The Establishment of Nuclear Safety Culture for Equipment Vendors in China

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Nowadays, there are 43 nuclear power units in operation and 13 units under construction in China.
1. Background

The AP1000 global first unit, the China Sanmen NPP unit 1, was connected to the grid successfully on June 30\textsuperscript{th}, 2018. The Haiyang NPP unit 1 was connected to the grid on August 17\textsuperscript{th}.

The EPR global first unit, the China Taishan NPP unit 1, was connected to the grid on June 29\textsuperscript{th} after 9 years construction.
1. Background

NNSA has always attached high importance on building a positive nuclear safety culture. We actively cultivated a nuclear safety culture that is in line with the international advanced practices and China’s national reality after IAEA introduced the concept of nuclear safety culture.

On the 30th anniversary conference of NNSA, we concluded that the acknowledgement of nuclear safety culture in China is one of 10 achievements.
1. Background

On Jan 1st, 2018, China issued the Act of the People’s Republic of China on Nuclear Safety to strengthen nuclear regulation.

The Licensees and related equipment suppliers, construction contractors, service suppliers shall develop and establish nuclear safety culture positively according to the law.
1. Background

We advocate the basic principle of “safety first, quality first“.

Implement the nuclear security view of “Rationality, Coordinative and Common Progress”.

Keep on the spirit of "strict, careful, cautious and realistic".
1. Background

《The policy of nuclear safety culture》 was issued by NNSA, NEA and CAEA together in December of 2014.

Last year,《The Features of nuclear safety culture》 was published. It introduced 8 features, in order to push forward nuclear safety culture construction.
2. Main Actions of NNSA

1. From 2014 to 2015, NNSA conducted a year-long promotion of nuclear safety culture designed to improve the nuclear safety culture level of the equipment industry.

- Compiled specific manuals on nuclear safety culture and regulations.
- Targeted at eliminating the fraudulent behaviours and illegal operations.
- Covered all the equipment licensees (200) and qualified persons (20000).
2. Main Actions of NNSA

Currently, the major problem in the Chinese nuclear equipment manufacturing industry is related to human factors.

In order to solve this issue, we took various actions to advanced the development of a positive nuclear safety culture in nuclear equipment vendors, utilizing the outcomes of MDEP/VICWG and the feedbacks from Korea CFSI issues.
2. Main Actions of NNSA

2. In the latter half of 2016, we conducted a “Risk Screening” and “look back” action to recheck the progress of the continuous building of nuclear safety culture and consolidate previous results in the nuclear equipment area.

3. From July to September 2017, NNSA carried out a comprehensive inspection on nuclear safety for 23 equipment vendors. Nuclear safety culture was one of the key evaluation points.
2. Main Actions of NNSA

4. Took the nuclear safety culture as one of the most significant elements in supervision and inspection, NNSA carried out evaluations on nuclear safety culture levels for some crucial equipment vendors in daily surveillance.

Evaluate contents

1. Policy levels: concept and commitment.
2. Management levels: good example with correct attitude toward safety.
3. All individual’s indispensable role in safety and personally responsible.
4. Organizational and constant learning.
5. Complete and effective management system.
6. Proper working environment is created.
7. Mechanism of questioning, reporting and experience feedback on safety issues.
2. Main Actions of NNSA

- Sample Survey
  Coverage 50% of all the staff (executive persons less than 30%)

- Dialogue and Interview
  formal and informal

- Documents Review
  QA program, procedures, guidance, Quality record.

- Behavior Observe
  activities and circumstance

Evaluation Ways
## 2. Main Actions of NNSA

Nuclear culture levels and building advice.

<table>
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<tr>
<th>Test Scores</th>
<th>Nuclear culture levels</th>
<th>Advice</th>
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<tr>
<td>A≤60</td>
<td>Disorderly management level</td>
<td>Rectification and safety culture construction measures shall be taken immediately.</td>
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<tr>
<td>60&lt;B≤75</td>
<td>Passive constraint level</td>
<td>Positively construct safety culture</td>
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<tr>
<td>75&lt;C≤90</td>
<td>Active management level</td>
<td>Steadily promote and create the mechanism to encourage all staff to be involved</td>
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<tr>
<td>D&gt;90</td>
<td>Self-control promotion level</td>
<td>Keep and carry forward the safety culture</td>
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5. In order to enhance equipment licensees’ nuclear safety culture level, we push equipment vendors to publish their own enterprise’s nuclear safety culture policies and objective, organized quality assurance leaders’ test, compiled regulation manual for vendor legal representative.

Organised 10 forums according to the equipment catalogues to enhance the effective of experience exchange.
2. Main Actions of NNSA

7. Between 2014 and 2018, we took enforcement action or sanctioned more than 48 equipment vendors who didn’t abide by the laws and regulations.
3. Further Prospect

1. Formulate a specific nuclear safety culture inspection procedure to standardize the content of the inspection of equipment vendors.

2. Develop guidance on nuclear safety culture construction to guide equipment vendors’ nuclear safety culture activities.
3. Complete the development of online experience feedback systems to streamline experience feedback work processes and raise efficiency.

4. Advance internal capacity building, enhance the nuclear safety culture levels of NNSA's inspectors.
Thanks for your attention!