
The Toshiba ABWR

- Reducing New Build Project Uncertainties -

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President

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Organization of Power Systems Company

As of September 1, 2010

Power Systems Company



Yasuharu IGARASHI
President and CEO,
PS Company

EVP: Shigenori SHIGA

Fuel Cells Business Promotion Dept.

GM: Osamu MAEKAWA

Nuclear Energy Systems & Services Div.

VP: Kiyoshi OKAMURA

Toshiba America Nuclear Energy Corporation

President: AKIO SHIOIRI

WEC Coordination Div.

EVP: Shigenori SHIGA

Thermal & Hydro Power Systems & Services Div.

EVP: Yoshihiro ABURATANI

Power & Industrial Systems R&D Center

GM: Osamu MAEKAWA

Keihin Product Operations, Fuchu Complex

GM: Motoharu GOTO

GM: Isao AOKI

Overview

- 1. Countries considering New Build Projects face a daunting set of challenges***
- 2. Toshiba's efforts this past half century have focused on reducing some of these challenges and uncertainties***
- 3. Opportunities exist to further reduce these challenges and uncertainties***

What are the Major Challenges?

- ***Land for site and T&D Right of Way***
 - ***T&D Infrastructure/Reserve requirements***
 - ***Geo-political support***
 - ***Financing***
 - ***Electricity Pricing and Energy Mix***
- ***Licensing***
 - ***Design and Construction Certainty***
 - ***Cost Certainty***
 - ***Nuclear Equipment Supply***
 - ***Operational Certainty***

TOSHIBA's Focus

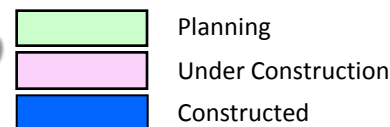
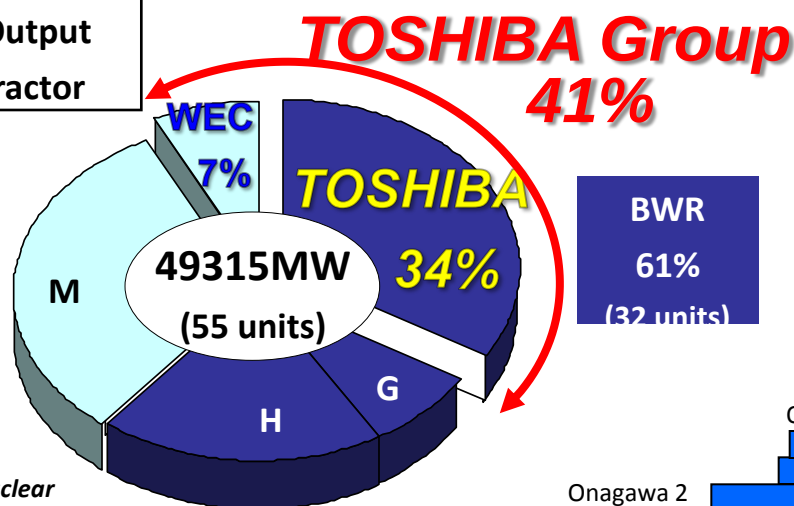
Timeline

- **Focus for the period since 1960 ~**
 - ***BWR Project Development within Japan***
 - ***Buildup of nuclear infrastructure***
 - ***Completion of first ABWR - 1996***

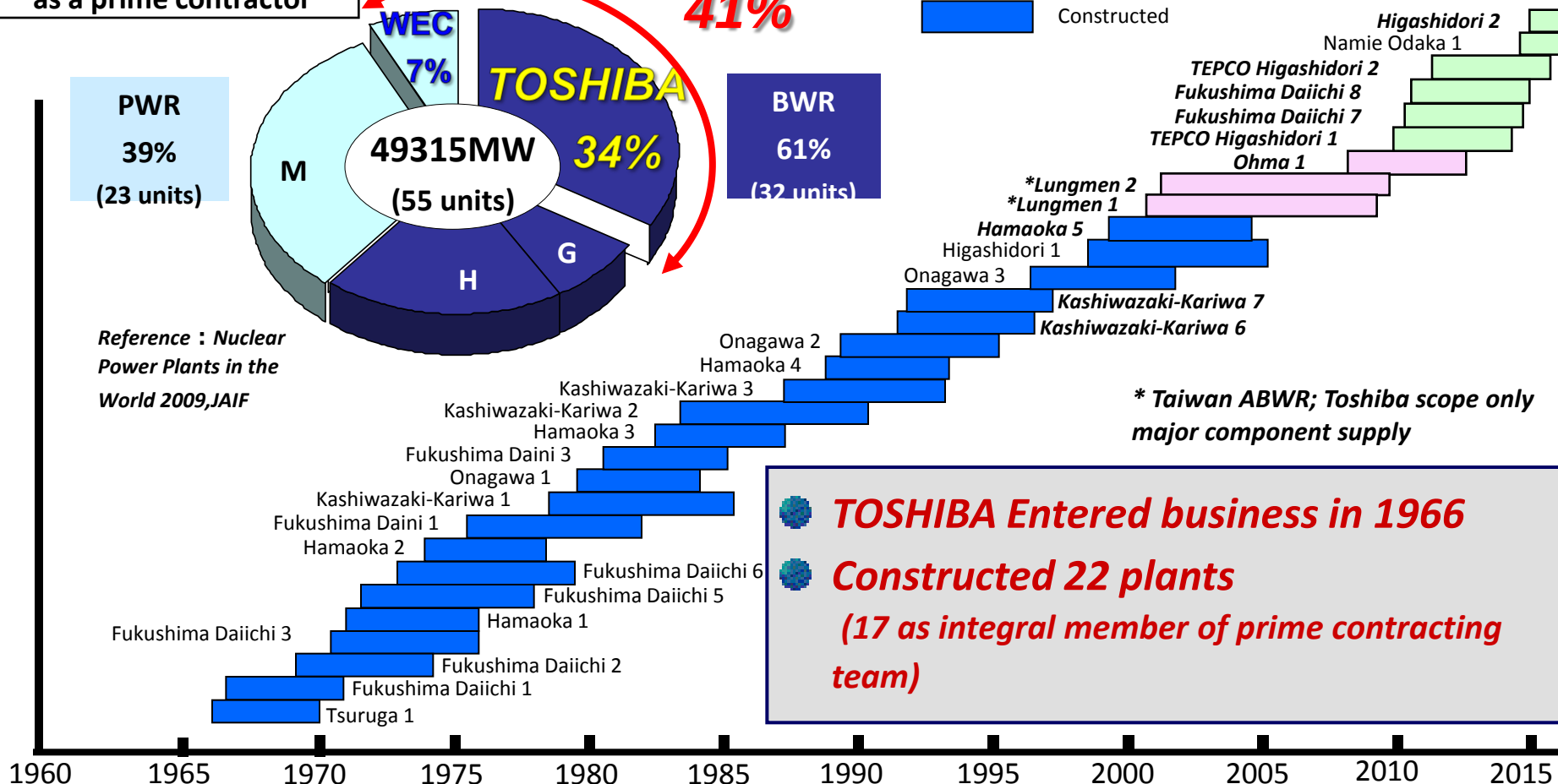
- **Expansion period began in 2000**
 - ***Development of the International market utilizing skills and experience from a sustained, uninterrupted 40 year period.***

TOSHIBA's Construction Experience in Japan

Share of Gross Output
as a prime contractor



Reference : Nuclear
Power Plants in the
World 2009, JAIF



Continuous Construction Experience

TOSHIBA Construction Experience of ABWR

Kashiwazaki-Kariwa Unit 6

- ***The first Generation III Reactor in the world
(C/O: November 1996)***
- ***Gross Electric power 1,356 MW***
- ***Short construction period
37 months (1st concrete – FL)***
- ***Built on schedule and budget***



Hamaoka Unit 5

- ***World's 3rd ABWR
(C/O: January 2005)***
- ***Gross Electric power 1,380 MW***
- ***Latest technologies applied***
- ***Combined type reactor
building for the high seismic
condition***



ABWR is only operating Generation III Reactor

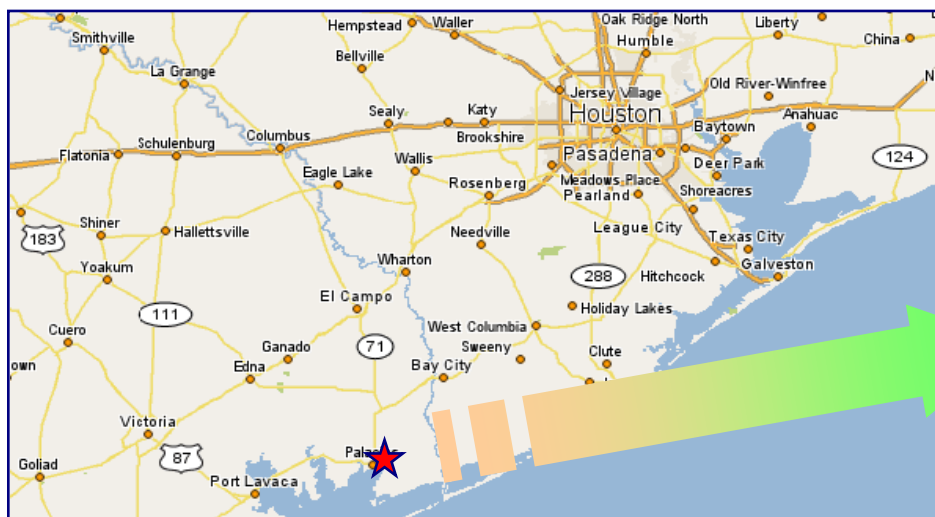
Expansion Period : 2000 to Present-

- ***Bellefonte ABWR Feasibility Study: 2003-2004***
- ***Confirmed viability of ABWR technology for US market***
- ***Acquisition of WEC – 2006***
- ***Brought together complementary technologies and skill sets that benefit deployment of ABWR and AP1000 designs***
- ***STP ¾ Project- 2007 – ongoing***
 - ***Begin Engineering – 9/2007***
 - ***File COLA for Toshiba ABWR US NRC – 9/2008***
 - ***Begin construction planning and modularization planning – 8/2008***
 - ***Begin major equipment procurement – 8/2009***



Building solid base for ABWR deployment worldwide

US-ABWR for STP 3&4 Project

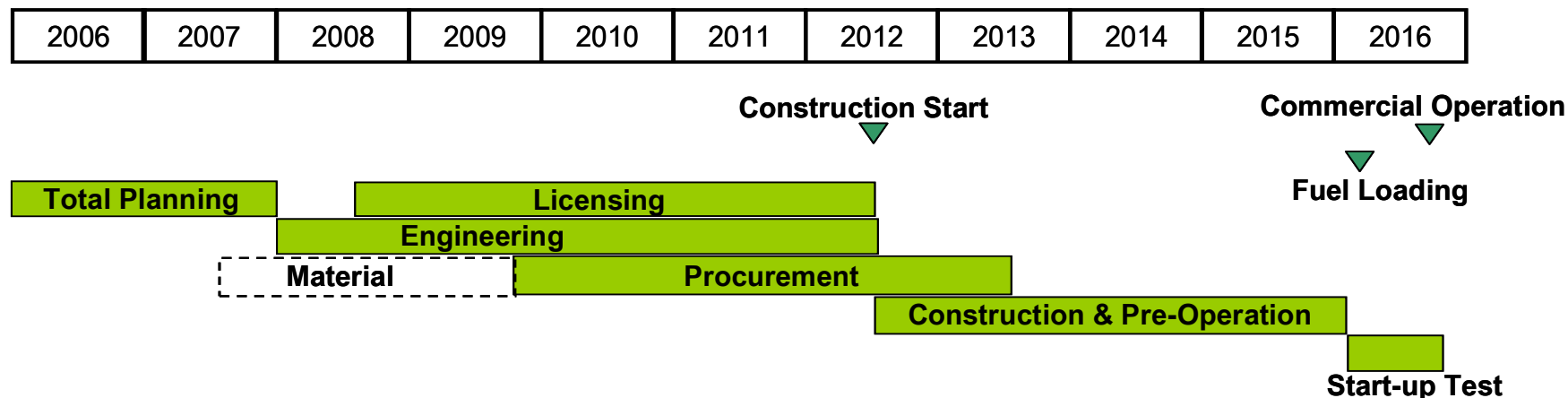


Location of South Texas Project



Bird's eye view of the site

Engineering and Construction Schedule for STP3



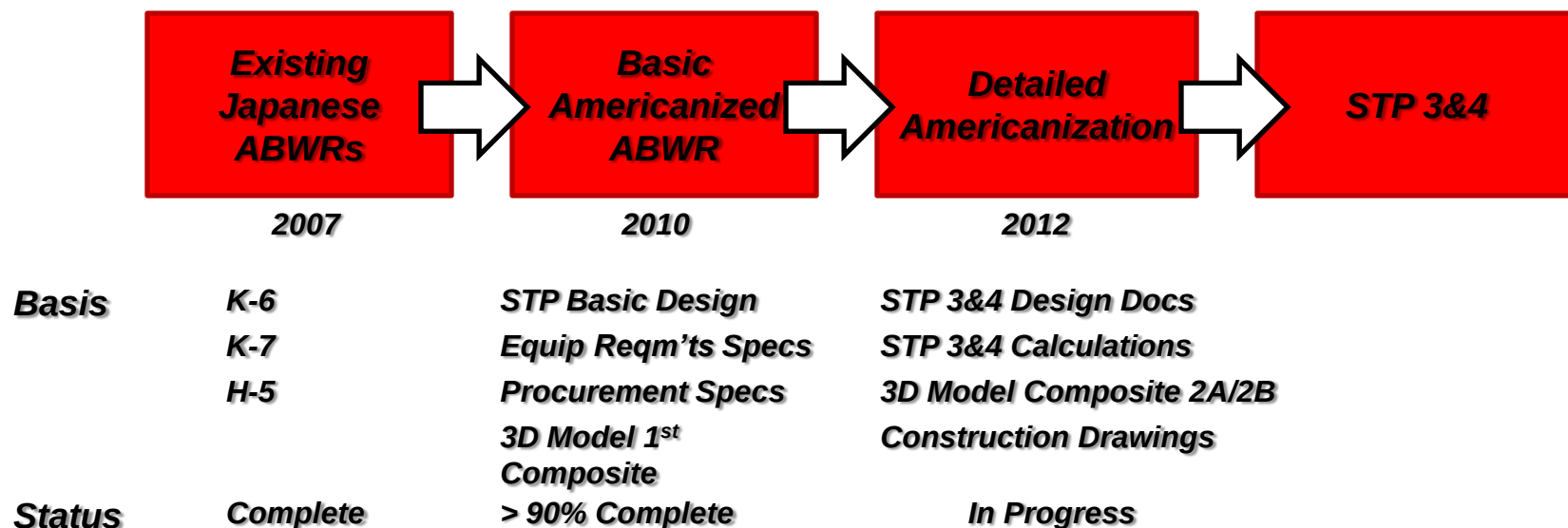
STP $\frac{3}{4}$ Licensing Schedule

- ***COLA submitted to US NRC – 9/2008***
- ***Over 1700 RAIs issued; (~95%addressed/resolved)***
- ***NRC accepted TOSHIBA as ABWR Supplier – 8/2009***
- ***Beginning Phase 4 – SER with no open items – 4/2011***
- ***Expect FSER – 9/2011***
- ***Expect COL issuance – 6/2012***
- ***Reference COL for US fleet, short licensing effort for all subsequent COLAs***

Licensing Process Proceeding on Schedule

STP 3&4 Design Status - Americanization

Replication and Americanization Timeline



Objective: complete detailed design prior to start of safety related construction

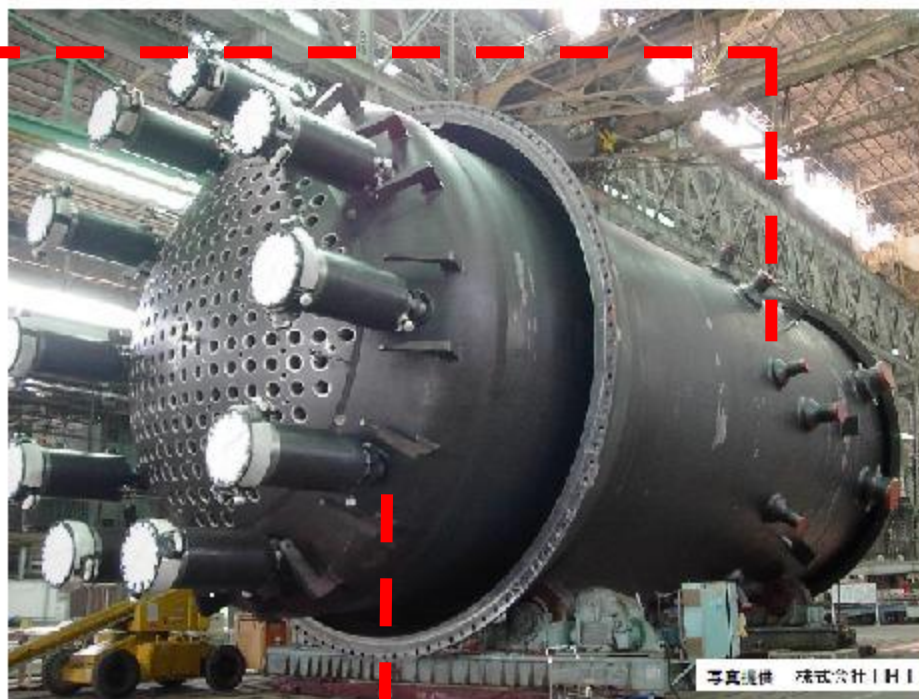
Long Lead Equipment Procurement Underway

[RPV Parts for STP 3&4 under fabrication]

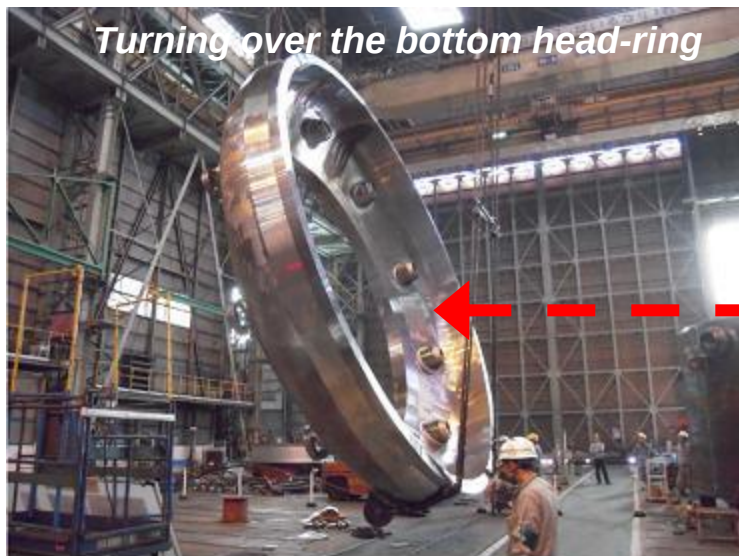
Hot Roll Bending of Shell Course 2 plate



RPV



Turning over the bottom head-ring



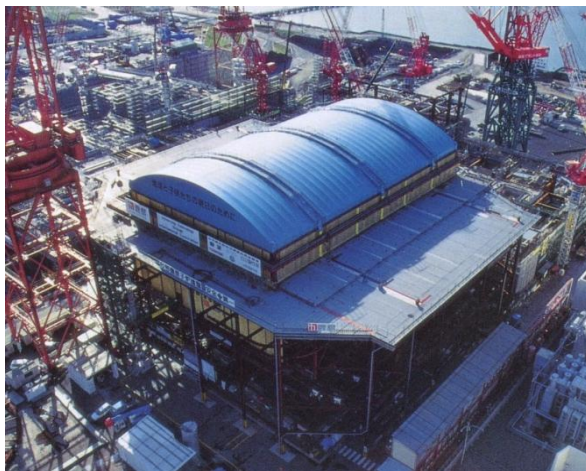
RPV: Reactor Pressure Vessel

Construction Method of NPP

1) Expansion of Parallel Works
Open-Top Construction Method



2) Improvement in Field Productivity
All-weather Construction Method



3) Reduction in Field Works
Modularization



Use of proven, Advanced Construction Methods =
Cost and Schedule Certainty

TOSHIBA ABWR – Expansion to the International Market

➤ **Design Finalization**

STP detailed design meeting US Codes & Standards finished in 2012

➤ **Advantageous Licensing Status**

STP's final SER will be issued in late 2011 with COL issued in 2012

➤ **Improved COST Certainty**

50 years of continuous design/construction experience, 3 ABWRs operating, and STP progress

➤ **Value of Schedule Certainty**

Advanced construction methods reduces construction time, cost, financing, and risk.

➤ **Operational Certainty**

ABWR operating fleet provides demonstrated experience in startup, operating experience, spare parts, and support.

Summary

Major steps taken by Toshiba to gain certainty/reduce risks in licensing, design, procurement, construction, cost and operation of the ABWR for the world market

Challenges Ahead

- 
- **Minimizing**
differences in design and licensing requirements
 - **Maximizing**
localization content while maintaining the highest quality standards
 - **Quantifying**
and reducing labor productivity differences
 - **Customizing**
modularization plans

TOSHIBA

Leading Innovation >>>