DRBF Conference The Hague

Dispute Boards for Nuclear Projects – A DAB Member's Perspective

> Murray Armes 9 December 2022

THE NEED FOR NUCLEAR ENERGY

- Historically controversial
 - Safety
 - Nuclear waste (safe long-term storage)
 - Centralised facilities
 - Located away from centres of population
 - Association with nuclear weapons
- Climate change vs Increasing demand for energy
- Political risk
- A world of high traditional energy costs
- Can renewables bridge the gap?
- 5 benefits of nuclear power (EDF Energy):
 - One of the most low-carbon energy sources
 - It also has one of the smallest carbon footprints
 - It's one of the answers to the energy gap
 - It is essential to our response to climate change and greenhouse gas emissions
 - Reliable and cost-effective

WHAT ARE THE FEATURES OF NUCLEAR PROJECTS?

- Complexity
- Cost
- Time
- Multiple stakeholders
- National/international regulators
- Risk
- Joint venture constructors
- Multiple construction stages
- ARE NUCLEAR PROJECTS MEGA PROJECTS?

WHAT IS A MEGA PROJECT?

 "Megaprojects are large-scale, complex ventures that typically cost \$1 billion or more, take many years to develop and build, involve multiple public and private stakeholders, are transformational, and impact millions of people"

> Flyvbjerg, Bent (2017), "The Oxford Handbook of Megaproject Management"

 "Megaprojects are temporary endeavours (i.e. projects) characterized by: large investment commitment, vast complexity (especially in organizational terms), and longlasting impact on the economy, the environment, and society" Brookes, Naomi J, Locatelli, Giorgio (2015) "Powerplants as megaprojects"

CHARACTERISTICS OF MEGA PROJECTS

- Size
 - Usually very large scale
 - Global Mega Project Market is between USD6-9 trillion per year (PMI)
- Complexity
 - Long lead times
- Time
 - Take place over many years
- Cost
 - Often defined as costing more than \$1bn
 - Can be substantially more
- Risk
 - Nine out of ten have cost overruns according to PMI Institute
 - Overruns of up to, an over, 50% are common according to PMI Institute
 - Time Delays
 - Pandemics?

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CHARACTERISTICS OF NUCLEAR MEGA PROJECTS

- Multiple Stakeholders
 - Public Stakeholders
 - Private Stakeholders
 - National Governments
 - Regulators
- More than one contracting entity
 - To mitigate risks contracting entities are often joint ventures of major building companies
 - May be more than one JV working on the site at any one time
 - Interface considerations/agreements
- Often expertise is so specialised there are only a handful of consortia capable of designing and constructing a nuclear facility
- The energy market can change during the course of the project

CHARACTERISTICS OF NUCLEAR MEGA PROJECTS



DISPUTES AND NUCLEAR MEGA PROJECTS

- Is there a greater likelihood of disputes?
- Disputes arise out of UNCERTAINTY which gives rise to RISK
- Nuclear projects are risky because:
 - Complexity
 - Length of project
 - Cost of project
 - Changing technology
 - Joint ventures
 - Political risk
- What is a dispute?

"A dispute evolves from a disagreement that impacts the commercial interests of one or other of the parties to a contractual arrangement"

- A DAB can assist in identifying problems before they become formal disputes
- Is there a role for a DAB during the design stages?
- Is there role for a DAB during the operation stage?

THE TRADITIONAL STRUCTURE OF A DB

- DBs normally comprise:
 - A single member
 - Three persons (one chair and two members)
 - Or more (usually an odd number to prevent a split decision)
- It is important to ensure the right mix and scope of expertise
- Easier to do this with a larger panel (but costs may be a consideration for smaller projects)
- Large, complex projects may involve many disciplines:
 - Engineering, architecture, tunneling
 - Specialist engineering disciplines
 - Legal
 - Construction Management, Quantum and finance
- DBs are normally appointed at the outset of a contract
 - On a Mega Project is there an advantage in having the DB also involved in the design stage?

IS A LARGER DAB HELPFUL?

- Does a larger, more complex project require a larger DAB?
- <u>The London Olympics</u>, two panels:
- Independent Dispute Avoidance Panel
 - 11 members, including chairman
 - Members designated to projects
 - Regular meetings, early warning notices, risk register
 - Employer, contractor, senior execs or project
 - Manager may request involvement
 - Designated member proceeds only when both parties agree to involve IDAP
 - Flexible process: can be adapted to suit dispute with few procedural rules
- Dispute Adjudication Panel
 - Process must comply with UK rules for Statutory Adjudication as a minimum
 - 12 members including chairman

IS A LARGER DAB HELPFUL?

- <u>The Channel Tunnel</u> 5 members:
 - Legal
 - Engineering
 - Quantum
 - Finance
- In the event a dispute was referred a panel made up of:
 - Chair
 - And two others
- A larger panel allows the project to benefit form a wider range of experience
- Allows selection of the members best suited to a particular dispute

SOME THINGS TO CONSIDER

- Larger DAB = higher cost (offset by greater benefits?)
- Availability?
 - Short term, is it possible to get a larger board to meet together with the parties regularly?
 - Are all DAB members required for every meeting?
 - Long term, are all board members going to be available throughout the life of the project?
 - Especially if the DAB extends to the operation phase: assessing performance, availability, etc
- The use of reserve board members?
 - Can assist if availability becomes a problem
 - How should they be kept up to date?
- In the event of a dispute how will the tribunal be selected?

DISPUTE BOARDS AND NUCLEAR MEGA PROJECTS

TRADITIONAL EPC



MEGA PROJECT EXAMPLES

- The London Olympics (not nuclear but a relevant model)
- The ITER Project
- CERN High Luminosity Project

Case Study 1: The London Olympics

- Multiple large-scale projects
 - Venues: Olympic Stadium, Aquatics Centre, Velodrome and Velopark, Temporary Venues
 - Utilities, Structures, Bridges, Highways
 - Broadcasting, media and Press Centres
 - Landscaping
 - Transport Improvements
- No possibility of an extension of time
- Complex site
- Contract: NEC3
 - Stimulates project management
 - Clear and simple language
 - Promotes resolution of issues before they become disputes
- UK Statutory Adjudication





- Dispute resolution (tiered process)
 - Negotiation
 - Escalation to senior executives
 - Independent dispute avoidance panel
 - Adjudication panel
 - High Court: Technology and Construction Division



- Independent Dispute Avoidance Panel
 - 11 members, including chairman, appointed by ODA
 - Representative panel of industry experts
 - Members designated to projects
 - Regular quarterly meetings
 - Early warning notices, risk register
 - Included in each contract but not mandatory
 - Employer, contractor, senior execs or project
 - manager may request involvement
 - Designated member proceeds only when both parties agree to involve IDAP
 - Flexible process: can be adapted to suit dispute
 - Few procedural rules



- Dispute Adjudication Panel
 - Process must comply with UK rules for Statutory Adjudication as a minimum
 - 12 members including chair
 - Drawn from RIBA, ICE, RICS, CIOB, IET, etc.
 - Adjudicator may act as expert to determine target price



- Why Two Panels?
 - A concern about jurisdiction
 - An adjudicator cannot take part in other proceedings
 - Concern that dispute avoidance process is a form of "mediation" [Glencot Design Co Ltd v Ben Barratt & Son (Contractors) Ltd]
 - Concerns that decisions might not be enforced
 - Processes recognize that disputes will arise
 - Departs from the usual standing board format
 - Is this really a Dispute Board or a Hybrid?



• Did It Work?



- Definition of Success
- Venues and Infrastructure completed ahead of time and within budget
- "These were happy, glorious Games"
- To date only a couple of cases have ended up in court
- Only a small handful of adjudications with 1 suspended
- 'Do the basics well'





- Initial attitude
 - Scepticism/cynicism
 - Plenty of work so why take on tis difficult project?
- Who does the panel actually represent?
- Ingrained supply chain behaviours
 - Ingrained attitudes to dispute resolution within the supply chain and client
- Change over time with experience





- When does a disagreement become a dispute?
- Can IDAP coexist with an adjudication panel?
- Effective and proactive contract administration is vital
- Identify and understand the desired impact of the board
- Ingrained attitudes to dispute resolution within the supply chain and client can be overcome
- Emphasises aims and attitudes of the client
- Reinforcement of behavioural and cultural ideals
- Balance of the panel is crucial
- Clearly identify the framework for referrals
 - Encourages and supports timely resolution of emerging issues
 - Reinforces contractual dispute resolution mechanisms
 - Provides a framework and background for open examination
- Is it binding?





Case Study 2: The ITER Project

THE ITER PROJECT

- "The Way" (Latin)
- International Tokamak Experimental Reactor
 - Not designed to produce energy for the grid
- Nuclear fusion research megaproject
 - The world's largest experimental Tokamak reactor

the way to new energy

'We say that we will put the sun into a box. The idea is pretty. The problem is, we don't know how to make the box.'

Pierre-Gilles de Gennes, French Nobel laureate in physics

- ITER will provide the "box"
- A collaboration of 35 nations over 35 years, began 2007
- ITER Members
 - China, EU, India, Japan, Korea, Russia, USA

THE ITER PROJECT – NUCLEAR FUSION

- For a city of 1m inhabitants, energy requirements:
 - 250,000t oil
 - 400,000t coal
 - 60kg fusion fuel







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THE ITER PROJECT – THE SITE

- Located in Cadarache, Southern France
- 180 hectare site, 42 hectare platform
- 39 buildings and technical areas



THE ITER PROJECT – THE ADJUDICATION PANEL

- Convened in February 2014
- Comprises 6 members
- With exception of the chairman the member's contracts are for a period of 7 years which is the duration of the construction period
- The panel members are drawn from the UK and France but the selection process was EU-wide
- Although called an *"adjudication panel"* it is actually a dispute board and its primary function is dispute avoidance, dispute resolution only takes place for disputes that cannot be avoided





THE ITER PROJECT – THE ADJUDICATION PANEL

- Due to public procurement constraints F4E could not enter into tripartite contracts with the contractors and the adjudicators.
- Therefore, the adjudicators were employed and 'imposed' by F4E in the public procurement procedures to award the construction contracts
- The panel is made up of:
 - Lawyer (chair)
 - Architects (x 2) (now 1)
 - Nuclear Engineer
 - Dual Qualified Lawyer/Engineer
 - Nuclear Services Engineer
 - (now both delay and quantum experts)
- <image>
- The chair and two others are selected to adjudicate a dispute

THE ITER PROJECT – THE CONTRACTS

- Works let in packages, Construction Contracts
 - Let based either on FIDIC Red or Yellow Books
 - The anti-seismic bearings contract was let as a bespoke form
 - An architect/engineer has been employed to produce the Employer's design and project manage the various contracts
- Services Contracts
 - Architect/Engineer and H&S and Inspection Services are bespoke forms of contract
- Each Construction Contract with F4e has provisions for resolution of disputes by the DB
- Each contract has interfaces with other contracts (interface agreements).
 - Each interface agreement has provisions for resolution of disputes by the DB, different rules apply and F4E will not be a party to such adjudication.







THE ITER PROJECT – THE CHALLENGE

- Contracts let to consortia of international contractors
- Construction techniques are challenging with design and construction issues never before encountered
- Interfaces between contracts are challenging
- With complex and evolving novel technology change management is a challenge (technical evolution faster than construction)
- Change management is reflected in complex scheduling requirements
- F4E has to comply with financial regulations and procurement rules







THE ITER PROJECT – DISPUTE RESOLUTION

- Overall timetable for dispute resolution:
 - (1) Engineer's Determination or Other Dispute
 - (2) Referral of Dispute to Senior Representatives (There is a strict 28 day time bar for this)
 - (3) 30/45 day period for Senior Representatives to discuss
 - (4) If necessary, dispute is referred to adjudication



THE ITER PROJECT – DISPUTE RESOLUTION

- The DB dispute resolution procedure is different to the normal FIDIC procedure which is:
 - (1) Notification of Dispute to Chairman
 - (2) Notification by Chairman of Adjudicator's Selected by Chairman (Parties propose only)
 - (3) Respondent's Written Submissions
 - (4) Adjudicator's Decision Issued within 25 days (meeting/hearing/visit may take place)
 - (5) Decision to include an award on costs reflecting the parties' relative success or failure in the adjudication
 - (6) Decision is Final and Binding unless brought before the European Court in Luxembourg within 45 days





THE ITER PROJECT – DAB PROCEDURES

- The DB meets the parties and visit the site approximately every 4 months
- The actual requirement is a minimum of once per year and a maximum of four times
- Visits include an overview of progress and key points and meetings are held between F4E and any contractors/consortia that wish to participate
- Presentations by F4E and contractors
- Each visit includes an in depth visit to the works and walk around the works
- <u>This first of a kind project is a prime candidate for</u> <u>multiple disputes – this has not been the case</u>







THE ITER DAB











THE ITER PROJECT – THE SUN IN A BOX



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Case Study 3: CERN High Luminosity Project

CERN – THE LARGE HADRON COLLIDER • Built between 1998 and 2008

- 27km circumference •
- Up to 175m deep •
- Particle accelerator: accelerate particles to very high kinetic • energies and let them impact other particles
- Analysis of by products of collisions provides information about subatomic particle behaviour



HIGH LUMINOSITY PROJECT CERN

- CERN: The LHC High Luminosity Project
- Announced in 2013, operational by 2025
- Higher number of collisions is proportional to Higher Luminosity = greater chance of finding something!
- Five person standing DAB set up in 2016
- Appointed during both <u>design</u> and <u>construction</u> stages
- Two almost identical contracts, but different ground conditions and jurisdictions
- FIDIC Red Book
- Tunnelling project involving shafts and galleries

HIGH LUMINOSITY PROJECT CERN





HIGH LUMINOSITY PROJECT CERN Two projects in different locations:

- - Geneva, Switzerland and Cessy, France _
- Two contracts, two designers and two contractors (and two different site conditions and jurisdictions)
- Effective use of nonbinding opinions



HIGH LUMINOSITY PROJECT CERN



LEARNING FROM NUCLEAR MEGA PROJECTS

- Megaprojects may involve construction and processes that have never been carried out before
- Megaprojects take a long time
 - The same team may not be available for another project
 - One legacy of such projects is <u>LEARNING</u>
- That learning must be passed on to those who will build the future nuclear facilities

IS DISPUTE AVOIDANCE WORTH IT?

- DB costs 0.05%-0.26% of the construction costs
 - Typically 0.1% (DRBF Survey Data)
- It costs several times more to go to litigation or arbitration
- About 99% of disputes referred to DBs are resolved in less than 90 days, the average cost is about 0.02% of the value of the dispute
- 98% of referred disputes end with the DB
- Of the 2%, half are subsequently upheld
- Of the 1% of decisions upset by arbitration/courts, almost always due to procedural irregularity, not on the substance of the decision
- Remember Disputes are costly
 - Money, Time, Reputation
- Average 50% of all legal costs in the construction industry are dispute related
- <u>That time and money could be spent on the project itself.... or by</u> <u>improving margins and the financial performance of the industry</u>