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TOSHIBA Nuclear Activities

June 8th, 2010

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TOSHIBA CORPORATION

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TOSHIBA Nuclear Energy Business

Front End





Maintenance Service





TOSHIBA Nuclear Energy Business

From front end to back end



Front End (1)

Strengthening supply chain

Established uranium-related transactions company (U.K.: A-UAM^{*1})

Acquired Springfields Fuel Ltd., a U.K. fuel supply company

- Signed MoU with TENEX of Russia for materializing of enriched uranium product business
- Signed definitive agreement with Kazatomprom of Kazakhstan on JV for rare metals





Front End (2)

Leading Innovation >>>

- Collaboration with Atomenergoprom (AEP)
 Toshiba and AEP have signed GFA^{*1}
 - Under the corporative relationship, TOSHIBA and AEP have formed 3 working teams in the field of ;
 - Front end civilian nuclear fuel cycle
 - Designing / engineering for nuclear power plant construction
 - Manufacturing and maintenance of equipment



GFA signing ceremony in Moscow

TOSHIBA signed MoU on discussions toward possible cooperation in the nuclear fuel business with TENEX
 TENEX and TOSHIBA had discussion a lot and will be able to reach to our fruits in the near future

NPP Construction (1)

Maximizing synergies between TOSHIBA and WEC^{*1}

Status of on-going projects (14 plants^{*2})

- U.S. : Acquired federal loan guarantee (Vogtle #3&4)
 First Japanese company certified by NRC^{*3} (ABWR)
- China: Started Construction of Sanmen #1&2, Haiyang #1

Japan: Started Construction of Ohma#1 (J-POWER)

Strive to increase order wins

- Progress of construction plan in the U.K., Finland and Kazakhstan, in addition to the U.S. and China
- Enhance leading position with TOSHIBA and WEC's unrivaled construction and operation experience and 2 reactor types (ABWR / AP1000^{*4})



Sanmen #1 (China)

6/14

NPP Construction (2)

Shorten construction period using 6DCADTM

- Develop detailed schedule
- Simulate schedule with 3D model







NPP Construction (3)

Cooperation with Russian Industry

- Collaboration of TOSHIBA and Russian industry to improve the quality of construction engineering and planning for future nuclear power plants
- ◆6DCADTM application is considered
 - Agreed on consulting service
 - •6DCADTM software licensing

•Consultation of $6DCAD^{TM}$ application for real NPP construction





 Most fruitful collaborative fields of TOSHIBA and Russian industry

Maintenance Service (1)

Enhancing leading position of TOSHIBA and WEC

- U.S. : Enter into BWR market in U.S.
 with TOSHIBA's technology
 WEC opened BWR training
 - WEC opened BWR training center in Tennessee



 Japan: Employ WEC's advanced technology for Japanese domestic nuclear plants

BWR Training Center (Chattanooga, TN)

Cooperation with Russian Industry on Material

- Improve the manufacturing capability of Low Alloy Steel in the Russian partner's company by our technical support
- Russian partner's company was recognized as supplier of turbine rotor for thermal power plant supplier

Maintenance Service (2)

Improve Material Integrity by Underwater Laser Beam Welding

- Dry the welded area by shielding gas
- Without draining water realizes short-period maintenance
- Applicable to both BWR and PWR







Welding Equipment for PWR



Fast Reactor (1)

Next-generation reactor for various uses

- No need to change fuel for three decades
- Helps with the world community's nuclear nonproliferation agenda
- Excellent fit for needs of emerging economies
 - 4S*1 Reactor
 Safe design to achieve passive reactor shutdown
 Construction of the first 4S reactor could start in the latter half of this decade
 Feasibility being studied in Alaska in the U.S.

TWR^{*2}

Leading Innovation >>>

- TWR will use un-enriched uranium without reprocessing
 - Start studying possible technical collaboration with Terra Power on a future nuclear reactor



⁴S Reactor

Fast Reactor (2)

4S

Passive safety system utilizing natural phenomena

- Electricity generation, heat, hydrogen production, or seawater desalination
- Developing large EMP^{*1} with TOSHIBA's sodium test facility



| 30MWt, 135MWt |
|--------------------------|
| 10MWe, 50MWe |
| Sodium |
| Metal, U-Zr binary alloy |
| Movable Reflector |
| |



Sodium test facility



φ3.3m

Full scale EMP

Conclusion

TOSHIBA contributes environment and energy security through the nuclear activities

TOSHIBA promotes mutually beneficial collaboration with Russian industry





TOSHIBA Leading Innovation >>>