
From: Abrahamsson, Arne <Arne.Abrahamsson@nkt.com>
Sent: 04 October 2021 11:00
To: RIIOElectricityTransmission
Subject: Consultation - Shetland HVDC Link - Project Assessment HVDC Cable delivery

Dear Sirs,

My name is Arne Abrahamsson, and I am overall responsible for NKT's deliveries of cable systems for the Shetland HVDC Link.

Please find below NKT's answer to Question 1: , as well as some reflections regarding some of the content of the Shetland HVDC Link consultation related to the cable deliveries of the +/- 320 kV 600 MW single circuit cable: 250 km subsea and 11 km onshore cable routes ("Package A") as well as the "Tie-in" cables for connecting the existing Caithness-Moray HVDC Link to the new HVDC Switching Station at Noss Head ("Package D").'

Question 1: Do you agree with our proposal cost allowances for the Shetland Link Project?

I note that Ofgem proposes to allow the land cable costs and sea cable in section 2.12 – but also that the land cable costs are considered to be more expensive than an "average" project of this type. The total lengths of the Package D cables are very short, but they still require all engineering and routine testing – these costs are independent of the cable lengths. The same applies for the manufacturing process itself that starts with setting up for each of the manufacturing steps (conductor stranding, insulation extrusion, heat treatment, lead extrusion). There will also be start-up cable scrap and end cable scrap for each of the manufacturing steps, and the lengths of scrap cable generated in the various process steps are independent of the length to be produced. In short, the longer the cable lengths the lower fixed costs per meter. Even if NKT has the same cable designs for the Package A land cable and for one of the Package D cables, the insulation material in the two cables is not the same (due to that the Package D cables needs to be compatible with the existing Caithness – Moray cables) thus we cannot manufacture the short Package D length together with the longer Package A land cable. This also means that the small amount of special insulation material to be purchased only for Package D will not benefit from any discounts.

The above is also to a certain extent applicable for the Package A land cables, which also have a small portion of land cables compared with the subsea cables; 11 km being approx. 4% of the total combined cable route of approx. 261 km. These 4% land cable have the same requirements as the sea cable design with respect to be qualified by type testing and also the extensive routine testing including a superimposed impulse test for each design to be manufactured – land cable as well as sea cable.

On the subject land / cables sea cables, NKT has a strong preference for delivering the total cable system from end termination to end termination including the land cable sections and the sea cable sections with the land cable joints and transition joints between the land cable design and the sea cable design. Reason being that the type tests should qualify a cable system – not only a specific cable design but also all components necessary to deliver a complete cable system. This is not impossible to achieve with different suppliers (at least not for AC – DC being more complicated) but it will create a number of difficult interfaces and potentially an unclear situation regarding responsibilities – both during construction / testing – but also during the warranty period.

Overall, we consider that the procurement processes for the Packages A & D have been fair – but a challenge for us as supplier – with a number of iterations and justifications from NKT to SSEN before we were finally selected for the cable delivery.

Best regards

Arne Abrahamsson
Project Director

T +46 455 55811 | M +46 70 636 7994
Arne.Abrahamsson@nkt.com | www.nkt.com



NKT HV Cables | P.O. Box 546 | SE-371 23 Karlskrona | Sweden

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NKT HV Cables AB | Company Registration No.: 559079-0290 | Registered address: Verkövägen 102, 371 60 Lyckeby, Sweden