Chapter 2: Ignoring the local requirements from the Safety Authority

Since 2004, the safety authority has granted 979 HAF 601 and HAF 604 certifications to local and international manufacturers, installation companies and design institutes.

In 2008 this process for foreign companies needed six months.

In 2013, it requires two years at best.

In 2014 many new HAF 604 applications and renewals will be rejected, and there is almost no chance to apply a second time.

The HAF 601 is the center of attention of the National Energy Administration. The more HAF 601 are granted, the higher is the localization rate. However foreign companies based in China will face a new hurdle: local competition means a stalemate for their expansion in the domestic market.

Chapter 2: Ignoring the local requirements from the Safety Authority

This article will exhibit eight steps, which lead to failure:

- Ignoring the duration of the process
- Not complying with the list of documents
- Avoiding communication with other departments
- Challenging the constraints of the regulation
- Tampering the application with external data
- Interfering with business development
- Overlooking communication with the NSC
- Neglecting to use technical units and consultants

Ignoring the duration of the process

Since 2008, the length of the process has increased from six months to two years.

Most of the companies involved in the market do not want to face this issue and want the certification to be awarded to conclude their business deal.

The foreign manufacturer is not paying attention to the schedule of the NNSA, its technical support units and the internal process of the registration.

Let’s examine a few examples:

In 2010 a famous German company, reputed for its products in electrical penetration got a deal for a new type of reactor in China, the HTR. This company outsourced the certification and put a lot of pressure on a local agency to get the certification according to its anticipated schedule.
The NNSA did not issue the HAF on time. The agent obtained the certification a few months later, and the deal for the HTR was concluded anyway. However the German company did not pay the overall fee and decided to penalize the agent, a strong sign of foreign arrogance in China.

In 2011, a French company specialized in Casting and Forging signed an agreement to provide a component for the RCP in the Taishan project. The company prepared the HAF application, sent it to China and was waiting for the safety authority to give the certification. After a few months of delay, the company decided to ask a local agency to take over the project, which was concluded six months later (a few days after the Fukushima event). If the company had continued waiting and dealt directly from France, the next certification wouldn’t have been awarded until April 2012 - 13 months later!

In most cases the applicant does not foresee the internal process at the NSC and NNSA:

- The inspector may be required for urgent site inspection purposes.
- The inspector may be sent for training.
- The expert committee is cancelled due to a lack of coordination between all experts and a tight schedule. In 2013, one expert committee was held in June.

- The backlog of HAF 604 applications is large, so the NSC does not want to accept new ones, except for standalone projects (see below for Tianwan).

- The application from the company was made in 2011 before the transfer of responsibility from the North Regional Office (NRO) to the NSC.

### Milestones and Planning for HAF 604 certification

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Task</th>
<th>Time estimation for finishing task</th>
<th>Workload per day</th>
</tr>
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</table>
| Preparation of application file | a. Clarify whether or not the components are included in NNSA's Catalog of Equipment to be registered  
b. Indicate necessary documents for primary submission of application file  
  Give the applicant detailed explanations on required documents.  
c. Send samples of application forms to applying company to fill in and give detailed explanations. | 3-4 months | 1) Paper work (task: a,b,c,d,f,h,i): Four hours  
  2) Translation (task: e.): Two hours  
  3) Consulting/meeting with engineers/experts familiar with registered components from related organizations, inspection units, Design institute…  
  (task: a.g.): One hour  
  4) Others: One hour |
### Milestones and Planning for HAF 604 certification

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<td>3-4 months</td>
<td>1) Paper work (a.b.c.d.f.h.i): Four hours</td>
</tr>
<tr>
<td>b. Indicate necessary documents for primary submission of application file</td>
<td></td>
<td>2) Translation (task: e.): Two hours</td>
</tr>
<tr>
<td>c. Send samples of application forms to applying company to fill in and give detailed explanations.</td>
<td></td>
<td>3) Consulting/meeting with engineers/experts familiar with registered components from related organizations, inspection units, Design institute… (task: a.g.): One hour</td>
</tr>
<tr>
<td>d. Answer questions from the applicant when there is any problem or confusion in preparing the application file</td>
<td>1 month</td>
<td>4) Others: One hour</td>
</tr>
<tr>
<td>e. Translate documents provided by the applicant to Chinese review the translation by engineers</td>
<td></td>
<td>1) Submission of application file (a): A half day - one day</td>
</tr>
<tr>
<td>f. Draft application file and list the rest of missing documents</td>
<td>1 month</td>
<td>Note: Only on Tuesday, we can officially submit application file.</td>
</tr>
</tbody>
</table>

### Submission of application files

- a. Officially submit application file to NNSA
- b. According to the result of preliminary examination of National Nuclear Safety Administration, mend and modify the files
- c. Get more information from the company if necessary.

### Further inspection in the nuclear equipment division of NNSA after the application file passes the primary inspection

- a. Indicate potential questions which will be raised by the nuclear equipment division in further inspection
- b. Receive questions from NNSA
- c. Forward questions to the applicant and give some advice on how to answer the questions

### Acceptance fax from NNSA

- a. Indicate potential questions which will be raised by the nuclear equipment division in further inspection
- b. Receive questions from NNSA
- c. Forward questions to the applicant and give some advice on how to answer the questions

1) Paperwork (b.c): Five hours
2) Communication/meeting with engineers/experts: One hour
3) Others: One hour
<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>Time</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance fax from NNSA</td>
<td>Translate the fax and send it to the applicant</td>
<td>2 work days (considering time difference)</td>
<td>3 hours</td>
</tr>
<tr>
<td>Technical inspection by NSC (NNSA's technology support unit)</td>
<td>a. NSC will raise several batches of questions and send them to Dynabond; b. Dynabond will answer some questions if we can; c. Translate other questions and send them to the applicant as soon as possible; d. Give the applicant instructions on how to answer the questions; e. Sort of the answers from the applicant and officially submit them to NSC. f. Organize a dialog meeting between NSC and the applicant</td>
<td>5 months</td>
<td>1) Paperwork (b.c.d.): Five hours 2) Communication/meeting with NSC/design institute/engineering companies (a.b.c.d.e.f.): One hour 3) Consulting with engineers/experts: One hour 4) Others: One hour</td>
</tr>
<tr>
<td>NSC writes a report on the capacity of the applicant</td>
<td>a. Keep close contact with NSC and get updated status of HAF 604 inspection b. Assist the applicant to clarify all questions</td>
<td>1 month</td>
<td>1) Paperwork (b): Five hours 2) Communication/meeting with NSC/design institute/engineering companies (a.b.): One hour 3) Consulting with engineers/experts: One hour 4) Others: One hour</td>
</tr>
<tr>
<td>NNSA/NSC hold</td>
<td>a. Coordination between NNSA/NSC and the applicant b. Assist the applicant to clarify all questions</td>
<td>25-35 work days</td>
<td>1) Paperwork: Four hours 2) Communication/meeting with NSC/design institute/engineering companies (a.b.): Two hours 3) Others: Two hours</td>
</tr>
</tbody>
</table>
Six Reasons Foreign Companies Fail in Chinese Market

- The schedule mentioned in the regulation is not respected (see HAF 604 art. 9)

<table>
<thead>
<tr>
<th>NNSA publishes approval HAF 604 applicant on its official website</th>
<th>Coordination between NNSA/NSC and the applicant to ensure the information on the certificate is complete and correct.</th>
<th>25-30 work days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receive hard copy of HAF 604 certificate</td>
<td>Dynabond asks for an authorization letter to fetch the certificate on behalf of the client, Dynabond then sends the HAF 604 certificate to its client.</td>
<td>40 work days</td>
</tr>
<tr>
<td></td>
<td>Communication/meeting with NNSA: One hour; Translation of the information sheet which is published on the website and send to clients for confirmation: Three hours</td>
<td></td>
</tr>
</tbody>
</table>

List of Russian Companies recently certified for Tianwan 3 and 4

- PDTI Atomarmproect
- OAO Baltisyksyzavod
- LLC The Lebedyan Machine-building Plant
- LLC Polesye
- LLC Atomspetsservice
- JSC Okb Gidropress
- JSC Kontur
- JSC Soyuz-01
- JSC Tyazhmarsh
- JSC Specialized scientific research institute for instrumentation engineering
- JSC Scientific and production firm Central Valve Design Bureau
- JSC Liski Plant of Mounting Workpieces
- JSC Engineering company Ziomar
- JSC Central Design Bureau of Machining Building
- JSC Atommashexport
- JSC Enmash
- JSC Machine-Building Plant Zio-podolsk
- E4-Central Dynamic Installation Joint Stock Company
- Alpha - La Wa Li - PatoKe GV Gold

HAF 604 awards are made twice a year at most, in a large batch. Assuming your company has a contract in the pipeline, if you are not included in the batch and missed one expert committee, you will be penalized by your client for a ten month delays - the six months before the next expert committee and four months to obtain the hard copy of your certification, required for customs clearance in China when your products are delivered to the port.

The Russian case

For the whole year of 2012, 83 applications were awarded; nevertheless, the majority of them (45 certifications) were dedicated to Russian companies for Tianwan 3 and 4 projects:

The HAF certification for the Russian companies was a result of a political decision to accelerate the Tianwan project. Their applications will be restricted to the VVER technology.
The NSC had to focus on the certification of Russian companies. The certification for the Tianwan suppliers impacted the certification process for other companies involved in AP1000, CPR1000, EPR and other projects.

**Not complying with the list of documents**

In principle, the regulation is very simple. In the HAF 604 article 6, the applicant company must:

- abide by laws and regulations of the People’s Republic of China
- be a legal company in its own country
- have achievements and at least 5 years of experience in the field related to the activities planned

- have a workplace, facilities, components that match the planned activities and qualified professional technical staff
- have a quality assurance system matching the planned activities
- have a corresponding certification from the nuclear safety management department of its own country

Any company can provide such information, but the most important point is in the HAF 604 article 7, paragraph 7: “When applying for registration, overseas unit shall supply the following materials”…other materials NNSA asks for”.

What does “other materials” mean? It means every document required by the technical support unit, the NSC, such as test results, letter of satisfaction from your former clients, welding certifications, non-destructive testing reports, anti-seismic reports, flooding test reports, and the list continues…

- If your product is an innovation, forget about the registration, it must have references in operating nuclear power plants.
- If your product has not been used for five years, it will not be accepted.
- If your company does not keep the purchase orders or proof that your product has been used, you will not be accepted.

Many companies do not digitalize their documents and store them. Nobody in their quality management department is willing to dig in the cellar.

The applicants do not take into consideration the constraints from the NNSA:

- The NNSA and its technical support units have limited human resources and funding.
- The NNSA has been trained by EDF and the French authorities, and adjusts gradually to the NSC regulations.

**Documents Required for certification**

- Copy of business license
- Qualification Certificates received from the nuclear industry or any nuclear-safety supervision authorities, such as ASME, ISO 9001, ISO 14001…
- Standards to manufacture or design products, such as IEEE, RCC-E, RCC-M, IEC…
- Quality Manual/Quality Assurance Program
- Description of equipment to be registered
- Form for reference/achievement list for nuclear power plants around the world
- Form for reference/achievement list for non-nuclear projects
- Form for NDT staff + qualification certificates to be attached
- Description of the work place and facilities, including equipment used for manufacturing, testing and experiment.
- Outsourcing items when manufacturing or designing your product, such as seismic analysis or test/EMC test/Environmental test, and main sub-supplier list
- Signed Petition Letter to NNSA officer
- Letter of Entrustment to NNSA
- Staff description including qualifications and qualities.
- Key people in design, manufacture and QM
- Description of staff training
- Design approval documents from purchaser; design diagram with the signature of the designer; designer information form (major, education, work experience, years of working…); description of how to do design verification; description of how to allocate design tasks, such as design approval, design check and design verification; description of design software…
- Complete and correct application forms-Chapter 1
- Qualification test report of your registered components. Please give a general description of these tests. For example, what kinds of tests have been done; what are the results of these tests; where did you do these tests…
- Procurement Letter of Intent for your registered equipment
Six Reasons Foreign Companies Fail in Chinese Market

- The certification in China is a new obligation; the HAF 604 was promulgated in 2008, four years after the HAF 601.
- The certifications and needs change constantly.
- The HAF 604 is free, therefore brings more workload to the NSC and experts.
- The Fukushima accident impacted the conditions of anti-seismic and anti-flooding tests and reports.
- References from Taiwan are not considered as from a foreign country.
- More than 1,000 applications are waiting on the desk of the NSC.

These constraints must be anticipated by the project manager from your company and be shared with other departments that are involved in the Chinese market. This is not the case.

Avoiding communication with other departments

Generally, three types of companies apply for the HAF and each of them has their weaknesses.

- The SME
- The Company acquired by a foreign group
- The Multinational

The SME designates the quality manager or the project manager to the HAF certification. The internal process is faster due to the limited number of departments.

When the SME sells its product, if the end user is not the operator, the reference required by the NSC will not be fulfilled. A French SME, which provides forged components to valve and pump manufacturers for the EPR faced this issue: the NSC required an end user statement that can not be provided.

Spare parts may not be considered as references: several SMEs in the US and France during the last twenty years focused on after-sales service and spare parts rather than business development.

Some companies acquired by larger groups, become a brand and do not have the power to sign agreements. This type of situation will require the quality manager from the factory to have its application signed by headquarters.

A British company acquired by a US group faced the problem of coordination and timing: the manager in charge of the signature of every page of the application did not see the HAF as a priority, while the British company had a contract to fulfill for a diesel generator in China.

Many mistakes in the applications and new requirements from the safety authority made this project complex; the documents were translated and printed in China, sent back for review and approval in the UK and signed in the USA when the manager had time.

The multinational is even more complex. The group is split between the legal department in charge of all the purchase orders, the quality manager has often no power (in particular in the US), the project manager is just a “coordinator”, the top management focus on the business operation, and other “export controls” or any other bureaucratic entity.

Each department has its own plan, priority, and tolerance to external persons commitment and inquest.

In particular, in the US where email seems to have become the only way to communicate between each other, the success of US companies certified in China is unexceptional, considering that:

- Half of the next nuclear power plants in construction in China are based on AP1000 technology.
- The government strongly supports trade between the US and China.
- The acquisition of the AP1000 technology was official by the end of 2006 and the HAF 604 certification was promulgated in 2008.

Below: Share of US Companies certified by the end of 2012.

During the last five years, the multinationals that have applied for the certification have had common weaknesses: the lack of leadership and determination.

Note: Among all the foreign enterprises involved in the Chinese nuclear power market, only one is in the 100 top leaders list of PowerRank: David Farr, the Chairman of Emerson Electric.

Challenging the constraints of the regulations

The regulations and application forms are bilingual. The application must be completed in Chinese with the support...
of documents in English.

In case of misunderstanding, the Chinese language and the internal regulations of the NSC prevail.

Despite the NNSA having listed all the products subject to certification, the expertise in safety related equipment and components is still mushrooming.

One case still being challenged by the foreign side and the Chinese regulator is the Emergency Diesel Generator.

- According to the regulation in 2010, some of the safety related equipment had to be certified.
- Since the Fukushima accident, more components and sub-components need to be certified.
- Last year, most of the components did not need to be certified.

What happened during each step?

Originally, the representatives in Europe could not understand the indecision, the variation, the new conditions from the inspectors, and often refused to provide the documents in fear of losing their intellectual property.

Upon the advice of the agent, the company met the NSC, dealt with the new requirements, and obeyed the injunctions, statements and even embarrassment (the local agency, that was in responsible for this application, reported later the factual wording from the Chinese authority).

Still, the company succeeded, and reached its outcome.

Although this case was successfully concluded, most of the time, the NSC at the counter rejects the application due to the lack of documentation and explanation.

Both sides are guilty. The regulation is vague, the application even more so. It does not provide an example of the step-by-step process.

This lack of explanation is certainly due to the fact that the service is free, the service is just burgeoning and the service needs to find itself a specified standard.

On the other side, the quality manager, the legal department and the design or engineering departments do not want to provide proprietary patents and other information that could leak to any engineering company or local competitor.

The foreign side obviously presents its information cautiously when it is required, not when it is needed.

Furthermore, the foreign side does not know how to prepare the application. Often the company would just ask around other manufacturers “how they did it” and would get a minimum of feedback, and would just attempt to understand the meaning of this application,
In China, every Tuesday morning, the inspector can answer any question related to the application face to face with the company. But the resources are limited, the application is free of cost (contrary to any service provided by the NSC) and time is precious for the technical safety units.

When you meet the inspector with your application, do not play...

**Tampering the application with external data**

Nobody would do this, right?

A northern European company acquired a French company a few years ago. The factory closed, the patents and other know-how moved to the brand new factory in the northern European country (let's say between Norway and Russia). When this factory applied for the HAF 604, it used the references of the French factory as references of the group.

The management tried to explain to the safety authority that any reference from any branches should be considered as a reference from the group.

In the regulation, it is clearly stated (Article 7.4: “When applying for registration, an overseas unit shall supply the following materials […] Materials about its related achievements in the field”.

For its own defense, this company was using the article 14: “Where a unit registered changes its name, country, location or legal representative, it needs to apply for alteration of registration certification in less than 30 days after the alternation of these items in its own country”.

That was not tricky, the application was not done by the French factory. The NSC rejected the application.

Another case is related to a German company manufacturing valves.

The company is a successful supplier of non-safety related valves. The company intended to expand its business in safety valves.

The company provided documents, which indicated the intention of Areva to purchase valves for the EPR projects upon certain technical conditions.

The company explained to the safety authority that it was a supplier of Areva for such type of valves and used this document to support the application.

After an investigation with Areva in China, Germany and France, it was discovered that the company participated in the tender but could not meet the requirements.

The company was not a supplier of Areva for the EPR, but continued to pretend to be one in order to get the HAF 604.
Both companies are “black listed” by the safety authority.

**Interfering with business development**

The safety authority will not accept any new application at the counter.

The number of references or the quality of the application will not change this fact.

Only one motive can help the applicant to go through: the letter of intent.

Many foreign companies adopt an awkward strategy: the business development starts too early, too late, and is not adapted to the HAF process.

In 2008 and 2009, many agreements were signed, in particular by the CGNPC group with foreign enterprises that did not have the HAF 604. The safety authority penalized CGNPC for not respecting the regulation.

In 2011 a major company in Europe imported bent tubes for the manufacturing of heat exchangers in China. The company in charge of manufacturing the tubes was different from the company that bent the tubes. The latter one did not have the HAF 604.

The multinational signed the supply agreement; the cargo arrived in China, but could not be opened until an agreement was made with the safety authority. However, this multinational could have faced a major blow and could have been required to present a new set of bent tubes which would have brought a delay of 18 months.

In this market the sales managers need to find clients and secure a purchase order.

The end user will not sign any purchase order if the HAF 604 is not obtained.

However if a letter of intent related to a specific project is provided to the supplier, it can be used for the application to indicate to the NSC that specific equipment is needed in China.

To clarify this point, you follow this step-by-step methodology:

1. Start the business development and the HAF process at the same time.
2. Get the application ready to be presented to the Safety authority.
3. Get a letter of intent, or any document that indicates that your product is needed from your prospect.
4. Negotiate with your prospect (or new client) the time of manufacturing and delivery according to the process of the HAF 604 and involve the client in the process with the NSC.
5. Apply with the organized documents at the NSC counter (every Tuesday) and follow the process.
6. Inform your client on a regular basis of the status of the process and add six months of delay (the time needed between the expert committee meeting and the delivery of the hard copy) in your contract with your client.

Below: a list of the companies that will face the renewal of their certification within the next six months:

**Overlooking communication with the NSC**

The NSC became the center of attention of the government only in 2009. Before that, the center was relatively small, and the HAF activity was mostly supervised by the NRO.

Many young engineers were hired, bright guys, but did not compare to their counterparts at the GRS in Germany, or IRSN in France. They needed to get educated by the operators, the manufacturers and foreign TSO.

Despite this burgeoning activity, the inspectors face many hurdles:

1. a booming market
2. a large geographical area
3. a limited budget (compared to western counterparts)
4. thousands of applications - local and international.

The young inspectors of today will become the leaders of nuclear safety in China. There is no doubt about this. Above them some well experienced directors, trained in Europe and the US have a clear understanding of foreign and local technology.

One problem remains: most of the companies do not know them. Nobody hides them, you can find their names on many websites, documentation and technical seminars. The main focus of the manufacturer is the procurement department of the EPC or the operator.

In the nuclear power market, based on the safety culture, it is the duty of each company to remain close to the safety authority and to its technical units and educate them on the new aspects of the design and manufacturing, NDT, installation and so on.

By focusing only on the design and procurement departments
of the EPC, the companies create a gap of communication that slows down the business process.

Any companies, in particular, from the US that deal in China should take into consideration the working method with the NRC and apply it with the same endeavor in China.

By disregarding the relationship with the NSC, the NRO and the NNSA, the companies will not be able to reach the right department or decision maker to negotiate with and will rely on the EPC companies.

The same EPC companies do not want to deal with the safety authority, as each intervention would be regarded as a complaint or favor.

In order to reach the decision maker and understand the internal process of the application (whatever the application is), China has great technical support units that are often forgotten.

**Neglecting to use technical units and consultants**

In order to implement the safety culture in this market, the safety authority uses several entities.

Most of the foreign companies have never heard of the China Academy of Mechanical Science and Technology (CAMST).

This is a mistake.

The CAMST designed and wrote the HAF 601, 602, 603, 604 regulations and many others.

The CAMST knows the decision makers at the safety authority; they know how the competition applies and know what an inspector wants to read in the application.

The CAMST is not allowed to interfere in the process or even to communicate with the safety authority in favor of any company. However the CAMST can educate the applicant, review and advise on the documents and references needed and the latest regulation requirements.

Another entity, the Suzhou Nuclear Power Institute, is a trustworthy technical unit (it belongs to the CGNPC Group) and consults for local companies mostly.

The main concern of foreign companies is these entities passing confidential documents to local competitors.

If the secrecy of documents in China is hardly a convincing argument, it is the duty of each company to hire the proper managers, and consultants and to assess which page, which agreement, which report can be passed and may be published or reproduced.

There are more than twenty government agencies involved in the supervision, planning, enforcement, technical support, research and other activities related to nuclear safety and the environment in China (see list).

These agencies participate in the formulation and use of the regulation that affects the business of any manufacturer.

There are more than 170 regulations (HAF, HAD, other guidelines and laws) that affect the overall nuclear power activities. These regulations are constantly reviewed internally to be adapted to needs of the market and in respect of international standards and practices.

They impact the following areas:

- Ageing
- Decommissioning
- Environment
- Installation
- Management
- Operation
- Manufacture
- Nuclear Fuel
- Training
- Safety
- Protection
- Standard
- Transport
- Radiation Protection
- Radwaste
- Nuclear Material

Most of the foreign companies know only one: the HAF 604

In this market of 162 billion USD until 2020, and 194 planned nuclear power plants, most of the companies, local and international do not have the right focus.

As Keith Cunningham, the author of “keys to the vault” said: “in sport, if you cannot read the score board, you cannot understand the game”
In the biggest nuclear power market of the century, if your company does not know the regulations that will affect the business and your client’s activities, you cannot survive.

**Government Agencies involved in the Protection of the Environment**

- Environmental Emergency and Accident Investigation Center
- All-China Environment Federation
- Assessment Center of Environmental Engineering
- China Association of Environmental Protection Industry
- China Eastern Environmental Protection Supervision Center
- China Environmental Culture Promotion Association
- China Environmental Protection Foundation
- China Institute of Environmental Sciences
- China National Environmental Monitoring Center
- China Research Academy of Environmental Sciences
- China Southern Environmental Protection Supervision Center
- China-Japan Friendship Center for Environmental Protection
- Chinese Academy for Environmental Planning
- Foreign Economic Cooperation Office
- Nanjing Institute of Environmental Sciences
- Northeastern Nuclear and Radiation Safety Supervision Office
- Northwestern Nuclear and Radiation Safety Supervision Office
- Northwestern Southern Environmental Protection Supervision Center
- Nuclear and Radiation Safety Center
- Sichuan Nuclear Safety Monitoring Office

**Next Month Failure: Accelerating the creation of a local office**

*I would like to thank Elaine Li from my team for all the data research.*