出國報告(出國類別:訪問)

日本柏崎刈羽核能電廠
原子力綜合防災演練國際觀摩
出國報告

服務機關：核能安全委員會
姓名職稱：保安應變組賴佳琳技正
保安應變組賴曉君技士
基隆市消防局温梓強科員
派赴地區：日本/新潟縣
出國期間：112 年 10 月 26 日至 31 日
報告日期：112 年 12 月 14 日

摘要

2011 年東日本大地震引發福島第一核能電廠核子事故，並造成放射性物質外釋，嚴重影響居民生活與周遭環境；事故後我國參考福島事故經驗回饋，辦理國內核能電廠現有安全防護體制全面體檢方案，重新檢視並強化精進核子事故應變整備相關作為，以期能從源頭減災、整備耐災至應變抗災，全面強化核子事故應變機制，精進核安演習規劃亦為其中相當重要的一環。

我國與日本在地理環境與天然災害上有許多相似之處，日本防災機制及規劃一直是我國很好的借鏡與參考，近年來我國和日本於辦理核子事故演習時，均透過國際交流方式，邀請世界各國代表觀摩年度核子事故演習，今(112)年度我國辦理核安第 29 號演習時，邀請日本代表 3 名前來觀摩，112 年 10 月日本擇定新潟縣的柏崎刈羽核能電廠辦理年度原子力綜合防災演練，亦邀請我國前往參與觀摩，期透過交流過程相互砥礪學習，精進核能電廠各項強化措施及檢視核子事故相關民眾防護及應變機制，以守護我國民眾安全。

目錄

壹、出國目的

臺灣和日本皆為位於海上的島嶼國家，也面臨類似的地理位置和自然災害風險，包括地震和颱風。正因如此，日本的防災體系和應變機制都是可以借鏡的對象，藉此提升我國的災害應變能力。2011 年 3 月 11 日日本東北地區遭受了一次規模 9.0 的大地震和海嘯襲擊，這次事件導致福島第一核能電廠全廠停電，引發了嚴重的核災事故，對當地居民和環境造成了巨大衝擊，並造成大規模的疏散，以及民眾需要採取防護措施來應對輻射風險。為了強化核災應變方面的能力，我國參考了福島核災的經驗，於 2012 年 8 月完成了《國內核能電廠現有安全防護體制全面檢討方案》，以精進我國核能電廠的抗災能力和應對機制，以應對潛在的核災情境。

此外，我國也積極參與國際交流，加強核能電廠的應對和備案機制。日本自 2016 年開始邀請臺灣代表前往觀摩核災演練，這些演練包括 2016 年的北海道泊電廠、2017 年的九州玄海核能電廠、2019 年的島根核能電廠和 2022 年的美濱核能電廠。同樣地，我國也邀請了日本代表觀摩台灣的核安演練，以相互檢視和學習，從而提高核災應變和應對的能力，達到國際交流的目的。2023 年台灣再次受到日本內閣府的邀請，前往觀摩位於新潟縣柏崎市的柏崎刈羽核能電廠的原子力綜合防災演練。

本次的綜合防災演練與我國的核安演習類似，參與單位包括中央和地方政府機構、私人部門、相關機構以及核能電廠業者。演練範圍包括兵棋推演和實兵演練，涉及一般民眾的輻射清消作業、疏散收容演練、無人機輻射監測，以及柏崎刈羽 Off-site Center 原子力災害現場應對總部的運作。行程還參觀了日本原子能規制委員會的緊急事態中心。在觀摩行程結束後，並與日本內閣府和原子能規制委員會等官員一同參加了座談會，進行了意見交流和分享觀摩心得。本次實地參觀和觀摩活動讓我們更深入地了解日本的核災應變機制和演練規劃，這將有助於審視和精進現行的核災應變和演練規劃，以進一步強化和完善我國的核災應變機制。

貳、出國行程

本次出國行程含往返共計六日，行程表如表 1:

表 1、本次觀摩行程表

日期	行程內容
10 月 26 日	去程 (台北松山機場→日本東京羽田機場→新潟縣柏崎市)
10 月 27 日	1. 參加演習觀摩前說明會 2. 參訪輻射防護設施：高濱社區中心
10 月 28 日	演習觀摩： 1. 海運疏散作業：海上保安廳及海上自衛隊 2. 新潟縣廠外應變中心開設 3. 無人機空中輻射監測 4. 柏崎刈羽核能電廠廠內應變作業：熱交換作業、噴水作業
10 月 29 日	演習觀摩： 1. 暫時集結點演練：高田社區中心 2. 疏散車輛及人員輻射偵檢 3. 疏散中繼站與室內掩蔽設施觀摩 4. 收容所演練
10 月 30 日	1. 參訪原子力規制委員會緊急應變中心 2. 參加內閣府與國際觀摩人員交流會議
10 月 31 日	回程 (日本東京羽田機場→台北松山機場)

參、過程紀要

日本 2023 年原子力綜合防災演習(Nuclear Energy Disaster Prevention Drill) 國際觀摩於 10 月 27 日至 30 日間舉行，詳細行程如附件 1。

行程首日先於柏崎市産業文化會館辦理行前說明簡報，由日本原子力規制委員會(Nuclear Regulation Authority, NRA)及內閣府官員，分別說明日本針對核子事故應變組織的分工與規劃，以及本次觀摩行程解說；接續 28、29 日為廠內及廠外觀摩行程，由日方內閣府主導，安排國際觀摩團以遊覽車方式走訪各個觀摩站點，並安排有解說人員引導說明；最後一日安排於東京參訪原子力規制委員會，觀摩行程最後於內閣府進行交流會議。以上 4 日行程均安排英語口譯人員隨行，並透過隨身耳機聽取翻譯，以獲取良好解說品質。

本次演習國際觀摩團除我國外，還有美國、法國、新加坡、英國、印尼、菲律賓等國家代表參加，共計 19 人(如表 2)；我國代表團計 3 人參與，分別由核能安全委員會(以下簡稱本會)保安應變組及基隆市消防局派員。

表 2、國際觀摩團簡介

國家	參與人員機構
美國	能源部國家核子保安總署(Department of Energy/National Nuclear Security Administration, DOE/NNSA)、美國駐日大使館
法國	放射線防護與核安全研究所(Institute for Radiation Protection and Nuclear Safety, IRSN)、法國電力公司(Électricité de France, EDF)、法國駐日大使館
新加坡	內政科學技術局(Home Team Science and Technology Agency, HTX)
英國	英國駐日大使館
印尼	印尼駐日大使館
菲律賓	菲律賓駐日大使館
我國	核能安全委員會、基隆市消防局

一、日本核災應變體系說明

日本針對核子事故應變組織的分工與規劃，以下分為緊急應變計畫區劃分及應變時序兩個方面，說明如下。

在緊急應變計畫區劃分方面，日本參考國際原子能總署建議，劃定有距離電廠 5 公里範圍內的 PAZ(Precautionary Action Zone)及距離電廠 5 至 30 公里範圍的 UPZ (Urgent Protective Action Planning Zone)兩個緊急應變計畫區；在應變時序方面，核子事故發生時，首先係依電廠事故狀況判定核子事故類別，並依據緊急行動基準(Emergency Action Level, EAL)執行相對應的民眾防護行動，在放射性物質外釋後，再依實際測量到的輻射劑量率對照日本訂定的操作干預基準(Operational Intervention Level, OIL)採行民眾防護行動之建議。另有關劑量評估系統，考量在 2011 年福島事故中該系統未能及時發揮功效，日本迄今未將其納入民眾防護行動的執行依據中。

綜合敘述，日本在 EAL 規劃方面，當事故發展至緊急戒備事故時，會透過戶外廣播、廣播車、新聞資訊及手機訊息呼籲遊客返家、民眾進行室內掩蔽；若事故進展至廠區緊急事故，將進行 PAZ 內弱勢族群預防性疏散；若事故進一步發展至全面緊急事故，將疏散 PAZ 內一般民眾。

後續民眾防護行動規劃，則係依放射性物質外釋狀況，對照 OIL 執行各項輻射偵測、檢測以及撤離作業執行疏散，相關機制說明如圖 1。

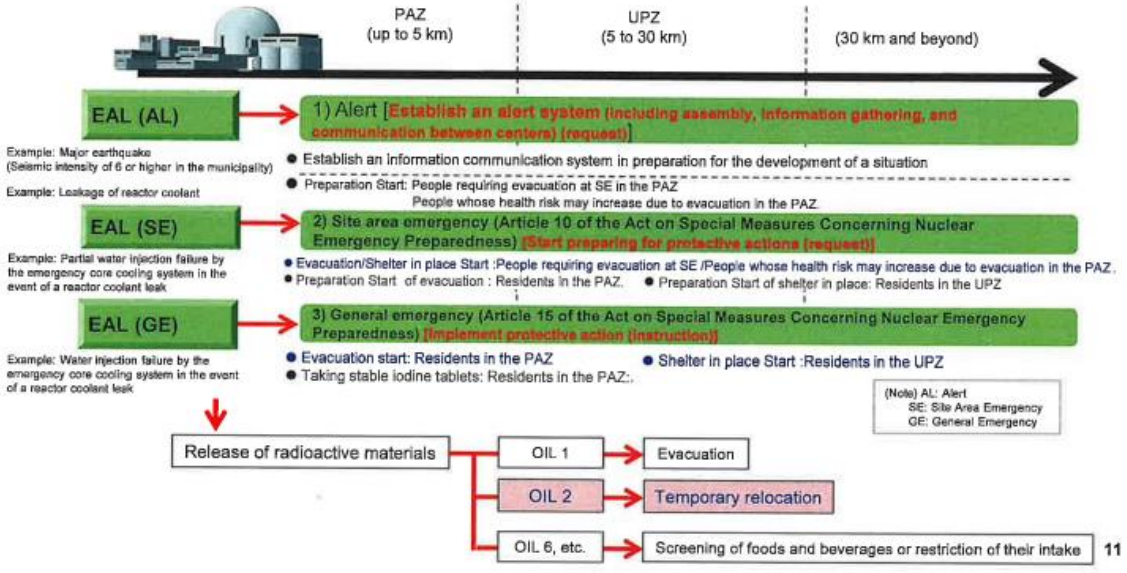


圖 1、日本核子事故應變機制說明

二、本次演練電廠介紹

日本係依據「原子力災害對策特別措施法」辦理防災演練，本次擇定新潟縣之柏崎刈羽核能電廠(Kashiwazaki Kariwa NPS)及鄰近區域舉辦，該電廠由東京電力公司經營，和福島事故中的福島第一核能電廠為相同經營者。柏崎刈羽核能電廠廠內共有 7 部機組，其中 1-5 號機組為沸水式反應爐(Boiling Water Reactor, BWR)、6 號機及 7 號機為進步型沸水式反應爐(Advanced Boiling Water Reactor，ABWR)，自 1985 年 9 月起陸續商轉，總發電量為 821 萬 2 千千瓦。2011 年東日本大地震後，因應日本政府政策，該電廠所有機組均以定期檢修和安全改善的名義停止運作，後續的安全檢查均未能通過原子力規制委員會審查，截至本次觀摩前，該電廠沒有機組成功重啟運轉。

柏崎刈羽核能電廠 PAZ 範圍涵蓋有新潟縣之柏崎市與刈羽村，人口數為 18,921 人；UPZ 範圍則包含新潟縣內的七市一町(柏崎市、長岡市、小千谷市、十日町市、見附市、上越市、燕市、出雲崎町)，人口數為 408,132 人；上述之緊急應變計畫區範圍及居住人口如圖 2 所示，合計約 42.7 萬人。

本次演練情境設定為新潟縣上越市糸魚川海岸附近發生地震，受地震影響，柏崎刈羽核能電廠 7 號機組緊急停止運轉，又因設備故障導致反應器冷卻功能喪失，進入全面緊急事故。

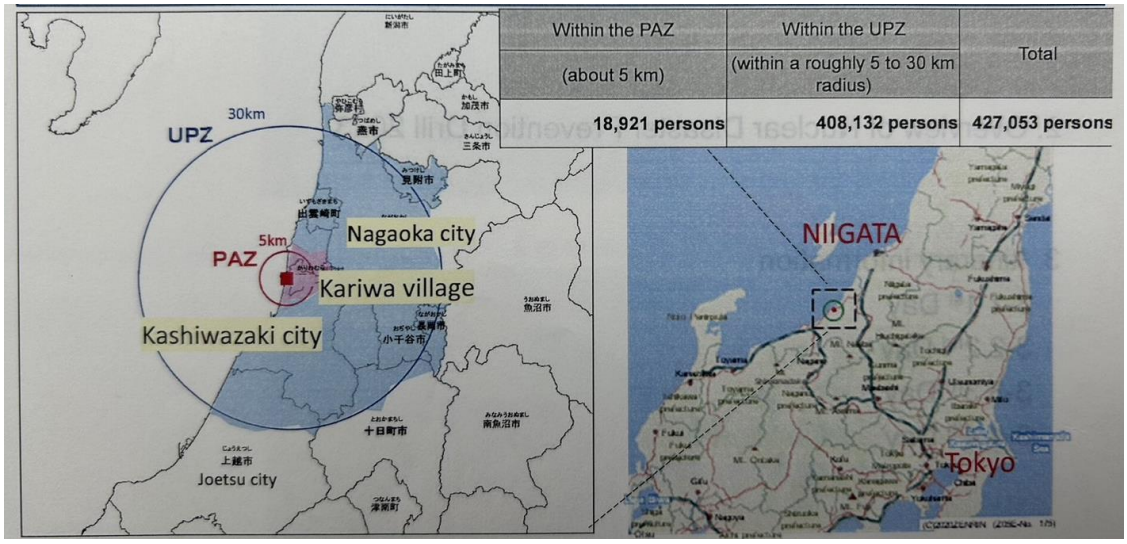


圖 2、柏崎刈羽核能電廠應變計畫區範圍及居住人口

三、參訪輻射防護設施：高濱社區中心

高濱社區中心距離核能電廠約 4 公里，主要可提供 PAZ 內無法自行疏散的民眾進行暫時避難收容，可收容人數 65 人；平時則做為當地居民的活動遊憩空間，不定期舉辦各項活動，包含烹飪、插花等，由當地自願者輪流值勤與維護。

當災害發生時，設施內備有 24 小時不斷電系統(柴油發電機)、氣閘艙(airlock)、雙入口門、以及約 3 天份的食物飲水，並設有空氣過濾裝置，可將外來空氣先進行過濾，去除灰塵、放射性碘、放射性銫等物質後，以提供乾淨空氣。現場介紹人員表示，目前設施內尚未備有輻射偵檢儀器及人員劑量計。

柏崎刈羽核能電廠周遭 PAZ 內約有 17 個類似場所，共可收容 2,212 人。

圖 3-1 空氣過濾裝置

圖 3-2 食物飲水

圖 3、觀摩高濱社區中心輻射防護設施

四、兵棋推演：新潟縣廠外應變中心演練

日本原子力防災綜合演練，是結合兵棋推演與實兵演練同步實施，其中新潟縣廠外應變中心(Off-Site Center, OFC)位於柏崎市原子力緊急預備中心，距離核能電廠約 7 公里處(依日本法規規定應設置於距核能電廠 10 至 30 公里範圍，但因該中心於原子力法規制定前建立，故實務上此項未能符合現行法規要求)。

OFC 主要工作為應變災害狀況，依電廠事故進程，於異常事故階段時就由 NRA 地區辦公室同仁進駐，廠區緊急事故時開設原子力事故合同現地對策本部，由內閣府負責核災的副大臣進駐擔任指揮官；全面緊急事故升級為原子力災害現地對策本部，亦由內閣府副大臣擔任指揮官，並有更多部會單位進駐。觀摩當日進駐人員超過 250 人，組成包含中央政府、地方政府與緊急監測中心(Emergency Monitoring Center, EMC)、消防、警察及相關組織等，其內部空間配置如圖 4。現場依配置區塊顏色區分各任務分組，進駐人員須穿著相對應之顏色背心，現場視訊系統可與原子力對策本部、新潟縣縣廳、柏崎市役所及刈羽村役場等單位同步進行連線，說明最新的狀況及接收上級指令下達(例如全面緊急發布、民眾撤離及服用碘片等內容)，並可向上級請求支援事項，當天亦現場連線日本首相發布緊急事態宣言，呼籲民眾撤離及服用碘片 。

該建築除作為新潟縣核子事故應變中心外，亦是新潟縣輻射偵測中心(Radiation Monitoring Center, RMC)和柏崎刈羽 NRA 地區辦公室所在地，為避免斷電，該建築於戶外規劃有柴油發電機室，作為緊急供電使用；另因為 OFC 空間不足，當地政府於旁邊的柏崎地區振興局 3 樓規劃進駐人員休息空間，設置 60 個床位，以利輪班進駐作業順利進行。總體而言，該廠外應變中心的功能類似我國的核子事故地方災害應變中心、前進協調所、輻射監測中心三者整併，功能較為集中。

圖 4-1 廠外應變中心現場演練狀況

圖 4-2 工作區域平面配置圖

圖 4-3 日本首相發布緊急事態宣言

圖 4-4 食物飲水採樣演練

圖 4、新潟縣原子力災害現地對策中心

五、廠內演練觀摩：柏崎刈羽核能電廠

觀摩首日(28 日)即赴柏崎刈羽核能電廠進行廠內觀摩，電廠保安程序森嚴，電廠周圍設有鐵刺網、攝影機，入口一車道配置 2 名警衛，出口一車道配置 1 名警衛，針對進出電廠的車輛及人員進行檢查，外賓進入電廠需詳細查核行李及身分證件才可進入電廠。本次國際觀摩團雖然事先已填具入廠申請表並提供護照資料，當日入廠時保警仍針對入廠人員進行嚴謹審查，程序包括以下：

(一) 2 名警衛上車，提醒入場不可攜帶尖銳物，若有攜帶攝錄影裝置(如手機)必須全數關機。

(二) 逐一檢查護照，比對入廠申請資料，並請每個人拿下口罩確認是否為同一人，確認完畢後發放入廠證。

(三) 逐一檢查手提包及後背包，確認未攜帶違禁品。

在經歷 50 分鐘的保安檢查後，觀摩人員始得入廠，當日廠內演練觀摩項目，包含熱交換作業及噴灑水霧作業。熱交換作業主要係利用大容量送水車將反應爐內無法排放之熱水抽出，並注入冷水幫助反應爐降溫；另噴水作業主要係利用加農水砲，由工作人員人力操作水柱方向進行噴水作業，目的是為了利用水霧促進外釋放射性物質的沉降，從而降低放射性物質擴散範圍。

六、廠外觀摩：暫時集結點演練(高田社區中心)

日方在全面緊急事故階段，會在放射性物質外釋前疏散 PAZ 地區的民眾，UPZ 的民眾則會視 OIL 的結果決定室內掩蔽或疏散。其中無法自行離開的民眾可前往暫時疏散點(temporary meeting place)搭乘巴士，功能類似我國的集結點。暫時疏散點設於距核能電廠 PAZ 5 公里外的地點，附近居民透過電視、手機等方式接收到撤離訊息，附近居民可以到此集合搭乘撤離專車進行疏散。

高田社區附近一帶規劃有 15 處的會面點，本次觀摩參訪之高田社區中心會面點可容納約 100 位居民到此集結，居民抵達時首先進行報到檢錄登記資料，除紙本作業外，因應電子化作業普及，居民亦可掃描 QRcode 進行個人資料輸入。報到時即會發放 1 日份的碘片(為避免民眾誤食，本次演練以糖果代替)、碘片服用說明與注意事項及礦泉水，碘片服用時機與我國做法一致，即俟政府通知才能服用，提供的礦泉水即供民眾可在收到服用通知時立刻服用。居民在完成報到手續後，便到室內稍作休憩，等待疏散專車到此接駁。

圖 5-1 暫時集結點告示牌

圖 5-2 人員報到檢錄、發放碘片及說明服用注意事項

圖 5-3 民眾等待疏散接駁車輛

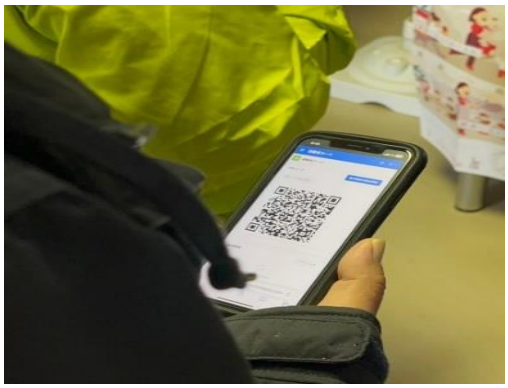


圖 5-4 運用 QRcode 進行人員檢錄

圖 5、高田社區中心暫時集結點演練

七、廠外觀摩：海運民眾疏散作業(海上保安廳與海上自衛隊)

海運疏散主要是用於無法自行疏散的住民，在前往暫時集結點集合之後，會由巴士載往預計疏散陸海空交通工具處所，以海上運輸而言，本次觀摩即展示了兩種量能的疏散工具：海上保安廳(Coast Guard)的巡邏艇與海上自衛隊(Maritime Self-Defense Force)的登陸艇。

海上保安廳的巡邏艇疏散演練地點位於柏崎港，該巡邏艇輸運量能約為單次 100 人，可見到現場應變人員預先穿著防護衣，但此時應尚未有放射性物質外釋。海上自衛隊演練地點位於柏崎中央海水浴場，所使用的是氣墊登陸艇(Landing Craft Air Cushion, LCAC)，不須依賴港口，沙岸即可進行登陸作業，機動性高；但每艘登陸艇僅能裝載 30 人左右，輸運量能較小。

圖 6-1 海上保安廳巡邏艇

圖 6-2 海上自衛隊氣墊登陸艇

圖 6、海運民眾疏散作業演練

八、廠外觀摩：疏散車輛人員輻射偵檢

本項演練地點為直江津風車公園停車場，功能類似我國的防護站，所有自 PAZ 疏散離開的車輛均會被引導至此處進行輻射偵檢，以確認無輻射污染。被引導進入的民眾及貼有車輛檢查證的車輛，首先會由應變人員利用輻射偵檢儀器針對指定處(例如：雨刷)進行輻射污染偵測，這個部分和我國直接以門框偵檢器確認車輛是否有污染的作法上有所差異，使用門框式偵檢儀器較為快速、也可減少人力資源，但人員偵檢的方法雖然耗時，但結果可能較為仔細。

針對居民車輛偵檢部分，以 OIL4 為檢測標準(距離皮膚數公分劑量值為 40,000 cpm)，偵測結果若顯示車輛放射性活度超過 40,000 cpm，將由軍方以乾除污法對車輛進行簡易清消，並對車上乘客進行抽樣偵檢，檢查特定部位(例如：鞋底)，若乘客抽樣結果也超過 OIL4，則全車乘客都必須進行偵檢，超過 40,000 cpm 的人員則需進行進一步全身除污作業。完成整套偵檢流程後，車輛離開前最後一站是由專人發放碘片，若未能從家內攜出碘片之民眾可以現場領取碘片，並發放車輛檢查通行證，後續至收容所時須出示該通行證，車輛才能獲准進入。

圖 7-1 車輛輻射偵檢

圖 7-2 車輛除污

圖 7-3 人員輻射偵檢

圖 7-4 發放碘片與說明使用方式

圖 7、人員車輛輻射偵檢除污

九、廠外觀摩：疏散中繼站與室內掩蔽設施

本項演練項目所在地為新潟縣上越市的頸城地區公民館(Utopia Kubiki Hope Center)，此為新潟縣上越市居民自行駕駛車輛及搭乘撤離專車前往收容所的中繼站，進入中繼站的居民會引導至 2 樓進行安置，等待進一步指示再行前往收容所避難。場所內僅有簡易安置設施，不具收容功能，並設有免費 Wifi。

另本次演練當中，柏崎市居民中繼站雖非位於此處，惟仍配合演練到此中繼站參與演練，居民進入中繼站後將會依所屬城市分別進行報到與安置。

圖 8-1 進入中繼站後分區進行安置

圖 8-2 場所內設置有免費 wifi

圖 8、疏散中繼站與室內掩蔽設施演練

十、廠外觀摩：收容所演練

收容所演練項目位於新潟縣的三和保健中心(Sanwa Ward Health Center)，主要為新潟縣柏崎市居民的災害避難所，可容納約 150 人，並備有 7 日收容量能。本次演練的高田社區居民於接獲疏散通知後，可自行開車或搭乘撤離專車到此收容所進行避難，工作人員會依事先彙整的自行駕車疏散名冊進行清點，名冊包含居民的姓名、性別、年齡、緊急連絡電話及車牌號碼等資訊。

自行駕駛車輛前往的居民，車上須持有完成人員車輛污染檢查證明的通行證方能進入，證明文件包含車輛檢驗證明(每車 1 張)及居民檢驗證明(每人 1 張)；當日館外並設有人員全身輻射偵檢車，針對未事先進行車輛污染檢查的民眾，須先上車進行偵測確認無放射性物質污染，始能進入該設施。

圖 9-1 人員全身輻射偵檢車

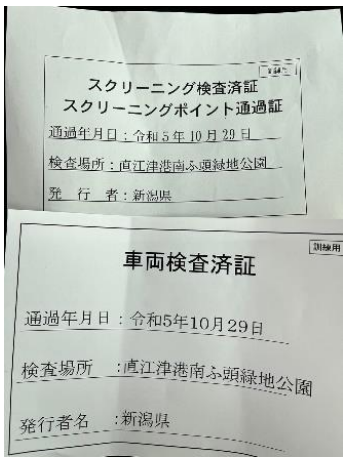


圖 9-2 車輛及居民檢驗證明

圖 9、收容所演練

十一、廠外觀摩：無人機空中輻射監測

2011 年福島事故造成放射性物質外釋，當時有許多地區遭受放射性銫的污染，促成了日本發展無人機來進行輻射監測。本項演習主要展示了三款空中無人載具，其在飛行高度、飛行時間、負重能量都有所不同(如表 3)。

觀摩當日因雨勢過大，故僅有二台執行輻射偵測作業，監測到的輻射劑量可直接回傳至後台，地面操作人員可同步將資料上載至新潟縣環境放射監視網站，以供民眾上網查詢。

經詢問操作無人載具的專業執照規範，日方表示相關要求主要係針對買賣無人載具的廠商，對於使用者並無特殊要求；此外，日方允許直升機及無人載具同一個空域內同時飛行，此作法與我國法規有異(我國法規禁止直升機及無人載具同時飛行於同一個空域)，其安全措施為限制各自的飛行高度(離地面高度 150 公尺是無人機飛行高度上限)，以避免撞擊事件的發生。

表 3、日方無人機功能展示比較表

	無人駕駛飛機 (unmanned airplane)	**無人駕駛直升機 (unmanned helicopter)**	**無人機 (drone)**
			
型號	Penguin C	FAZER G2	M300RTK
飛行時間	1,200 分鐘(20 小時)	90 分鐘(1.5 小時)	55 分鐘
負重	5 公斤	25 公斤	2.7 公斤
特色	飛行時間長	負重大	機動性高

圖 10-1 無人機執行空中輻射監測

圖 10-2 輻射劑量即時回傳處置

圖 10、無人機空中輻射監測演練

十二、參訪原子力規制委員會緊急應變中心

日本原子力規制委員會辦公室位於東京都六本木，2011 年福島事故發生前，日本核能電廠的管制作業分散在內閣府、經濟產業省以及文部科學省；福島事故後，為整合原子力管轄權責，並強化核安監管的獨立性，在 2012 年 9 月成立了原子力規制委員會，直接隸屬於環境省。作為一個獨立機關，原子力規制委員會負責日本全國的核能安全管制、核子保安及核子保防等業務，角色與我國核能安全委員會類似。規制廳轄下派駐各電廠據點的事務所，則直接監管電廠保安、主導電廠年度演習規劃以及電廠防災計畫的審查工作。

原子力規制委員會 3 樓為其核子事故緊急應變中心 (Emergency Response Center, ERC)，負責監管核能電廠運轉參數及全國環境輻射偵測即時資訊，確保電廠運轉正常及環境輻射安全，其功能類似我國核安會之核安監管中心。平日白天該辦公室有一般職員出入，無專責輪值人員；夜間及假日則由 4 人進駐輪值。在收到電廠異常通報、或電廠所在區域發生五級以上地震時，將召回人員成立 ERC。

ERC 作業場所分為廠內應變中心(on-site center)和廠外應變中心(off-site center) 2 個作業區，廠內應變中心作業區負責事故發生時追蹤掌控廠內狀況，可與日本各核能電廠及相關單位進行視訊連線；廠外應變中心作業區則是負責處理和地方災害應變中心相關作業事項，事故時也可隨時與各地方政府進行視訊連線，討論即時狀況和應變決策，簡易配置圖如圖 11。(註：ERC 內全面禁止飲食與攝錄影)

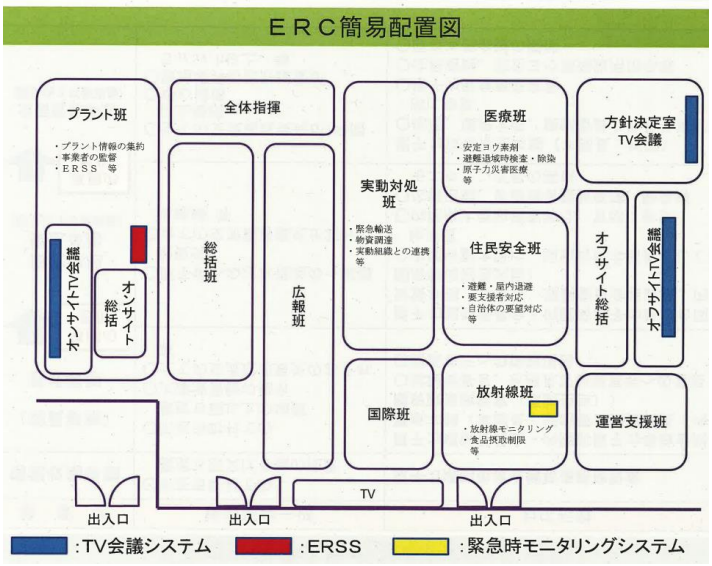


圖 11、ERC 簡易配置圖

十三、參加內閣府與國際觀摩人員交流會議

本次觀摩最後一個行程為參與日本內閣府辦理之國際觀摩人員交流會議，該會議由內閣府原子力防災事務局(Nuclear Disaster Management Bureau)局長主持，首先由內閣府針對本次演習進行回顧與總結簡報，再請國際觀摩人員就演習提出建議。會議情形如圖 12。

本會同仁於總結會議時首先感謝日方的邀請，續詢問日方是否有考慮於民眾防護行動決策中恢復採行劑量評估系統、以及是否考量過參考國際情勢在事故情境設定中加入戰爭元素。日方回復，因日本先前使用的的劑量評估系統(SPEEDI)在福島事故時使用操作上遇到很大困境，因此目前民眾防護行動決策仍是以 EAL 和 OIL 為主，暫不考慮恢復使用劑量評估系統；至於情境設定部分，因演習目前是著重於演變至全面緊急事故後廠內外的應變作為，因此在情境設定上尚未考慮到戰爭或反恐的部分。

其他各國代表提出的議題還包括：碘片發放的政策與服用劑量、如何量化評估演習成果民眾對於演習的想法或建議等；再由日方針對問題逐一請對應權責人員回應說明，其中碘片的服用劑量和我國相同，發放政策則是在集結點、防護站等場所方才進行發放，有別於我國係預先發放予民眾 2 日份、另外 2 日份由地方政府進行保管之作法；評估演習成果的方式則是聘用評核委員和針對民眾發放問卷，這部分和我國類似。

各國駐日大使館代表關心議題則偏向：核子事故警報發放時是否能涵蓋到外籍人士、日本政府何時會正式通知撤僑、以及集結點和收容所是否能接收外籍人士等。日方回復，目前的民眾防護措施並未特別區分日本本國民眾或外籍人士，外國人亦可跟隨民眾一齊到集結點進行登記檢錄，並搭乘巴士疏散至收容所；至於核子事故通知部分目前則是儘量作到媒體多元化(如透過廣播、電視、網路)，在語言上則尚未能包括外文的防災訊息通知或疏散引導告示等，未來也會參考外賓意見，研擬提供其他語言資訊的作法。

會議最後，主席感謝各國參與代表踴躍提供日本辦理演習的意見，有助於日本持續精進核子事故緊急應變作業。

圖 12、國際觀摩人員交流會議

肆、心得與建議

一、日本與我國之比較

以下彙整本次觀摩，日本與我國辦理核安演練的異同之處：

(一)緊急應變機制規劃方面

我國與日本在核子事故民眾防護行動規劃方面，均採用 EAL 和 OIL，然而考量到 OIL 僅在放射性物質外釋時方能使用，且針對核子事故後復原階段作為適用範圍有限，我國爰參考 IAEA 建議，持續發展大氣擴散模擬系統與劑量評估系統，以使民眾防護行動決策系統更全面完善。相較之下，日本在 2011 年福島事故後，因劑量評估系統(SPEEDI)在操作上遇到重大瓶頸，迄今仍未採用該模擬工具作為民眾防護行動決策輔助。

(二)兵棋推演與實兵演練辦理方面

在演習辦理方面，此次演習日方情境設定是由地震引發核子事故，在交流會議時我方人員詢問是否考慮加入國際情勢(如戰爭)威脅考量，日方表示目前暫無此規劃，但可納入未來參考。我國近年(111 年、112 年)在規劃核安演習情境時，均因應國際情勢加入戰爭元素，在情境想定方面上的考量比起日方更為周全。

本次演習日方規劃兵棋推演和實兵演練同步實施，相較於我國分開辦理的方式，在時序上更有完整性，並可讓參與者熟悉決策面及執行面的關聯性；缺點是必須動員大量人力物力，評核與觀摩動線安排繁雜，投入成本規模龐大。依據日方統計，本次參與演習的應變人力及行政人員近 4,000 人。

在觀摩疏散車輛人員輻射偵檢的演練項目時，發現日方針對車輛的偵檢和除污是以人員手動偵檢為主，這和我國使用門框式偵檢器和大型除污機具的作法有所差異。直接以門框偵檢器確認車輛是否有污染較為快速、也可減少人力資源，日本以人員操作輻射儀器相對較為耗時，但可針對車輛局部進行偵測除污，結果可能較為仔

細。另外，日本考量除污後產生的大量廢水難以處理，因此採行的除污方式為乾除污，相較我國濕除污的方式可減少廢水產生，惟除污效果待進一步研析。

透過本次觀摩可發現，日本的演練重點為全面緊急事故階段之廠外民眾應變作業，我國作法則是強調超前部署。為避免核子事故發生，已要求台電公司於必要時採行特定重大事故策略指引，執行廢棄核子反應器設施應變措施，以確保民眾生命財產安全為第一優先，因此我國核安演習實施重點，相較於日方偏重於緊急戒備事故進程至廠區緊急事故時之應變。

(三)國際觀摩接待規劃方面

日方和我國近年來在辦理核安演習時，均會邀請各國前往觀摩，透過國際交流相互學習，並藉以檢視我國機制與作法是否能與國際接軌。在國際觀摩團接待規劃方面，日方作法和我國十分類似，觀摩過程每日安排巴士在住宿點和演練項目之間接駁，並安排人員於各站進行講解，說明演練當下事故發生時之應變措施及政府組織運作方式；行前召開說明會簡報日方機制與介紹觀摩行程，觀摩後安排有交流會議，提供各國發表心得與建議的交流平台。全程均是以英語進行溝通和解說。

二、建議事項

(一) 本次觀摩日方的核安演習無論是演習規模或是演練情境設計及流程，均與我國有許多相似之處，同樣納入兵棋推演及實兵演練兩個面向，以及依核子事故發生時序演練。進一步分析，日方演練重點在於全面緊急事故階段廠外的演練內容，並以日本在地居民為主，針對遊客及外籍人士規劃較少，相較之下我國無論在警報發放、手機通知、告示牌與宣傳單等資訊均注重多元語言的資訊傳遞，友善外語使用人士，建議維持現行作法並持續精進。

(二) 日方近幾年的核安演習情境想定均是參考 2011 年福島事故經驗，以地

震引發核子事故為主，相較之下我國在演習情境想定上，參考地理因素和國際情勢納入了海嘯、湧浪、火山、戰爭等多重元素，因此檢視核能電廠在不同威脅下的安全性，建議未來在情境規劃方面持續保持多元性。

(三) 日本本次規劃實兵演練時，在部分項目是以不壓縮時序方式進行完整演練，雖然會和當下的核子事故進程有所落差，但優點是讓應變人員及參與民眾完整演練及熟悉整個過程；建議我國未來辦理實兵演習時，也可參採此方式，採取單一項目完整演練。

(四) 我國與日本在地理環境與天然災害上有許多相似之處，並且同為使用核能電廠的國家，該國的核子事故應變機制、核安演習規劃、以及2011 年福島事故後的處置經驗，都相當值得我國借鏡。近年來透過雙邊演習上的國際觀摩交流，有助於精進核安演習之規劃，進一步強化核子事故災害應變機制完整性，建議賡續派員參加。

伍、附件

附件 1、日本 2023 年原子力綜合防災演習國際觀摩行程表

附件 2、原子力規制委員會(NRA)簡報

附件 3、內閣府核子事故應變措施簡報

附件 4、國際觀摩團本次觀摩之演練項目介紹

附件 5、柏崎刈羽核能電廠簡介及今年度廠內演練觀摩項目

附件 6、柏崎刈羽核能電廠第 6、7 號機組強化措施

附件 7、原子力規制委員會緊急應變中心介紹簡報

附件 8、人員車輛輻射偵檢與除污作業示意圖

附件 9、完成輻射偵檢後之車輛及人員通行證

附件 10、徵求當地住民自願參與演練傳單

附件 11、參與演練之當地住民演練後調查問卷

附件 12、碘片服用方式說明

Nuclear Disaster Prevention Drill 2023

October 27-29, Niigata, Japan
October 30, Tokyo

Cabinet Office

Outline of the event

Schedule

Dates: October 27-29, 2023
Venue: Kashiwazaki City, Niigata Prefecture

Date: October 30, 2023
Venue: Tokyo

Program

◆Day 1　Friday, October 27
14:00-15:50 Briefing on Japan's Nuclear Disaster Prevention System, Itinerary, Q&A
16:20-16:40 Observation: Radiation protection facilities (Takahama Community Center)
18:00-20:00 Reception @ Restaurant Kappo Kamoshita (seated style)

◆Day 2　Saturday, October 28
08:30-08:50 Observation: Evacuation by Japan Coast Guard patrol boat (Kashiwazaki Port)
09:00-09:30 Observation : Evacuation by Maritime Self-Defense Force vessels, etc. (Kashiwazaki Central Beach)
10:00-10:55 Observation : Response situation by the Local Nuclear Emergency Response Headquarters (Niigata Prefecture Nuclear Emergency Preparedness Center)
11:20-11:50 Observation : Evacuation by Air Self-Defense Force rescue helicopter (Gendo Sports Park)
13:05-13:30 Observation: Radiation monitoring by drone (Kashiwazaki Central Beach)
14:00-16:00 Observation: On-site accident restoration training (Kashiwazaki Kariwa Nuclear Power Station)

◆Day 3　Sunday, October 29
08:30-09:00 Observation: Temporary meeting place (Takada Community Center)
10:00-10:40 Observation: Screening tests of evacuation (Naoetsu Port South Pier Green Park)
11:00-11:25 Observation: Operation of evacuation route and shelter (Utopia Kubiki Hope Center)
11:45-12:15 Observation: Evacuation center (Sanwa Ward Health Center)
16:00 Arrive at JR Nagaoka Station and go to Tokyo by yourself
No reservations have been made for dinner and hotel on this day in Tokyo.
Please make your own arrangements.

◆Day 4　Monday, October 30
11:00-12:00 Tour of the Nuclear Regulation Authority ERC
14:00-17:00 Workshop with CAO, NRA and overseas visitors

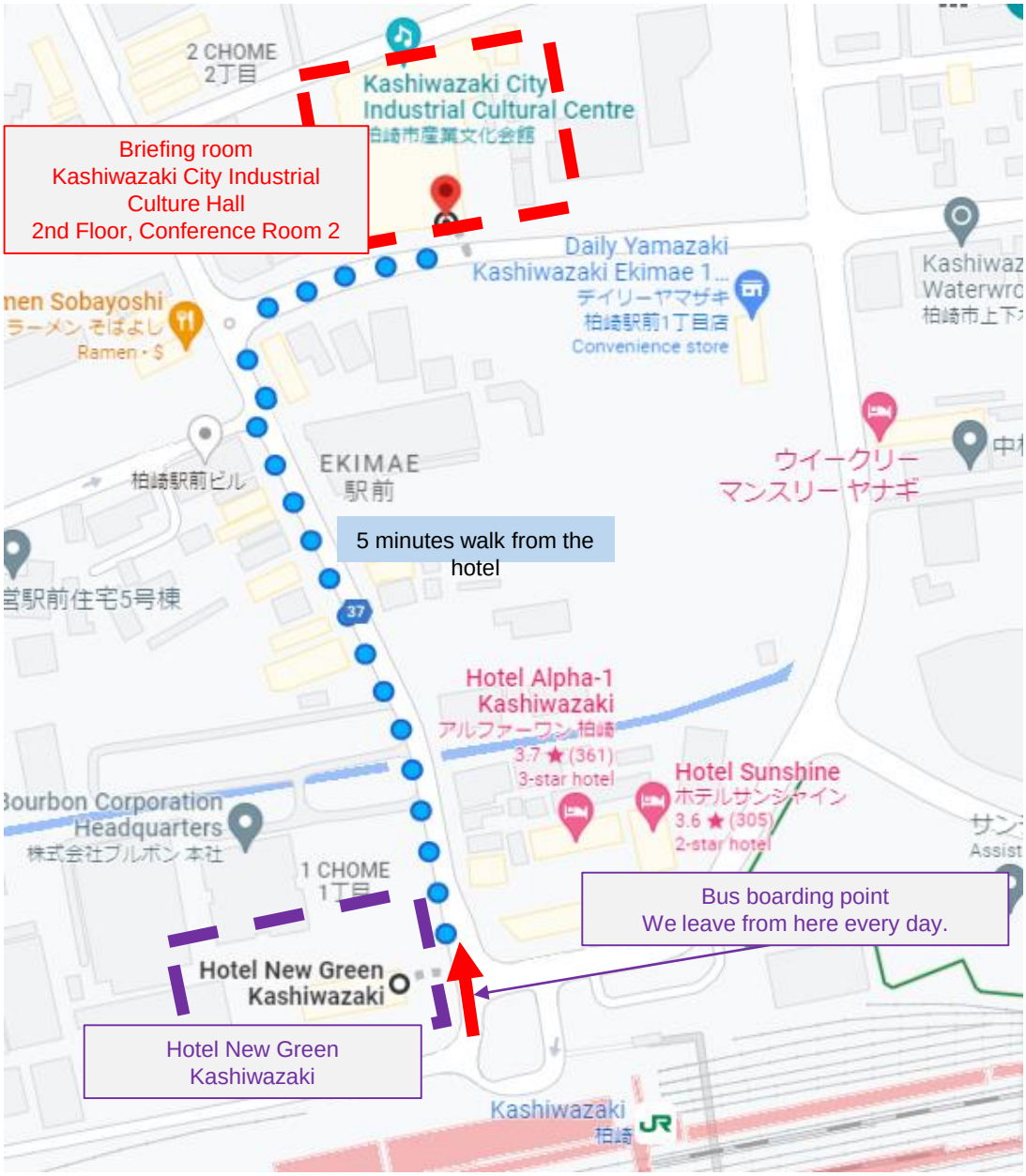
*Subject to change depending on the situation.

Terms of Participation

Meeting place (October 27, Briefing)

Meeting time and date: October 27 (Friday)
13:30 Gathering, 13:35 Chartered Bus departure
Meeting place: Bus will take you to the venue from Hotel New Green Kashiwazaki.
If you miss the gathering time, please come to the venue on foot.
Venue: Kashiwazaki City Industrial Culture Hall, 2F, Conference Room 2
2-2-45, Ekimae, Kashiwazaki, Niigata 945-0055, Japan

Hotel check-in time: 15:00~
Those arriving on this day are requested to leave their large luggage at the hotel before joining the tour.



Terms of Participation

Meals

The following meals will be provided by the Cabinet Office.

Dinner (reception): Friday, October 27
Lunch: Saturday, October 28; Sunday, October 29 ; Monday, October 30

We will accommodate your dietary restrictions as much as possible based on the information we received in advance.

Travel expenses

Travel expenses are to be borne by the participants. (Lodging and Transportation fee between your home country and Kashiwazaki City, Niigata Prefecture.)

Meeting place (October 30, Nuclear Regulation Authority)

Meeting time and date: Monday, October 30, 10:45 a.m.
Meeting place: In front of the Nuclear Regulation Authority
(near the entrance on the 1st floor of the Roppongi First Building)
1-9-9 Roppongi, Minato-ku, Tokyo, Japan, 106-8450
Access Information:
①Take the Namboku Line of Tokyo Metro to Roppongi Itchome station, N05.
It takes four minutes to walk to the NRA headquarters from Exit 2.
②Take the Hibiya Line of Tokyo Metro to Kamiya-cho station, H05.
It takes eight minutes to walk to the NRA headquarters from Exit 2.

Terms of Participation

Emergency Contact

◎On or before October 26, 2023
Please contact us by e-mail.
E-mail: convention_itd@nta.co.jp (9:45-17:45 JST)

◎From October 27, 2023
Please contact us by e-mail or at the phone number below.
E-mail: convention_itd@nta.co.jp

Phone: SHIMBO Kiyomi (Nippon Travel Agency): 080-3939-5962
NIIOKA Terumasa (Cabinet Office): 090-1046-2210

Japanese Border Measures

Currently, quarantine measures upon entry into Japan are as follows:

Valid Vaccination Certificate	Pre-departure Test	On-arrival Test	Isolation
Not Required	Not Required	None	None

Please check here for details.
https://www.mhlw.go.jp/stf/covid-19/kenkou-iryousoudan.html#h2_1

Terms of Participation

Personal ID, clothing and personal belongings

◎During the Observation tour and the Reception
Smart casual (chinos, jacket, sneakers, etc.)
Please wear comfortable clothes and walking shoes as there is a lot of walking during the tour.
Men do not need ties. Women are requested not to wear heeled shoes.

◎October 28 (Sat.) During the tour of the power plant
Please be sure to bring the same ID which you submitted when applying for the tour previously.
You will not be allowed to enter the power plant on the day of the tour if showing a different ID at the entrance of the power plant.

Please wear long sleeved shirt, long pants and sneakers.
Need to wear a mask while visiting the power plant, so please bring your own.

The use of cell phones is prohibited in the power plant.

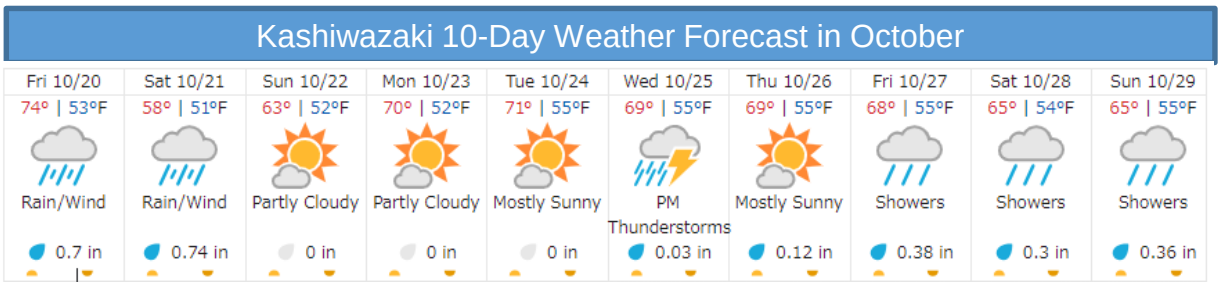
Eating and drinking are also prohibited in the power plant except in designated areas.

There are no restrooms on the observation route in the power plant.

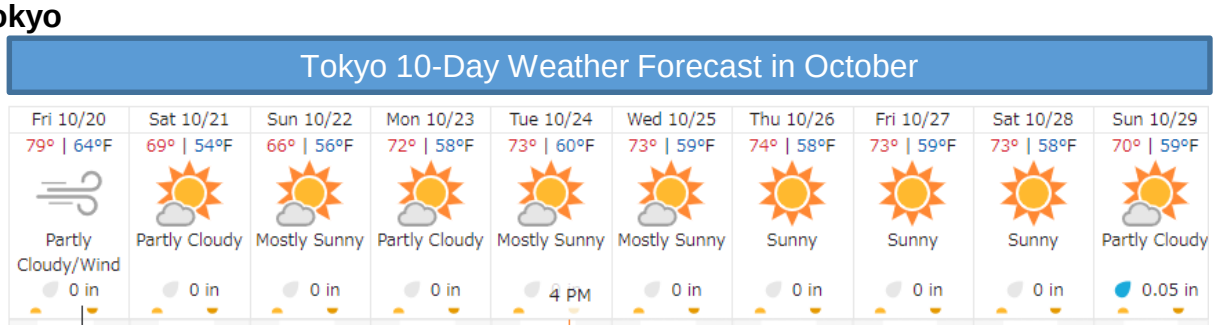
Please board the bus with a minimum of personal belongings in one piece of hand baggage.
(Travel luggage cannot be loaded on the bus).

Climate

Kashiwazaki



Tokyo



Hotel Information

Hotel New Green Kashiwazaki

Address: 945-0055
1-3-8 Ekimae, Kashiwazaki City, Niigata Prefecture
TEL 0257-24-1111
FAX 0257-21-8111

Type of guest room:
Non-smoking single room (14㎡)
6,600 yen per night without meals

Check-in: 15:00
Check-out: 10:00

Breakfast: 6:30-9:30
940 yen per meal
*Price increased from October 1.

Facilities: Free Wi-fi

Please settle the accommodation expenses at the hotel front desk upon your check-out.
(Credit cards are acceptable)
VISA, MASTER, JCB, DINERS, AMEX, UC, DC, SAISON, NICOS, UFJ

Accommodation in Tokyo

Please make your own arrangement of accommodation in Tokyo area.

Regulations on Nuclear Emergency Response in Japan

Nuclear Regulation Authority, Japan

27 October 2023

NRA, Japan
Nuclear Regulation Authority

Outlines

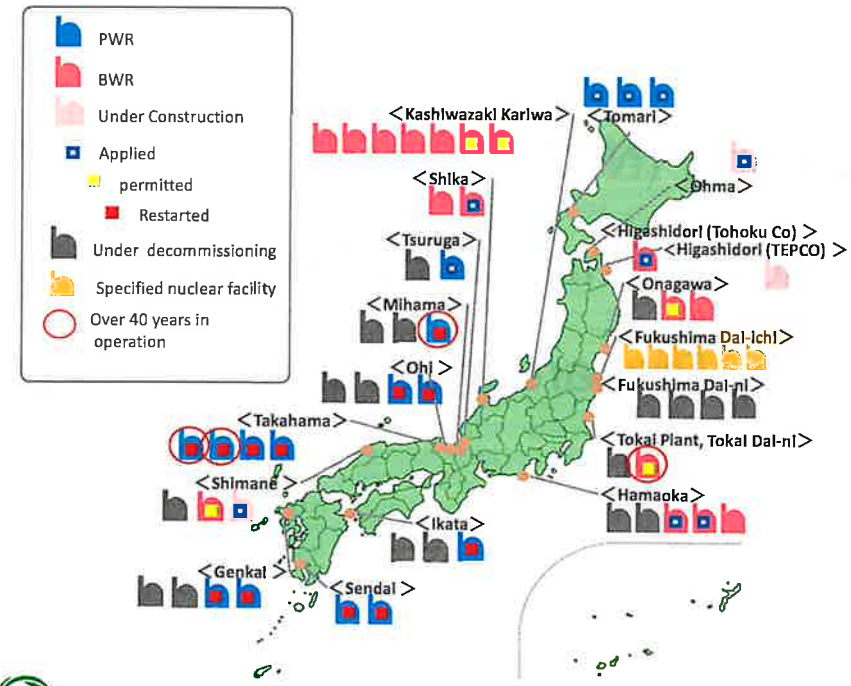
- Nuclear Regulation Authority (NRA)
- Legal Framework for Nuclear Emergency Management
- NRA Guide for Emergency Preparedness and Response

Nuclear Regulations Authority

- Established in September 2012
- Affiliate organization of Ministry of the Environment
- High degree of independence
- Chairman and four Commissioners appointed with approval of the Diet
- 1,018 secretariat staff (1 January 2023)
- Specialized in regulation
- Safety, security and safeguards

https://www.nra.go.jp/data/000067218.pdf

Current Status of Nuclear Power Plants

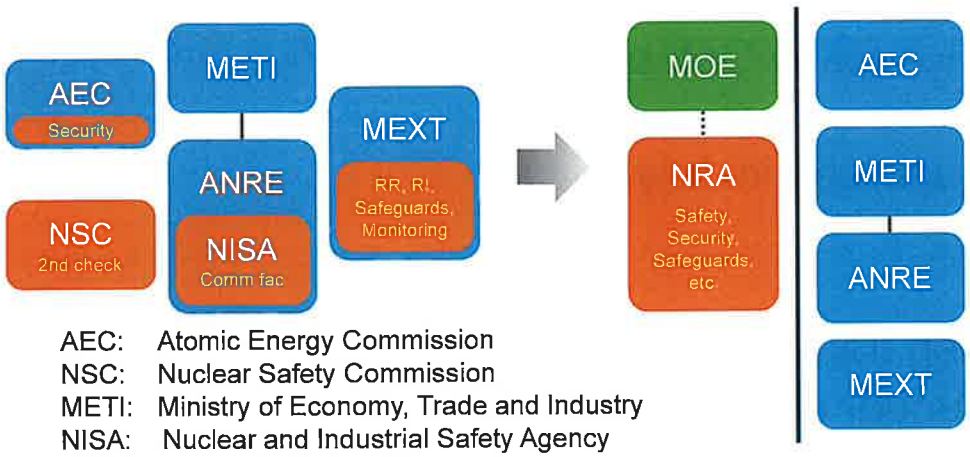


As of September 2023

Total[*1]	**60**	
Applied	27	PWR 16 BWR 11
Permitted	17	PWR 12 BWR 5
Restarted	*12*	*PWR 12* *BWR 0*
Under decommissioning	24	PWR 8 BWR 15 GCR 1
Others	9	PWR 0 BWR 9

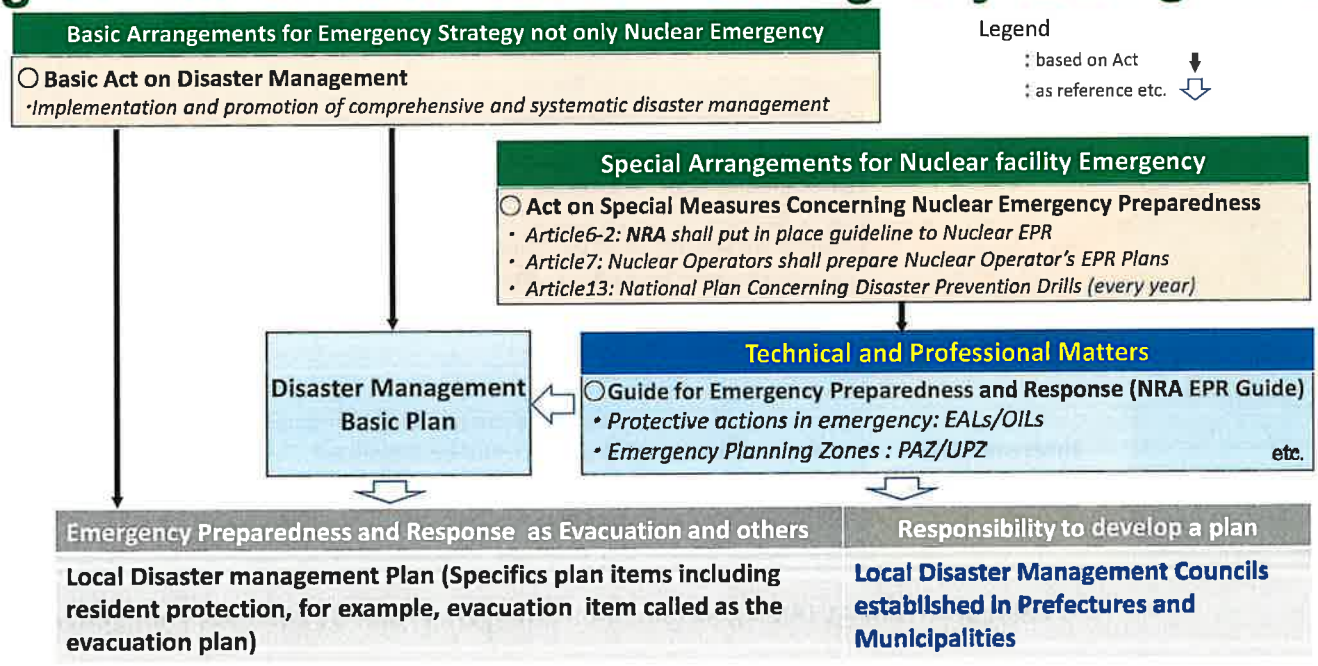
*1 Including NPPs under construction (3 reactors) and Fukushima Daiichi unit 1-6

(Ref.) Reform of Nuclear Regulatory Body after Fukushima nuclear accident



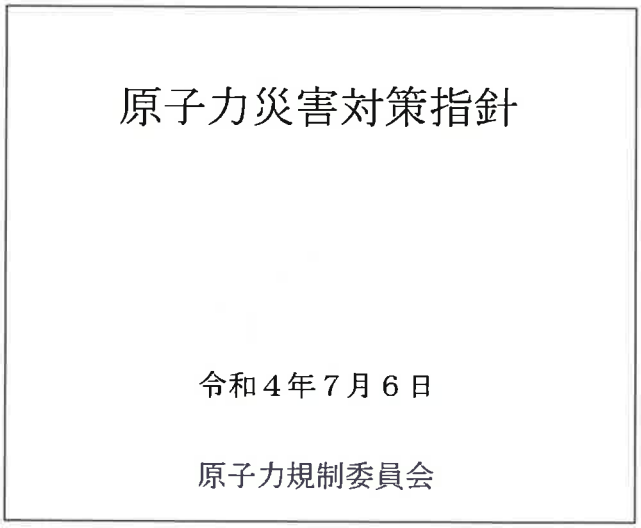
AEC: Atomic Energy Commission
NSC: Nuclear Safety Commission
METI: Ministry of Economy, Trade and Industry
NISA: Nuclear and Industrial Safety Agency
ANRE: Agency for Natural Resources and Energy
MEXT: Ministry of Education, Culture, Sports, Science and Technology
MOE: Ministry of Environment

Legal Framework for Nuclear Emergency Management



NRA EPR Guide

- ✓ First issues in October 2012
- ✓ Last updated in July 2022
- ✓ English translation is now under development



https://www.nra.go.jp/data/000396853.pdf

Emergency Phases in NRA EPR Guide

Preparedness	Preparation Phase	Nuclear operators, government, local governments, etc. should develop response plans respectively, and such plans are to be assessed, and improved through exercises and drills.
Response	Initial Response Phase (※)	Protective actions shall be taken promptly in order to avoid or to minimize severe deterministic effects (PAZ) and to reasonably reduce the risk of stochastic effects (UPZ) from radiation exposure under the condition of limited available information.
	Intermediate Response Phase	It is necessary to take appropriate measures to deal with radioactive materials already released into the environment. Environmental radiation monitoring, personal radiation dose estimation, health assessment, decontamination, etc., should be conducted.

(※) consists of AL (Alert), SE (Site area Emergency) and GE (General Emergency)

Emergency Planning Zones

EPZ

	JAPAN		IAEA(GS-G-2.1)	
	PAZ	UPZ	PAZ	UPZ
Nuclear Power Plant (NPP)	5km	30km	3-5km	5-30km
Research Reactor				
10MW＜thermal power ≦100MW	—	5km	—	0.5-5km
2MW ＜thermal power ≦10MW	—	500m	—	500m

PAZ and UPZ for NPPs

PAZ

Within approximately 5 km radius from NPP

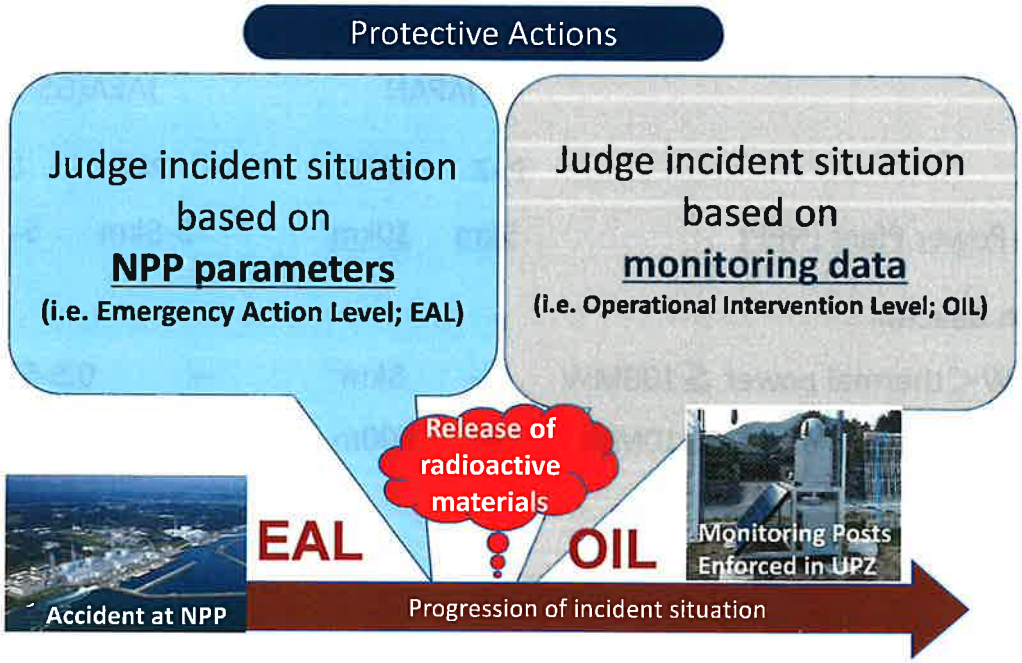
- Evacuation and Iodine thyroid blocking are conducted **based on EALs** before the release of radioactive materials into the environment.
- People requiring evacuation at site area emergency (e.g., elderly, disabled, infants, pregnant and nursing women) need to be evacuated on site area emergency (SE).
- If evacuation is difficult, stay in the shelter.

UPZ

Within approximately 30 km radius from NPP

- Evacuation, temporary relocation, etc., are conducted **based on EALs and OILs**.

Strategy based on EALs and OILs



NRA,Japan Nuclear Regulation Authority

Same as Taiwan.

Protective Actions based on EALs

- Before a release of radioactive materials, precautionary protective actions are taken promptly.
- Emergency Action Levels (EALs) are classified into three levels, Alert, Site Area Emergency and General Emergency based on predetermined conditions of the nuclear facility.

	Alert (AL) e.g.) Earthquakes more than 6 low in Japanese scale, Large Tsunami Warning	Site Area Emergency (SE) e.g.) Loss of all AC power, Failure of a part of ECCS	General Emergency (GE) e.g.) Loss of all reactor cooling functions, Failure to Scram by Control Rod-Drive
PAZ (~5km)	People requiring evacuation at SE Prepare for Evacuation/Sheltering	People requiring evacuation at SE Start Evacuation/Sheltering	
		Prepare for Evacuation	Start Evacuation
		Prepare for taking Iodine	Taking Iodine
UPZ (5~30km) (※1)		Prepare for Sheltering	Sheltering in house
Outside UPZ (30km~) (※2)			

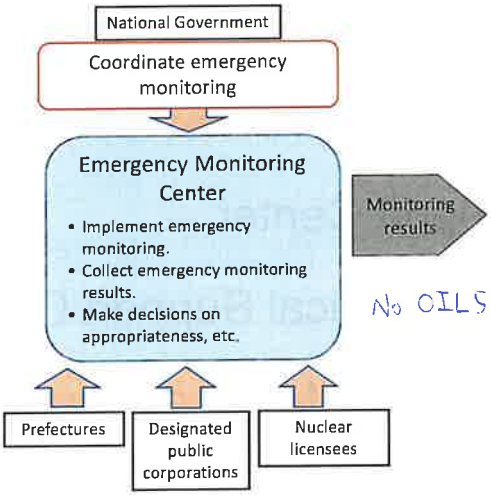
(※1) National and local governments implement stepwise precautionary protective actions such as evacuation as in the PAZ even in the UPZ depending on magnitude or duration of the event.

(※2) Outside UPZ, sheltering in place is taken depending on severity or deterioration of the emergency situation. The information is given to residents when general emergency is declared.

NRA,Japan Nuclear Regulation Authority

日：不用劑量評估系統

Emergency Radiation Monitoring and OILs

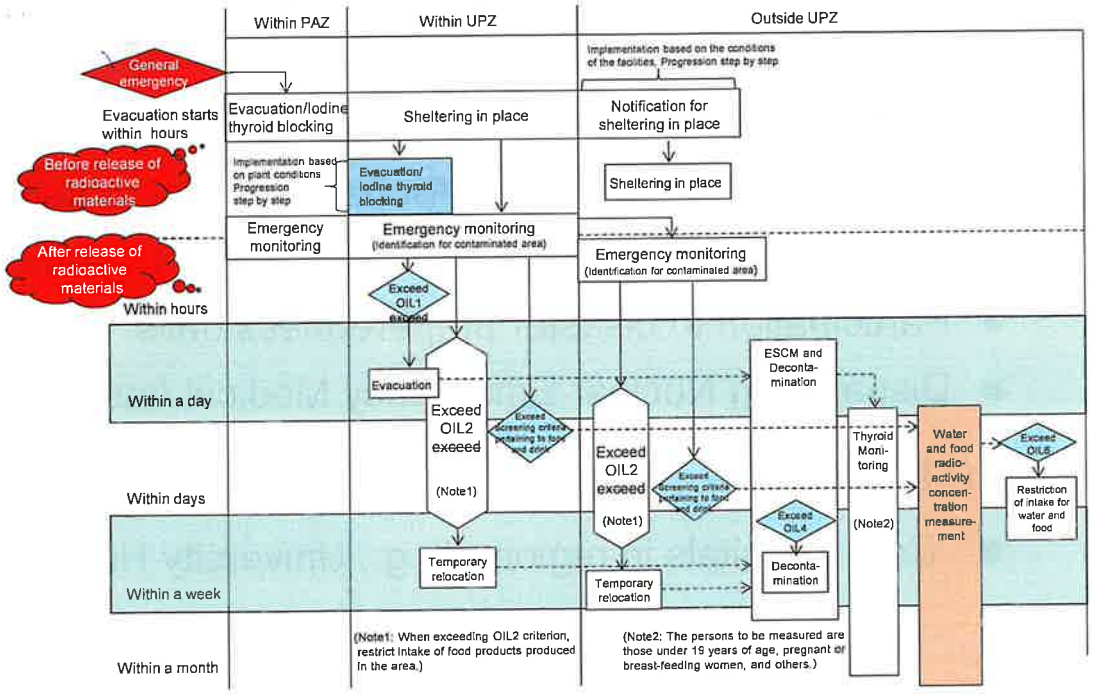


No OILS.

Type	Radiation Criteria	Overview of Protective Measures
OIL1	500μSv/h	Specify the areas within a few hours and initiate evacuation, etc.
OIL2	20μSv/h	Specify the areas within a day, restrict the intake of local products, and initiate temporary relocation within a week.
OIL4	β : 40,000cpm 13,000cpm (a month later)	Conduct primary decontamination promptly for those who evacuated or relocated.
Screening criteria pertaining to food and drinks	0.5μSv/h	Specify the areas where radionuclide concentrations in foods and drinks should be measured within a few days.
OIL6	Drinks / Foods I 300 / 2,000 Cs 200 / 500 U 20 / 100 Pu(TRU) 1 / 10 [Bq/kg]	Measure and analyze the radionuclide concentrations in foods and drinks within a week. Rapid implementation of restriction of water, local produced foods, and agricultural produce which exceed the standard.

NRA,Japan Nuclear Regulation Authority

Operation Flowchart for Protective Actions



NRA,Japan Nuclear Regulation Authority

Nuclear Emergency Medicine System

- Nuclear Emergency Core Hospitals
- Nuclear Emergency Medical Cooperative Institutions
- Nuclear Emergency Medial Support Center
- Advanced Radiation Emergency Medical Support Center
- Core Advanced Radiation Emergency Medical Support Center

https://www.nra.go.jp/activity/bousai/measure/medicalsystem.html

(Ref)

Nuclear Emergency Core Hospitals

Designated by local government hosting nuclear facilities

- **Functions:**
  - Special medical treatment for patients with radiation exposure
  - Conducting training course for persons in regions
  - Participation to disaster preparedness drills
  - Dispatching Nuclear Emergency Medical Assistance Team
- **Institutes:**
  - Core hospitals in regions (e.g., University Hospitals)

https://www.nra.go.jp/data/000253873.pdf (from Fig. 3 in page 72)

(Ref)

Nuclear Emergency Medical Cooperative Institutions

Registered by local governments hosting nuclear facilities

- **Functions:**
  - Primary treatment for patients with radiation exposure
  - Cooperation with local government on nuclear emergency responses
- **Institution:**
  - Institutes in regions

https://www.nra.go.jp/data/000253873.pdf (from Fig. 3 in page 72)

(Ref)

Nuclear Emergency Medical Support Center

- **Functions:**

Designated by the national government

  - Coordination among medical institutes
  - Organizing Nuclear Emergency Medical Assistance Team
  - Coordination to dispatch Nuclear Emergency Assistance Team
  - Conducting training for Nuclear Emergency Assistance Team
  - Participation to emergency preparedness drills

https://www.nra.go.jp/data/000253873.pdf (from Fig. 3 in page 72)

(Ref) Nuclear Emergency Medical Support Center

- **Institutes:** Designated by the national government
  - Hiroshima University
  - Fukushima Medical University
  - Hirosaki University
  - Nagasaki University

NRA,Japan Nuclear Regulation Authority

https://www.nra.go.jp/data/000253873.pdf (from Fig. 3 in page 72)

(Ref)

Advanced Radiation Emergency Medical Support Center

Designated by the national government

- **Functions:**
  - Medical treatment for patients with internal radiation exposure requiring long-term and specialized treatment
  - Establishing medical cooperation among medical institutes
  - Conducting training for medical personnel
  - Participation to emergency preparedness drills
  - Dispatching specialists of medical treatment and/or dose assessment

https://www.nra.go.jp/data/000253873.pdf (from Fig. 3 in page 72)

NRA,Japan Nuclear Regulation Authority

(Ref)

Advanced Radiation Emergency Medical Support Center

Designated by the national government

- **Institution:**
  - QST/NIRS (National Institute of Radiological Science)
  - Nagasaki University
  - Fukushima Medical University
  - Hiroshima University
  - Hirosaki University
  - Fukui University

https://www.nra.go.jp/data/000253873.pdf (from Fig. 3 in page 72)

(Ref)

Examples (as of 1 August 2023)

Prefectures	Core Hospitals	Medical Cooperative Institutions
Niigata	2 Niigata University Medical & Dental Hospital Niigata Cancer Center Hospital	18 (e.g., Medical, Pharmacists, Radiological Technologists Associations, Municipal Hospital)

https://www.nra.go.jp/data/000216042.pdf

Thank you

Nuclear Regulation Authority
1-9-9, Roppongi, Minato-ku, Tokyo, 106-8450,
Japan

NRA, Japan
Nuclear Regulation Authority

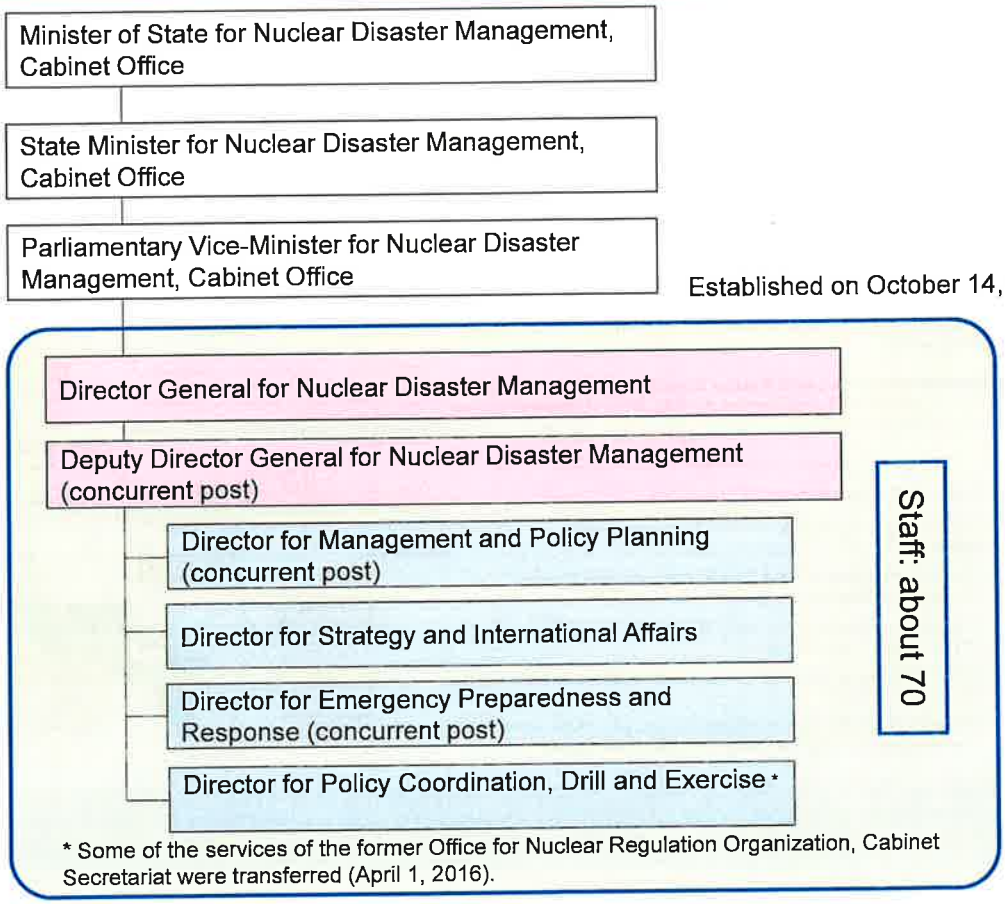
[C2] October 27, 2023
Explanatory Material
Cabinet Office (Nuclear Disaster Management Bureau)
Tentative Translation

Current Status of Nuclear Emergency Preparedness Measures

October 2023

Cabinet Office (Nuclear Disaster Management Bureau)

Organizational System of the Cabinet Office (Nuclear Disaster Management Bureau)



Role of the Cabinet Office (Nuclear Disaster Management Bureau)

The role of the Cabinet Office (Nuclear Disaster Management Bureau), shown below, stays the same regardless of peace times or emergencies:

To address off-site nuclear disaster management measures

Cabinet Office (Nuclear Disaster Management Bureau)

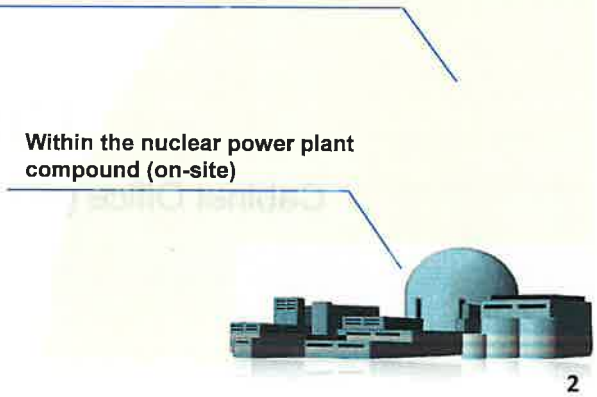
- Department in charge of protective actions such as evacuation of residents in **off-site**
- **Response officers** are the ones who actually carry out protective actions. They include officials of national government and local government organizations, including relavant organizations such as police and fire departments, or private enterprises.

* The basic concept of protective action is based on the NRA Guide for Emergency Preparedness and Response (hereinafter the NRA EPR Guide) developed by the Nuclear Regulation Authority.

* A Nuclear Disaster Countermeasure Priority Area is established for each facility.

Nuclear Regulation Authority (NRA)

- As a highly independent Article 3 committee of the Ministry of the Environment, the NRA is primarily responsible for **regulating the safety** of nuclear power plants and other facilities (**on-site**) from a scientific and technical standpoint.
  * The NRA conducts off-site monitoring (including measurement of radiation).
- It is mainly **electric utilities** that are responsible for handling accidents within nuclear power plants.



Progress to Date

Mar. 2011 Accident at the TEPCO Fukushima Daiichi Nuclear Power Plant

Sep. 2012 **Inauguration of the Nuclear Regulation Authority**

Oct. 2012 Establishment of the NRA EPR Guide and Nuclear Emergency Preparedness Manual

Sep. 2013 Establishment of a working team to support improvement of local disaster management plans

Oct. 2013 Resumption of the Nuclear Energy Disaster Prevention Drill (completely revised to, for example, include the assumption of a complex disaster).

Oct. 2014 **Establishment of the post of Director General for Nuclear Disaster Management**

Mar. 2015 **Establishment of Regional Nuclear Disaster Management Councils** (Review and reinforcement of the structure of the working team)

Progress made in formulating an "emergency response"

(Examples of actions taken)

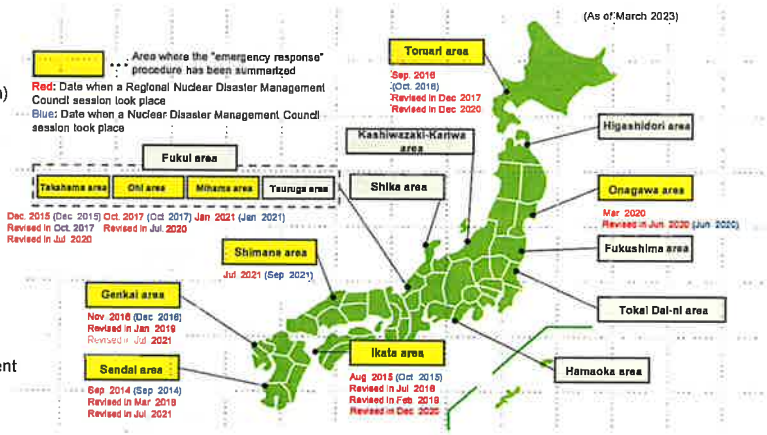
- Launched training projects and enhanced and strengthened drills and training
- Reinforced the system of the Cabinet Office (Nuclear Disaster Management Bureau)
- Facilitating evacuation in the event of a nuclear disaster (e.g., implemented model projects)
- Promoted advance distribution of stable iodine tablets (improved current distribution methods)
- Published the basic concept of protective actions in the event of a nuclear disaster during the spread of an infectious disease

(Examples of improvement)

- The size of the Nuclear Disaster Countermeasure Priority Area was revised from the EPZ (within a 10-km radius) to the PAZ (within 0 to 5-km radius) and UPZ (within 5- to 30-km radius), and it was decided that evacuation before the release be conducted in the PAZ, sheltering-in-place be conducted in the UPZ, and protective actions such as temporary relocation take place after the release based on the monitoring results.
- Consideration for persons requiring special care (early evacuation and sheltering-in-place)

EPZ: Emergency Planning Zone (area for emergency planning)
PAZ: Precautionary Action Zone (area where preparations should be made to implement precautionary protective actions)
UPZ: Urgent Protective Action Planning Zone (area where preparations should be made to implement urgent protective actions)

Status "Emergency Response" compilation



Based on the lessons learned from the accident at TEPCO's Fukushima Daiichi Nuclear Power Plant, we have been working on institutional development (laws, regulations, manuals, etc.) and the formulation and revision of "emergency response," including local disaster management plans and evacuation plans.

It is important to keep **improving the effectiveness** of our nuclear disaster response.

Nuclear Emergency Preparedness Systems during ordinal Times and Emergencies

Ordinal Times

Nuclear Emergency Management Council
* Standing committee

(Article 3-3 of the Atomic Energy Basic Act)

O Comprehensive coordination during peace times regarding nuclear emergency preparedness, including promotion of implementation of measures based on Nuclear Emergency Response policy
O Overall coordination of long-term measures after the accident

Council Structure
Chairman: Prime Minister
Vice Chairman: Chief Cabinet Secretary, Minister of the Environment
Minister of State for Nuclear Disaster Management, Cabinet Office
Chairman of the Nuclear Regulation Authority, etc.
Members: All Ministers of State, State Ministers and Parliamentary Secretaries of the Cabinet Office, Deputy Chief Cabinet Secretary for Crisis Management, etc.

Secretariat Structure
Secretary General: Minister of the Environment
Deputy Secretaries: Director-General for Nuclear Disaster Management, Cabinet Office and Director-General of Water and Atmosphere Environment

Emergency

Nuclear Emergency Response Headquarters
* Temporarily established at the Declaration of a Nuclear Emergency Situation

(Article 16 of the Act on Special Measures Concerning Nuclear Emergency Preparedness)

O Comprehensive coordination of emergency response measures and post-nuclear disaster measures pertaining to a nuclear emergency situation

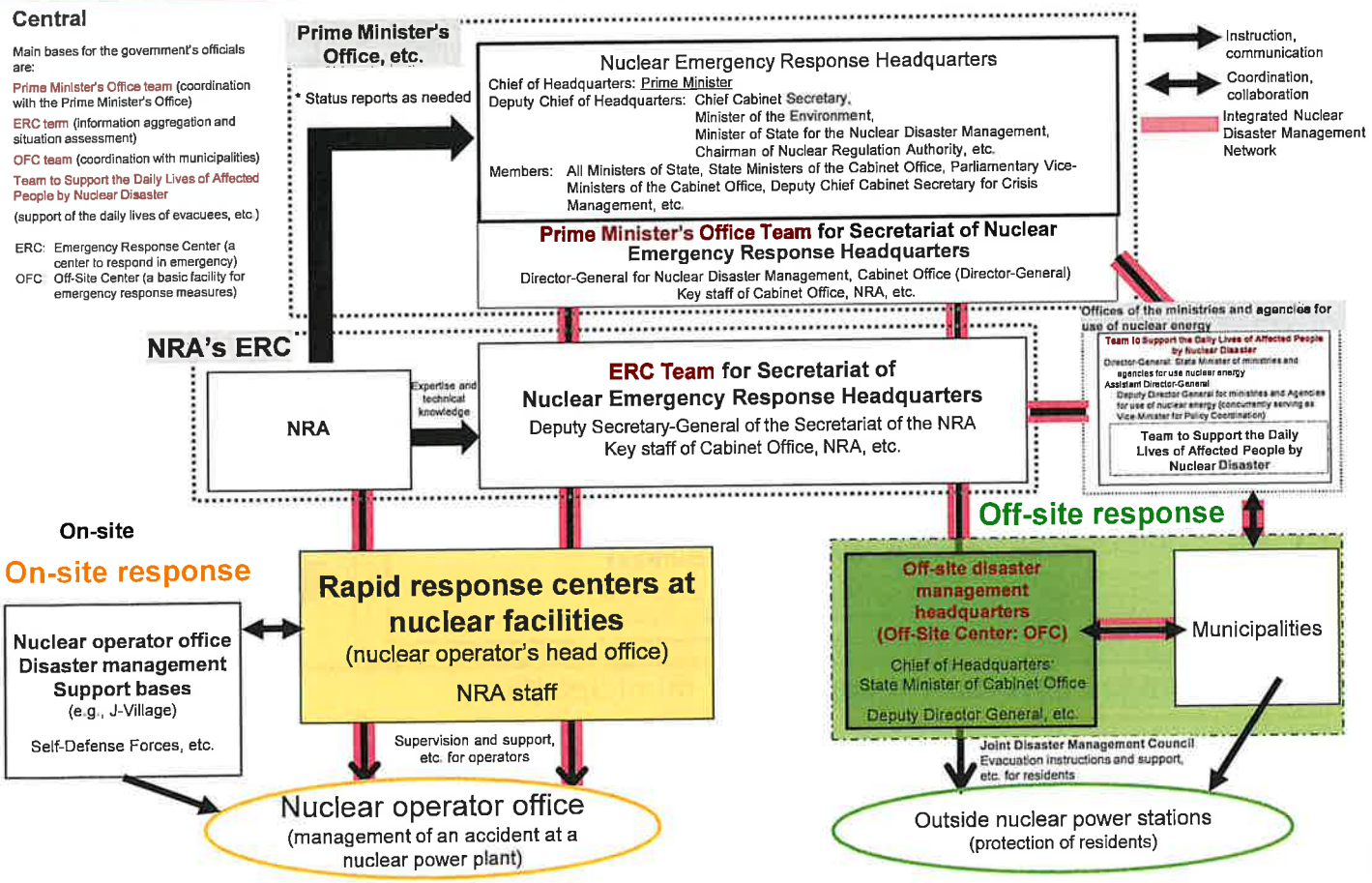
Council Structure
General Manager: Prime Minister
Deputy General Manager:
Chief Cabinet Secretary
Minister of the Environment
Minister of State for the Nuclear Disaster Management, Cabinet Office
Chairman of Nuclear Regulation Authority, etc.
General Staff: All Ministers of State, Deputy Chief Cabinet Secretary and other persons appointed by the Prime Minister: State Minister of Cabinet Office, Parliamentary Secretary, etc.

Secretariat Structure
Acting Secretary General:
Director-General for Nuclear Disaster Management, Cabinet Office
Alternate Acting Secretary General:
Secretary-General of the Secretariat of the Nuclear Regulation Authority
Deputy Secretariat General:
Councilor of Crisis Management, Cabinet Secretariat
Councilor of Disaster Management, Cabinet Minister, Cabinet Office

(Note 1) The State Minister of Cabinet Office in charge of nuclear disaster management or Parliamentary Vice-Minister (concurrently serving as State Minister of the Environment or Parliamentary Vice-Minister of the Environment) will serve as the head of the on-site disaster management headquarters.
(Note 2) State Minister of the Environment and Parliamentary Vice-Minister of the Environment who are not in charge of nuclear disaster management are also appointed as needed.

4

[Reference] Crisis Management System in the Nuclear Emergency Situation

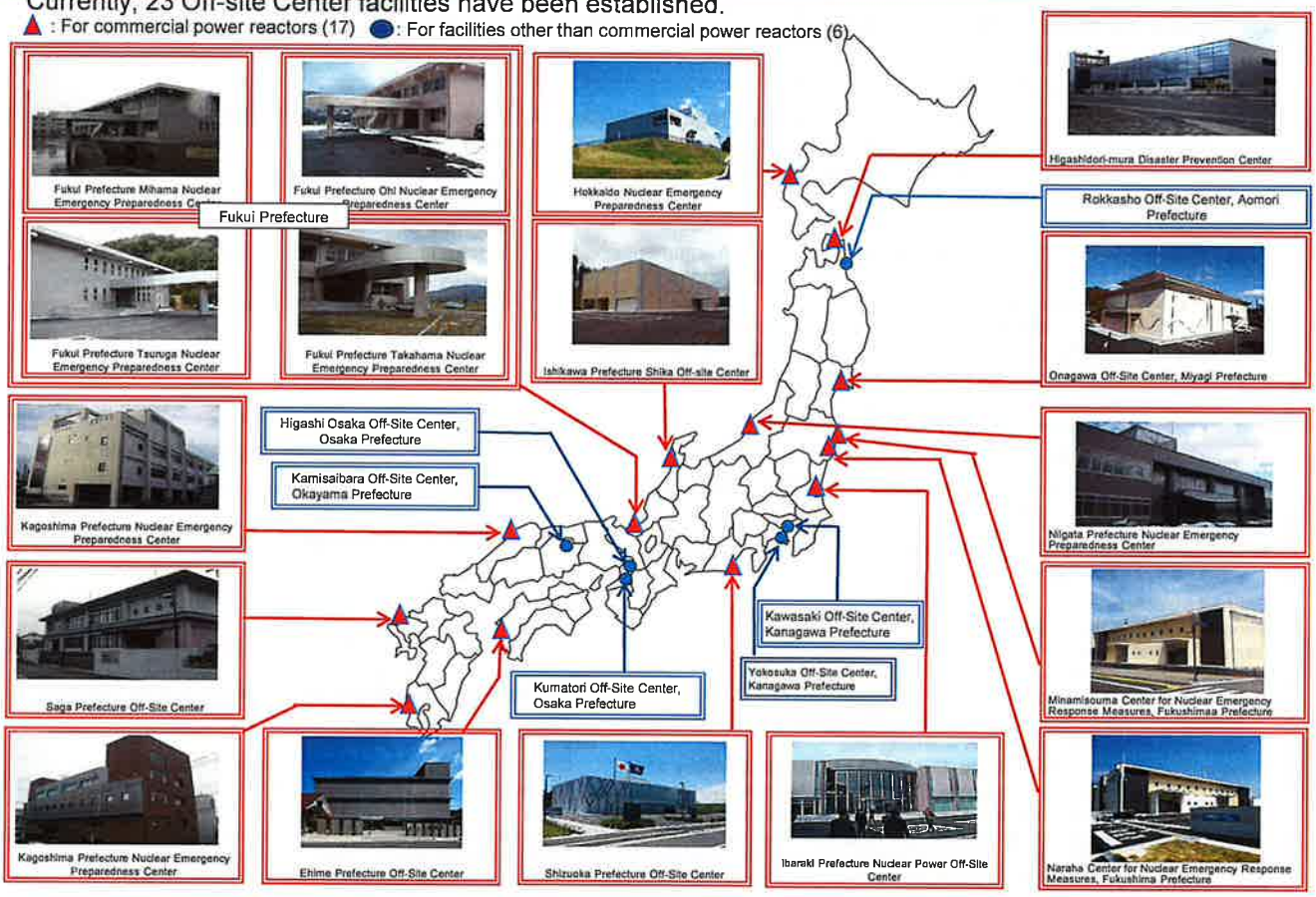


5

[Reference] Off-site Centers Around Japan

Currently, 23 Off-site Center facilities have been established.

▲ : For commercial power reactors (17) ● : For facilities other than commercial power reactors (6)



Formulation of Local Disaster Management and Evacuation Plans and Their Support Systems

Nation

National Disaster Management Council

Basic Disaster Management Plan

Provision of matters that should be conducted by the county, municipality and electric power companies

* Basic Act on Disaster Management

Nuclear Regulation Authority

Guide for Emergency Preparedness and Response

Provision of specialized and technical matters related to Nuclear Disaster Risk Management

* Act on Special Measures Concerning Nuclear Emergency Preparedness

Prefectures and municipalities

prefectural Disaster Management Councils and Municipal Disaster Management Councils

Local Disaster Management Plans and Evacuation Plans

Municipalities that are familiar with local conditions prepare based on Guide for Emergency Preparedness and Response and Basic Disaster Management Plan.

* Basic Act on Disaster Management, Act on Special Measures Concerning Nuclear Emergency Preparedness

Regional Nuclear Disaster Management Council

- Established by the Cabinet Office for each of the 13 regions where nuclear power plants are located
- Participation of relevant national ministries including the Cabinet Office and NRA, as well as relevant local governments that formulate plans
- Compile "Emergency Response" for relevant areas, including evacuation plans for each municipality, and confirm that they are specific and reasonable in light of Guide for Emergency Preparedness and Response etc.
- "Basic Disaster Management Plan based on the Basic Act on Disaster Management

Report and Approval

Nuclear Emergency Council

*Atomic Energy Basic Act

- Consists of all ministers and the Chairman of the NRA (Chairman: Prime Minister)
- The government approves that the "Emergency response" including local evacuation plans is specific and reasonable in light of Guide for Emergency Preparedness and Response etc.

Support

Support

Secretariat

The Cabinet Office (Nuclear Disaster Management Bureau)

Support for municipalities conducted by the government

Financial support for protective equipment and materials

Specifics on the government support for municipalities

- The government is involved in the detail planning process from the beginning, takes initiative and fully supports local municipalities by solving local issues together such as securing evacuation sites, the means and routes, including consideration for persons requiring special care
- Materials required in emergencies will be provided through national grants etc.
- Conduct support on a national level, including requests for cooperation from relevant private organizations
- Continue to check and revise previously formulated plans, and continue to make improvements and enhancements based on the results from trainings, etc.

[Reference] Nuclear Energy Disaster Prevention Drill (Drill Records up to the Last Fiscal Year)

Conducted almost every year since the Act on Special Measures Concerning Nuclear Emergency Preparedness came into effect (December 1999)

After the Fukushima nuclear plant accident

Fiscal year	Implementing prefectures	Electric power companies and power plants	Status of "emergency response" case compilation at the time of drill
2022	Fukui, Shiga, Gifu	Mihama Power Station, Kansai Electric Power Co., Inc.	○
2021	Miyagi	Onagawa Nuclear Power Station, Tohoku Electric Power Co, Inc.	○
2019	Shimane, Tottori	Shimane Nuclear Power Station, Chugoku Electric Power Co., Inc.	×
2018	Fukui, Kyoto, Shiga	Ohi Power Station and Takahama Power Station, Kansai Electric Power Co., Inc.	○
2017	Saga, Nagasaki, Fukuoka	Genkai Nuclear Power Station, Kyushu Electric Power Co., Inc.	○
2016	Hokkaido	Tomari Power Station, Hokkaido Electric Power Co, Inc.	○
2015	Ehime	Ikata Power Station, Shikoku Electric Co., Inc.	○
2014	Ishikawa, Toyama	Shika Nuclear Power Station, Hokuriku Electric Power Company	×
2013	Kagoshima	Sendai Nuclear Power Station, Kyushu Electric Power Co., Inc.	×
2010	Shizuoka	Hamaoka Nuclear Power Station, Chubu Electric Power Co.	
2009	Ibaraki	Tokai Dai-ni Power Station, the Japan Atomic Power Company	
2008	Fukushima	Fukushima Daiichi Nuclear Power Station, Tokyo Electric Power Company Holdings, Inc.	
2007	Aomori	Reprocessing plant: Japan Nuclear Fuel Limited	
2006	Ehime	Ikata Power Station, Shikoku Electric Co., Inc.	
2005	Niigata	Kashiwazaki-Kariwa Nuclear Power Station, Tokyo Electric Power Company Holdings, Inc.	
2003	Saga, Nagasaki	Genkai Nuclear Power Station, Kyushu Electric Power Co., Inc.	
2002	Fukui	Ohi Power Station, Kansai Electric Power Co., Inc.	
2001	Hokkaido	Tomari Power Station, Hokkaido Electric Power Co, Inc.	
2000	Shimane	Shimane Nuclear Power Station, Chugoku Electric Power Co.	

* In 2004, the drill was scheduled to take place in Niigata prefecture (Kashiwazaki Kariwa Nuclear Power Plant, TEPCO), but was cancelled due to the Central Niigata Prefecture Earthquake happening.
* In 2020, the drill was scheduled to take place in Miyagi prefecture (Onagawa Nuclear Power Plant, Tohoku Electric Power), but was cancelled considering the situation related to the spread of the novel coronavirus, including the declaration of a state of emergency related to the novel coronavirus infection and the status of infection in the metropolitan region.

Changes in the content of the Nuclear Energy Disaster Prevention Drill before and after the nuclear accident

1) Scenario
- Before the nuclear power plant accident, there was no assumed response to the release of radioactive materials or the occurrence of a complex disaster combined with a natural disaster.
- After the accident, the above scenario (response to the release of radioactive materials and complex disaster combined with natural disaster) has been incorporated.

2) Resident evacuation
- Before the nuclear accident, evacuation plans did not include such specific matters as "to where" or "by how."
- After the nuclear accident, it was decided to include those details in the evacuation plan, and the Nuclear Energy Disaster Prevention Drill was used as an opportunity to demonstrate the plan (the resident evacuation drills after the accident became more specific than before it).

References

[Reference] Priority Areas for Nuclear Emergency Preparedness Measures

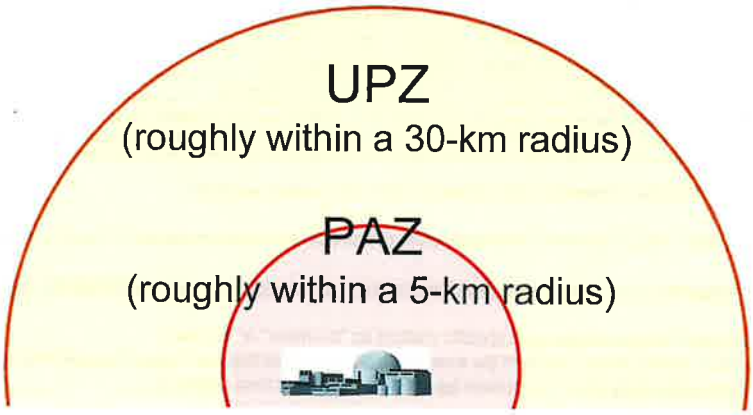
○ **PAZ: Precautionary Action Zone (area where preparations should be made to implement precautionary protective actions)**

Roughly within a 5-km radius of the nuclear facility (in the case of a power reactor)
Evacuation or other measures will be taken on a precautionary basis as early as during the stage before radioactive materials are released.

○ **UPZ: Urgent Protective Action Planning Zone (area where arrangements should be made to take urgent protective actions)**

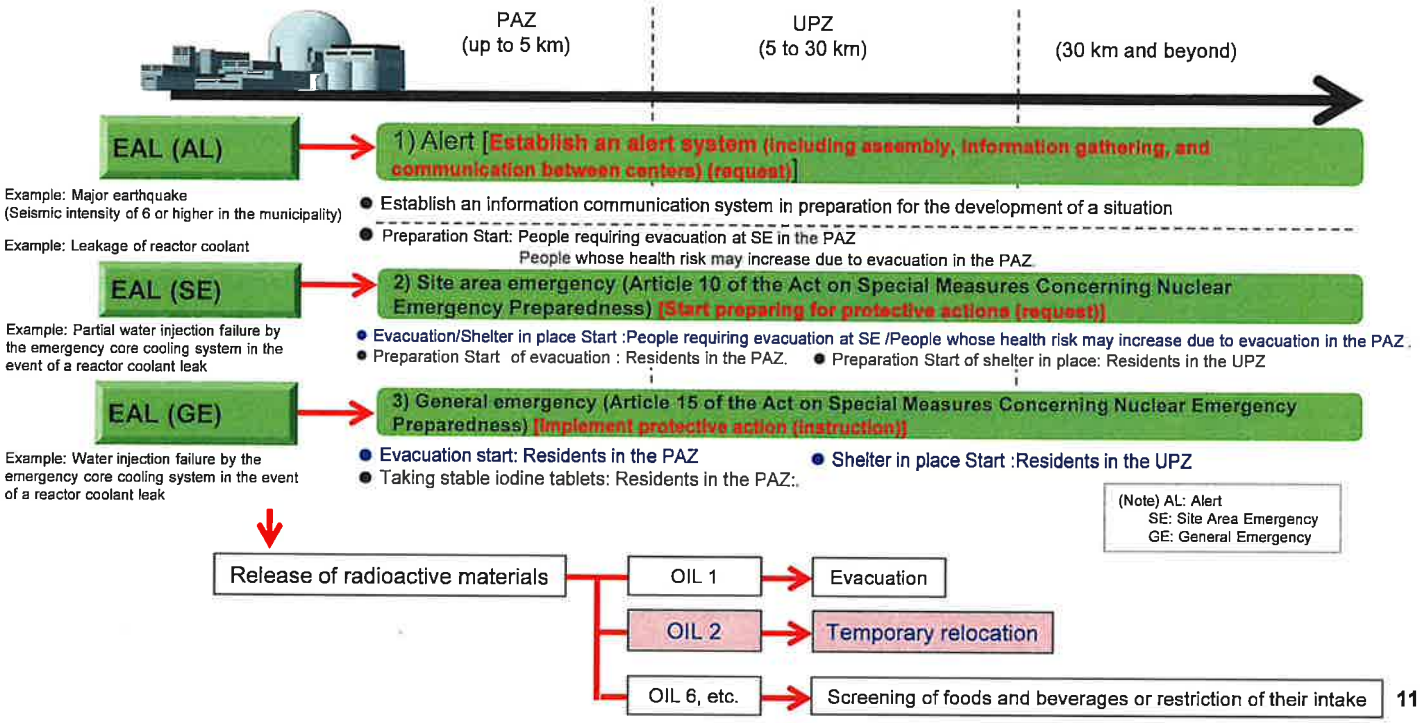
Area within an approximately 30-km radius outside PAZ (in the case of power reactors)

- In the event of a general emergency, residents should shelter in place during the stage before the release of radioactive materials.
- After the release of radioactive materials, the Nuclear Emergency Response Headquarters will identify areas where the air radiation dose rate exceeds a certain level based on the results of emergency monitoring, and temporarily relocate evacuees under the direction of the General Manager of the Headquarters (Prime Minister).



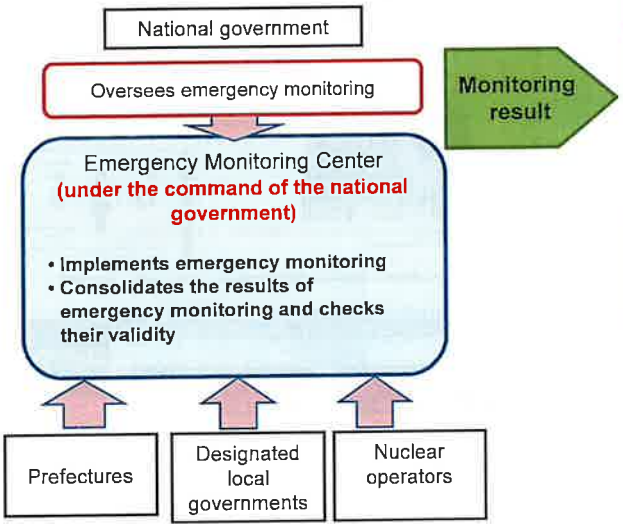
Phased Evacuation Based on the EAL and Protective Actions based on the OIL after the Release

○ Three emergency classification levels have been introduced based on the status of the nuclear facility. The EAL (Emergency Action Level) is established as the standard for determining the classification.
○ Evacuation and/or sheltering-in-place will be conducted before the release of radioactive materials according to the EAL.
○ Temporary relocation of residents in the UPZ will be conducted after the release of radioactive materials according to the OIL (Operational Intervention Level).



Concept of Protective Actions in the UPZ

- ○ In the event of a general emergency, residents in the UPZ should shelter in place in the stage before the release of radioactive materials.
- ○ After the release of radioactive materials, the Nuclear Emergency Response Headquarters will identify areas where the air radiation dose rate exceeds a certain level based on the results of emergency monitoring and, in the identified areas, will temporarily relocate evacuees under the direction of the General Manager of the Headquarters (Prime Minister).
- ○ For foods and beverages, the concentration standard will be set up by radionuclide, and intake restrictions will be applied.



Type	Initial standard value	Outline of protective actions
OIL 1	500 μSv/h (microsieverts per hour)	Identify the area within a few hours as the standard and conduct evacuation.
OIL 2	20 μSv/h (microsieverts per hour)	Identify the area within a day as the standard, restrict intake of local products, and conduct temporary relocation within about a week.
Food and beverage standards	0.5 μSv/h (microsieverts per hour)	Identify the area, in which radionuclide concentrations in food and beverages should be measured, within a few days.
OIL 6	The standard set by nuclide	Measure and analyze the radionuclide concentrations in foods and beverages within a week as the standard, and swiftly apply restriction of intake of those exceeding the standard.

Subsidy for Safety Measures under Emergency Situations Including Nuclear Power Plant Emergency

Estimated amount for FY2023
Special Account for Energy Measures
¥10 billion (¥9.5 billion)

Project background and description

○ **Background and need for the project**

Based on the NRA EPR Guide and other rules formulated by the Nuclear Regulation Authority in October 2012, we need to strengthen nuclear disaster preparedness measures for residents in the areas surrounding nuclear power generation facilities.

○ **Project details and implementation items**

Financial support is provided for measures taken by local governments(*), where nuclear facilities or other relevant facilities are located, for nuclear disaster management based on the following five major projects:

(*) For nuclear power plants, prefectures located generally within a 30-km radius

1) Emergency Communication Network Development Project

A project to maintain and manage an emergency communication network linking the local government in question to national government organizations as well as relevant municipalities

2) Disaster Prevention Equipment and Materials Development Project

A project related to developing or improving facilities that ensure the safety of residents under emergency situations or goods used to ensure the safety of people involved in disaster management activities, or to develop or improve facilities or goods used for nuclear emergency medicine or facilities or goods used for the security of nuclear facilities

3) Emergency Response Survey and Dissemination Project

A project related to research and dissemination of knowledge on ensuring the safety of residents in the event of an emergency

4) Emergency Response Base Facility Development Project

A project related to developing and maintaining core facilities for emergency response measures (Offsite Centers)

5) Emergency Evacuation Facilitation Project

A project related to facilitating emergency evacuation (based on the verification of the effectiveness of model demonstration projects such as measures to cope with narrow roads in evacuation routes during evacuation (such as local repair, including establishment of waiting zones for passing each other), safety measures (such as slope improvement), heavy-snowfall measures (such as snow-melting systems or arrangement of traffic controllers), or provision of information to evacuee residents (such as installation of guiding posts))

Project scheme

National government → (A fixed amount is granted) → Prefectures where the target facility is located

Specific outcome (example)

Enhancing and strengthening the nuclear emergency preparedness system

Cost for Commissioning Implementation of Nuclear Facility Disaster Prevention Measures

(Nuclear Emergency Preparedness Training Project, Nuclear Emergency Preparedness System Development Project)

Estimated amount for FY2023
Special Account for Energy Measures
¥460 million (¥460 million)

Project background and description

○ **Background and need for the project**

We urgently need to improve the response capabilities of response officers in the event of a nuclear disaster. It is necessary to provide systematic and effective training and drills on disaster prevention skills required for decision makers at the national and local levels, personnel who guide residents on site, and personnel who screen for contamination.
In addition, we need to accumulate the latest domestic and international trends and knowledge related to nuclear emergency preparedness, and conduct research and studies that contribute to appropriate protective actions.
Furthermore, we need to further promote the establishment of a nuclear emergency preparedness system, including contamination screening.

○ **Project description**

[Nuclear Emergency Preparedness Training Project and other projects]

1) Nuclear Emergency Preparedness Training and Drill Project

This project aims to enhance and reinforce various efforts including blind training for improvement of the response officers' response capability and desk training related to decision making and conduct training for relevant persons on emergency preparedness who are supposed to work outdoors in a Nuclear Disaster Countermeasure Priority Area in the event of a nuclear disaster, thereby promoting systematic fostering of the nuclear disaster response officers.

2) Nuclear Disaster Management Research Project

The aim is to conduct surveys on the latest domestic and international trends in nuclear disaster management, as well as research and studies related to radiation protection measures. In addition, the project intends to incorporate the results of these studies into policies and measures and disseminate them domestically and internationally in order to further strengthen the nuclear emergency preparedness system.

3) Project for Responding to a Prolonged Nuclear Disaster

Based on the lessons learned from the accident at the Fukushima Daiichi Nuclear Power Plant, the intention is to examine the content of training, provide operational assistance, and develop manuals for the personnel of the "Team to Support the Daily Lives of Affected People by Nuclear Disaster," which will be responsible for responding to a prolonged nuclear disaster.

4) Project for Promoting Residents' Understanding Related to Nuclear Disaster Response

The aim is to verify measures to promote understanding of the actions to be taken in the event of a nuclear disaster, so that all residents understand what they should do.

[Project to Establish a Nuclear Emergency Preparedness System]

The aim is to enhance and improve the efficiency of the nuclear emergency preparedness system by reviewing the standardization and mutual exchange of materials and equipment for contamination screening to be conducted in the event of a nuclear disaster, by supporting the establishment of a local government implementation system, and by examining operational methods for thyroid radiation dose monitoring.

Schematic diagram of a redevelopment project

[Nuclear Emergency Preparedness Training Project and other projects]

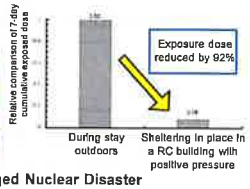
1) Nuclear Emergency Preparedness Training and Drill Project

Photo showing a drill session

Photo showing a training session

2) Nuclear Disaster Management Research Project

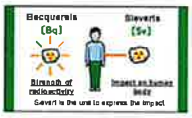
Example: Collect information on international standards at IAEA and other organizations
- Research and study on digital introduction or utilization
- Research and study on the effectiveness of sheltering-in-place



3) Project for Responding to a Prolonged Nuclear Disaster

Photo showing desk training by the Team to Support the Daily Lives of People Affected by a Nuclear Disaster

4) Project for Promoting Residents' Understanding Related to Nuclear Disaster Response



[Project to Establish a Nuclear Emergency Preparedness System]

Handbook for Deployment and Use of Materials and Equipment for Contamination Screening (prepared in 2022)

Review of standardization or mutual exchange of materials and equipment

Support for establishing the local government's implementation system

Project scheme

National government → Commissions → Private organizations, etc.

Enhancing and Strengthening Disaster Management Measures in Areas Surrounding Nuclear Power Plants

(Subsidy for Nuclear Disaster Measure Projects)

FY2022 second supplementary budget: ¥4.3 billion
(Initial budget for FY2022: ¥ xxx (general account)

Project background and description

○ **Background and need for the project**

Based on the serious lessons learned from the accident at TEPCO's Fukushima Daiichi Nuclear Power Plant, in which people requiring special care died because they were forced to evacuate without adequate preparation, we need to develop facilities for the safe temporary sheltering-in-place of people requiring special care while reducing the risk of exposure to radiation until evacuation preparations are in place.

In addition, we urgently need to develop nuclear emergency hub hospitals and other facilities based on the NRA EPR Guide in securing the nuclear disaster medical care system or to develop Offsite Centers (OFC), hub facilities for the emergency response necessary in the event of a nuclear disaster.

○ **Project details and implementation items**

[Project for Radiation Protection Measures]

- Radiation protection measures to be taken at facilities for the sheltering-in-place of people requiring special care and local disaster control centers within an approximately 10-km radius
- Radiation protection measures for indoor evacuation shelters in the UPZ that may be isolated

[Nuclear Emergency Medical Care Facility Development Project]

- Develop facilities and equipment necessary for activities as a nuclear disaster hub hospital

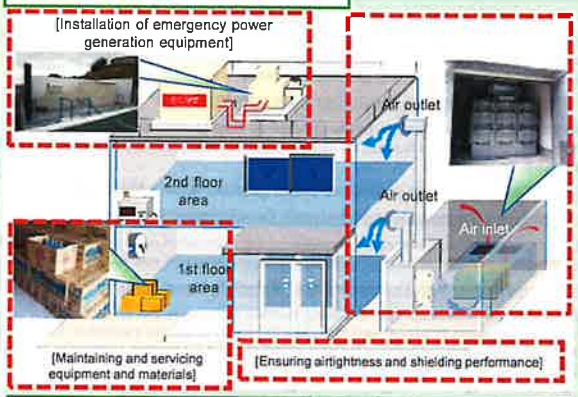
[Emergency Response Base Facility Development Project (OFC Development Project)]

- Development associated with compliance with the guidelines on requirements such as equipment related to OFC

Project scheme

National government → Flat-rate subsidy → Prefectures where the target facility is located

Radiation protection measures



Developing nuclear emergency medical care facilities

[Developing facilities for decontamination]
[Maintaining and servicing materials and equipment]

Development of OFC

Core facility for emergency response measures
(OFC: Offsite Center)

[Maintaining positive pressure in a facility]
[Enhancing performance of emergency power generators]
[Installing switchboards for power supply vehicles]
[Renewing other facilities]

内閣府
Cabinet Office, Government of Japan

October , 2023
Cabinet Office (Nuclear Disaster Management Bureau)
Tentative translation
Confidential only for participants

Overview of Nuclear Disaster Prevention Drill 2023

October 27th 2023

Cabinet Office (Nuclear Disaster Management Bureau)
Director for International Co-operation
Terumasa NIIOKA

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Cabinet Office, Government of Japan

1. Evacuation Plan in Kashiwazaki-Kariwa Region

2. Overview of Nuclear Disaster Prevention Drill 2023

3. Itinerary information
   3-1 1st Day
   3-2 2nd Day
   3-3 3rd Day
   3-4 4th Day

1. Evacuation Plan in Kashiwazaki-Kariwa Region

1-1 Planning Zone in the Kashiwazaki-Kariwa

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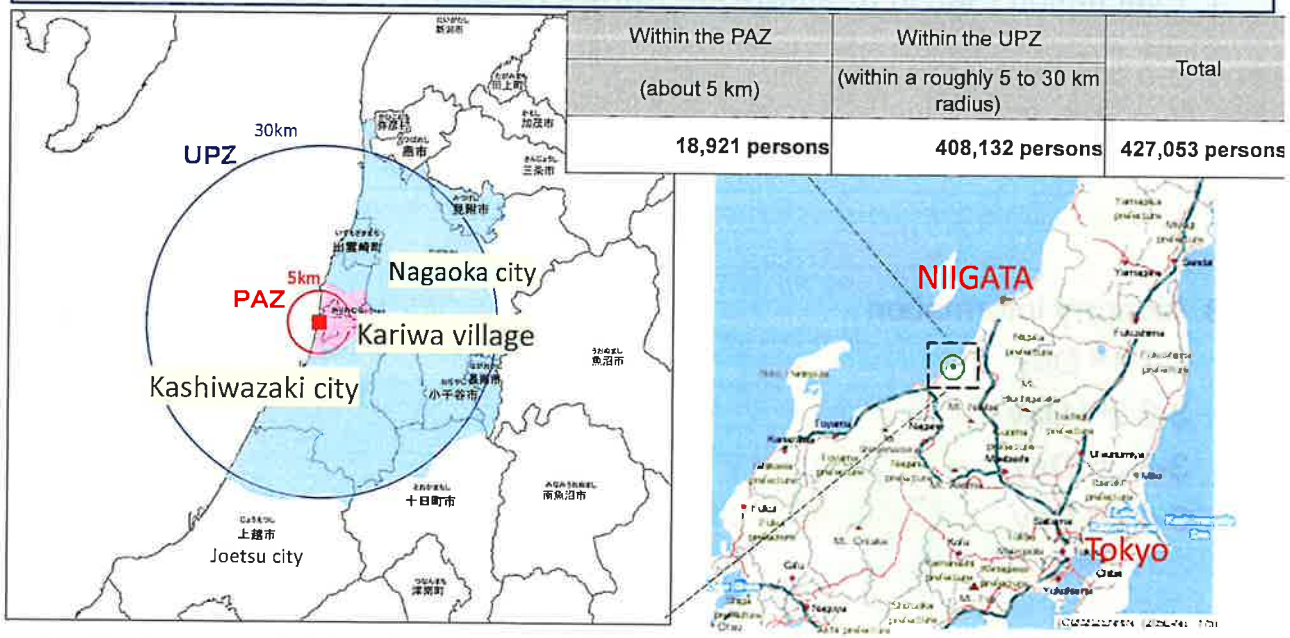
- The population inside the PAZ, which includes 1 city and 1 village, is 18,921 persons (Kashiwazaki city and Kariwa village).
- The population inside the UPZ, including 7 cities and 1 town, is 408,132. (Kashiwazaki city, Nagaoka city, Ojiya city, Tokamachi city, Mitsuke city, Tsubame city, Joetsu city, and Izumozaki town)
- The population of the Emergency Planning Zone (within a roughly 30 km radius) of the Kashiwazaki-Kariwa Region is 427,053 (as of April 1, 2022).

Within the PAZ (about 5 km)	Within the UPZ (within a roughly 5 to 30 km radius)	Total
18,921 persons	408,132 persons	427,053 persons

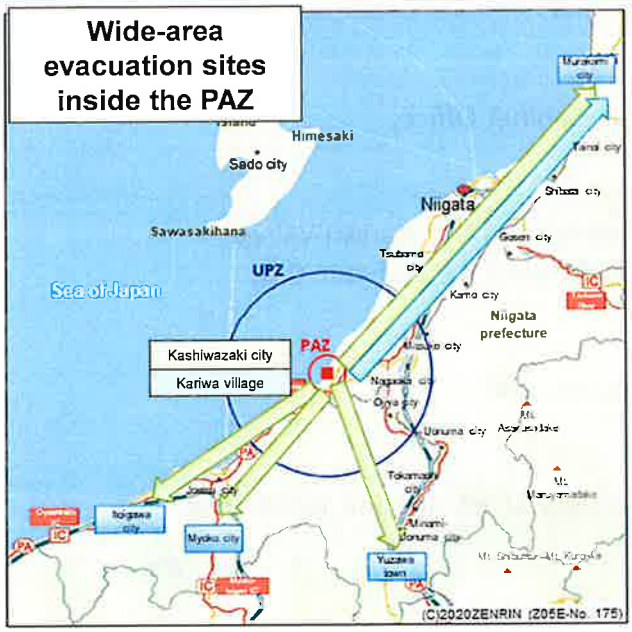


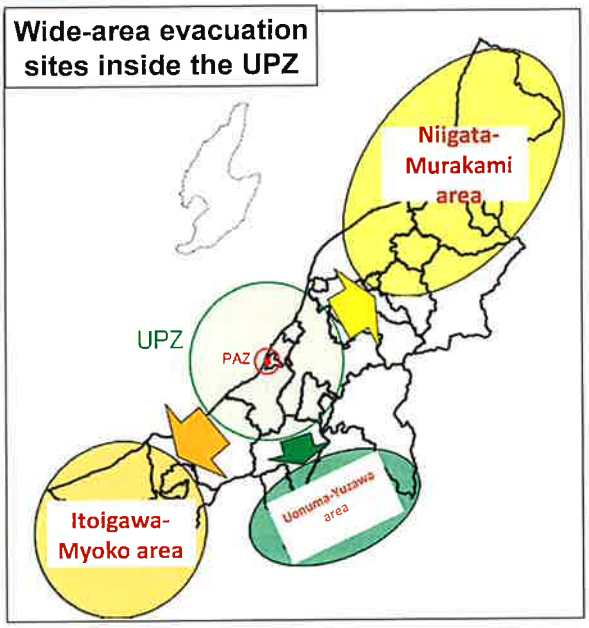
Source: Created by the Cabinet Office (Nuclear Disaster Management) based on GSI Maps of the Geospatial Information Authority of Japan website

1-2. Wide-Area Evacuation Sites for Residents of Each Municipality inside the PAZ and UPZ

内閣府 Cabinet Office, Government of Japan

- Evacuation sites for residents of each municipality inside the PAZ and UPZ are secured in Niigata prefecture.
- Evacuation routes are determined for each district in advance. If any evacuation routes become impassable as a result of a natural disaster or the like, then an alternative route will be taken for evacuation.





内閣府 Cabinet Office, Government of Japan

2. Overview of Nuclear Disaster Prevention Drill 2023

1. Implementation date
October 27th (Fri), 28th (Sat), and 29th (Sun), 2023

2. Subjected Power Plant
Kashiwazaki-Kariwa Nuclear Power Station, Tokyo Electric Power Holdings, Inc.

3. Participating organizations
Government agencies: Cabinet Secretariat, Cabinet Office, Nuclear Regulation Authority, etc.

Local governments: Niigata Prefecture, Kashiwazaki City, Kariwa Village, Nagaoka City, Ojiya City, Tokamachi City, Mitsuke City, Tsubame City, Joetsu City, and Izumozaki Town

Operators: Tokyo Electric Power Holdings, Inc., etc.

Related organizations:
National Institutes for Quantum and Radiological Science and Technology, Japan Atomic Energy Agency, etc.

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4. Implementation locations

Central（Tokyo）：Office of Prime minister, Emergency Response Center (ERC) of the Nuclear Regulation Authority, Cabinet Office, etc.

Local（Kashiwazaki-Kariwa Region）: Kashiwazaki-Kariwa Off-Site Center (Niigata Prefecture Nuclear Emergency Preparedness Center), Niigata Prefectural Office, Kashiwazaki City Hall, Kariwa Village Office, Nagaoka City Hall, Ojiya City Hall, Tokamachi City Hall, Mitsuke City Hall, Tsubame City Hall, Joetsu City Hall and Izumozaki Town Office

Kashiwazaki-Kariwa Nuclear Power Station of Tokyo Electric Power Holdings,Inc., and other related organizations

5. Overview of training

(1) Objectives:

Confirm the effectiveness of disaster prevention systems for national and local governments as well as nuclear power operators and cooperation systems for related organizations.

Confirm the central and local systems and procedures specified in manuals for nuclear emergencies.

Verify local disaster prevention plans and consider emergency response measures.

Extract lessons learned from training results and consider emergency response measures.

Promote the skill development of personnel involved in nuclear disaster countermeasures and understanding among residents regarding nuclear disaster prevention.

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5. Overview of training

(2) Assumed Accident Scenario:

An earthquake occurs with its epicenter off the coast of Itoigawa in Joetsu City in Niigata Prefecture. As a result of this earthquake, Unit 7 of the Kashiwazaki-Kariwa Nuclear Power Station stops operating due to an emergency shutdown. Furthermore, a series of equipment failures leads to a loss of reactor cooling functions resulting in Site Area Emergency and General Emergency.

(3) Characteristics:

・A headquarters operation training will be conducted to examine appropriate protective measures including blind training, assuming the largest-scale earthquake damage in the Kashiwazaki-Kariwa area among several earthquakes assumed in Niigata Prefecture's regional disaster prevention plan.

有不預警 Blind Traing

・A resident evacuation training will be conducted utilizing all means such as helicopters and ships under the cooperation of actual operational organizations such as the Self-Defense Forces.

疏散

・The smooth acceptance of evacuees using the Niigata Prefecture Disaster Prevention DX App and aircraft monitoring using unmanned aerial vehicles will be implemented.

監測

・A tabletop training will be conducted to examine issues during complex disasters with heavy snow damage.

5. Overview of training
(4) Number of participating organizations and others (As of October 17th, 2023)

Number of participating organizations:
119 organizations : Approximately 3,990 people

[Breakdown]
Government agencies: 26 organizations, 432 people
Local administrative agencies: 15 organizations, 231 people Local public entities: 40 organizations, 1,088 people
Public institutions: 4 organizations, 36 people
Local public institutions: 6 organizations, 9 people
Nuclear power operators: 14 organizations, 668 people
Other related organizations: 14 organizations, 90 people
Residents (evacuees and temporary evacuees participating): 1,433 people

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3. Itinerary information

Day 1 Friday, October 27

16:20-16:40 Radiation protection facilities (Takahama Community Center)

18:00-20:00 Reception @ Restaurant Kappo Kamoshita

Day 1-1 Radiation protection facilities (Takahama Community Center)

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Takahama Community Center

Observation of airlocks, positive pressure equipment, etc.

氣閘艙

◎ Facility Overview

This is a facility where residents can practice the resident-centered approach to community development by taking advantage of local characteristics, and it is also used for multi-purpose gatherings, learning activities, and athletic and recreational activities by local residents.

In the event of an emergency, the facility is used as a temporary gathering place for residents within a 5 km radius of the power plant, and because it functions as a radiation protection facility, it also serves as a shelter-in-place facility for people requiring special care. (It can accommodate 65 people.)

Day1-2 Responses Related to Residents Requiring Assistance in Evacuation Whose Health Risk Increases as a Result of Evacuation

内閣府 Cabinet Office, Government of Japan

- Provide residents whose health risk increases as a result of evacuation with accommodations at nearby radiation protection facilities equipped with radiation protection function (17 in total) until preparations for safe evacuation are completed.
- These 17 facilities are capable of accommodating a maximum of about 2,212 people including indoor evacuees and residents requiring assistance evacuating from homes in the PAZ.
- These 17 facilities also keep a reserve of about 3 to 7 days of foodstuffs and daily commodities for indoor evacuees.
- In addition, foods and other supplies will be supplied by Tokyo Electric Company Holdings, Inc. in case of any shortage of foods and other supplies during sheltering-in-place.

Kashiwazaki Nuclear Power Publicity Center (Maximum capacity: 144 people)

Facility for the handicapped Prefectural Hamanasu School for Special Needs Education (Maximum capacity: 168 people)

Facility for the handicapped Sazanami Gakuen (Maximum capacity: 70 people)

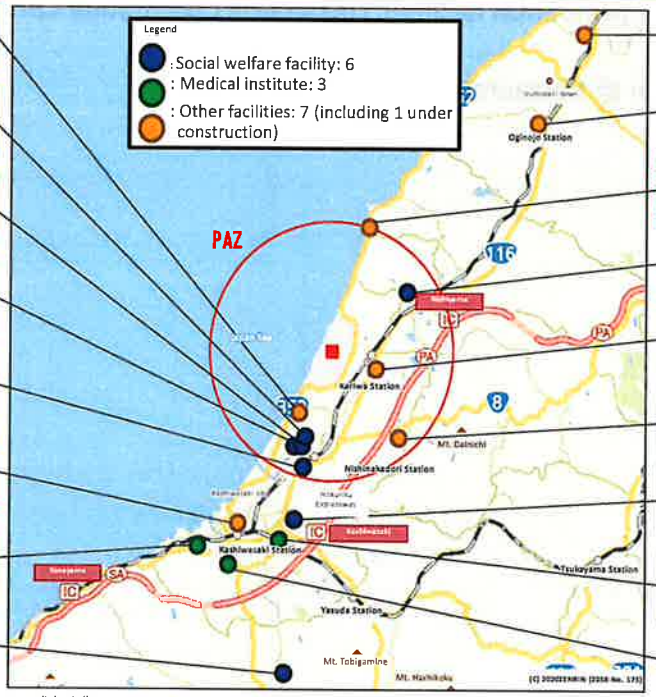
Facility for the handicapped Matsukaze-no-sato (Maximum capacity: 90 people)

Special nursing home for the elderly Nagomi-so (Maximum capacity: 120 people)

Kashiwazaki City Hall (Maximum capacity: 100 people (HQ staff))

Niigata Hospital (Maximum capacity: 460 people)

Paid nursing home Heartful Care Kashiwazaki (Maximum capacity: 75 people)



Nishigoshi Area Farm Village Environment Improvement Center (Maximum capacity: 111 people)

Yatsude Area Farm Village Environment Improvement Center (Maximum capacity: 184 people)

Takahama Community Center Maximum capacity: 65 people)

Special nursing home for the elderly Nishikari-no-sato (Maximum capacity: 110 people)

Kariwa Village Hall (Maximum capacity: 50 people)

Nakadori Community Center (completion scheduled for FY2023 or thereafter) (Maximum capacity: 95 people)

Paid nursing home Rosy Court Kashiwazaki (Maximum capacity: 80 people)

Kashiwazaki General Hospital and Medical Center (Maximum capacity: 150 people)

Seki Hospital (Maximum capacity: 140 people)

* Some shelter-in-place facilities will also be used if access to a community is cut off.

Day1-3 Main characteristics of sheltering facilities with radiological protections

内閣府 Cabinet Office, Government of Japan

Although radiation protection measures concerning sheltering in place for residents requiring assistance and residents as well as emergency off-site center etc. differs depending upon the form, scale and other features of a facility, the principal points of radiation protection measures are as follows.

Emergency generating equipment

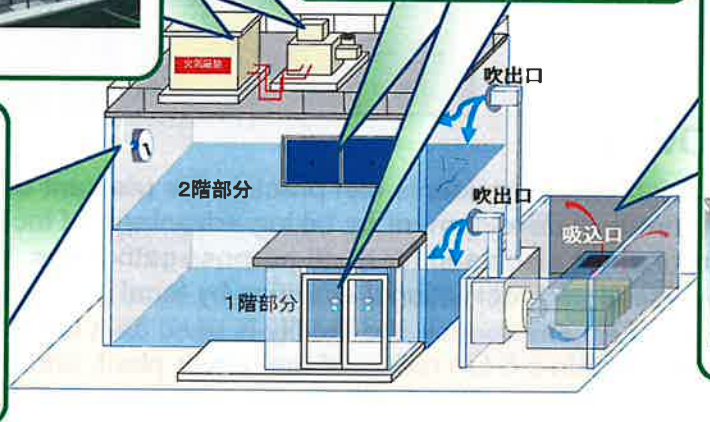
Emergency generating equipment which actuates positive pressurization equipment even in case of loss of commercial electric source.

Ensuring airtight

Double-entry doors for entrances (as measures against cracks etc.) and strengthening of window frames.

Differential pressure gauge

Grasp the operation status of positive pressurization equipment.



Pressurization equipment

- Removal of dust etc. through pretreatment filter.
- Removal of radioactive cesium, radioactive iodine etc. through main filter.
- Supply of clean air within the facility after said process.

Day 2 Saturday, October 28

8:30	8:50	Evacuation by Japan Coast Guard patrol boat (Kashiwazaki Port)
9:00	9:30	Evacuation by Maritime Self-Defense Force vessels (Kashiwazaki Central Beach)
10:00	10:55	Response situation by the Local Nuclear Emergency Response Headquarters (Niigata Prefecture Nuclear Emergency Preparedness Center)
11:20	11:50	Evacuation by Ground Self-Defense Force rescue helicopter (Gendo Sports Park)
13:05	13:30	Radiation monitoring by drone (Kashiwazaki Central Beach)
14:00	16:00	On site accident restoration training (Kashiwazaki Kariwa Nuclear Power Station)

Day2-1 Evacuation by Japan Coast Guard patrol boat and Maritime Self Defense Force vessels.

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Cabinet Office, Government of Japan

Training assumptions

A strong earthquake with a seismic intensity of 6+ occurred in Kashiwazaki City, Kariwa Village, and other areas. The atomic reactor at the only operating unit, Unit 7 of the Kashiwazaki-Kariwa Nuclear Power Plant, automatically stopped. Subsequently, part of the core cooling function was lost, resulting in a "Site Area emergency," and the loss of the core cooling function led to a "General emergency." Evacuation orders were issued for the PAZ area, and evacuation began. Although evacuation is usually done by private car, traffic congestion on evacuation routes has occurred, so evacuation is being carried out by ship and bus to the evacuation destination.

Contents of Training

・Wide-area evacuation drills by ship

A wide-area evacuation drill by the Japan Coast Guard patrol vessel and bus is conducted under the assumption that it is impossible to evacuate by private car due to traffic congestion on the evacuation route

Source: Japan Coast Guard website (Images are for reference only)

・Wide-area evacuation drills by air-cushion craft

A wide-area evacuation drill by the Japan Maritime Self-Defense Force's air-cushion craft (LCAC) , transport ship and bus is conducted under the assumption that it is impossible to evacuate by private car due to traffic congestion on the evacuation route

Source: Maritime Self-Defense Force website(Images are for reference only)

3

Niigata Prefecture Nuclear Emergency Preparedness Center

◎ Facility Overview

A base facility for combined actions of the national government, local governments, and related organizations to respond to nuclear disaster situations.
[The Niigata Prefectural Radiation Monitoring Center] and the [Kashiwazaki-Kariwa NRA Regional Office] have been established in this facility. Radiation protection work was completed in 2014.

監測中心.

NRA Local.

Training assumptions

[GE]

General emergency situation occurred, and evacuation orders were issued for the areas within the PAZ, and evacuations began. In the evacuation, it is assumed that people will evacuate by private car as a rule, but in cases where they cannot evacuate by private car, they will evacuate by bus. In addition, helicopter and bus evacuations are carried out in anticipation of traffic congestion on the evacuation route.

無法自行Eva→

Contents of Training

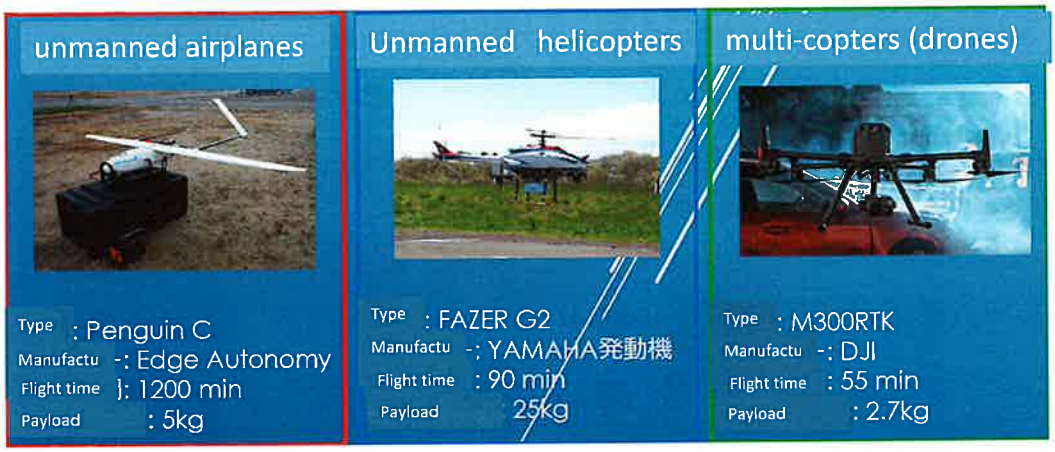
Helicopter evacuation training

能? How long?

Assuming that evacuation by private car is not possible due to traffic congestion on the evacuation route, a wide-area evacuation training will be conducted using helicopters and buses from the Ground Self-Defense Force.

Source: Grand Self-Defense Force website (Images are for reference only)

Radiation monitoring by drone



After the Fukushima Daiichi nuclear disaster, radioactive cesium contaminated a wide area. To conduct a wide-area survey of the contamination and observe its progress, the Japan Atomic Energy Agency (JAEA) developed and established a method of unmanned aerial radiation monitoring. The method of environmental monitoring that has been carried out in Fukushima Prefecture was developed further, and a real-time communication function of radiation measurement data was added as a system to respond to nuclear disasters. This system was introduced for the first time in this comprehensive disaster prevention training.

There are various types of unmanned aerial vehicles, such as unmanned airplanes, unmanned helicopters, and multi-copters (drones), which differ in altitude, flight time, and can be used depending on the measurement location and purpose.

In addition, the use of unmanned aerial vehicles has significant benefits such as being able to monitor the Plume release and its direction by monitoring near the release site with unmanned aerial vehicles even if it is impossible to predict how much will be released immediately after an accident.

(Reference) Radiation monitoring

Radiation monitoring by monitoring posts results around nuclear power plants are always available through the Radiation Monitoring Information Sharing and Publication System on the Nuclear Regulation Authority's website. The Nuclear Regulation Authority (NRA) had published environmental radiation monitoring information in Japan measured by the national and local governments through a "Radiation Dose Measurement Map" in real time. In case of a disaster (defined in the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness), NRA shares the result of emergency radiological monitoring through the "Emergency Radiation Monitoring Information Sharing / Publication System". These systems have been integrated as the "Radiation Monitoring Information Sharing / Publication System", which publishes both of the environmental radiation monitoring information and the result of emergency radiological monitoring

Source: Radiation Monitoring Information Sharing and Publication System on the Nuclear Regulation Authority's website.

◎ Overview of Kashiwazaki-Kariwa Nuclear Power Plant, Tokyo Electric Company Holdings, Inc.

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7
Reactor type	Boiling-water reactor (BWR)					Advanced boiling water reactor (ABWR)	
Electrical output	1.1 million kW	1.1 million kW	1.1 million kW	1.1 million kW	1.1 million kW	1,356,000 kW	1,356,000 kW
Operation start (Date)	Sep. 1985	Sep. 1990	Aug. 1993	Aug. 1994	Apr. 1990	Nov. 1996	Jul. 1997
Status of operation	Shut-down	Shut-down	Shut-down	Shut-down	Shut-down	Shut-down	Shut-down

内閣府 Cabinet Office, Government of Japan

Day3 Sunday, October 29 OIL

08:30-09:00 Temporary meeting place (Takada Community Center) 集結點 (路手先集合) 暫時會面點.

10:00-10:40 Evacuee Screening as Contamination Management 疏散效& 除污
(Naoetsu Port South Pier Green Park)

11:00-11:25 Operation of Place via evacuation: evacuation route and shelter 安置.
(Utopia Kubiki Hope Center)

11:45-12:15 Evacuation center (Sanwa Ward Health Center) 收容所.

Training assumptions

内閣府 Cabinet Office, Government of Japan

Evacuation training for residents of the Urgent Protective Zone (UPZ) in the event of a General Emergency (after radioactive material release)

Due to the General emergency, indoor evacuation(Sheltering) is implemented in all districts within the UPZ. Subsequently, the core was damaged, and radioactive material was released. The situation was such that there was an increase in space radiation dose requiring temporary relocation in the Takada area, and temporary relocation instructions were issued. In terms of evacuation, it is generally done by private car. However, those who cannot evacuate by private car should gather at a bus evacuation assembly point and evacuate by bus arranged by the prefecture

Contents of Training

Wide-area evacuation training by bus
This is a temporary relocation training by bus to the evacuation destination for those who do not have a private car or cannot evacuate by private car

Destination (training venue)

Screening point: Naoetsu Port Minami Futo Ryokuchi Park

Place via evacuation: Utopia Kubiki Kiboukan

Evacuation center: Miwa Health Center

内閣府 Cabinet Office, Government of Japan

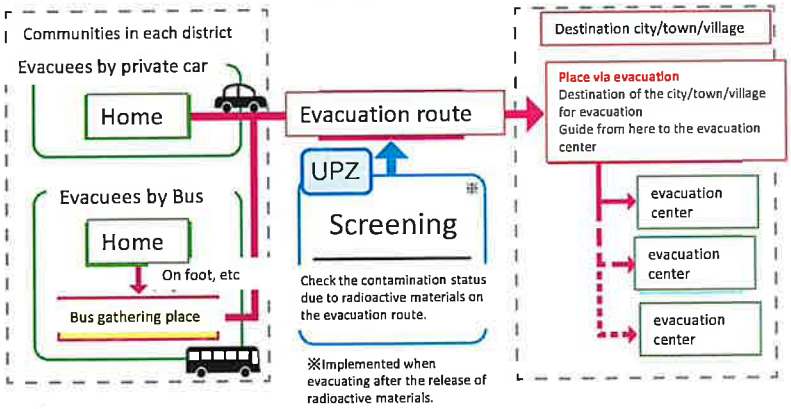
Ex : Evacuation Implementation by Instruction from the Kashiwazaki City

Flow of Evacuation

1. In principle, evacuate by private car.
・Speak to your neighbors and try to evacuate together as much as possible.
・Be careful of traffic accidents and follow the guidance instructions.
・Set the car air conditioner to internal circulation.

2. If you cannot evacuate by private car:
Speak to your neighbors.
Go to the designated bus evacuation meeting place.

3. If you need support for evacuation:
Evacuate by welfare vehicles if you need a wheelchair or stretcher.
We will arrange welfare vehicles at your home if necessary.



The place to aim for during evacuation is Place via evacuation

Screening (UPZ)
•In the case of evacuation or temporary relocation of UPZ, screening and decontamination are performed before you reach a place via evacuation.
•Screening is the process of measuring whether radioactive substances are attached to the body surface or vehicle.
•If the test results exceed the standard value, a simple decontamination is performed, and the test is conducted again.
•The screening point is located on the evacuation route around 30 km.
•Receive a "tested certificate" and head to a **place via evacuation**

内閣府
Cabinet Office, Government of Japan

Day 4 Monday, October 30

11:00-12:00 Tour of the Nuclear Regulation Authority ERC
14:00-17:00 Workshop with CAO, NRA and overseas visitors

内閣府
Cabinet Office, Government of Japan

Tour of the Nuclear Regulation Authority ERC

Workshop with CAO, NRA and overseas visitors @All Nippon Express Kasumigaseki Bldg.

Thank you for your attention!

Kashiwazaki Kariwa Nuclear Power Station

TEPCO

The OUTLINE OF KASHIWAZAKI-KARIWA NUCLEAR POWER STATION

■Introduction

Kashiwazaki-Kariwa nuclear power station is located near the center of Niigata prefecture. The site covers an area of about 4.2square-kilometers(**Tokyo Dome about 90Pieces**) including the land in kashiwazaki City and Kariwa village. The total of generating capacity by seven plants is 8,212 MW. It is the biggest in the world and is recorded as a *Guinness World Records*. Nuclear power generation contributes to a stable energy supply for resource-poor Japan and a reduction of greenhouse gas,CO2 emissions.

TEPCO is committed to maintaining stable operations of its power stations by placing top priority on safety.

■Equipment Overview

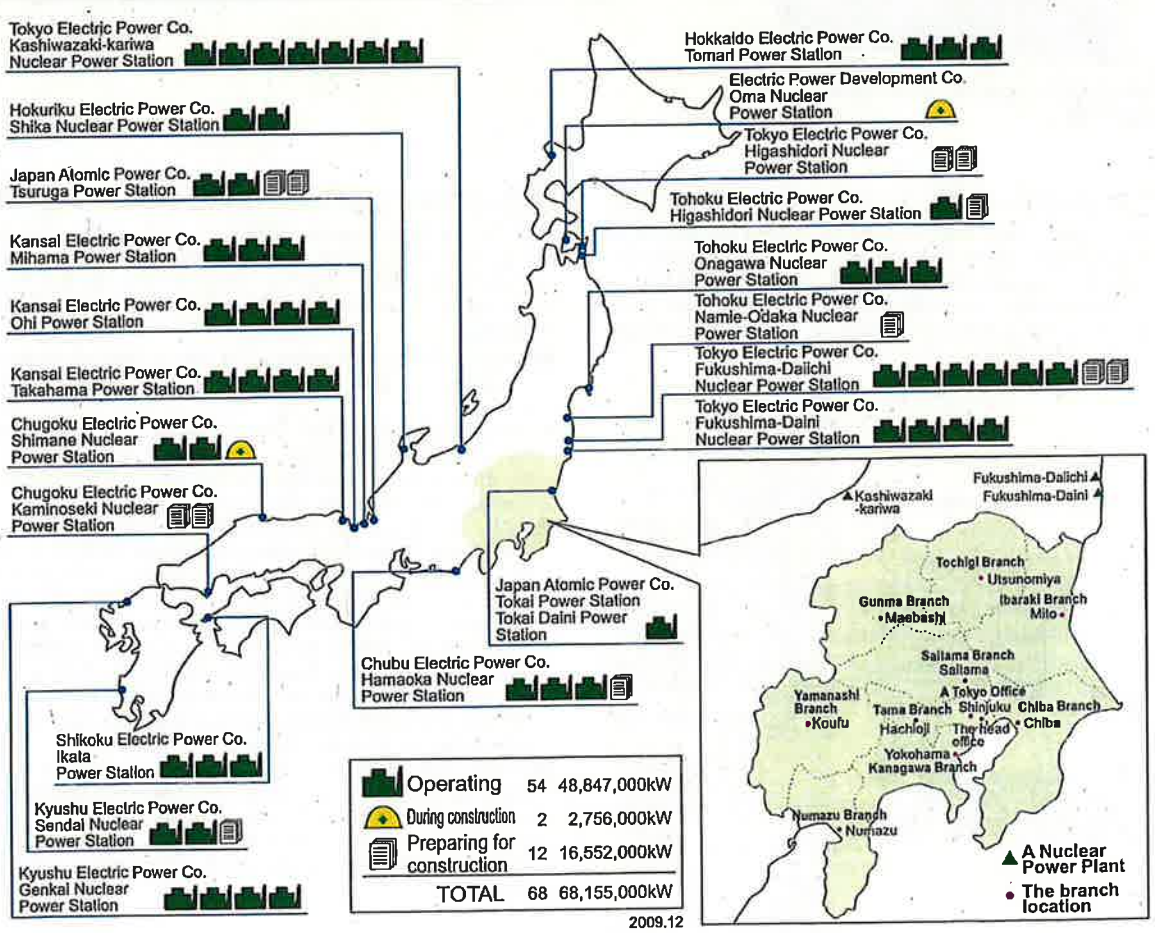
Site area	about 4.2square-kilometers (Kashiwazaki-area: about 3.1・Kariwa-area: about 1.1)						
Reactor type	BWR					ABWR	
Unit number	Unit.1	Unit.2	Unit.3	Unit.4	Unit.5	Unit.6	Unit.7
Output (10,000kw)	110	110	110	110	110	135.6	135.6
Start of construction	Dec.1978	Oct.1983	Jul. 1987	Feb.1988	Oct.1983	Sep.1991	Feb.1992
Start of commercial operation	Sep.1985	Sep.1990	Aug.1993	Aug.1994	Apr.1990	Nov.1996	Jul. 1997

■Power Station Whole View

Construction Progress

1969. 3	Kashiwazaki Assembly decision for siting NPS	
6	Kariwa Assembly decision for siting NPS	
11	Open the preparation office for the construction of Kashiwazaki-Kariwa Nuclear Power Station	
1974. 4	Making the agreement about the fishery compensation with the Kashiwazaki・Izumozaki fishing cooperative society	
1975. 3	License Application for the construction of the Reactor Unit 1	
1978. 8	Signed the safety agreement for the construction	
12	Unit No.1 Start of construction	
1980.12	Unit No.2 and No.5 Public hearing(1st stage)	
1983. 1	Unit No.2 and No.5 Public hearing(2nd stage)	
10	Unit No.2 and No.5 Start of construction	
1984.10	Unit No.3 and No.4 Public hearing(1st stage)	
11	Unit No.1 Fuel loading	
1985. 9	Unit No.1 Start of commercial operation	
1987. 1		Unit No.3 and No.4 Public hearing(2nd stage)
7		Unit No.3 Start of construction
11		Unit No.6 and No.7 Public hearing(1st stage)
1988. 2		Unit No.4 Start of construction
1990. 4		Unit No.5 Start of commercial operation
6		Unit No.6 and No.7 Public hearing(2nd stage)
9		Unit No.2 Start of commercial operation
1991. 9		Unit No.6 Start of construction
1992. 2		Unit No.7 Start of construction
1993. 8		Unit No.3 Start of commercial operation
1994. 8		Unit No.4 Start of commercial operation
1996.11		Unit No.6 Start of commercial operation
1997. 7		Unit No.7 Start of commercial operation

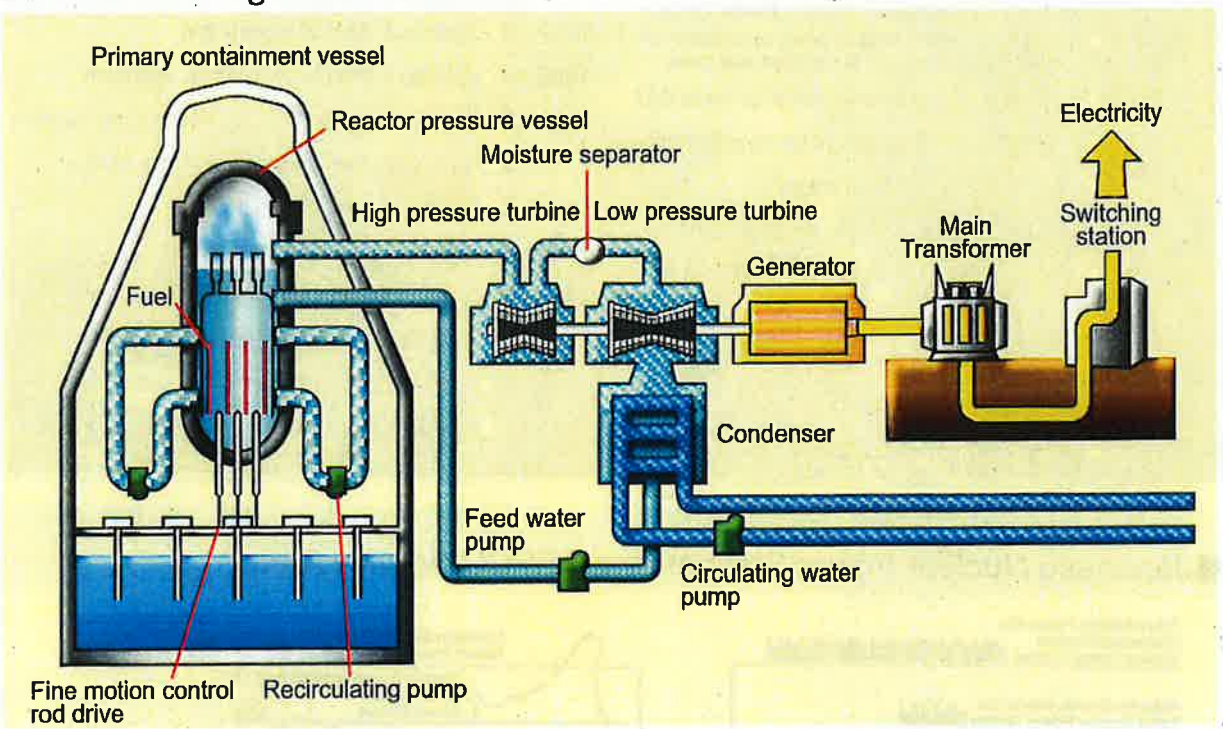
Japanese Nuclear Power Stations and TEPCO Service Area



Mechanism of Nuclear Power Generation

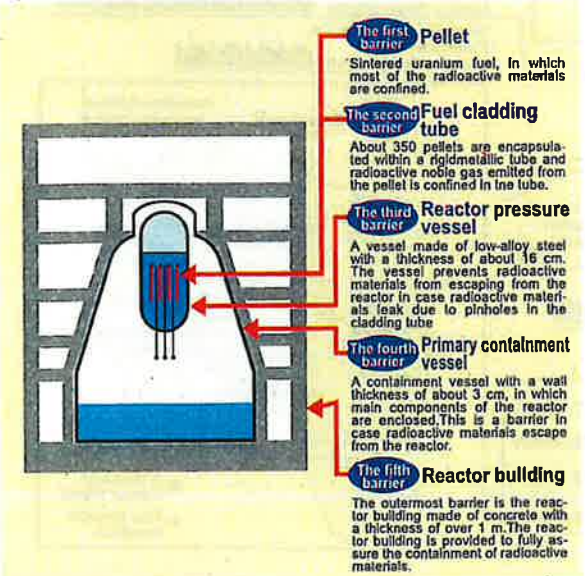
TEPCO has adopted the BWR(Boiling Water Reactor),which generates steam directly in the reactor. A nuclear power plant generates the heat energy by continuous fission of uranium fuel in reactor core. The heat energy boils water and turns it into steam. And then steam turns a turbine to generate electricity. Used steam is cooled down with the condenser and return back to water. It flows back to the reactor to be heated again. The advanced BWR(ABWR : Advanced Boiling Water Reactor) adopted to unit NO.6/NO.7 are the first one in the world.

■BWR : Boiling Water Reactor



■5barriers for the containment of the radioactive materials

Nuclear power plants are designed to prevent the release of radioactive materials to the outside and to shut them into the Primary Containment Vessel, etc. We call them 5barriers. In case of emergency, we close the valves of pipes which are extended to the outside and clean up the radioactive gas with emergency filter.



■Superior performance of the ABWR

TEPCO has developed the ABWR to achieve the enhanced safety, reliability and operability with three BWR manufactures (GE, Toshiba, Hitachi).This is the high-performance plant is adopted in which the improved BWR technology.

- Adoption of internal pump···The reactor coolant recirculation pump has been installed in the Reactor Pressure Vessel.
- Fine Motion Control Rod Drive···The ABWR has a diversified control rod drive mechanism with a fine-tunable electric drive system in addition to the current hydraulic drive system, thus achieving higher safety.
- Reinforced Concrete Containment Vessel···A highly safe Reinforced Concrete Containment Vessel (RCCV) is used for the reactor containment. Employment of reactor internal pumps has eliminated piping for the reactor coolant recalculating system. This, in turn, has enabled the center of gravity of the reactor building to be lowered, making the building more resistant against earthquakes. And integration of the RCCV and the reactor building has increased resistance against deformation resulting from internal pressure in the event of an accident.
- ABWR type Control Room Panels···All operators in the main control room can share important information on plant operations promptly and accurately by the use of the large screen display panel. A compact main control console is used to integrate important supervising and controlling functions.

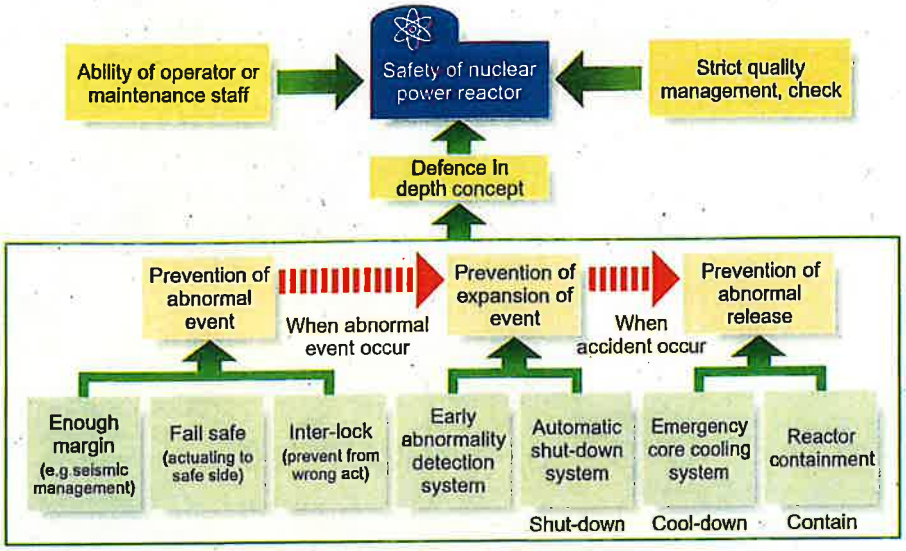
Safety Design of Nuclear Power Plant

The major premise of safety measures for nuclear power stations is ensure the safety of persons in the surrounding area from danger due to radioactive materials in any eventuality. We call it multiple layers.

①Prevent the machinery break down and the error in operating

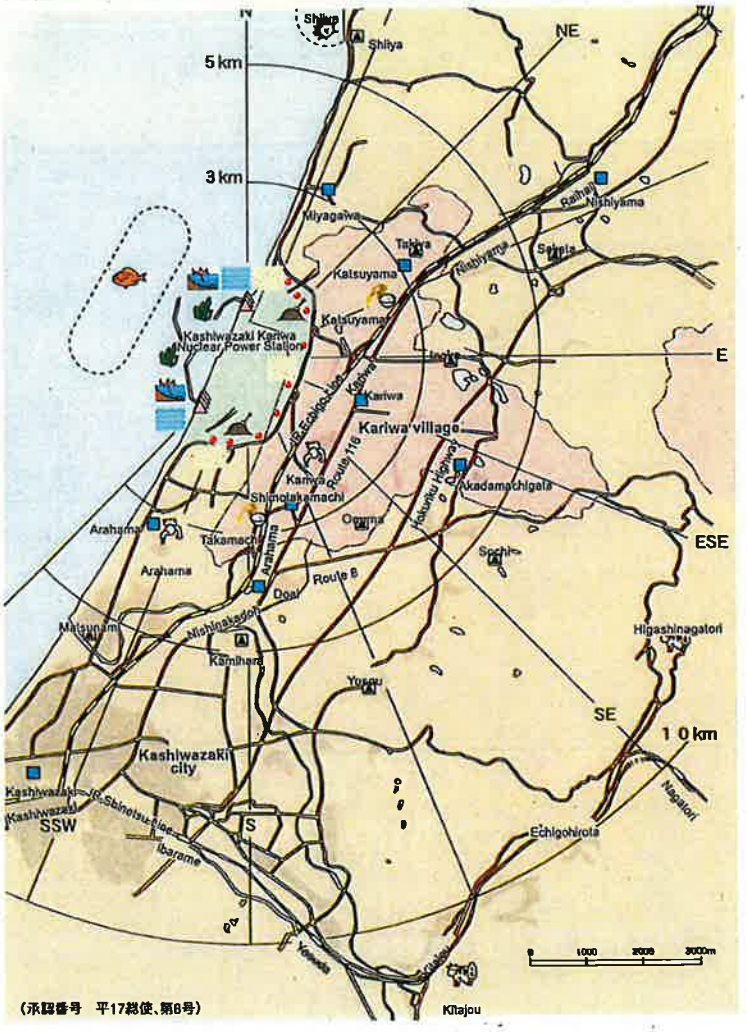
②The system can automatically shut down the reactor in case of abnormalities

③The system of preventing the release of radioactive materials in case of accident.



Environment and Radiation Monitoring

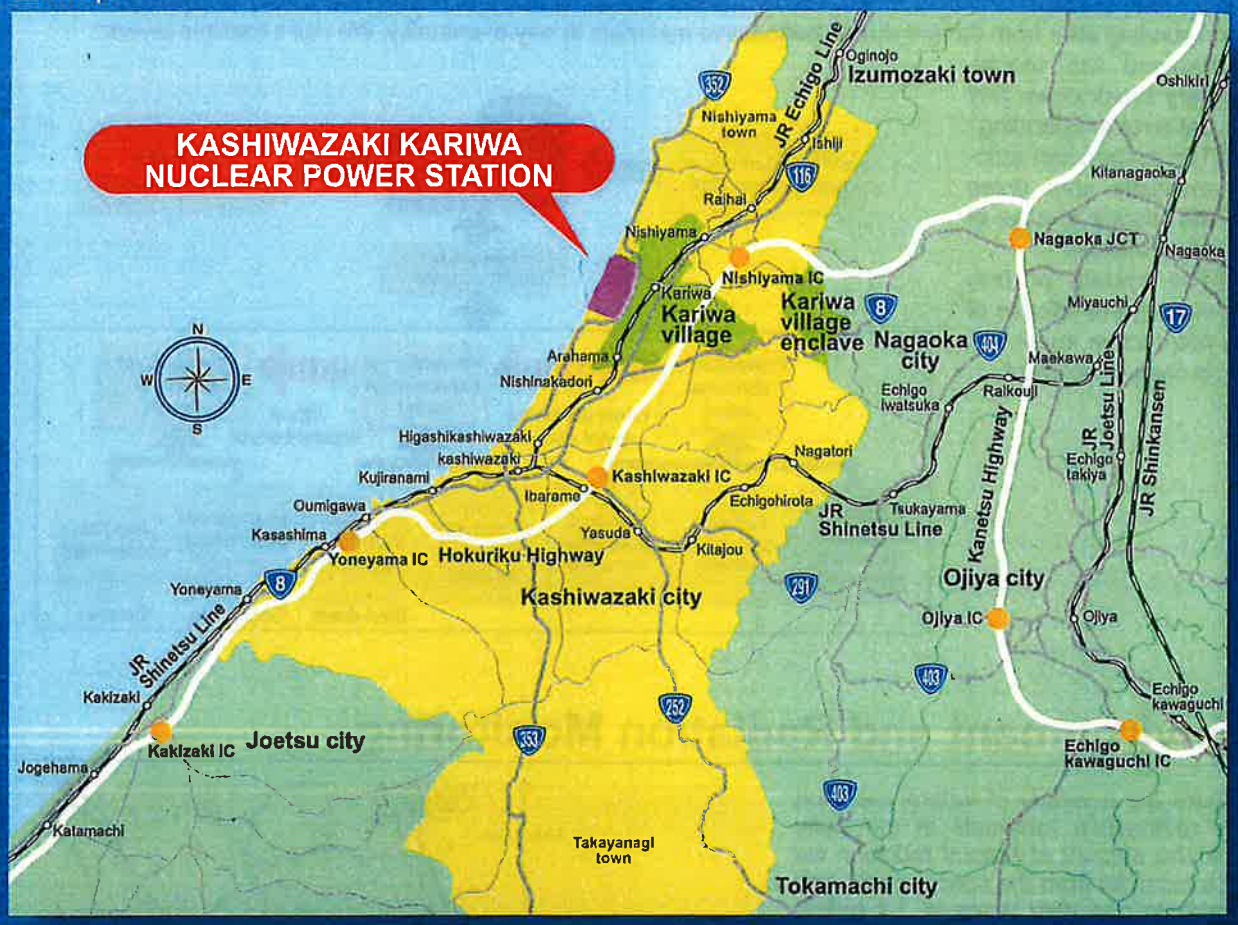
There are a variety of natural radiation or radioactive materials in our daily life.The amount of natural radiation we are received from the space, earth, and foods in one year alone is 2.4 millisiverts(the global average).Electric utilities manage radiation exposure so that local residents around a nuclear power plant receive less than 0.05 millisiverts per year and actually less than 0.001 millisiverts. At our nuclear power stations, we closely monitor the amount of radiation and levels of radioactive substances that are released into the environment. The results of the surveys are reported to local governments, as well as widely disclosed to the public.We install monitoring posts in the perimeter of the sites and monitor radiation in the atmosphere around the clock. We also measure the amount of radioactive substances contained in seawater, soil, agricultural products, sea products and animal products around our power stations by collecting samples on a routine basis, to examine whether the operations of our nuclear power stations have any impact on the surrounding environment.



- Monitoring post
- Monitoring point
- Niigata prefectural Monitoring station
- Monitoring point forsea water

*Sievert : It is the unit which represents the degree of the impact from radiation. (1 mSv = 10^{-3} Sv)

Map



TEPCO

TOKYO ELECTRIC POWER COMPANY

KASHIWAZAKI KARIWA NUCLEAR POWER STATION

16-46 AOYAMA-CHO KASHIWAZAKI-SHI
NIIGATA-KEN 945-8601 JAPAN PHONE : 0257-45-3131
http://www.tepco.co.jp/nu/kk-np/index-j.html

2011.1

Highlight: Processes

Saturday, October 28	11:00–11:30	(1) Training on operation of materials and equipment
	14:00–14:30	(2) Training on power source team coordination
	14:30–15:00	(3) Preparation for heat exchanger unit
	15:00–15:20	(4) Water-discharge training

Highlight: (1) Training on operation of materials and equipment

Remote control of robots and drones

Experience Building

Saturday, October 28

11:00–11:30

Highlight: (2) Training on power source team coordination

Emergency M/C power reception together with Tohoku Electric Power

Saturday, October 28, 14:00–14:30

Highlight: (3) Preparation for heat exchanger unit

Loading work with reach stacker

Saturday, October 28, 14:30–15:00

Fresh water reservoir

Highlight: (4) Water-discharge training

Control of water diffusion by large-capacity water truck and water cannon

Saturday, October 28, 15:00–15:20

Highlight: Heliborne transport

Transport of relief supplies from 2F by SDF helicopter

Nishiyama General Ground

Saturday, October 28, arrival scheduled at around 15:00

Map of Field Highlight Events, Nuclear Energy Disaster Prevention Drill, 2023

Revamping Procedures and Emergency Response Measures

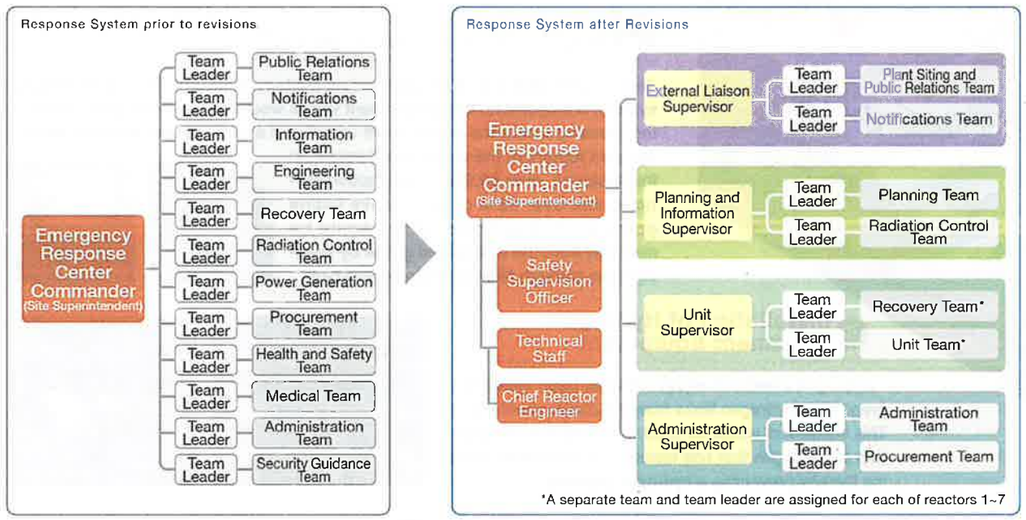
Training is repeatedly conducted to enhance the ability of power station personnel to respond to an accident

11 Revamping an Emergency Response System

When responding to the Fukushima Daiichi Nuclear Power Station Accident the Site Superintendent was inundated with all sorts of information making it impossible to make quick and accurate decisions. Learning from this experience we have revamped our emergency response system and employed the Incident Command System (ICS*) by which teams responsible for each department function are formed and each team leader reports to the Site Superintendent. This enables a quick and accurate emergency response.

**Incident Command System*

The standard system for responding to emergency situations employed in the United States. A commander is at the top of the command chain and the number of people under the commander's direct supervision is limited to seven or less.



12 Emergency Response Training

Training on undisclosed scenarios is conducted so that trainees can not only become accustomed to enhanced and newly installed equipment, but also flexibly respond to the conditions of a severe accident. And, an Emergency Response Center used to respond to an accident has been established in the Unit 5 reactor building.

Site personnel have been licensed on the operation of large vehicles and construction machinery so that debris can be quickly removed, roads repaired and coolant injected directly into the reactors. Training is conducted repeatedly to ensure that personnel can adeptly operate wheel loaders and fire pump trucks.

TEPCO

Primary Measures for Kashiwazaki-Kariwa NPS Units 6/7 to comply with the New Regulatory Requirements

※The information in this pamphlet is correct as of December 2017.

Tokyo Electric Power Company Holdings

Primary Measures for Kashiwazaki-Kariwa NPS Units 6/7 to comply with the New Regulatory Requirements

At the Kashiwazaki-Kariwa Nuclear Power Station we have formulated various safety measures based on the lessons learned from the Fukushima Daiichi Nuclear Power Station Accident. The following is an introduction of the primary measures that have been implemented in order to comply with the New Regulatory Requirements.

Countermeasures for Natural Disasters

We have formulated several countermeasures for natural disasters, such as earthquakes and tsunamis.

1 Earthquake Countermeasures

We have added additional supports and reinforcements to pipes and electrical conduits inside buildings.

2 Tsunami Countermeasures

We have installed watertight doors on rooms that house important equipment in order to protect them from flooding. Furthermore, we have waterproofed locations where pipes and cable trays pass through walls by filling the gaps in with silicone rubber.

3 Forest Fire Countermeasures

We have created a 20m-wide firebreak between the power station and the surrounding forest in order to protect the site from forest fires.

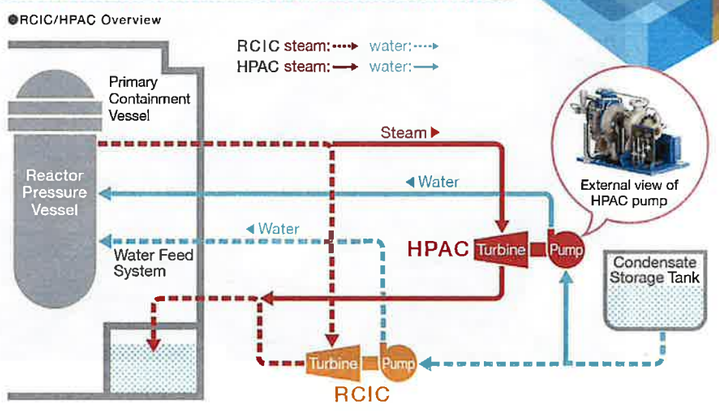
Severe Accident Countermeasures and Effectiveness Assessments

We have formulated multilayered countermeasures to prevent an accident from escalating into a severe accident in the rare case that one was to occur.

4 Enhancement of High Pressure Coolant Injection System

In the event of a loss of power the Reactor Core Isolation and Cooling System (RCIC) would activate. A turbine driven by steam from the pressure vessel is directly connected to a pump that would pump water from the condensate storage tank into the pressure vessel thereby cooling the fuel.

Furthermore, to prepare for RCIC activation/operation failure, a High-Pressure Alternative Cooling System Pump (HPAC), which operates under the same principles and can be started up quickly, has been installed. This has resulted in redundant systems for high-pressure coolant injection.

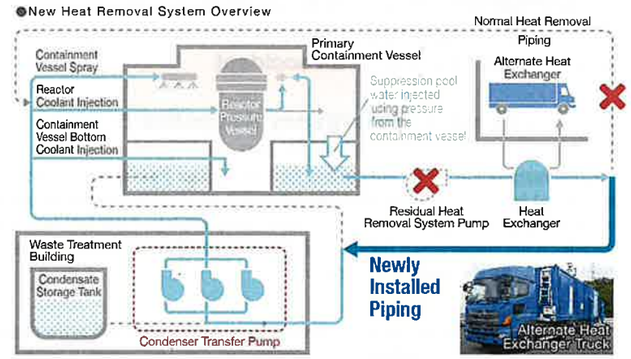


5 Enhancing the Low Pressure Coolant Injection System

In order to prepare for a total loss of power that renders motorized low-pressure coolant injection equipment inoperable, 42 fire pump trucks have been dispersed on high ground. This should enable coolant to be injected into the pressure vessel even if there is no power.

6 Enhancing Heat Removal Methods

We have developed and installed a new heat removal system (alternate circulation cooling system) for cooling the pressure vessels and containment vessels in the event of an emergency. This system would remove heat from the containment vessel and prevent rises in pressure and temperature inside the containment vessel even if the existing heat removal system was inoperable. This should eliminate the need to vent the containment vessel except in the direst of circumstances.

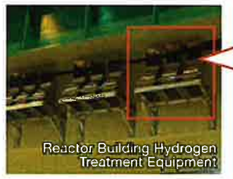


7 Enhancing Functions to Mitigate Environmental Impacts

In the event that the new heat removal system (alternate circulation cooling system) is inoperable, the containment vessel would be vented in order to lower the pressure inside the containment vessel and avoid a severe accident resulting from rupture of the containment vessel. In this instance, over 99.9% of radioactive particles and over 98% of radioactive iodine gases (excluding noble gases) would be removed from the discharged gases by passing them through filtered venting equipment.

8 Installation of Hydrogen Treatment Equipment

Hydrogen treatment equipment has been installed to prepare for hydrogen leaks from the containment vessel. This equipment would be used to reduce the concentration of hydrogen that has leaked into the reactor building thereby preventing a hydrogen explosion.



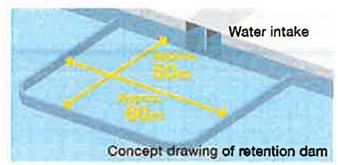
9 Enhancing Power Facilities

In preparation for the case where electricity from off-site supplied via transmission lines and electricity from emergency diesel generators is lost, three gas turbine generator trucks and 24 high-voltage power trucks have been dispersed throughout the site on high ground in order to supply the power required to inject coolant and cool the pressure vessels and containment vessels. Storage batteries and rechargeable batteries have also been additionally placed in locations unlikely to be affected by a tsunami. This should enable the required power to be supplied to equipment control devices and instruments in the Main Control Rooms even in the event of a station blackout.

10 Securing Water Sources

A reservoir has been built on high ground to ensure that there is enough freshwater to be used for cooling during an emergency (approx. 20,000 tons).

And, a retention dam has been built around the water intake to ensure that there is enough seawater left to be used for cooling purposes if necessary even if the ocean recedes in conjunction with a tsunami.



ERC（緊急時対応センター）について

令和5年10月

原子力規制委員会原子力規制庁

長官官房緊急事案対策室

ＥＲＣ概要

緊急時対応センター（ＥＲＣ）は、原子力災害等が発生した際に政府・原子力規制委員会が災害対応を行うための施設。原子力災害対策特別措置法第１５条に基づく原子力緊急事態宣言が発出された際には、原子力災害対策本部事務局が設置され、関係省庁・関係機関から職員が参集し、緊急時対応を行う。

１．概要

住　所：東京都港区六本木１－９－９　六本木ファーストビル３階
床面積：約７００ｍ^2

２．設置機器

（１）ＴＶ会議システム
官邸、オフサイトセンター、事業者、道府県庁舎等と接続

（２）電話・ＦＡＸ
複数の地上回線及び衛星回線を敷設し冗長化

（３）その他
ＥＲＳＳ、緊急時モニタリングシステム、気象情報システム
また、庁舎が停電した場合に備え、非常用発電機を設置

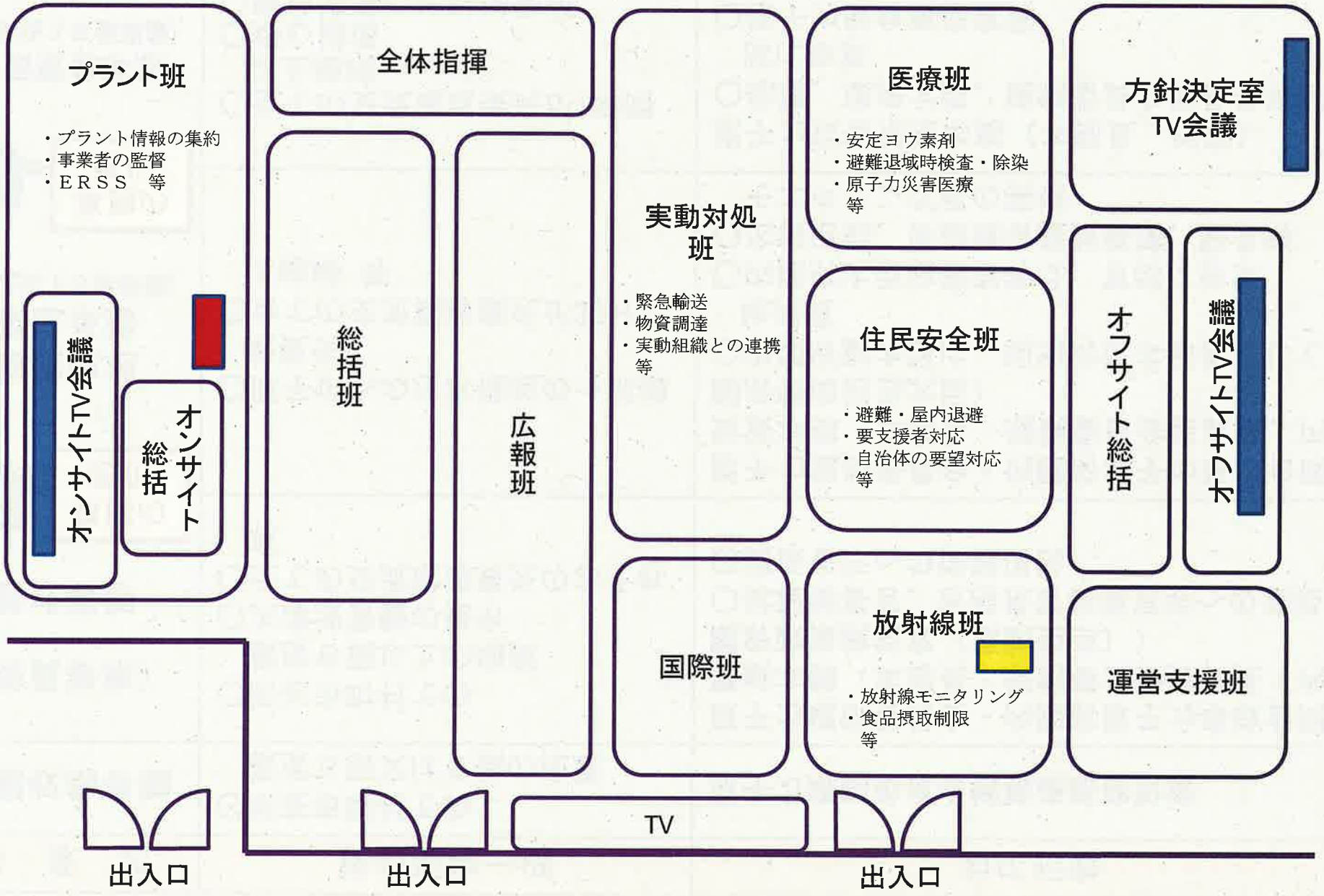
３．参集人数

約２００人（原子力災害対策マニュアルに規定の参集要員数）

原子力災害発生時の基本的な対応行動

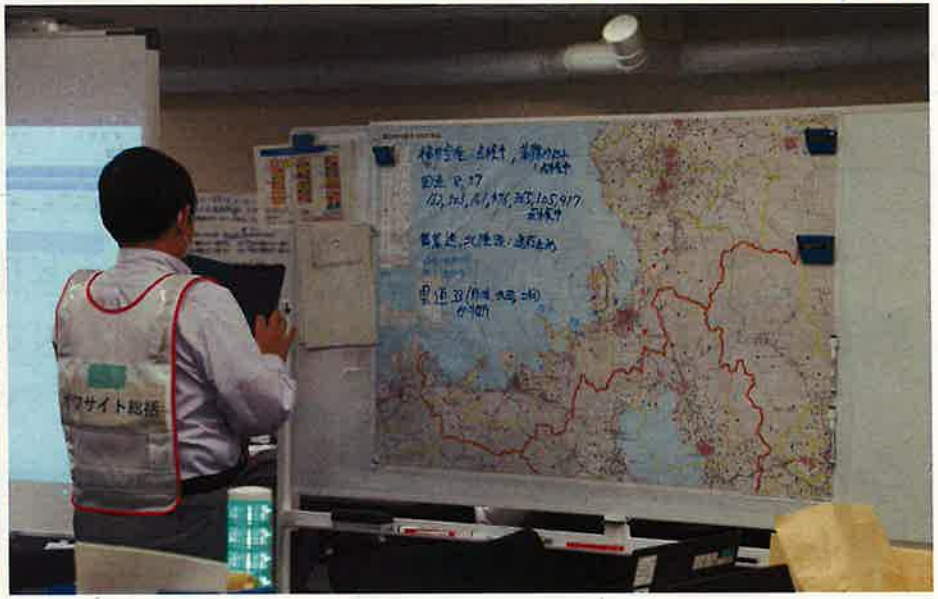
事　象　名	該当事象一例	対応行動
情報収集事態	○所在市町村での 震度５弱又は５強の地震	**原子力規制委員会情報連絡室設置**
（委員参集） **警戒事態** 事態の悪化	○所在市町村での 震度６弱以上の地震 ○大津波警報の発令 ○全ての交流電源喪失のおそれ 等	**原子力規制委員会・内閣府原子力事故合同警戒本部（本部長：規制委員会委員長・内閣府政策統括官（原防担当））** ○総理秘書官、官房長官秘書官等への連絡 ○関係省庁への情報提供
施設敷地緊急事態 **(原災法１０条事象)** 事態の悪化	○原子炉への注水機能の一部機能喪失 ○全ての交流電源喪失が30分以上継続　等	**原子力規制委員会・内閣府原子力事故合同対策本部（本部長：規制委員会委員長、内閣府特命担当大臣）** ○内閣府副大臣は、現地対策本部長として現地派遣 ○内閣府大臣政務官等は、官邸に参集 ○広報活動、要避難者避難要請、緊急時モニタリング等の実施
全面緊急事態 **(原災法１５条事象)**	○全ての交流電源喪失が1時間以上継続 ○炉心損傷 ○敷地境界の放射線量が ５μSv/h以上　等	**原子力災害対策本部（本部長：総理）** ○総理、環境大臣、規制委員会委員長等が官邸に参集 ○原子力緊急事態宣言 ○住民避難、安定ヨウ素剤服用指示等 ○原災本部会議の開催

ＥＲＣ簡易配置図



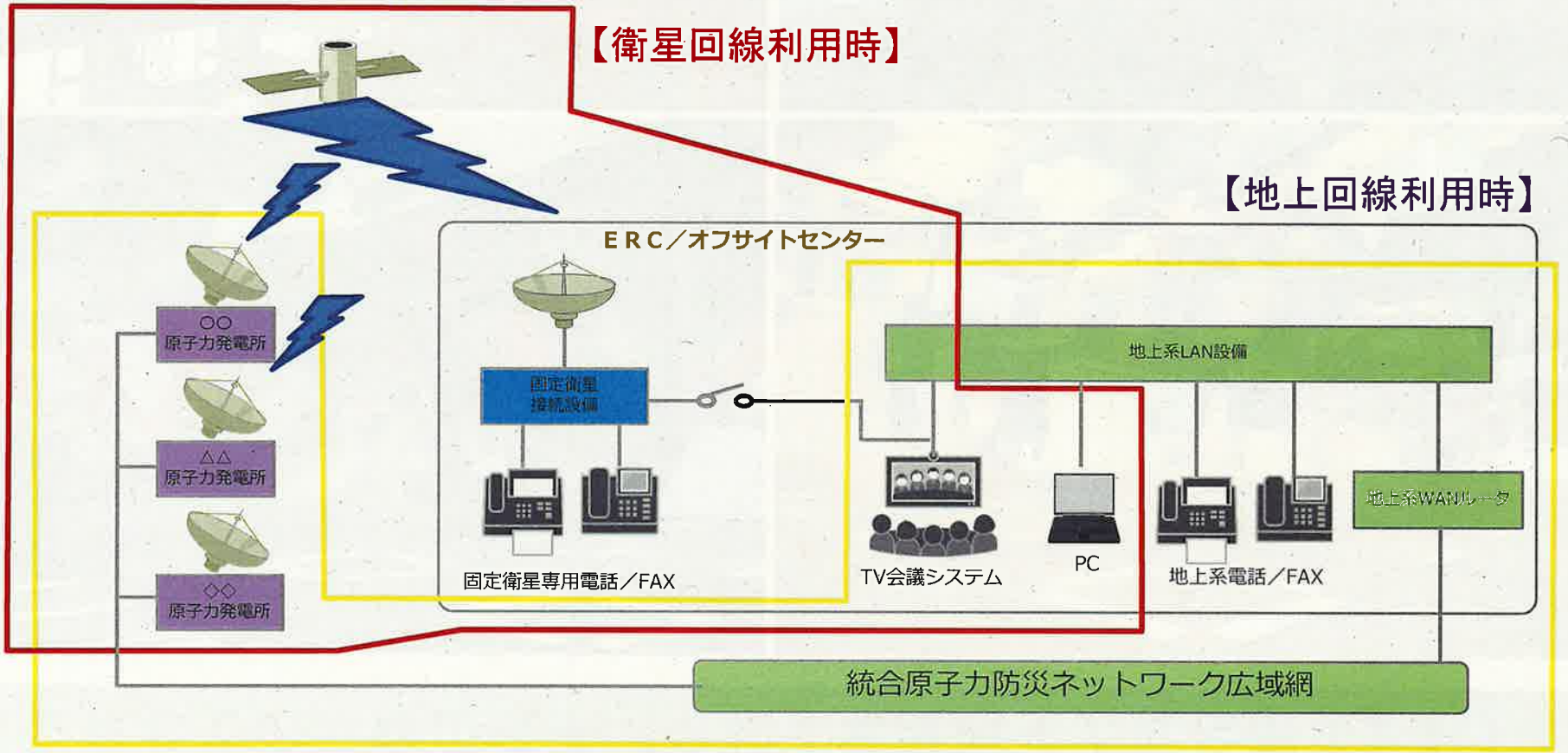
：TV会議システム　：ERSS　：緊急時モニタリングシステム

ＥＲＣでの活動の様子（令和４年度原子力総合防災訓練）



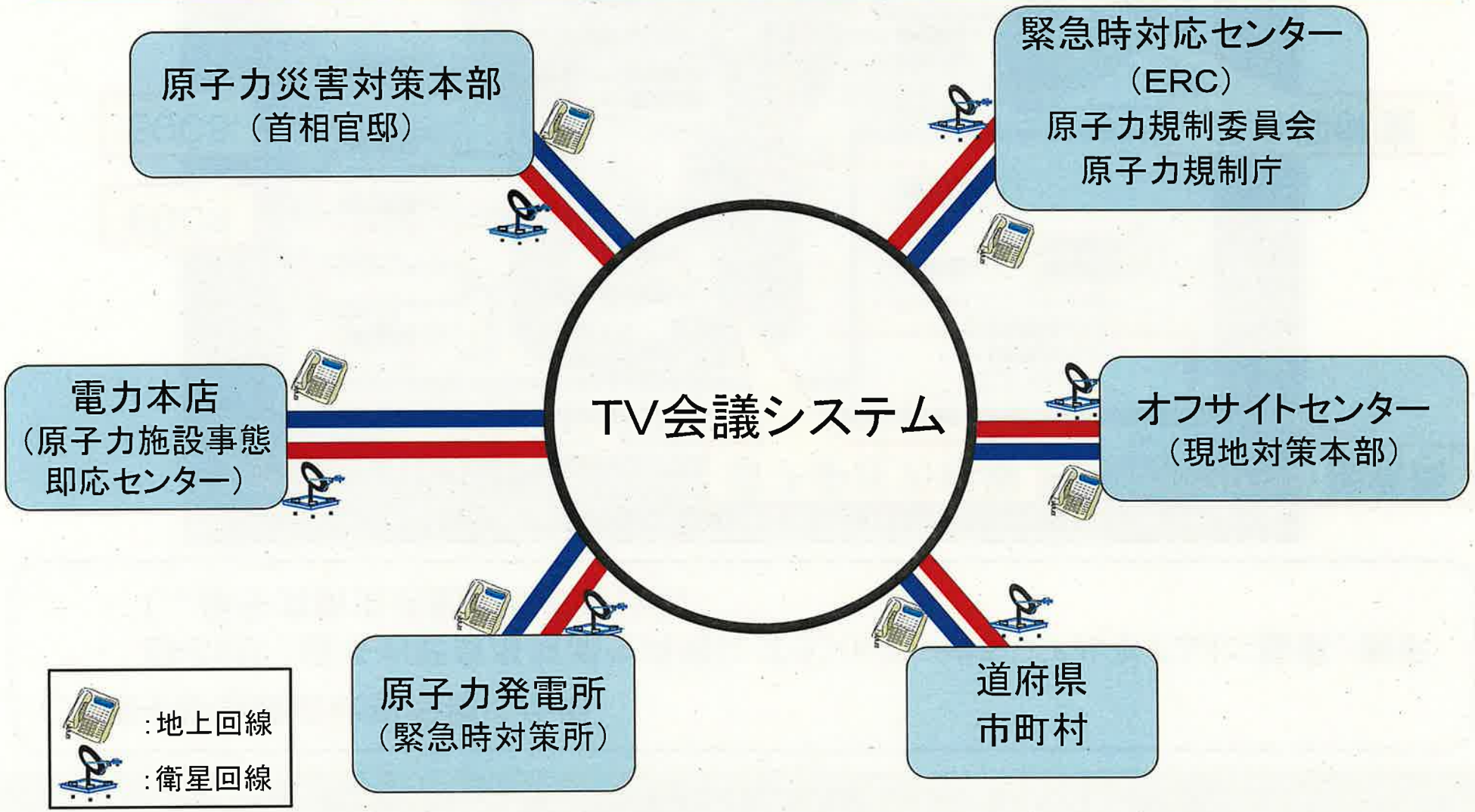
原子力統合防災ネットワークシステム

○原子力災害等が発生した際に、官邸、緊急時対応センター（ERC）、オフサイトセンター（OFC）、地方自治体、原子力事業者（発電所・本店）等をネットワークで接続し情報共有するためのシステム。
○情報連絡・共有のツールとして、電話・FAX、パソコン端末に加え、テレビ会議システムを整備。一般の地上回線に加え、衛星回線を整備。



ＴＶ会議システムネットワーク：オンとオフの情報共有

○ 原子力施設から30km圏内の道府県・市町村に対しTV会議システムを整備している。
○ 緊急時は、原子力発電所と電力本店、ERC、官邸等を接続したプラント対応の会議及び現地のオフサイトセンターと自治体、ERCを接続した住民防護のための会議を実施する。

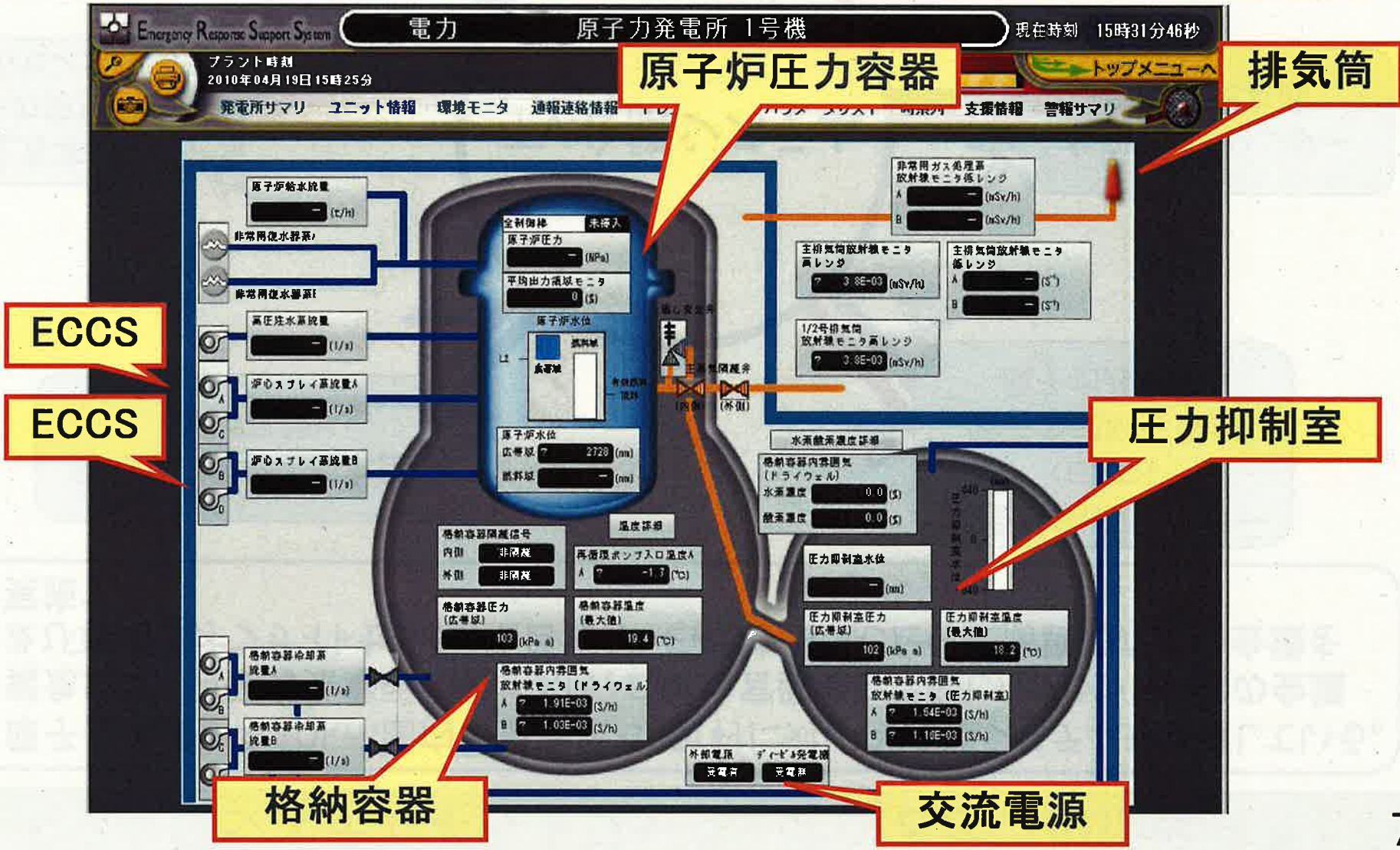


Emergency response system

ＥＲＳＳ（緊急時対策支援システム）概要

○ 原子炉施設の状態把握に活用

- ERSSは、原子力緊急事態発生時等にプラントデータをリアルタイムに 提供、表示し、原子力防災活動の支援を行う。

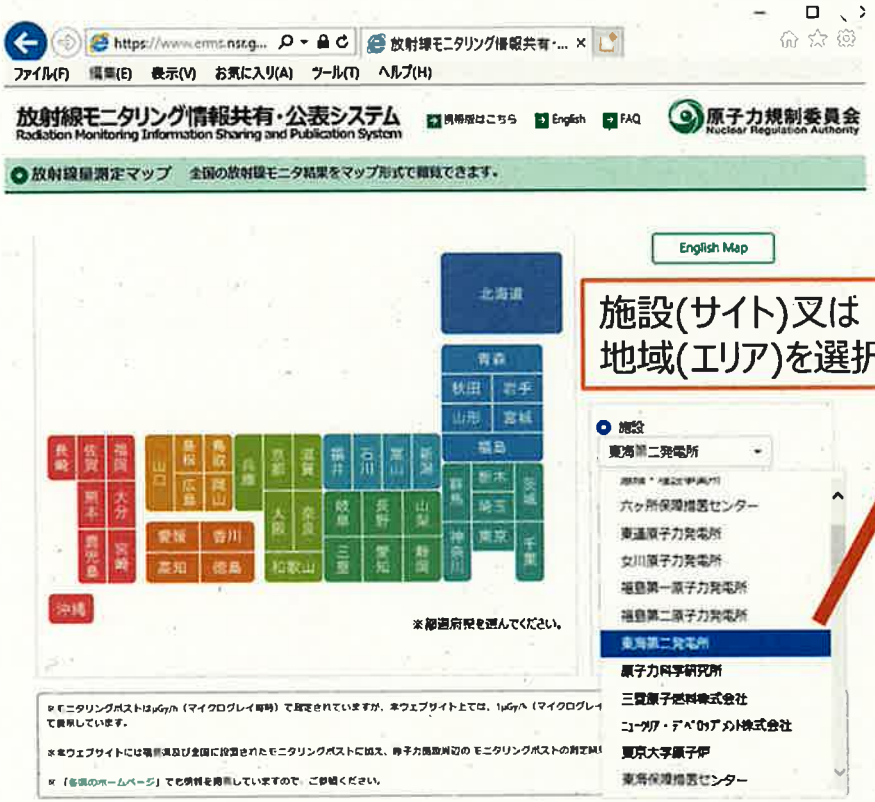


放射線モニタリング情報共有・公表システム

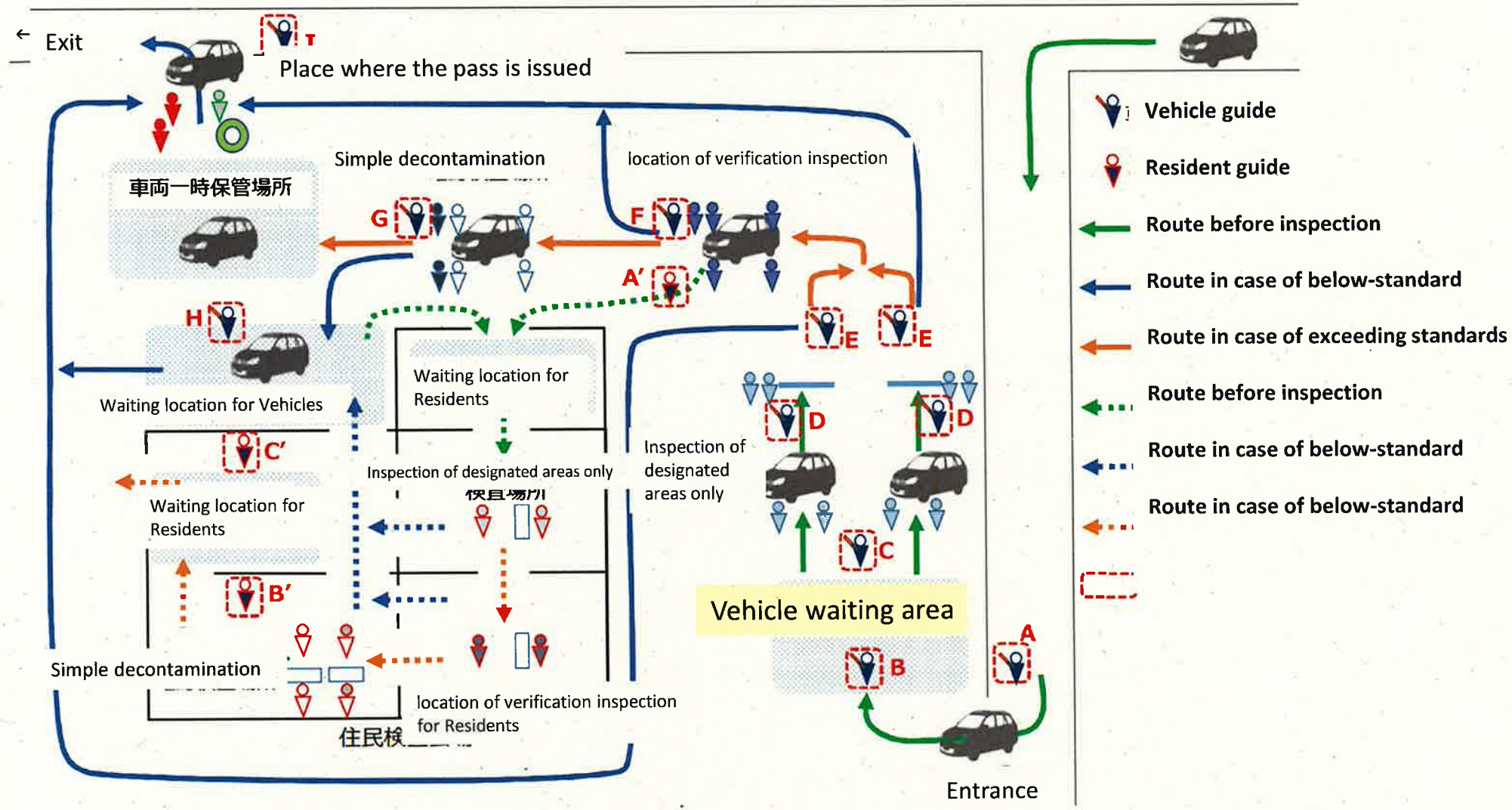
○　原子力災害発生時における緊急時モニタリング結果の集約、関係者間での共有及び迅速な公表
○　全国のモニタリングポストの測定値を平常時から公表

放射線モニタリング情報ポータルサイト

全国のモニタリングポスト等の測定値をリアルタイムで配信



Screening point: Naoetsu Port Minami Futo Ryokuchi Park



訓練用

車両検査済証

通過年月日：令和5年10月29日

検査場所　：直江津港南ふ頭緑地公園

発行者名　：新潟県

訓練用

スクリーニング検査済証
スクリーニングポイント通過証

通過年月日：令和５年 10 月 29 日

検査場所：直江津港南ふ頭緑地公園

発　行　者：新潟県

令和５（２０２３）年１０月１３日

住民避難訓練に参加される皆さま

柏崎市危機管理部　防災・原子力課長

令和５年度新潟県原子力防災訓練（住民避難訓練）
事前登録について

「新潟県原子力防災訓練」において、住民避難訓練に御参加いただき、感謝申し上げます。

避難訓練会場に集合していただいて受付を行いますが、その際にＩＣＴを活用した受付の簡略化にご協力いただきたいと思います。

別紙の事前登録方法をご確認いただき、お持ちのスマートフォンで訓練当日までに事前登録をお願いいたします。

スマートフォンをお持ちでない方など、事前登録が難しい方でも訓練にご参加いただけます。

できる限りのご協力をよろしくお願いいたします。

ご不明点などありましたら下記お問い合わせ先にご連絡ください。

お問い合わせ先
柏崎市 危機管理部 防災・原子力課
原子力安全係
TEL：0257-21-2323

令和５（２０２３）年１０月１２日

（医師国家試験に合格される皆さま）

独立行政法人 国立病院機構 総合・福岡病院
臨床研修部
TEL：０３５７－３１－１８３２

令和５年度独立行政法人国立病院機構（仮称）臨床研修医
事前登録について

「独立行政法人国立病院機構」において、臨床研修医に採用されるには、事前登録が必要となります。

臨床研修医を希望している方で、まだ事前登録をされていない方は、下記のホームページにアクセスし、事前登録をお願いします。

ホームページでは、病院ごとの特色や、研修医の先輩からのメッセージなども掲載しています。

ぜひ、病院ごとの特色をよく比較してください。

ご不明な点などありましたら下記お問い合わせ先にご連絡ください。

令和５年度新潟県原子力防災訓練

「新潟県防災 DX アプリ」実証実験へのご協力のお願い

令和５年 10 月 12 日　新潟県原子力安全対策課

県では、防災分野のデジタルトランスフォーメーション（DX）として、被災者の避難や支援の高度化に向けた新しいシステムの開発を検討しています。令和５年度新潟県原子力防災訓練では、柏崎市、長岡市、刈羽村の皆さまのご協力のもと、試作品アプリによる実証実験を行います。つきましては、実証実験にご協力をいただきたいと考えておりますので、ご理解賜りますようお願いします。

1　お願いしたいこと

①アプリのアカウント作成

②バス（一時）集合場所・避難経由所・避難所での QR コードによる受付

職員が「QR コード」により受付を行います。

③スクリーニングポイントでの車両番号認証（29 日のみ）

スクリーニングポイント通過の際に、スタッフが車両を撮影し車両番号を認証します。

システム（アプリ）のイメージ

2　日時・実証実験の流れ

■日時　令和５年 10 月 28 日（土）又は 29 日(日)

■実証実験の主な流れ

● バス（一時）集合場所	★バス避難者の QR コードによる受付
● スクリーニングポイント	★通過車両の車両番号認証（29 日のみ）
● 避難経由所	★避難者全員の QR コードによる受付
● 避難所	★避難者全員の QR コードによる受付 アンケート記入

- 当日は、現地の職員の指示に従って行動をお願いします。
- スケジュールは現時点の計画であり、変更になる可能性があります。
- 進捗によっては、待ち時間等が発生する場合があります。あらかじめご了承ください。

3　当日の持ち物等

✓　スマートフォン

✓　各市町村で準備をお願いしているもの（内履き等）

訓練前日までに登録をお願いします

4　事前準備

「新潟県防災 DX アプリ」にアクセスし、必要事項の入力をお願いします。

新潟県防災 DX アプリの準備方法

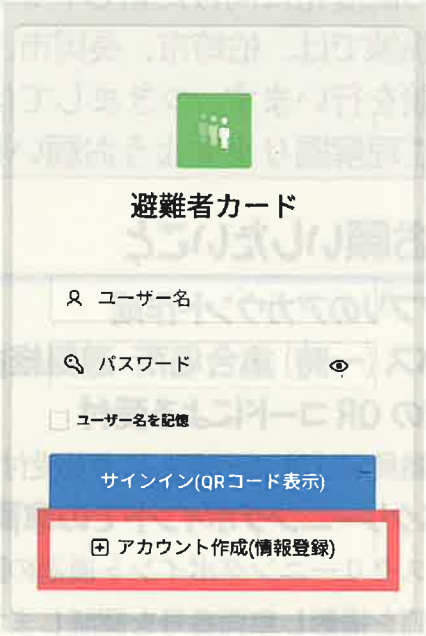
※訓練前日までに登録をお願いします

1 アプリにアクセスする

QR コードを読取り
アプリへアクセス

- このアプリは、ダウンロードの必要はなく、スマートフォンの Web ブラウザから利用します。
- 各自のスマートフォンの操作方法により、「お気に入り」や「ブックマーク」登録をお願いします。

2 「アカウント作成（情報登録）」をクリックする



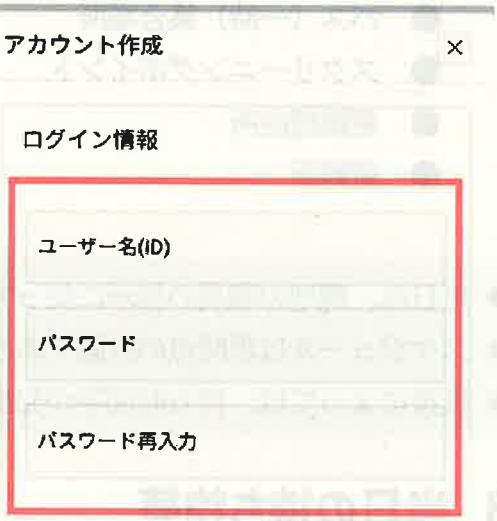
■個人情報の入力に関して
　このシステムは、県が委託している事業者によって構築・運用されます。入力された個人情報は、事業者のセキュリティ対策を施したサーバーに保存されますが、実証実験終了後、情報はすべて削除します。

3 必要項目を入力する

(1) 必須項目(①～⑦)を入力しアカウントを作成します。
（「※」の項目の入力が無い場合登録ができません。）

①ユーザー名(半角英数)(※)
②パスワード(半角英数)(※)
③姓名(※)
④フリガナ(※)
⑤郵便番号
⑥住所
⑦自動車登録番号
（バス、レンタカーの方は訓練当日に入力）

●ユーザー名・パスワードは
半角英数（a～z、A～Z、1～9）
での入力をお願いします。



(2) 任意項目の入力

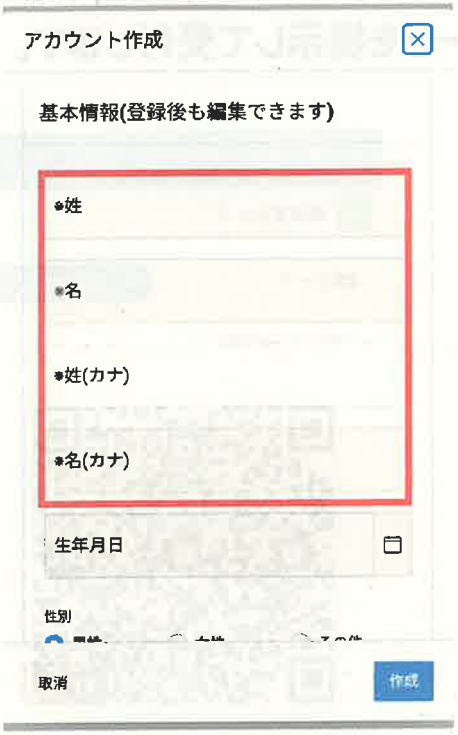
⑧性別
⑨電話番号
⑩生年月日

メモ用	
ユーザー名	
パスワード	

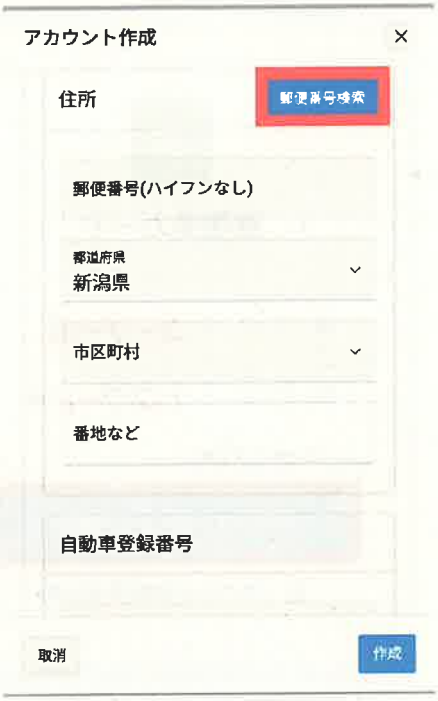
新潟県防災 DX アプリの準備方法（登録手順）

※訓練前日までに登録をお願いします

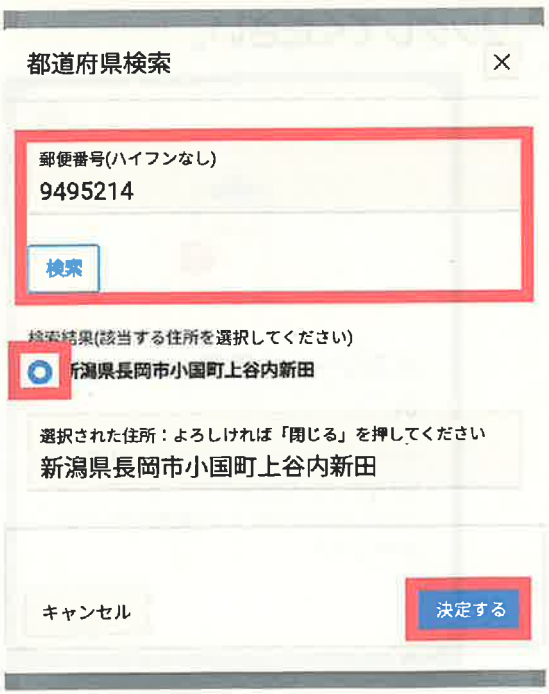
○ 姓と名を登録します



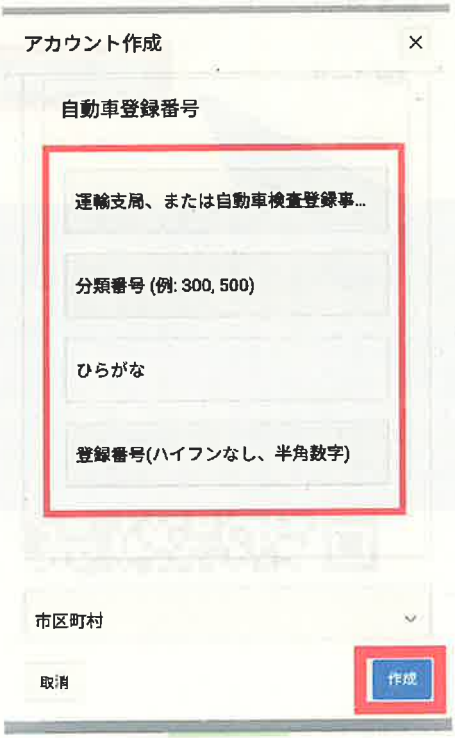
○ 郵便番号検索で住所登録します「郵便番号検索」をクリックします



○ 郵便番号を入力し「検索」を押すと住所が表示されますので、住所の左の「●」を選択し、「決定する」をクリックします。（番地の入力は任意です）

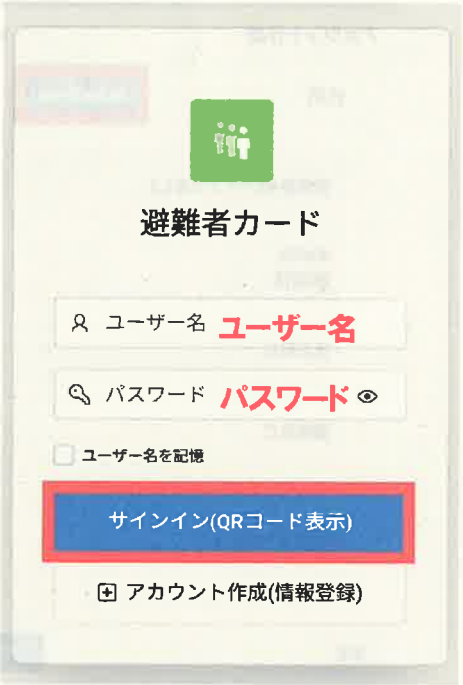


○ 自家用車で避難される方は自動車登録番号を登録します。入力が終わったら、「作成」をクリックします。



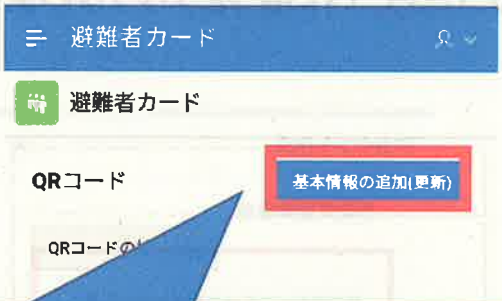
登録情報の確認　※バス(一時)集合場所などで受付するとき

1　ユーザー名、パスワードを入力して「サインイン(QR コード表示)」をクリックします



2　以下の画面が表示されれば、登録終了です。訓練では、この QR コードを提示して受付します。

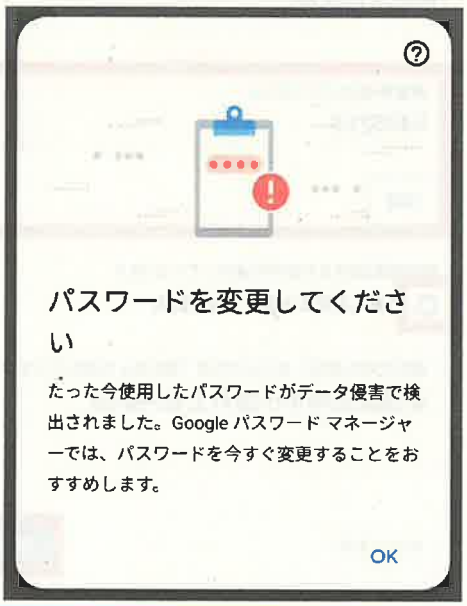
3　情報の修正や追加をする場合は、「基本情報の追加(更新)」をクリックします。



★バス・レンタカーの方は訓練当日にこちらから自動車登録番号の入力をお願いします。

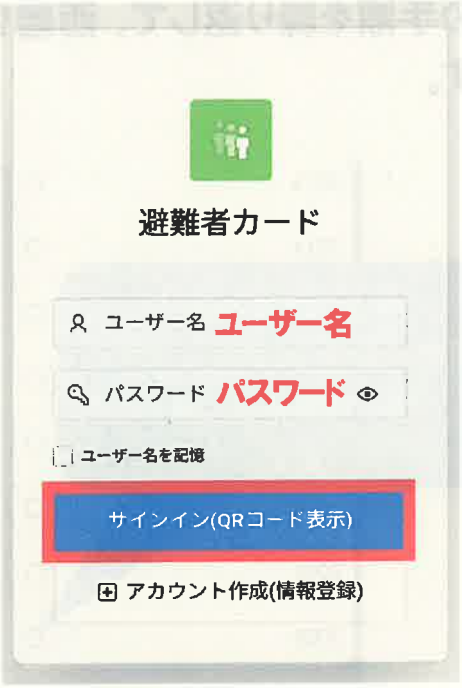
★自家用車で一緒に避難する方がいる場合もこちらで入力をお願いします。

※　Android を使用されている場合、簡単なパスワードを設定すると、以下の画面が表示される場合があります。実際にパスワードが流出したわけではありませんので、「OK」をクリックしてください。



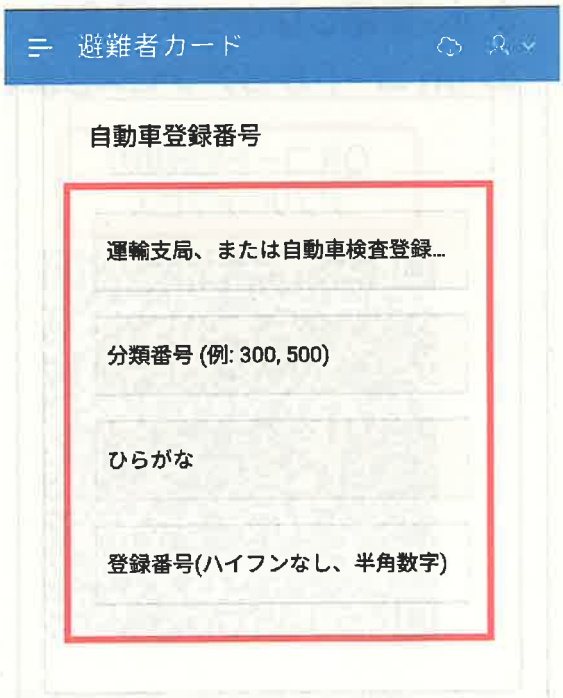
その他（自動車登録番号等の入力について）

1 「避難者カードアプリ」で、ユーザー名とパスワードを入力してサインインします。

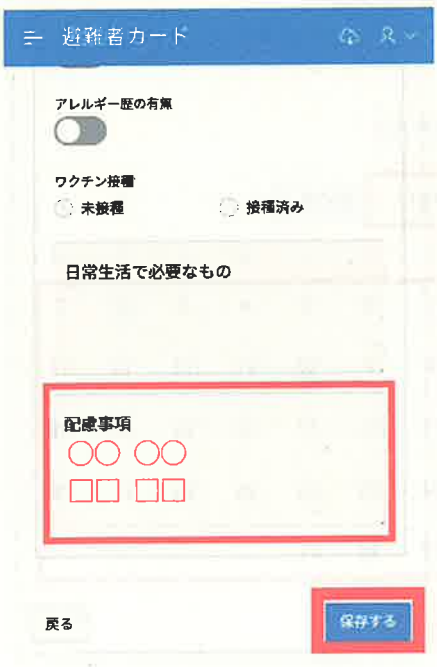


2 「基本情報の追加（更新）」をクリックします。

3 自動車登録番号を入力します。（開いたページ中央付近）



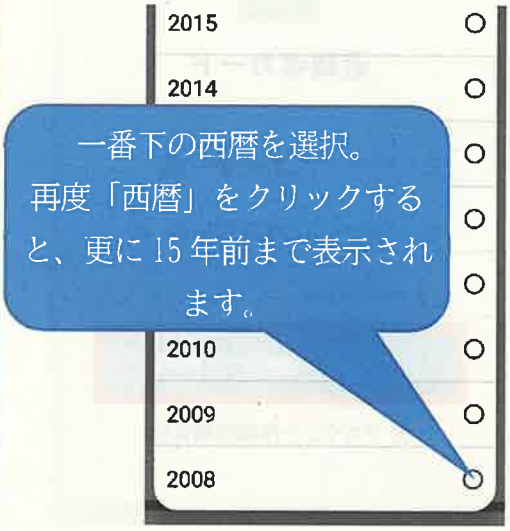
4 自家用車などで一緒に避難する方がいる場合は、配慮情報に避難される方の氏名の入力をお願いします。入力後に、「保存する」をクリックします。



生年月日の登録方法

○ 生年月日をクリックするとカレンダーが表示されます

○ 「西暦」をクリックすると 15 年前まで西暦が表示されますので、以下の手順を繰り返して、西暦を選びます。



※ 誠に申し訳ありませんが、今回のアプリの仕組み上、１回で 15 年前までしか表示できませんので、ご了承願います。

○ 西暦が決まりましたら、月をクリックし月を選択し、最後に日を選択します。

※ URL を「お気に入り」や「ブックマーク」に登録しなかった場合は、以下の QR コードからアクセスします。

QR コードを読取り
アプリへアクセス

※ エラーが生じる場合は、画面の更新（画面を下に引っ張るなど）を試してください。

令和５年度 新潟県原子力防災訓練　参加住民アンケート

原子力防災訓練にご参加いただきましてありがとうございました。参加された皆様の貴重なご意見・ご感想を今後の原子力防災・避難計画などに活かしたいと考えておりますので、アンケートにご協力をお願いいたします。各設問の該当する記号に○をつける、または記入をお願いします。

１．　お住まいの市町村を教えてください。　※ 柏崎市の方はPAZ又はUPZにも○をお願いします

ア　柏崎市（PAZ・UPZ）　イ　刈羽村　ウ　長岡市　エ　小千谷市

オ　十日町市　カ　燕市　キ　上越市　ク　その他（　　）

２．　あなたの年齢を教えてください。

ア　２０歳未満　イ　２０歳代　ウ　３０歳代　エ　４０歳代　オ　５０歳代

カ　６０歳代　キ　７０歳代　ク　８０歳以上

【　全　般　】

問１．あなたがお住まいの地域は、PAZ、UPZまたはそれ以外のどの区域に該当するのか訓練参加前から知っていましたか？

ア　知っていた　イ　知らなかった

問２．あなたは訓練前、お住まいの市町村の原子力災害時の避難計画の内容について、知っていましたか？

①　バスで避難する場合の「一時集合場所」を知っていましたか？

ア　知っていた　イ　知らなかった

（イを選ばれた方）訓練に参加し、理解できましたか？

ア　はい　イ　いいえ

②　（UPZの方のみ）一時移転（避難）の際、「スクリーニング」を受けることを知っていましたか？

ア　知っていた　イ　知らなかった

（イを選ばれた方）訓練に参加し、理解できましたか？

ア　はい　イ　いいえ

③　「避難経由所」を知っていましたか？

ア　知っていた　イ　知らなかった

（イを選ばれた方）訓練に参加し、理解できましたか？

ア　はい　イ　いいえ

④　「避難先市町村」を知っていましたか？

ア　知っていた　イ　知らなかった

（イを選ばれた方）訓練に参加し、理解できましたか？

ア　はい　イ　いいえ

問３．安定ヨウ素剤の配布を受けた際の説明は理解できましたか？

ア　十分理解できた　イ　概ね理解できた　ウ　理解できなかった　エ　訓練対象外

（ウを選ばれた方）理由をお聞かせください

裏面へ続きます→

問４．（UPZ の方のみ）スクリーニングポイントの目的及び検査の流れは理解できましたか？

ア　十分理解できた　　イ　概ね理解できた　　ウ　理解できなかった　　エ　訓練対象外

（ウを選ばれた方）理由をお聞かせください

問５．避難経由所の目的及び受付の流れは理解できましたか？

ア　十分理解できた　　イ　概ね理解できた　　ウ　理解できなかった　　エ　訓練対象外

（ウを選ばれた方）理由をお聞かせください

問６．避難所での受付の流れは理解できましたか。

ア　十分理解できた　　イ　概ね理解できた　　ウ　理解できなかった　　エ　訓練対象外

（ウを選ばれた方）理由をお聞かせください

問７．（UPZ の方のみ）屋内退避の方法について理解できましたか。

ア　十分理解できた　　イ　概ね理解できた　　ウ　理解できなかった　　エ　訓練対象外

（ウを選ばれた方）の理由をお聞かせください

問８．（自家用車・レンタカー避難の方のみ）避難の流れは理解できましたか。

ア　十分理解できた　　イ　概ね理解できた　　ウ　理解できなかった　　エ　訓練対象外

（ウを選ばれた方）理由をお聞かせください

問９．今回の訓練により、原子力災害が発生した場合に自分がどのように行動すべきか手順がわかりましたか？

ア　わかった　　イ　わからなかった　　ウ　その他

（イ、ウを選ばれた方）の理由をお聞かせください

問１０．今回の訓練に参加して、原子力災害時に、避難を確実に行えると感じましたか？

ア　感じた　　イ　感じられなかった

（イを選ばれた方）理由をお聞かせください

【自由意見】

問１１．今回の訓練に関するご感想・ご意見、今後の訓練に取り入れたら良いと思うこと等、お気づきの点をお聞かせください。

★アンケートにご協力いただき、ありがとうございました。

＊本アンケートは記入後、お住まいの市町村の職員にお渡し下さい。

令和５年度 新潟県原子力総合防災訓練　防災 DX アプリアンケート（住民用）

原子力防災訓練にご参加いただきましてありがとうございました。参加された皆様の貴重なご意見・ご感想を今後の訓練などに活かしたいと考えておりますので、アンケートにご協力をお願いいたします。

１．お住まいの市村を教えてください。

□ 柏崎市　□ 刈羽村　□ 長岡市

２．年齢を教えてください。

□ ２０歳未満　□ ２０歳代　□ ３０歳代　□ ４０歳代
□ ５０歳代　□ ６０歳代　□ ７０歳代　□ ８０歳以上

３．使用したスマートフォンの種類（OS）

□ iPhone(iOS)　□ その他（Android など）　□ 使用していない

問１．「二次元バーコード」による受付についてご意見をうかがいます。

① 今回はどちらの方法を使用しましたか。（1 つに☑）

□ アプリを使用　□ 簡易避難者カード（紙）を使用

② ①で「アプリを使用」に☑をした方、アプリへの事前登録はどうでしたか。

□ 簡単　□ 普通　□ 難しい

③ ①で「簡易避難者カード（紙）」に☑をした方、紙での受付はどうでしたか。

□ 簡単　□ 普通　□ 難しい

④ 「二次元バーコード認証」が完了するまでの時間はいかがでしたか。(1 つに☑)

□ 速い　□ 普通　□ 遅い

⑤ 「二次元バーコード認証」の読み取りは１回で完了しましたか。（1 つに☑）

□はい　□いいえ

⑥ 「二次元バーコードによる受付」と「自治体職員が氏名・地区名等を口頭で確認する受付」を比較して考えると、どちらが良さそうですか。（1 つに☑）

□ 二次元バーコードによる受付　□ 自治体職員が口頭で確認する受付

⑦ ⑥で「二次元バーコードによる受付」と答えた方、その理由を教えてください。（複数可）

□ 口頭でのやりとりがなくて簡単　□ 受付時間が早くて良い
□ 二次元バーコード決済などで操作に慣れている
□ その他（下の欄に記入ください）

<裏面に続きます>

⑧　⑥で「自治体職員が口頭で確認する受付」と答えた方、その理由を教えてください。（複数可）

□　アプリの使用に抵抗感がある　□　個人情報の流出や用途が不安
□　アプリの操作が難しい　□　直接質問されて回答する方が良い
□　その他（下の欄に記入ください）

問２.「新潟県防災 DX アプリ」に関してご意見をうかがいます。

①　スマートフォンアプリを利用して避難の受付を行うことについて、どうお考えですか。（1 つに☑）

□　問題ない　□　どちらとも言えない　□　良く思わない

②　今後、二次元バーコード認証による受付を活用することについて、どうお考えですか。（1 つに☑）

□　活用してほしい　□　どちらとも言えない　□　やめてほしい

③　アプリではなく、マイナンバーカード自体を利用して避難の受付をすることについて、どうお考えですか。

□　実施してほしい　□　どちらとも言えない　□　必要と思わない

問３.その他

アプリの改善点、その他御意見・御要望があれば自由に記入してください。

★アンケートにご協力いただき、ありがとうございました。

＊本アンケートは記入後、お住まいの市町村の職員にお渡し下さい。

説明資料

表面 これから安定ヨウ素剤を配布します！

放射性ヨウ素による内部被ばくを防ぎ、
甲状腺がん等の健康影響を低減するため、
これから安定ヨウ素剤を配布します。

【アレルギー・配布希望の確認】

①ヨウ素アレルギーのある方
②配布を希望しない方
→ **配布は行いません**

例）ヨウ素に過敏症・アレルギーがあると医師から言われた

例）イソジン®などのヨードうがい液を使って、じんましん、息苦しさ、血圧低下などの過敏症状（アレルギー）が出た

【配布人数・年齢の確認】

配布係に安定ヨウ素剤が必要な次の区分の人数をお教えください。

区分	種類	服用量
①13歳以上	丸剤	2丸
②3歳以上13歳未満	丸剤	1丸
③生後1か月以上～3歳未満	ゼリー剤 32.5mg	1包
④生後1か月未満※	ゼリー剤 16.3mg	1包

※生後1ヶ月未満で安定ヨウ素剤を内服した赤ちゃんや安定ヨウ素剤を服用した方の母乳栄養を受けた赤ちゃんなどは、服用後2週間から4週間をめどにお近くの小児科医院・病院で甲状腺機能に関する検査をお受けください。

安定ヨウ素剤を配布します
服用の指示が出た場合、速やかに服用してください

※めったにないことですが、過敏症状が出るとすれば飲んでから30分以内くらいです。
その間は念のため体調の変化に気をつけながら避難してください。

※裏面の注意事項も、後ほどよくお読みください。

裏面

＜安定ヨウ素剤の服用に係る注意事項＞

○服用後、慎重に様子を見ていただきたい持病
避難後に受診する際に、安定ヨウ素剤を服用したことを報告してください。
ただし、1回の安定ヨウ素剤服用での影響は小さいと思われます。
(1) 甲状腺機能亢進症、機能低下症
(2) 腎機能障害、腎臓病
(3) 先天性筋強直症
(4) 高カリウム血症
(5) 結核
(6) 低補体血症性蕁麻疹様血管炎と診断されたことがある方
(7) ジューリング疱疹状皮膚炎と診断されたことがある方
(8) 次の薬剤を服用されている方
・カリウム含有製剤(カリウム補給)
・リチウム製剤(躁うつ病治療)
・抗甲状腺薬
・高血圧治療薬(アンジオテンシンⅡ受容体拮抗剤、カリウム貯留性利尿剤、ACE阻害剤)

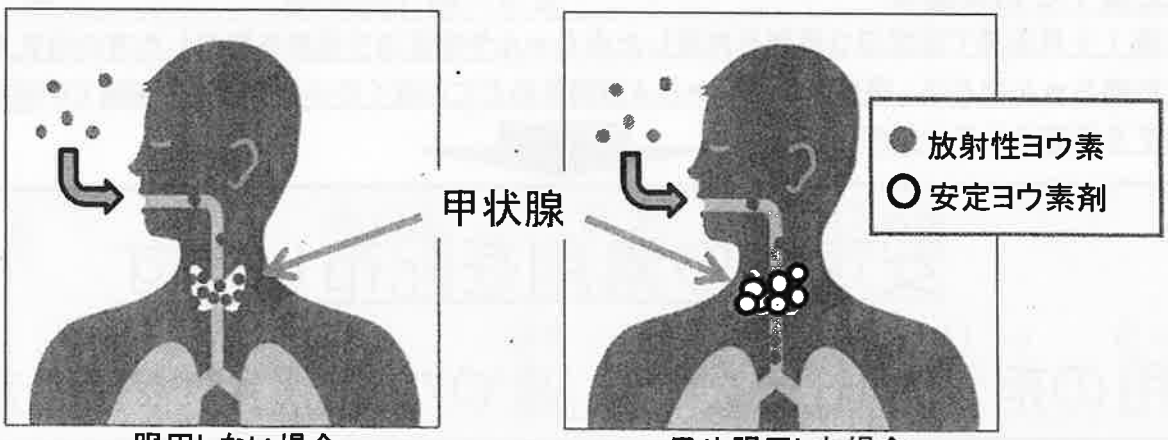
○妊娠している方
原則として安定ヨウ素剤の服用対象です。

○授乳中のご婦人
原則として安定ヨウ素剤の服用対象です。

○副作用として報告されている症状
・過敏症: 発疹 など
・消化器症状: 悪心・嘔吐、胃痛、下痢、口腔・咽喉の灼熱感、金属味覚、歯痛、歯肉痛、血便(消化管出血) など
・その他の症状: 甲状腺機能低下症、頭痛、息切れ、かぜ症状、不整脈、原因不明の発熱、首が腫れる、声が枯れる、つばが飲み込みづらい など

○安定ヨウ素剤を飲んだ後の注意点
・飲んだ直後の30分程度を目安に、体調の異変に注意しながら避難してください。
・誤って、服用量以上に服用してしまった場合でも、吐く等の処置は必要ありません。
・もし、呼吸困難、血圧低下、発疹などの異変を感じた場合には、すぐに医療機関(重篤な場合は119番)にご相談ください。

(参考)安定ヨウ素剤の効果



服用しない場合　　予め服用した場合

※安定ヨウ素剤は甲状腺に集積して、後から体内に入ってきた放射性ヨウ素の甲状腺への取り込みをブロックできます。

※放射性ヨウ素を吸入する前の24時間以内に安定ヨウ素剤を飲めば90%、吸入した後でも8時間以内に飲めば40%をブロックします。