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Fukushima

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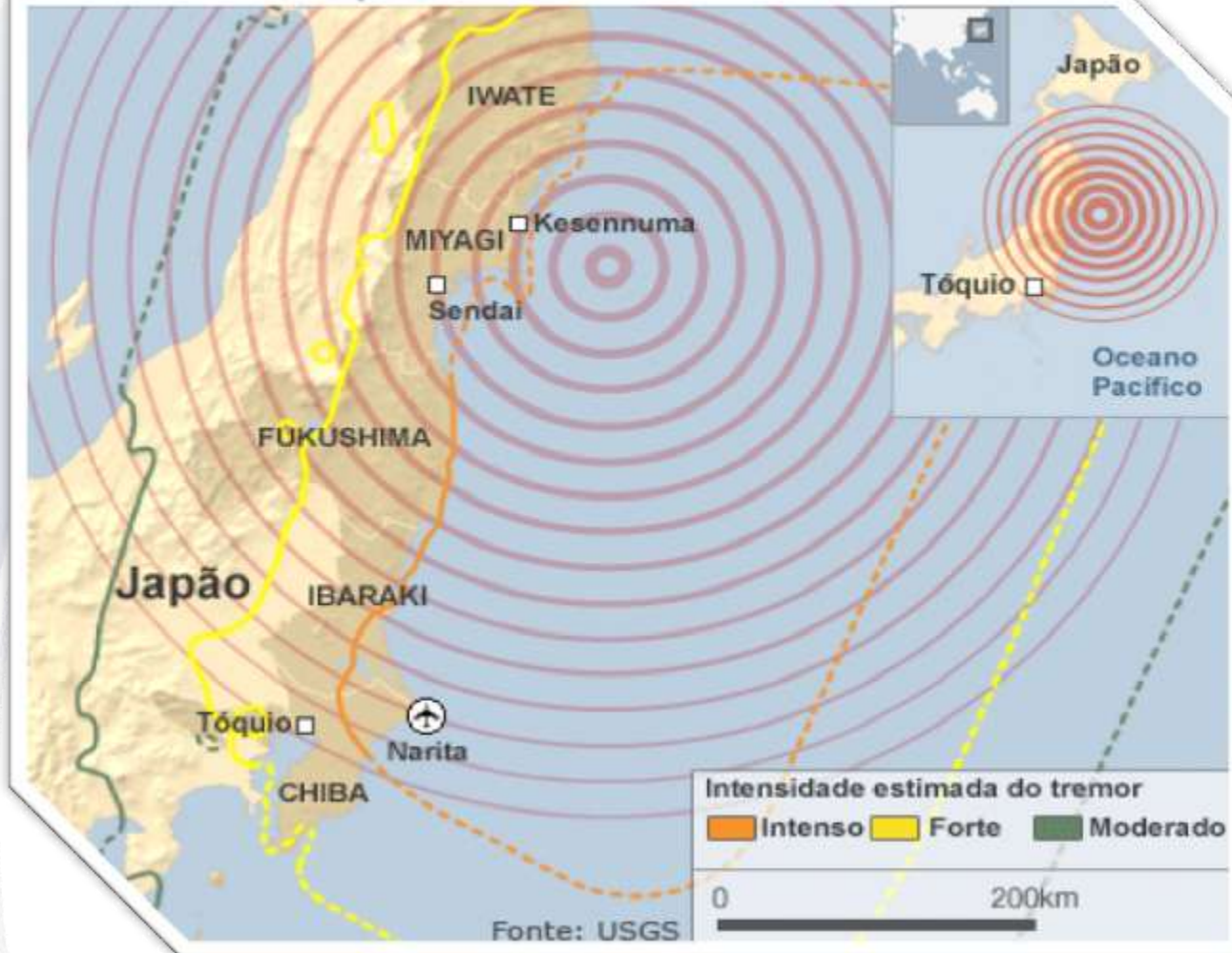
FUKUSHIMA DAIICHI NUCLEAR POWER PLANT



JULY/2012



Áreas afetadas pelo terremoto



Earthquake of 9 on the Richter scale, followed by tsunami, very close to the coast.



CHAOS

PANIC

INQUIRIES



What happened in Japan cannot and should not be minimized, but, like everything in life, should be studied with caution.

Is necessary to analyze the causes of all the consequences of errors and, especially, learn from each one of them.

There is no any power generation technology that is 100% safe and whoever says otherwise is totally wrong.

All technologies have their risks and should improved from these errors. What we do, as engineers and scientists is working to reduce these risks.



- **Name: SAYANO-SHUSHENSKAYA** - Russia
- **Power: 6.400 MW** -> 15% of all energy produced in Russia, and 2% of total electricity in the world (for 2009).

IMPACTS:

- 76 people died;
- The accident caused the oil spill, releasing at least 40 tonnes;
- The Rusal, the world's largest aluminum producer, has stopped producing about 500,000 tons of aluminum, due to lack of energy.





← BEFORE

AFTER →



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THERMOELECTRIC POWER PLANT ACCIDENT



IRÃ – 386 MW





- Projects more stringent;
- More rigorous evaluation at critical points;
- Advanced PWR: natural circulation without the need for cooling pumps;
- Plants more safe.

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About Engevix



JACKSON

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- EPC Services and Engineering Projects
- Areas of operation:
 - Power (generation, transmission, distribution)
 - Infrastructure (sanitation, railway, highway, metro, airports, buildings, ports)
 - Industry (oil and gas, chemical and petrochemical, metallurgy, mining, pulp and paper, biofuel)
- Macaé: off-shore maintenance

DESENVIX

- Renewable Energy Projects
- Vertical Operation, including: development, implementation and operation of power plants
 - Generation
 - SHP
 - HPP
 - Aeolian
 - Biomass
 - Transmission

ENGEVIX CONSTRUÇÕES OCEÂNICAS ECOVIX

- FPSO hulls buildings for oil and gas industry
 - Rio Grande: shipyard

INFRAVIX

- Infrastructure Solutions
 - VIABAHIA
 - Public-Private Partnerships (PPP's)
 - Rio Grande do Norte: airport
 - Brasilia: airport



Board of Directors

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CEO
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Executive Director
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Ciro Schmitt

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Edson Bouer

VPI
Industry
José Carlos Lopes

VPN
Infrastructure & Constructions
Wilson Vieira

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GLOBAL PRESENCE



- Permanent Offices
- Representation





Portfolio is approximately R\$ 4 billion in outstanding contracts in progress and trading

Investment of more than R\$ 10 million in annual information technology

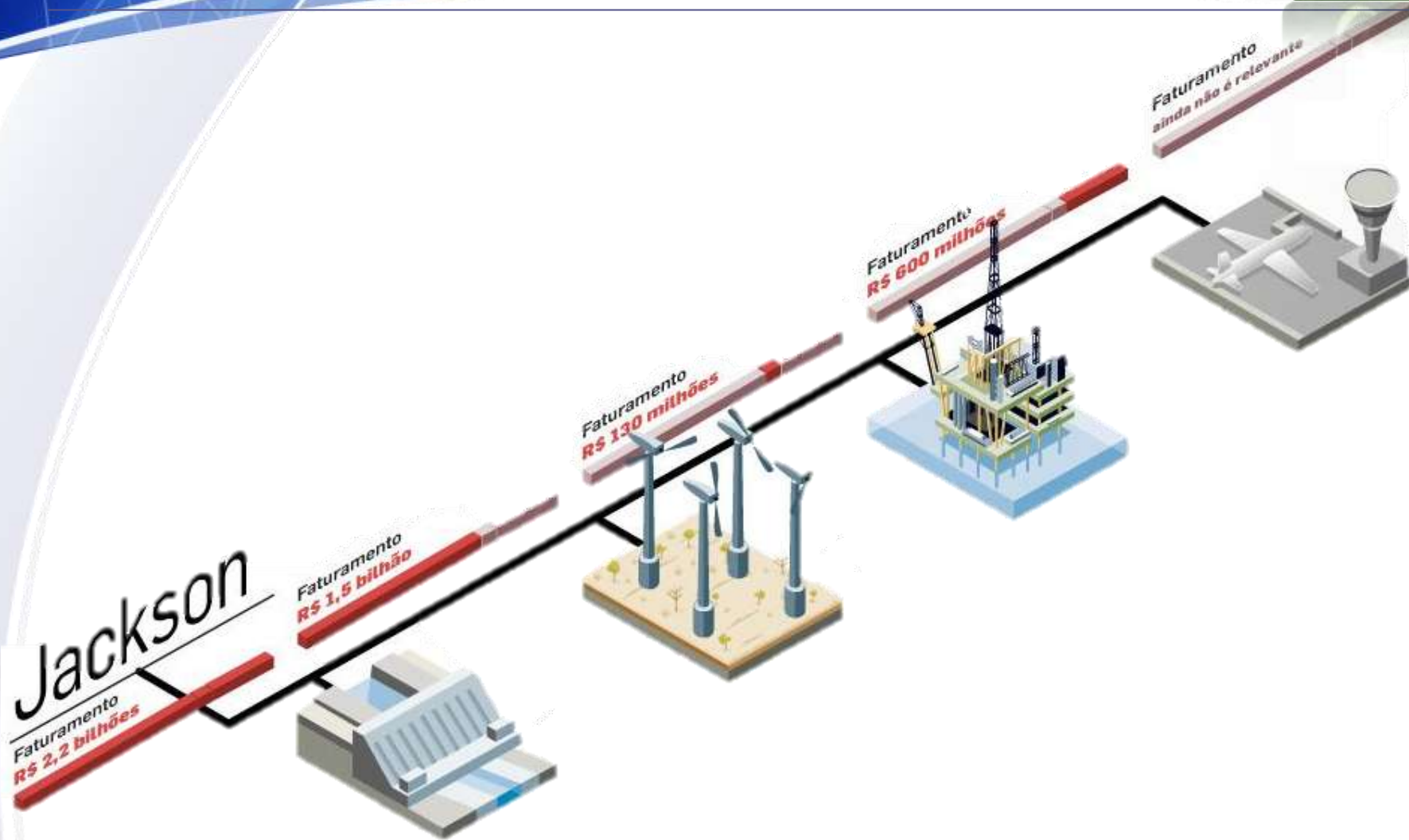
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Average annual revenues exceeding R\$ 1.5 billion with an estimated R\$ 1.7 billion for 2012

It employs more than 3,700 people (more than 700 engineers)

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HOLDING REVENUE



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ANGRA PROJECT



➤ ANGRA 1

- Architectural Design treatment of facades and landscaping

➤ ANGRA 2

- Civil Project non-nuclear area
- As built of piping project and copy from paper to Autocad

➤ ANGRA 3

- Civil Project

}	Primary System Structure
	Secondary System Structure
- External piping and pipeline between ANGRA 2 and 3
- Electromechanical 2 - associated with secondary system
- Electromechanical 1 - associated with the primary system (subcontracted by ÅF-Consult)

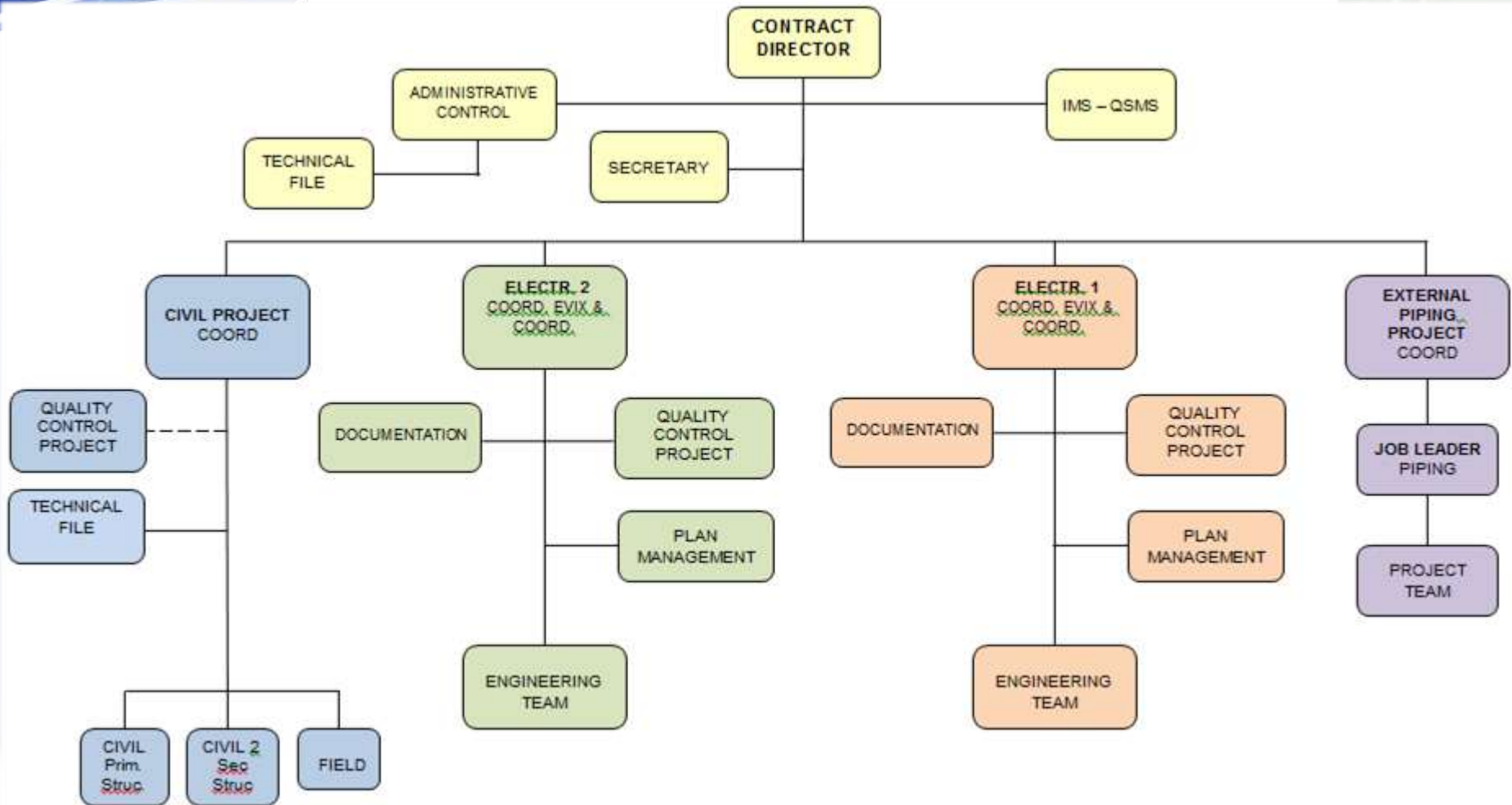
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ANGRA 3

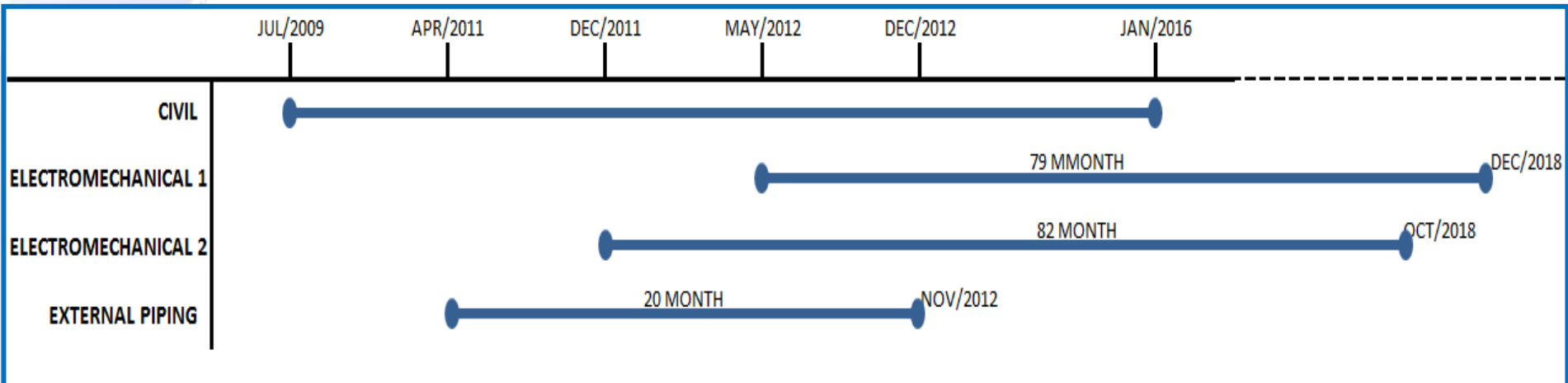


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 **Eletrobras**
Eletronuclear



ANGRA 3 DESIGN SCHEDULE





CIVIL DESIGN

Structural design and detailing for construction of all building related to energy production

Does not include support buildings and site finishing



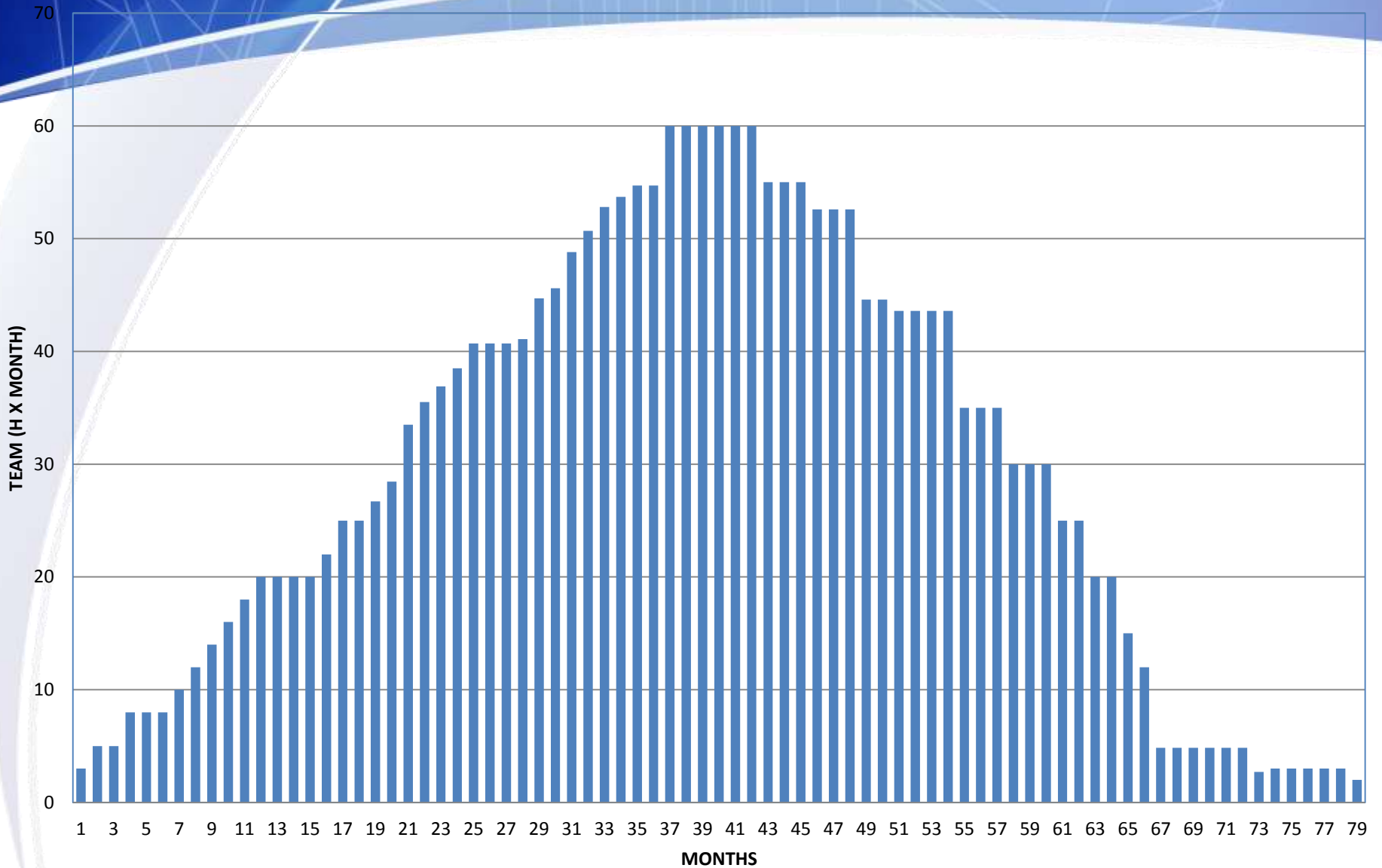
ELECTROMECHANICAL 1 AND 2 PROJECTS

Services: piping, ventilation, electrical, I&C, design support during erection and commissioning;

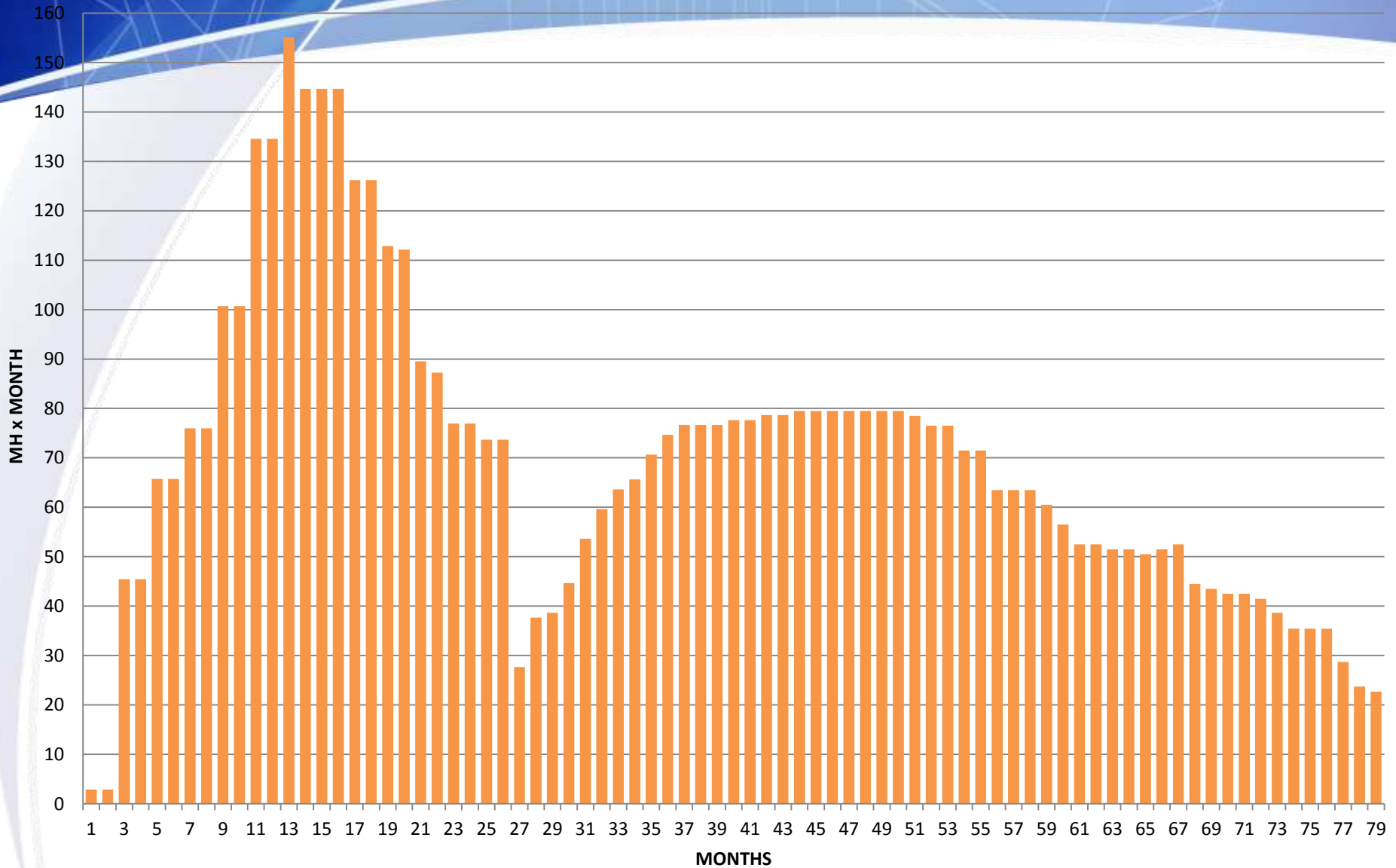
Electromechanical 1 Project -includes modelling 3D in PDS

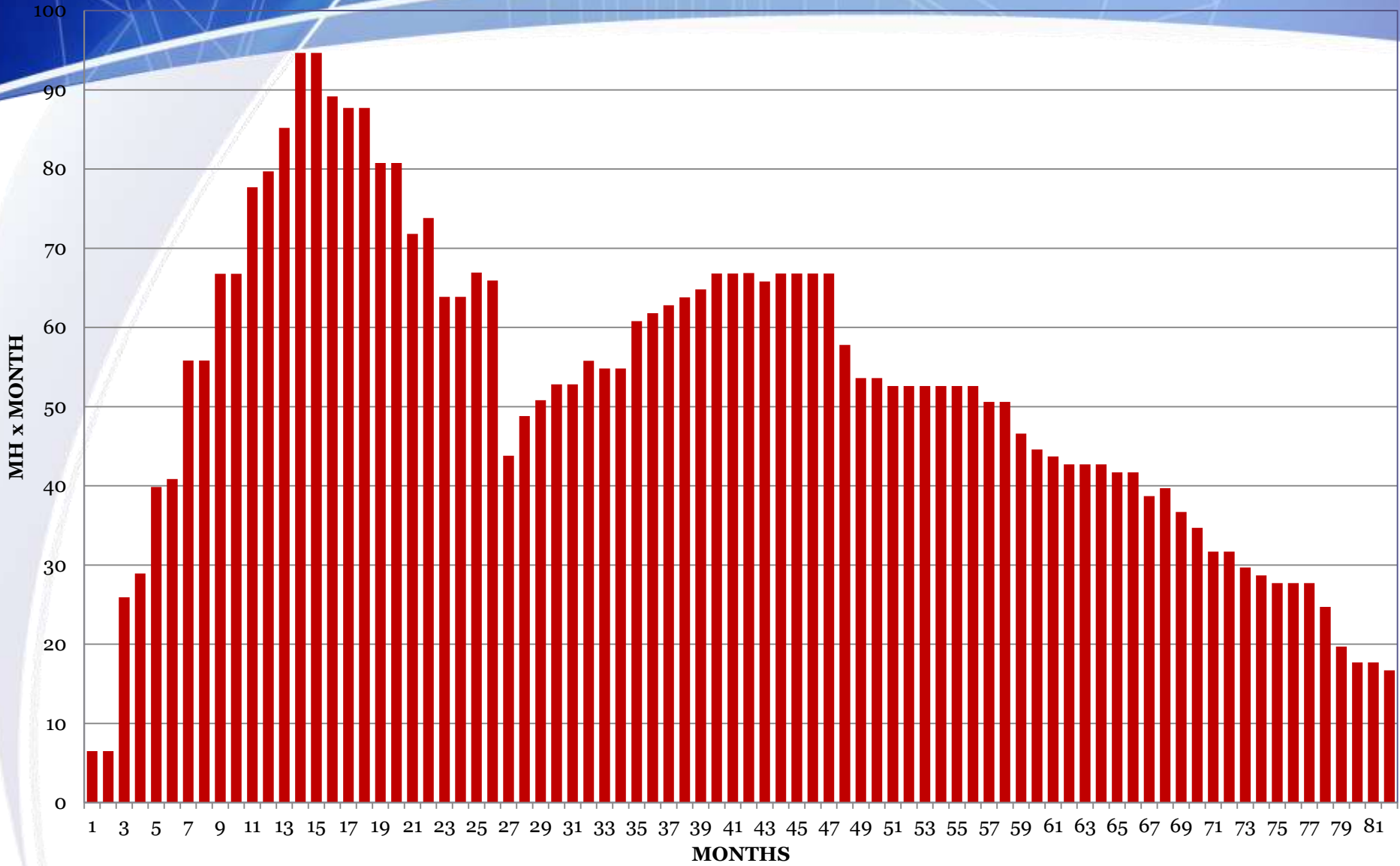


ITEM	CONTRACT	PROGRESS
1	Civil secondary structures	40%
2	Civil 1 – nuclear structures	50%
3	Piping external area	80%
4	Electromechanical 2	4%
5	Electromecanical 1 (with AF)	1%



ELECTROMECHANICAL 1 PROJECT RELATED TO THE PRIMARY SYSTEM HISTOGRAM





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THANK YOU

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