST Chronology Officer - James Vaughn at 11:33:32 on 3/20/2011 EST Chronology Officer - James Vaughn at 11:38:18 on 3/20/2011</p> |
| <p>2011/03/20<br/>10:38:22 ET</p>  | <p>Action Items Review: 1) DHS wants NRC to provide a SITREP for the Secretary. 2) Marty indicated IAEA should take on clearing house functions. Jim Wiggins: Priority goes to the DHS report then to IAEA coordination. EST Chronology Officer - James Vaughn at 10:49:16 on 3/20/2011</p>   |
| <p>2011/03/20<br/>10:46:13 (INPO)</p>  | <p>POC Phone Number (b)(6) Cell (b)(6)</p>  |
| <p>2011/03/20<br/>10:38:22 ET</p>  | <p>Action Items Review: 1) DHS wants NRC to provide a SITREP for the Secretary. 2) Marty indicated IAEA should take on clearhouse functions.</p>  |
| <p>2011/03/20<br/>10:54:14 ET Dir</p>  | <p>Chuck and the on site team can serve as the introduction between the two persons from U.S. industry and TEPCO / Ambassador.</p>  |
| <p>2011/03/20<br/>11:00:17 ET Dir</p>  | <p>Need to reach out to NRC/ADMIN Office for non-technical support functions (e.g FOIA request plan).</p>   |
| <p>2011/03/20 U.S. Gov't. Industry Consortium Conference Call<br/>09:56:47</p> | <p>Purpose: Discuss follow-up actions from March 19, 2PM kick off meeting and industry plan for providing support to Japan. Participants: NRC/ET, DOE: Jim Vavosa (Naval RXs), Industry, INPO EPRI, GE, Bechtel, Utility Reps (b)(6) (Full Team), Pete Lyons (b)(6) INPO CEO) Bill Borchardt (EDO), NRC Overview: ET Dir: Jim Wiggins 2247/ ops with team on site. Team in Rockville Ops Center Spt team in Japan and comms with U.S. Facility status: Positive trend. No new info on RXs. Recovery step underway. Power lines to 1 &amp; 2. Power 3 &amp; 4 on Monday. Dose rates lower than before. No current issue with Pools. Unit 3 &amp; 4 are not clear. Unit 3 with water stream based on TEMPCO. Calculation running. No new info. Hotter area in the northwest of facility based on wind direction. Wind mostly easterly. Several over flights. Evaluating info now. Working with DOE regarding impact on west coast of U.S. NARAC running numbers. U.S. told Friday to evac. 50 miles from site. INPO: (b)(5)</p> <p>(b)(5)</p> <p>(b)(5) This group can interact with other groups (France, CEA). Bill Borchardt: What do need form U.S&gt; Gov't? Not sure now - will know more next 24 hours. Pete Lyons: Need to define capabilities of U.S. fed. How long will it be</p>   |

before industry will have senior people on group? Pete: Don't know yet. The on-site team is going to need Chairman and DOE Sec engagement. NRC on-site team may be a good for opener. Bill Borchardt: 10 am phone call each day. Working to set up call with principles at 2 pm Monday. Tom Vavosa: (b)(5)

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2011/03/20 U.S. Gov't. Industry  
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Purpose: Discuss follow-up actions from March 19, 2PM kick off meeting and industry plan for providing support to Japan. Participants: NRC/ET, DOE: Jim Vavosa (Naval RXs), Industry, INPO EPRI, GE, Bechtel, Utility Reps (b)(6) (Full Team), Pete Lyons (b)(6) (INPO CEO) Bill Borchardt (EDO), NRC Overview: ET Dir: Jim Wiggins 224/7 ops with team on site. Team in Rockville Ops Center Spt team in Japan and comms with U.S. Facility status: Positive trend. No new info on RXs. Recovery step underway. Power lines to 1 & 2. Power 3 & 4 on Monday. Dose rates lower than before. No current issue with Pools. Unit 3 & 4 are not clear. Unit 3 with water stream based on TEMPCO. Calculation running. No new info. Hotter area in the northwest of facility based on wind direction. Wind mostly easterly. Several over flights. Evaluating info now. Working with DOE regarding impact on west coast of U.S. NARAC running numbers. U.S. told Friday to evac. 50 miles from site. INPO (b)(5)

(b)(5)  
(b)(5) Bill Borchardt: What do need form U.S. Gov't? Not sure now - will know more next 24 hours. Pete Lyons: Need to define capabilities of U.S. fed. How long will it be before industry will have senior people on group? Pete: Don't know yet. The on-site team is going to need Chairman and DOE Sec engagement. NRC on-site team may be a good for opener. Bill Borchardt: 10 am phone call each day. Working to set up call with principles at 2 pm Monday. Tom Vavosa: b5

(b)(5) Should be covered in the calls. Jim Wiggins: Need to establish protocols with Japan. Who does, says, what? Actions may be between the two industries. We can develop it one the next couple of days. (Commenter) Is USAID the lead POC without technical understanding? Jim W (b)(5)  
(b)(5) Bill Borchardt: U.S. Gov't lead needs to move to perhaps USAID. Tom Vavosa. U.S. Gov't. needs the be in lead in the technical regards, Also on the call was CMDR Chuck Good, of DoD Joint Staff, J-4. Contact Tom Vavosa who has a buisness card for CMDR Good. EST Chronology Officer - James Vaughn at 11:33:32 on 3/20/2011

2011/03/20 (b)(6)  
11:47:31

Discussion with (b)(6) regarding two technical people to Japan. What is logistics? Need to be an urgent action. Would like to move tomorrow. Can we make that part of discussion with TEPCO. 14 hour trip. Jim Wiggins: Chuck on site- can begin some of the interface while in the air. Chuck should go to Embassy first. Best if they can get to emergency center. Bill: I will identify people. Jim: NRFC staff will contact POC (b)(6) for details. Jim Wiggins: Liaison Team will take lead for coordination. Industry people should go to embassy first. EST Chronology Officer - James Vaughn at 12:16:49 on 3/20/2011

2011/03/20 (b)(6)  
11:47:31

Discussion with (b)(6) regarding two technical people to Japan. What is logistics? Need to be an urgent action. Would like to move tomorrow. Can we make that part of discussion with TEPCO. 14 hour trip. Jim Wiggins: Chuck on site- can begin some of the interface while in the air. Chuck should go to Embassy first. Best if they can get to emergency center. Bill: I will identify people. Jim: NRFC staff will contact POC (b)(6) for details.

2011/03/20 RST Review  
13:31:16

Plant status: Not much new info. Source: TEPCO/INPO press release (Media News): Focus is on unit 4 SFP. TEPCO expects Defense Force (Fire Dept) to move on unit 4. Possible reduction in rad does in unit 3. Working on power line to units 1 & 2. Hooking up to distribution panel now. Possible couple of days to complete. Rad levels not clear on site. Working on hand off of Rad Equipment with industry team (b)(6) Closed NEI email data source issue. Share Toshiba drawings with INPO for independent structural analysis. EMT Review: Changing focus to real time matters versus worse case events. "Super Core" event is way conservative. President's event bounding of all three cores releasing. Couple of hours before done for dose information for U.S. territories. Likely higher than Super Core event. Will send it to NRC then to the White House. Next course is to look at a more realistic event. We are answering question from DOE. We are looking at real time conditions at SFP. We are comparing available TEPCO field data with event estimates. New language: "Super Core" versus "Super Source." Jim Wiggins: Protective action recommendations? Focus on Japan. Real number on site today. May have to work with NARAC if range is greater than 50 miles. Priorities: Pay attention to Tokyo if greater than 50 miles. Previous decisions still are correct regarding 50 miles evacuation as no new information suggesting a change. (Commenter)

(b)(6) Daily call list is pending very soon. After they wake up, we will coordinate with on site team (Japan) for morning call. OIS is creating emails groups now. Discussion regarding downsizing of NRC Ops staff.

2011/03/20 ET Director  
14:21:53

Discussion/shift change with Eric Leeds: Status update of all NNPs and SFPs. TEPCO is moving away from water cannon idea. Fire truck with a goose neck seems to be their preferred course of action. Issues remain for 3 & 4 pools. Rad levels are dieing off. We lost time doing release calculations for the White House due to different definitions of worse case. If facts change to greater than 50 miles, we need to get NARAC to look at Tokyo. Industry has been engaged regarding analysis. Two people are being identified by industry to send to Japan and interface with the NRC site team. Bill Borchardt spoke with Chairman and conclude that we should determine when/how the NRC needs to reduce staff. Transition issues related to industry (INPO) and logistics (TEPCO wants PCs, robotics and detection equipment). INPO has asked who is paying for all of this equipment and logistics.

2011/03/20 Chairman  
15:17:50

Brian: Japanese were concerned last night with use of saltwater. Could plug up fuel channels and affect heat transfer. Can't access reactor due to high dose rates. Wanted to reduce dose rates so could get close and access primary systems. Not sure what actual connection to seawater is. Also continuing coordination with other agencies, INPO and Bechtel. Chairman: priorities: 1. continued assessment of situation and dose projections and PARs, 2. technical support to give input. 3. Coordination with industry, TEPCO, etc. Is industry group getting ready to mobilize? Brian: yesterday met at 2pm, they said they would act soon. They are also meeting at 10:00 today. Chairman, update this evening on how 10:00 call went. What is plant status/issues? Brian: 1-3 units appear stable with seawater injection continuing. Containments believed intact. U3 cont. pressure stabilized. TEPCO believes water they sprayed on U3 SFP working, had some effect on dose rates. Focus is on U4 SFP. Plan to put more water in today. U 5-6 on diesels. U5 RHR pump was started and is providing SFP cooling. TEPCO installing HV cables to 1-2. Priority is restoring water to RHR pumps. Skeen: Plan is for first plane to leave Perth tonight, 2nd following next day. Brian: concluded based on discussions with Casto, that while not primary source, it would serve as backup in case anything fails. Chairman: in agreement. If need to change urgency, let Chairman know. Camper: daily call with inpo will be at 2pm tomorrow. Chairman: need to continue to emphasize urgency - has some stability, but not long-term. Need more normal circulation for reactors and stable water level in pools. Brian: even though they have offsite power, we don't know whether equipment will run. Chairman: can you bring in portable pumps? Brian: asked Jack Foster to find out what Japanese know about rad levels in food products (b)(5). Chairman: if we get slowed in interagency or industry issues, Chairman will engage to restore. Also if changes to PARs, need to know.

Brian: (b)(5)  
(b)(5)

(b)(5) John: We agree that U4 is definitely priority. Several days ago, #1 priority was U3, and then more to U4. They had done some calcs saying U3 was empty, and we agreed. That was on 3/18. TEPCO had performed calc on 6 days being left, but they said calcs have large uncertainty, and the have no clear level indications. Have tried aerial photography, but don't know. All pools show at or less than 100C, but with amount of rubble, is difficult to be able to reply on indications. We have been concerned about 4 for a long time also. Initially fire trucks, not pumps, plus helicopters. All not highly effective - marginally effective. Problem is with shooting from far away, incredible losses. Have been concerned with U4 all along. They came back and said SFP wall was different wall, further in. Sken: high decay heat due to full core offload, and no steam now. Brian: NR guy made recommendation that we should get pumps in Australia over to site ASAP. Has to be coordinated with TEPCO. John: knowledge of reactor is (b)(5)

(b)(5)

(b)(5) Truck has boom that goes 58m out. They wanted to know when it could be there, etc. We said no, we are not bringing that. That was a system based on concrete pumping trucks, and that was the TEPCO system. Asked if their acceptance was beyond just the Bechtel system - is it for anything like the aircraft, robotics, etc. They said it definitely includes pumping system, though (b)(5)

(b)(5)

(b)(5) they gave go-ahead with AF for the plane to take off. Have no idea how many people from govt have said yes. One meeting TEPCO has lots of Q's, next meeting they say not using system. Unclear what will happen with the system when it lands in country. Brian: so don't need more pumps now, but concern that was expressed is that if U4 SFP is dry, and it had full core offload, is it a molten mass that is starting to interact with concrete? John: think steaming is good - raised concerns with steaming stopping. They are at a loss what to do. One thing reported in media (fire trucks, helicopter), but then when talk to engineers in TEPCO, find out is not very effective. U3 they believe was dry, and was multiple days before got first fire trucks in, that's why priority on U3. They had moved some equip to U4. We've pushed them significantly on what assessment is. They say (b)(5)

(b)(5) But then why relying on water spraying?? Our understanding that U1 roof did not explode outwards, but dropped down on slab on refuel floor. (b)(5) then since roof is 3' of concrete, not comparing apples to apples. One has entire roof on top, others lots of debris. They then mention all water going in. Say fine, but have seen on TV, and we ask if they have done calcs of what has actually reached, with losses. They don't respond. Then we ask if fire trucks have rad monitors? Should be seeing huge shine from SFP. We ask if rad monitors have changed after water spraying, where could assess effectiveness. They say no, no change in readings. (b)(5) And no change in rad monitors. How can say successful and effective?? RST and Bechtel are running through all issues. Biggest issue is if use, they don't think will be effective, so now looking at concrete pumper truck. They have 2 in Japan. Thought is to get hose right over top of SFP. Water will drop straight down. Need to look at how can we use 90% of system from australia and then hook up to pumping truck. What can be done to put a T connect into pumping truck. One of concerns is whether it is really a system rated for continuous use? One of design concepts was to make sure it could be designed for continued operation - without operator. We agree there is no idea what is going on with U4, and no indication U3 is better. If we mention SFP going through floor, which have thought of also, several have talked about whether rad levels will skyrocket. What will that do to access to site? Dave: GEH had offered to bring system to their facility to train and operate. John: Understand that on airlift from Australia, are 2-3 people who are coming, and were vendor's reps for pumps/hoses. b2

b5

Went to TEPCO building with Trapp. They took to emerg. command center. Thought would be like EOF. Place was massive - 20-30 people making decisions, plus teams of people working on projects. 250-300 people. And 1 floor of TEPCO building - lots of engineers running all over. Leads for multiple issues. (b)(5)

(b)(5) Just recently have started talking to us. Most of info we have gotten is also available in media. Dave: Bechtel system should work with concrete pumper truck. John: Chuck has met with CEO/CNO of TEPCO. b2

(b)(5) Brian: Noone understands if found way to get seawater in, where is suction coming from? John: We have asked - they have never said whether stationary fire trucks, or whatever - they should be able to pull suction over to tanker. Shortly after, met with MOD, and they wanted status report on recommendations on 2 topics (that they had just informed us of). Then 18 hrs later, met with CEO/CNO, and they said they were in need of significant dire help on those 2 issues. So arrange meetings with them on 2 issues, and get GE, Exelon, etc for discussion on salt. Get into meeting, and they want to talk about pumping truck. So then get 20 issues on pumping system, (b)(5)

(b)(5)

(b)(5) We have told them we will meet with them at any time, whenever they want to meet. Huge protestors and cameras surrounding TEPCO facility. Design specs were 50m, we think we can meet 58m throttling down - we added margin anyway. Whole issue was that they thought they were getting concrete pumping trucks - even though that was their system, not ours. And there are 2 in Japan anyhow.

2011/03/20  
17:38:01 John

Would be interested to know what would happen if fuel did go through SFP and dropped down. What would do to access to site? Do they checkerboard? TEPCO would have info, but may not give. They say they need 72T water per day for losses. U2 only needs 20T per day. U1 5T/day.

2011/03/20  
17:40:51 ET

Have done supercore calc, so that should be consistent with what was assumed. John: no information really on water levels in units. Best information is steaming (or lack thereof) on TV. They think U3 was dry >48 hours ago. One concern is all runoff from site now with spraying water. John: Japan for years has had really good nuclear program. (b)(5)

(b)(5)

The issue with Unit 4 dry/not dry, they just galled us nonstop on issue after all the media nit.

2011/03/20  
18:04:33 ET

Watches YouTube video NHK interview with workers from plant. Discusses possible extensive damage may already have occurred at U4 and U3.

2011/03/20  
19:05:25 ET

Concern is that Unit 4's pool has been dry for a really long time - if hasn't done already, will eventually melt through concrete floor and drop down, hit torus, possibly steam explosion. PMT - when we correlate met data, we're checking with AMS data - spike to NW. Correlates perfectly with fire. During that period of time had ESE direction, so went right up that plume. Good possibility of where the activity came from. Sounds like the volatiles are laying on the ground. So what is left in pool now? If (b)(5)

2011/03/20  
19:35:21 RST

Questionable whether 3 or 4 are most important to do. Everything else pretty unchanged. Some inventory in 1-3. Think there is margin to SFPs boiling off. See steam coming out of 1-2. 5 and 6 in best shape now, some power back, keeping inventory above TAF in SFPs.

2011/03/20 PMT  
19:38:33  
Had call with Congressional Aides. Many questions on modeling and assumptions. Tasker was for separate briefing to try and answer questions for some of the staffers who had very specific questions. One from Markey's staff, and a couple not happy that we put out information way too conservative. Have been continuing to work with NARAC. No results for transpacific. They asked for total inventory in reactor - we sent to them. Call ongoing on modeling. They have scheduled meeting at WH on plume modeling assumptions. We should send someone from mgt team. Possibly Charlie or Weber. We have asked them for data on what levels they actually saw in food. Over next couple hours, should have another couple data points in what seeing on West Coast.

Status of units basically same. Have seawater cooling to 1-3 reactors. SFP in Unit 1 right now think some cooling going on. Pools worrying about are U3 and U4. In U4, don't see steam. Would imply pool is dry. Heard on news that TEPCO was focusing on Unit 4. Were attempting to spray water in it. **bs**

2011/03/20 Cmsr TA call  
19:58:14  
**bs** Utility still trying to hook up elec, offsite power. Have offsite coming into 1 side of switchgear room, but still need to run more tests. Not clear that equipment isn't damaged. Got reports today that contamination was measured in tap water in Japan. Going to ask Foster for details. New AMS data. Skeen: Think U1-3 stable at this point. Concerned about 3-4 SFPs. Seems spraying water has had some impact, so have switched to U4. The SFP there - seen no evidence of steaming. Believe event they had characterized as lube oil fire - still appears to be hydrogen explosion. Seems like there was material released around time of lube oil fire in Unit 4. Going to look at concrete-core interactions this shift to see what does if melts through U4 SFP. Don: Have gotten updated AMS plot. 12 flights taken over last 2 days. Continues to show band of higher contamination stretching NW from plant with dose levels measured that would be in 20-30mR/hr range. Evac level exceeded in those areas. Others are at levels below PAGs. Rad conditions have not changed that significantly. Understand that some of dose rates around U3 have come down a little. Still very significant dose rates. Trying to follow up on media reports of iodine in tap water in Tokyo, and iodine in milk, and contamination levels in spinach. We don't know what they measured or what their action level is. On unit 2 looks like cont pressure is high - would indicate intact. They report containments intact on 1-3. Brian: Don't know much about status of Unit 4. Unit 4 had full core offload. If fuel melted after pool went dry, and interacted with concrete, worst situation is goes through and falls down to rooms below, including torus. **(b)(5)** but can't discern anything from that. We don't have dose rate information on Unit 4. They are reporting pressure inside the vessels in 5-6. Dave: they say they have no danger for 5-6. Not concerned with 5-6 right now. Q: would think would have big heat source and rad signature if it had melted. Dave: they are getting high rad levels, but all reports are from TEPCO. Q: heard that Japanese doing their own imaging, and are they sharing info with in-country team. Dave: **(b)(5)** Q: The AMS data - does it capture time period when wind shifted onshore. Don: getting continuously built up info of surveys. Shows depositoin over time. Very clearly has plume to NW of facility, which correlates to time of "lube oil" fire on Unit 4.

2011/03/20 RST  
20:18:08  
**(b)(5)**

2011/03/20 Charlie Miller  
20:19:07  
Marty: meeting at WH at 8:30 tomorrow am. to discuss assumptions for calcs on consequences. Don: seems to be some mixing of realistic worst case and also the worst-worst case (melcor setup). Keep thinking melcor run will be done, and each shift still not run by DOE. **bs**  
**bs** DOD wants to know where to move ships. HHS wants to know for KI. Steve Aoke has been on several calls with PMT. We have reminded him of WH request several times. Charlie will do WH meeting in am. Mike: Josh talked to Deputy Admin of AID asking if we were able to embed in TEPCO. Marty: our team is frustrated and saying it is not value added.

2011/03/20 John  
20:51:01  
Marty: Have note from Josh asking whether we had successfully embedded in TEPCO and if not, should Chairman call Japanese ambassador. John: They have status boards on reactors, etc. Not sure how would work in there and who our interface would be. Couldn't really drift around table to table. Then they took us to 1 engineering floor, and they were heavily staffed up. Had multiple conf rooms for project tasks they were working on. They had significant ongoing activities. Language barrier and the lack of authority over here, can't see how would gain good information. Don't see how would work. If we would have asked to be embedded, they probably would have. They have huge table with NISA there. Now we have focused meetings on particular topics, such as skid from Australia. Then we will meet on salt issue and rad control access to facility. Would need to have authority to ask direct questions and sit in wherever they are operating, and we don't have that authority. Would say access is helpful, but how we manage is important. Embedding maybe not best. Brian: maybe find out from TEPCO or NISA what is best estimate of status of U4 SFP - no steam been seen coming out of. People worrying is melting through floor, and then will go to Torus, and then potential steam explosion. John: NHK news release mentioned cooling with fire trucks of U4. They will tell us that IR detectors show SFPs are all less than 100C. They are relying on that, and they can't. You can't see anything from their photos - can't see SFP or water. Info they will give us will not be sufficient. We will ask again, though. **(b)(5)**  
**(b)(5)** Larry - heard food was contaminated, if can learn about it, that would be helpful. John: is all over news. Picking it up. They have about 7.5% of countr'y's production in that area of country. They decided to ban cheese and milk. Marty **bs** Embassy has been monitoring. Medical officer characterized as 2 orders of magnitude below permissible limit. We have correlated Unit 4 fire with plume measured. If that's the case, then volatiles are already out there. They have hundreds of thousands of people needing food, they may have very different priorities. WSJ says 1 spinach sample 120km south of plant contained factor of 4 over Japanese legal limit. Raw milk samples from Kamamata town, up to 1510 Bq/kg I-131. Should get Foster, PMT and DOE working together to give ambassador consolidated input.

2011/03/20 ET  
21:45:04  
Watches youtube videos comparing Unit 1 and Unit 3 explosions. Unit 3 much larger, initiating event and then 3 loud bangs.

2011/03/20 PMT  
22:23:32  
Our intervention levels are about half of the Japanese levels for food. So we would have taken the same actions.

2011/03/20 RST  
22:30:14  
Mechanical difficulties with plane in Australia. Takeoff time TBD.

2011/03/20 John  
23:49:29  
At 11:30 a.m. **bs**  
**bs**

2011/03/21 John  
00:12:44  
TEPCO has new GM who advised that within last 24hr. there was no venting from Units 1, 2, & 3. No changes in spent fuel pools for Units 1, 2, & 3. There has been a significant shift in wind.

2011/03/21 John  
00:23:40  
**(b)(5)**

2011/03/20 John  
23:49:29  
At 11:30 a.m. **bs**  
**bs**

March 23, 2011

0600 EDT

## Briefing Sheet Fukushima Daiichi

Units 1, 2, and 3 reactors appear to be in a static condition. Seawater injection to the reactor coolant systems (via fire trucks) is continuing. Containment integrity status is uncertain for all 3 units. Report of steam coming from Unit 2. Reports of smoke from Unit 3 due to potential oil fire (Source: INPO). Unit 1 feedwater thermocouple reading 720 degrees F; and reactor lower head temperature is 741 degrees F (may not be reliable). Recent information indicates a second seawater injection path was established on Unit 1 through a feedline, with a slight drop in temperature noted.

AC power cables installed from a nearby transmission line to Units 1&2. TEPCO is working to establish power to necessary cooling equipment (U2 first). Electrical power has been restored to the Unit 3 control room (Source: NHK World). Power cables connected to a load center in Unit 4. External AC power restored to Unit 5 and 6. Unit 6 diesel generators running. RHR pumps providing cooling to both Units 5&6. 480 VAC power has been restored to portions of all 4 units, but limited capability to operate any equipment at this time.

Multi-day trending of all available dose rate information shows slightly declining levels.

Some indications of trace but detectable amounts of I-131 are being reported at some nuclear plants in the U.S. (Ginna and Nine Mile). Region I is being asked to get more detail.

Industry Consortium call established for 10:00 am each day. Priorities include establishing a method for US industry to interact with TEPCO (INPO representative scheduled to arrive in Tokyo 5:00 pm JDT March 23) and offering longer-term solutions for core and spent fuel pool cooling. Two shipments of the first train of Bechtel-designed equipment arrived at Yokota Air Base today. There is a third shipment of components for this train that will be shipped on Thursday, as the fittings etc., are still being fabricated. DoD is the lead U.S. Government agency coordinating equipment support logistics, funding, etc.

1:00 am call occurred with RST and TEPCO. Call focused on salt accumulation, hydrogen and criticality issues. RST is providing assistance to TEPCO following their request for analysis of when lower core will be filled with salt, and means to mitigate this, including criticality issues.

5:00 am report from C. Casto - TEPCO reports that the Unit 2 spent fuel pool is full of water, and cool at 54 degrees C. However, Unit 2 primary containment is likely to be damaged/breached as steam is observed coming from the containment. DOE planning to convey analysis on salt accumulation and prioritization of RHR restoration, then moving to freshwater source, via letter to TEPCO.

(b)(5)

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EEEE / 2

March 23, 2011

2300 EDT

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EEEE/3