

## Sizewell A and B Stakeholder Group (SSG)

Minutes of the Special Sub-Group meeting held at 7pm on Thursday 17<sup>th</sup> July 2014

at Sizewell Sports and Social Club to consider the Sizewell B Dry Fuel Store.

### Item 1. Opening Comments

- 1.1 Chair welcomed attendees, provided domestic arrangements and advised the purpose of this special sub-group meeting was to consider the Sizewell B Dry Fuel Store. Congratulations were extended to Niki Rousseau on her recent marriage. Chair advised that the NDA Insight Magazine and the NDA Report and Accounts were now available and invited comments and questions about these via email. Chair advised that the next special meeting, regarding the Off-site Emergency Plan, would be held late September.
- 1.2 JG commented that the SSG Minutes and related documents were now held on the Magnox website and requested that **all interested parties were informed**. Chair concurred. JG added that the new NDA website was difficult to navigate and **Chair agreed to contact the other SSG Chairmen to discuss this matter and advise the NDA of their findings**.

### Actions & Recommendations:

- i **Secretariat to advise all interested parties of e-location of SSG Minutes and related documents.**
- ii **Chair to liaise with other SSG Chairmen regarding the ease of navigating the NDA website and report findings to the NDA**

### Item 2. Attendance

- 2.1 Present: Cllr Marianne Fellowes (MF) Chair; Cllr David Bailey (DB); Cllr Ron Bailey (RB); Mr Trevor Branton (TB); Mr Declan Foy (DF); Ms Joan Girling (JG); Cllr Terry Hodgson (TH); Cllr Maureen Jones (MJ); Dr Sheena Robertson (SR); Mr Mike Taylor (MT); Mr Pete Wilkinson (PW)
- 2.2 In Attendance: Ms Marjorie Barnes (MB), EDF Energy  
Mr Nick Cofield (NC), EDF Energy  
Mr Martin Cubitt (MC), EDF Energy  
Dr Louise Franks (LF), Minutes  
Mr David Green, East Anglian Daily Times  
Mrs Haleana Knights, Magnox  
Ms Jan Lovell, Member of the Public  
Mr Jim Roberts, Magnox  
Mrs Niki Rousseau, EDF Energy
- 2.3 Apologies received by the secretariat: Dr Therese Coffey; Ms Pat Hogan; Cllr Bill Howard (represented by Cllr Ron Bailey); Cllr Andrew Nunn; Cllr Richard Smith; Mr Colin Tucker.

### Item 3. Sizewell B Dry Fuel Store (DFS) presentation

- 3.01 Mr Cubitt, Technical Inspection Manager at Sizewell B, introduced himself and provided a 45 minute presentation that described the background, life cycle & process and current status of the spent fuel project. This included two animations to describe the transfer of spent fuel assemblies from the ponds into Multi Purpose Canisters (MPC) and the transport (in HI-TRAC casks) and storage (in HI-STORM shielded containers) of the MPC's within the dry fuel store (please refer to the EDF Energy slides and video clips for details).

3.02 The following additional points were noted:

- Sizewell B DFS has yet to be constructed and the photographs used for illustration were taken at an operating site in the USA. Several dry fuel stores are in operation in the world.
- The inert gas used in the MPC's is Helium.
- Heat escapes the DFS by convection.
- The DFS will be approx the size of a football pitch and will be located on the old South car park on the Sizewell B site.
- Non-active DFS commissioning tests are scheduled for second quarter of 2015.
- The MPC's can be repackaged on site (existing fuel building or specialised repackaging facility), if required, for final disposal at the proposed geological disposal facility.
- The transfer of the spent fuel assembly from the ponds into the MPC's takes place within two existing chambers adjacent to the current storage pond within the fuel building.
- Once filled with spent fuel assemblies, a lid is placed on the MPC, approx 15gallons of water is drained out and the lid is sealed with an automated weld.
- The cask is fully dewatered and dried, over pressurised with inert gas, the access ports are individually sealed and a 'doughnut' of steel welded over the lid before being transported.
- HI-TRAC transfer cask weighs 70tonnes empty and approx 112tonnes when full.
- Transporter will be a multi-wheeled low-loader style vehicle.
- Inspection ring used to enable inspection of the MPC prior to transfer to the HI-STORM storage container.
- HI-TRAC cask re-used to transport next MPC.
- Temperature of HI-STORM containers monitored using thermocouples at the top and bottom.
- EURatom safeguards deployed once MPC placed into final storage position.
- MPC is delivered to site as a double walled steel shell. Space between walls is then filled with concrete on site.
- No fans or ducting is required for DFS ventilation.

**Item 4. Questions and answers regarding the Sizewell B dry fuel store**

4.01 RE Monitoring and Inspection

RB Who undertakes inspections and are they independent?

MC Each cask will be inspected by the manufacturer at their works. EDF Energy have considered the QA process for manufacture. Each cask will be receipt inspected on site. A fingerprint inspection can be taken upon transfer of the MPC from the HI-TRAC to the HI-STORM.

MF What is the role of ONR?

MC A stringent permissioning regime will be deployed to enable active commissioning. The planning permission enables DFS construction. At every stage, permission to proceed will be required from the internal regulator to enable the licence instrument requirements to be met. EDF Energy has to satisfy the ONR and have a safety case to operate the DFS.

RB Are the casks independently inspected?

MC Yes. The manufacturer has their own inspection arrangements, there is an independent inspection undertaken, EDF Energy will send individuals to the works to inspect the casks and the UK regulator has visited the works.

MT What is the assurance of the inspections?

CT A suite of inspections at the manufacturing works followed by receipt inspection at site, including all certification for welding and materials.

JG Clarification of the process for welding on the lid on the MPC sought.

MC The MPC lid is placed into position and the bay is drained, 15 gallons of water removed and replaced with inert gas, lid is welded and the weld is inspected, the remaining water is removed, the MPC is then over-pressurised to test for weld leakage prior to final sealing.

JG Does the final MPC sealing rely upon a second phase of welding?

- MC Several small valves on the top of the MPC are capped using a weld. A 'doughnut' ring is then welded over the whole lid.
- MJ Is the paperwork for the inspections retained and does this cover the entire process?
- MC Yes. The site record will contain the original steel certification, all welding certification and the details of all inspections undertaken.
- MJ Will everything be done to ensure safety if any faults are identified during any inspection?
- MC Yes.
- MF Given that the steel of the Belgian reactor pressure vessels was found to be flaking after several years, will there be ongoing inspections of the steel?
- MC The steel flaking was part of the manufacturing process, part of the quality control that leads to the materials certification. The specification at that time was different from that applied now. There will be periodic inspections undertaken.
- DF What is the inspection regime over the lifetime of the casks and is there any inspection of the concrete?
- MC There are two aspects for concrete – the pad that the casks will stand on will be subject to QA checks of concrete quality for each batch including a 56 day concrete strength test once poured. In terms of concrete between the double wall of the HI-STORM (the rings), the key check is for voidage to ensure no gaps exist.
- RB Who appoints the independent inspector?
- MC EDF Energy appoint an independent inspector. EDF Energy records are inspected by independent inspectors, for example internal regulators and the ONR.

#### 4.02 Source of concrete used on site

- MT Is the concrete produced on site?
- MC The concrete for the base of the DFS will be produced on site. The concrete for the rings is likely to be sourced from a local supplier.

#### 4.03 Decision to have a DFS on site

- RB When was it decided to have a DFS on Sizewell B site?
- NC There is a document that outlines all the stages involved in the selection of dry storage as the best option.
- NR The SSG received this document at the time.
- JG The options were discussed some 4-5years ago. About 20 options were considered by the SSG. Not sure if there was a public consultation.
- ACTION: EDF Energy to provide a copy of the documentation including details of the consultation undertaken.**

#### 4.04 Cost of DFS process

- PW Most appropriate option would be not to produce spent fuel in the first place. How many MPC's and HI-TRAK containers will be used? How much do they cost? What are the costs for the transporters and other specialised machinery? Has a carbon footprint been undertaken for the DFS process?
- MC Both transporters are made in Holland. Both are similar to the heavy transport systems used to move transformers about. In terms of actual cost figures, I can find out.
- ACTION: MC to ascertain cost per unit of casks, HI-TRAK containers and transporters and provide these to the SSG.**
- PW What is the cradle to grave carbon footprint for the DFS process?
- MC EDF Energy are likely to know this.
- ACTION: MC to ascertain and advise carbon footprint for DFS process.**

#### 4.05 Spent fuel storage versus disposal

- MF Why has the DFS process been described as final?  
MC *Storage* of the spent fuel on site will initially be in the wet store then finally in the dry store. *Disposal* of the spent fuel will be in the Geological Disposal Facility (GDF).  
PW The GDF is still not certain and if this does not become a reality, then this spent fuel will be stored at Sizewell. Who will take on the title for this spent fuel once EDF Energy has gone? It is irresponsible to keep producing this spent fuel if the answer to this question is not known.  
MF Once the station has been decommissioned, if the DFS still contains spent fuel who will be responsible for this? When will the local community funding payments of £20k per annum end?  
NC The £20k/annum will roll on until the whole site has been decommissioned.  
PW What if EDF Energy don't exist? The Government will have to pick this up and the taxpayer will have to pay out.  
MC EDF Energy pay into a fund to enable decommissioning of the site.  
PW Can't predict how much this will cost. It is all for private profit.  
**ACTION: Chair to pose the question to the NDA of who will take title of spent fuel in the DFS if EDF Energy no longer exist.**

#### 4.06 Decay footprint and radioactive protection

- PW What is the radioactive inventory of the spent fuel in terms of the radionuclide content and heat profile? Please provide details for the decay profile during the 5-10years that the spent fuel is in the wet store and, thereafter, in the dry store.  
MC Each flask placed into the dry fuel store will have a maximum heat load of 24KW that will decay over time. These decay curves are in the public domain.  
PW What about the radionuclide content? What types of radioactivity? Is it vulnerable to a terrorist attack?  
MC Security aspects cannot be divulged, however, this will form part of the safety case.  
MF Does the passive cooling process enable radiation to escape?  
MC Air travels on the outside of the cask and there will be no transfer of radioactivity from inside to outside.  
MF What about if there was a leak?  
MC The casks are over pressurised with helium and any leak would be detected.  
MF I remain concerned.  
MC There has been world wide experience that demonstrates that the casks are passively safe.  
MF Can you provide the radionuclide content and decay profile for the spent fuel in the wet store and in the dry store?  
MC I will try.  
**ACTION: EDF Energy to provide the radionuclide content and decay profile for the spent fuel in the wet store and in the dry store.**

- SR Will staff working in the DFS require radioactive protection clothing?  
MC No. No protective clothing will be required.

- MT Has additional worker exposure been considered?  
MC This has been assessed as part of the safety case. The radiation protection people have visited a plant in the USA that use this equipment to understand how to develop procedures to minimise worker exposure. All work on site is undertaken to minimise exposure of staff.

#### 4.07 DFS building

- DB What is the anticipated life-span of the building itself?  
MC Concrete pad design life is 100years. Every ten years there will be a periodic safety review. The building is a steel-framed building that enables maintenance and replacement of components as necessary. In other parts of the world the casks are stored outside.

- DB Who will fund the maintenance of the building and how secure is this funding? What if EDF Energy no longer exists?
- MC The decommissioning fund will support the future maintenance and any repairs. The fund is independently distributed and managed.
- PW It will fall to the tax-payer.  
**ACTION: Chair to ask the NDA who will fund the maintenance of the DFS building and how secure the funding is?**
- MT My understanding is that the building could be here for 150years. What about climate change and the ability of the structure to cope with the effects? I am concerned that the decommissioning fund will be insufficient to ensure that the building will be appropriate into the future.
- MC The periodic review will consider the DFS. The safety case will rely upon this assessment and will take into account future estimates of climate change. For example, if temperatures rise then plant that requires cooling may need to upgrade their air conditioning. One great advantage of the DFS is that it is passive and does not require active cooling.
- MF What will happen if the DFS commissioning is delayed?
- MC We are confident that the DFS will be fully commissioned for active use by late 2015. The operating safety case states that there must be sufficient room in the ponds to defuel the reactor at all times, meaning that the reactor cannot be refuelled without ensuring sufficient ponds capacity. This means operations would have to cease if insufficient pond capacity was available.
- MF There is huge pressure to ensure that progress with the DFS project does not lag behind.
- MC The project has been ongoing for several years and we are absolutely confident that it will be completed for active use within the timeframe set out.
- MF Who oversees the construction of the DFS?
- MC There is a project group on site. The main contractors will be overseen by the EDF Energy project staff to ensure compliance. All of this information is available to the regulators.
- MF Does the District Council have a role?
- NC SCDC check that the DFS is conforming to the agreed planning permission.
- RB With a domestic construction there are checks that are certified to ensure that certain stage requirements have been met before the build can continue – is this the case with the DFS?
- NC I believe so.  
**ACTION: NC to check and confirm whether SCDC have staged requirements for the DFS construction that must be met before construction is allowed to proceed.**
- JG Do SCDC have a set of conditions for how the DFS must be constructed? I have recently asked for these for the construction of Sizewell B and these have not been forthcoming. Can these be provided?
- NC I can provide a copy the original set of conditions for the construction of Sizewell B. The conditions for the DFS have been imposed by the Government, SCC and SCDC and I can also provide a hard copy of these.  
**ACTION: NC to provide a hard copy to the secretariat of the conditions for the construction of Sizewell B and for the DFS, for circulation to members.**
- 4.08 Benefits to the local community
- DB Will there be any increase in employment opportunities within the local community?
- MC Existing staff likely to absorb this work. There may an uplift in the number of engineering staff.
- DB Will the allocation of the £20k annual funding ever be reconsidered to include the Leiston community?
- NC This funding was to mitigate any effect of the store being within an Area of Outstanding Natural Beauty (AONB) and it's use is to protect the AONB. This is what the County and District Councils wanted.
- DB The store is within Leiston Parish. People in Bawdsey can draw upon this fund but residents of Leiston, only 1.5miles from the DFS, cannot.

- MF Neither the County Council or the District Council initially sought any compensation. MF asked for compensation to be requested and at the planning meeting a section 106 agreement was put forward. The value of this agreement was inappropriately small given that the fundamental contribution the local community are making to the National good by hosting a storage site and accepting the spent fuel. The section 106 was linked to the AONB and not a community package. I would like to see this allocation reviewed both in terms of amount and parameters for use. Additionally, as the minutes of the meetings to decide allocation are not made public, the spending of this fund is not open and transparent. This is very disappointing.
- NC The allocation is reviewed every five years and the amount adjusted for inflation.
- JG The original fund of £120k was allocated by three individuals to the AONB. One is the Sizewell B Station Manager, one is the SCC representative on the SSG and the other is the SCDC representative on the SSG. No Leiston Parish representative was on the adjudicating body. The money should be spent on matters like the Sizewell beach car park and the beach huts at Sizewell beach. It is not the fault of EDF Energy.
- NC As the Greater Gabbard and Galloper Wind Farms utilise Sizewell B land, EDF Energy insisted that funding was made available to the local community. This 'Suffolk Foundation' funding is accessible to the Sizewell and Leiston community.
- ACTIONS:**
- **Chair to summarise frustration about current 106 funding set up in terms of amount, where this is spent and three who makes the allocation decisions**
  - **NC to provide more information about the Suffolk Foundation funding.**
- RB Will EDF Energy provide a separate and additional fund to Leiston Town Council for use in Leiston?
- NC I can't agree to this.
- SR Please don't forget the other parishes in the surrounding area.
- TB The whole community needs to learn the lessons from this experience to ensure that any future funding really benefits the local community.

#### 4.09 European Atomic Energy Community (EURATOM)

- MF What is EURATOM?
- MC All nuclear facilities are subject to the EURATOM safeguarding arrangements. Basically, this involves the use of sophisticated tamper proof seals. This means that, for example, casks cannot be moved about without conforming to EURATOM legislation. This is an independent organisation that forms part of the safety case.

#### 4.10 Emergency Planning Arrangements

- MF The ONR confirmed that when they determined the size of the detailed emergency planning zone (DEPZ) that the DFS was not considered as part of the assessment as it had not yet been built. When planning permission was sought for the DFS, EDF Energy explained that the DFS was part of their regular operation and that storage of spent fuel on site was planned for. The combined effect was that the DEPZ was determined without consideration of the plan for spent fuel to be stored in the DFS. What effect will the DFS have on the overall risk assessment for the Sizewell B site?
- MC The safety case will consider the risk posed by the DFS. This will be considered when the DFS comes into operation. No assumption that the risks will increase because of the DFS should be made. The capacity of the DFS is for 146 casks, however, the initial campaign will be for 7 casks to be stored by the end of 2015 / early 2016.

#### 4.11 Fuel Storage in the Ponds

- MT Given that the ponds at Sizewell B are nearing capacity, If there is a station blackout, how will the spent fuel in the ponds be kept cool to ensure that it does not ignite? Have the risks associated with this been considered in the risk assessment for the site?
- MC Current storage of spent fuel in the ponds forms part of the risk assessment for the site. The cooling system and the back-up cooling arrangements are sufficient for the maximum capacity of the ponds. Ignition of fuel in the ponds is not feasible given that the level of water above the fuel elements is 2.5M.
- JG What is the rationale behind the planned 5-10years that spent fuel is stored in the ponds prior to being stored in the DFS?
- MC This is because there is a limit on the heat output of the spent fuel in each cask of 24KW. Each spent fuel element will be at different levels depending on its location within the reactor. The ponds allow the heat output to decay and an appropriate loading plan will be implemented to ensure that the heat limit of the cask is not exceeded to maintain compliance with the safety case.
- MF Is the 24KW heat limit an average or is it a maximum?
- MC It is an average for the cask. Some fuel assemblies may be higher heat rated, others may be lower heat rated.
- JG The capacity of the ponds for wet storage will be realised during 2015 and to enable further wet storage, some of the current wet stored spent fuel elements will be removed and dry stored.
- MC Yes, that is correct.
- JG Given that you know what is currently in the ponds, is there a plan for which elements will be dry stored and when, and is this a uniform number each year?
- MC The plan is to dry store elements on a campaign basis. The transfer from wet to dry will be on a batch basis, for example 75 elements removed from wet storage to the DFS then 10 elements moved from the reactor to pond, followed by another 10 and another 10.
- TB What is the capacity of the wet pond in terms of numbers of fuel elements?
- MC I don't have that to hand and am unsure whether I can share that with you.
- MF If your campaigns remove the lower heat-rated elements and the capacity of the ponds is then used to store high heat-rated elements, won't the overall heat contained within the ponds increase over time?
- MC The initial decay of heat from newly discharged fuel is rapid. All the fuel assemblies in the pond decay over time. When the ponds receive newly discharged fuel assemblies the average does increase slightly and then with time will fall away. The intention is to remove a higher number of assemblies with each campaign and then, over time, to replace these with hotter newly discharged assemblies in smaller batches. Overall, the heat contained within the ponds will not change significantly until there are no more newly discharged assemblies to put into the ponds, at which point the average will drop away.
- MF Is there a maximum heat capacity for the ponds?
- MC There is a safety case for pond heat loading.

#### 4.12 Lifetime considerations

- JG When will the site be considered to be at the end of its life? Is this when all the spent fuel is out of the reactors, out of the ponds or out of the DFS?
- MC The life of the station will be considered to be at an end when all the spent fuel is in the DFS.
- JG How will the stored fuel be transferred to the final place for disposal, assuming that such a facility will be made available? Will this be oldest fuel first?
- MC If the current site facilities are no longer available and the final disposal repository required the fuel to be repackaged, then a small repackaging facility would be built on site to enable this. The order in which the spent fuel is transferred can only be speculated upon and there may be

a heat limit, for example, that means that the fuel characteristics would be taken into consideration when deciding the order of disposal.

- JG This means that decommissioning of the site will take a long period of time, just like Sizewell A.  
MC This will take a period of time but, depending on the packaging requirements, this is likely to be shorter than that for Sizewell A.
- MF I attended a briefing session about the proposed GDF and the loading order for the GDF was questioned. The Government intend to place a limit on the space that will be made available for storing the fuel generated by EDF Energy and future new build. The GDF will be primarily for legacy fuel as this is not considered as safe as that stored in the DFS. The casks in the DFS are likely to be one of the last sources of waste to be disposed of. This will impact on future generations.

#### 4.13 Transport considerations

- MT Will the cask be treated as an abnormal load?  
MC My understanding is that two casks can be carried on a typical transporter. The larger HI-STORM containers will be transported individually and are similar in size to a transformer.
- MT Will this cause any issue on the highways  
MC No.
- MF Will the movement of fuel out of the ponds and to the DFS be above ground? If yes, what is the rationale for locating the DFS near the A site boundary.  
MC A study was undertaken at the time to ascertain the best option for location and the DFS will be constructed there. I don't recall the details of the rationale. It may have been that this enabled the build to proceed rapidly.
- MF Are any changes required to the roads around site to transport the fuel from the ponds to the DFS?  
MC No major changes required other than to strengthen the covers to the trenches. This is part of the safety case.
- MF Will site tours be suspended during fuel movements? Will fuel movements be undertaken only during outages?  
MC Site tours will not be affected by the campaigns.
- MT Are there any plans for the use of the rail line currently used by Sizewell A, once Sizewell A has gone?  
MF Could this be used for the transfer of casks to the GDF? It is impossible to know at this time.  
JG Leiston Town Council need to consider the future use of the rail line, possibly for Sizewell B decommissioning.  
MF Neighbouring parishes need to consider this too. There should be consultation with the local community when considering matters like transfer of stored waste to the GDF.  
**ACTION: local representatives on the SSG to consider the rail line when informing local town plans.**
- MF What are the planned transport routes for concrete sourced off site?  
NC The transport route originally went through Leiston but after concerns were raised this was changed and the concrete will now be provided by Eastern Concrete in Stowmarket and transported via the normal haulage route.
- DB To clarify, the off-site source will now be brought in from Stowmarket some 30miles away, whereas the Lovers Lane source is only 3 miles away.  
NC The majority of concrete will be produced by the batching plant on site, the rest will be sourced from Stowmarket to enable transport to be via the normal haulage route. This decision was made by the contractor and EDF Energy supports this.
- MF Is this only a contingency?  
NC Yes.

4.14 Use of MOX

PW If Sizewell B were to use MOX, would this have any impact on the loading or storage procedures?

MC There are no current plans to use MOX. If this ever became a possibility then this would have to be considered to establish a safety case.

MF A question will be posed at the National Stakeholder Group meeting regarding the future use of MOX.

4.15 Capacity of the DFS

TB If the capacity for each cask is 24 fuel assemblies and the first campaign will be to store 7 casks this will mean that 168 fuel assemblies will be removed from the ponds. How many fuel assemblies will be placed into the ponds during each outage?

MC Approx 85 to 90.

TB Is the plan to gradually reduce the inventory of the wet pond?

MC Over the next 50-60years the inventory will be slowly transferred to the DFS with the intention that by the time decommissioning is reached there will only be a small number of fuel elements remaining in the ponds.

TB Is there any intention to try and dry store the fuel elements as quickly as possible.

MC No, it will be a gradual transfer over 60 years.

RB Sizewell B won't be here in 60 years.

MC The plan is to ensure that by the end of the life of the station the number of fuel assemblies is minimised, always keeping in mind that the max load of a cask is 24KW.

**Summary of Actions from section 4**

- i EDF Energy to provide a copy of the documentation regarding the decision to have a DFS, including the consultation undertaken.**
- ii MC to ascertain and advise cost per unit of casks, HI-TRAC containers and transporters.**
- iii MC to ascertain and advise the carbon footprint for the DFS process.**
- iv Chair to ask the NDA:  
1) Who will take title of spent fuel in the DFS if EDF Energy no longer exist.  
2) Who will fund the maintenance of the building and how secure is this funding?**
- v EDF Energy to provide the radionuclide content and decay profile for the spent fuel in the wet store and in the dry store.**
- vi NC to check and confirm whether SCDC have staged requirements for the DFS construction that must be met before construction is allowed to proceed.**
- vii NC to provide a copy to the secretariat of the conditions for the construction of Sizewell B and for the DFS, for circulation to members.**
- viii Chair to summarise the frustration about current 106 funding set up in terms of amount, how this is ring-fenced and who makes the allocation decisions.**
- ix NC to provide information to the SSG about the Suffolk Foundation funding.**
- x Local area representatives amongst the SSG membership to consider the rail line when informing local town plans.**

**Item 5: Next Steps**

- 5.1 Chair advised that the Minutes once prepared will be shared with EDF Energy to ensure accuracy. Slides and video clips will be placed onto the SSG website.
- 5.2 No further comments were forthcoming.

The meeting closed at 9.15pm

**Next SSG meeting:** 10.00 on Thursday 11<sup>th</sup> September 2014 at Yoxford Village Hall.

FINAL