Walchandnagar Industries Limited

" Ensuring Quality of Nuclear Components"

National Conference on Regulatory Interface (NCRI – 2017)

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Scenario in Nuclear Industry 2007-2016

- **Target plan for Nuclear Power Generation : 63 GWe**
- **Indian NPP Designs: 700 MWe PHWRs, FBRs, AHWRs**
- **Foreign Designs: VVERs, EPRS, PWRs with progressive plan for localization**
- **Civil Liability for Nuclear Disaster Act (CLNDA), issues are addressed by DAE and bidding for tenders now possible.**
- **Formal tie up with Russians is in place and Localization scope settling down**
- **DAE decided to place orders in Fleet Mode and FIM supply for critical materials**
- **However tis has taken about eight years and hence no work orders to Nuclear Equipment Suppliers for about 8 years.**
- **Uncertainty about tendering for French and American Reactors**

Scenario in Industry 2007-2012 (Continued)

- **Industry was very glad and supported this ambitious plan and prepared:**
  - **a) Investment plans in Facility Creations and Man Power inductions.**
  - **b) Participated in Foreign Supplier's evaluation for localization in Design, Engineering, Manufacturing / supply, EPC works ….**
  - **c) Re-evaluation by EDF as AREVA is no longer in charge**

However considerable delays in restarting nuclear programs, Industry suffered losses such as

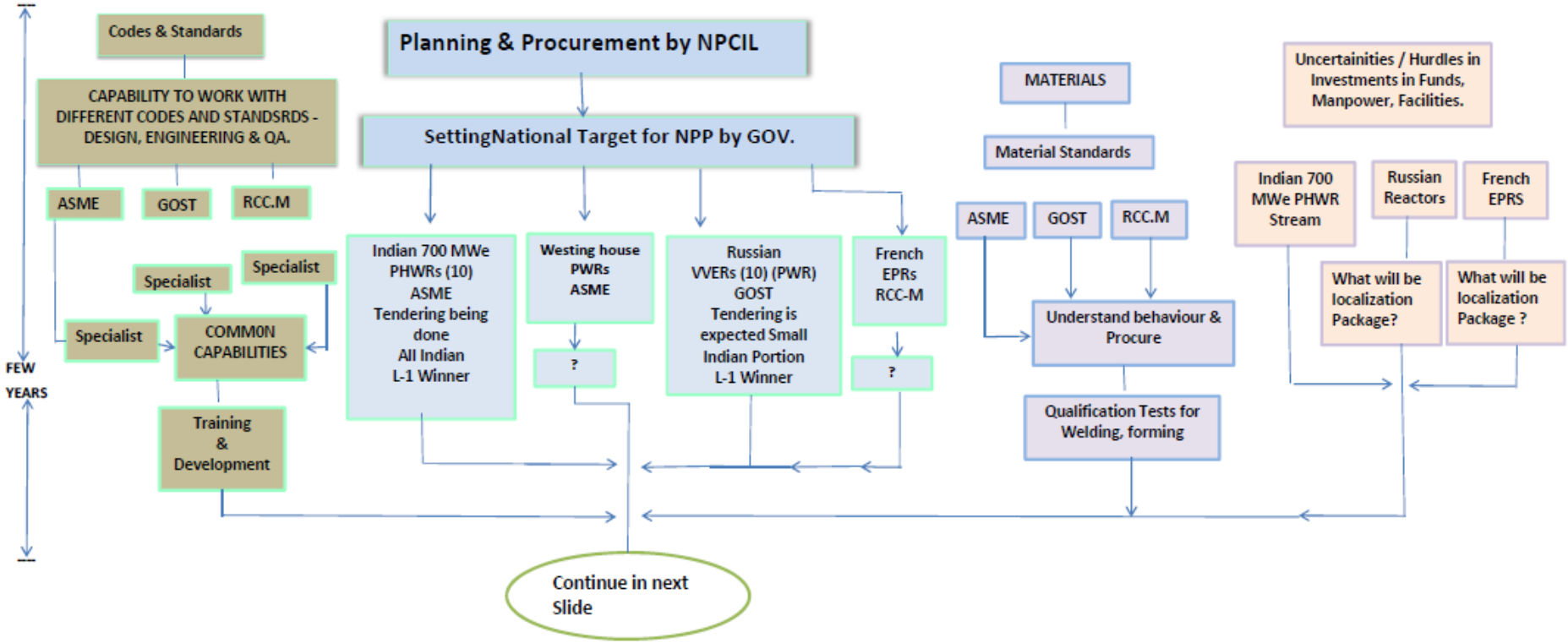
- **Financial loss for the investments made by industry**
- **sensing considerable period will be taken to revive situation, man power reduced / diverted to other businesses. NO new induction in Nuclear since 2010.**
- **Tendering for GHAVP 1 &2 and Kudankulam 3&4 (with limited localization scope) only has started but suppliers are unable to guess what orders will come and hence unable to commit funds, manpower and creation of facilities.**

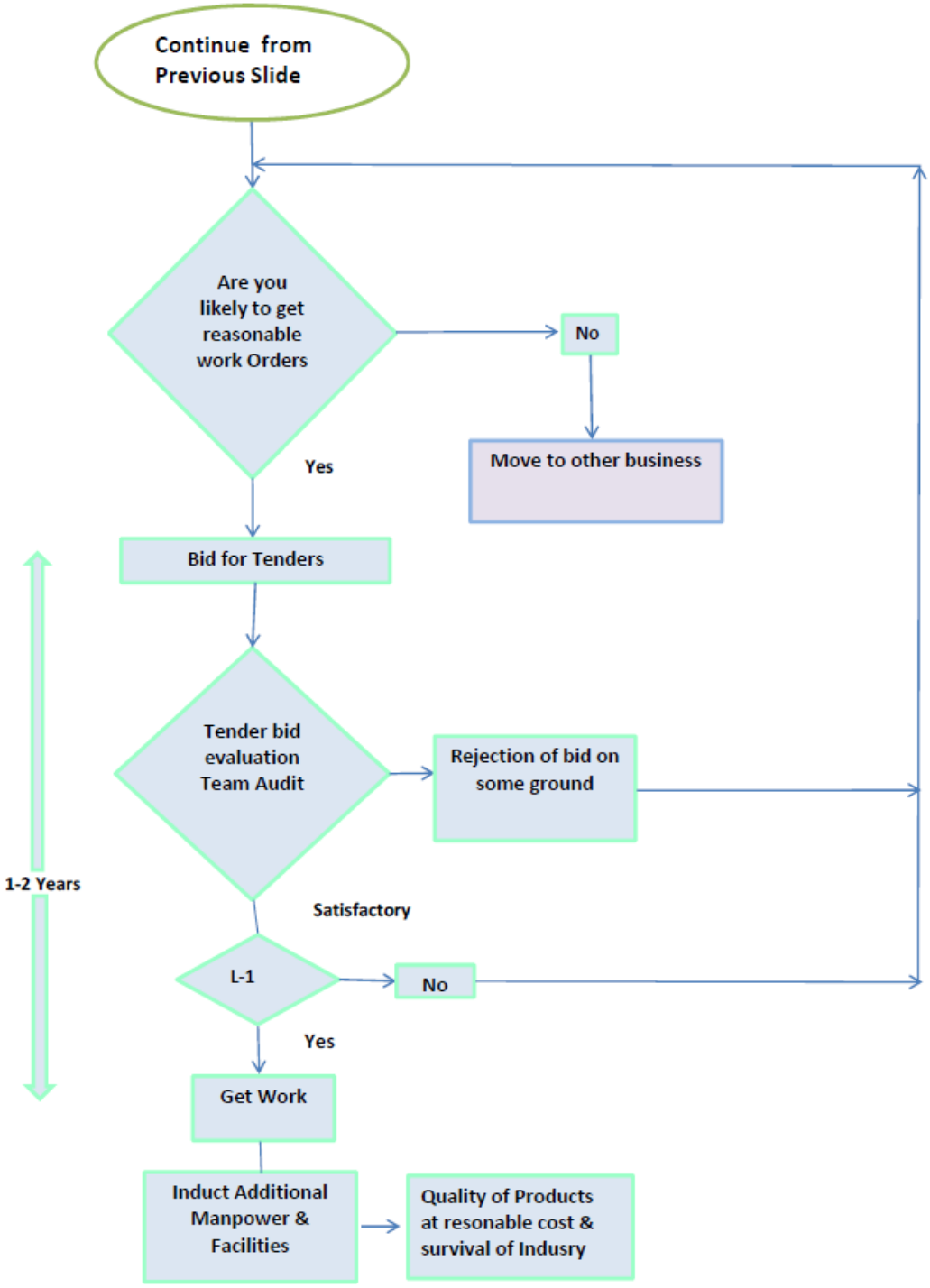
New Scenario In Industry and DAE

- New Companies do not mind under quoting
- Old companies bidding at no profit no loss or under quoting to survive.
  This may lead to joining hands for profits & survival
- DAE has more pressure from Government to execute projects in time. Commercial issues becoming important & more checks, balances. LD imposition regularly, penalties for minor deficiencies heavy & erode thin profits
- Qualification criteria stringent and tendering conditions loaded in favor of DAE.
- Payment terms do not meet cash flow requirements of industry and industry has to borrow heavily, resulting in heavy financial burden.
- The repeat orders and assured business cannot be given by DAE and hence investments in infrastructure is difficult. Without proper infrastructure manufacture is not possible. Thus catch 22 situation.

Ensuring Quality of Nuclear Components

ACTIVITIES BEFORE QUALITY CONTROL




Continue from Previous Slide
Are you likely to get reasonable work Orders
No
Move to other business
Yes
Bid for Tenders
Tender bid evaluation Team Audit
Rejection of bid on some ground
1-2 Years
Satisfactory
L-1
No
Yes
Get Work
Induct Additional Manpower & Facilities
Quality of Products at resonable cost & survival of Indusry

REQUIREMENTS FOR ASSURED GOOD QUALITY

1. Assured continuous business
2. Critical FIM by DAE
3. Terms of payments to help resolve cash flow problems
4. Technical and commercial hand holding by NPCIL
5. Minimize penalties as they take away thin profits

This will enable Suppliers to:

1. Invest in best technical man power
2. Investments in facilities and equipment
3. Produce good quality equipment & Deliveries in time

WIL HAS GOOD TRACK RECORD IN SUPPLY OF NUCLEAR EQUIPMENT

AND

THE EQUIPMENT SUPPLIED ARE FUNCTIONING WELL FOR DECADES

The End

INDICATIVE DISCUSSION POINTS & WIL RESPONSE

1. **AERB participation in QA at Manufacturer's place:**

NPCIL in Tender Tech Specs has brought in AERB requirement of QA & Safety. NPCIL has organization for QS at manufacturing place either by Resident Engineer or by visiting QS personnel or by third Party.

All deviations are taken up in writing with NPCIL & NPCIL seeks acceptance from AERB as required. If AERB wants to directly interact with Manufacturer, it will be additional requirement, not covered by Contract and will have time & cost implications and decision making will not be single point & confusion will be at plant.

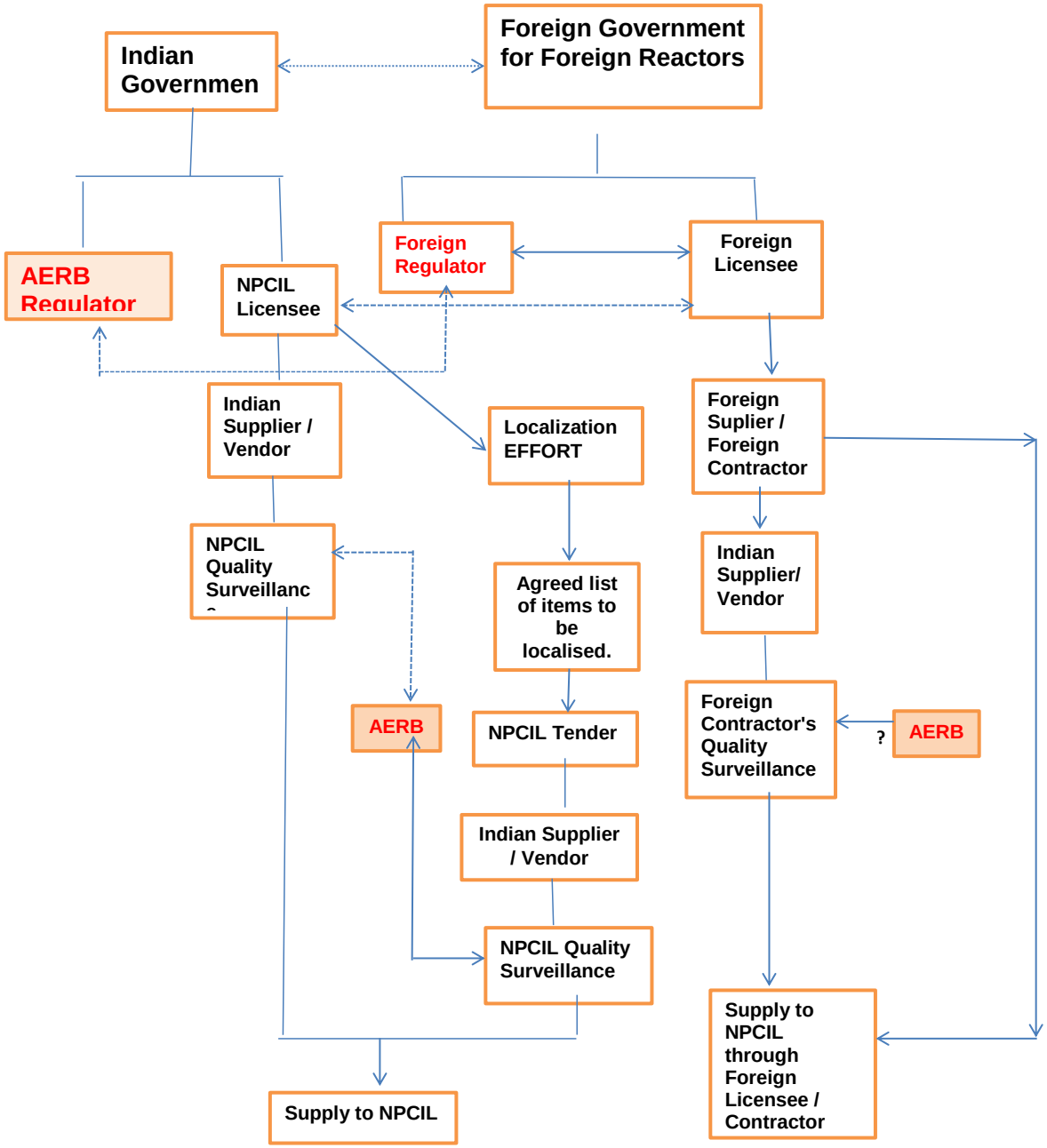
Hence continuation of present practice is recommended. **However, on specific serious deviation AERB rep can participate with view to find solution.**

2. ECRP for major components: Report to AERB:

This is internal matter between NPCIL & AERB and present practice be continued. On a specific important event / change AERB rep can participate.

3. Localization of Foreign Reactor Equipment: See next slide.

ROLE OF QUALITY SURVEILLANCE AGENCIES FOR INDIAN & IMPORTED REACTORS



INDICATIVE DISCUSSION POINTS & WIL RESPONSE

(Continued)

4 & 5. Developing Local vendors, their qualification for Imported NPP in Fleet mode

a) Encourage and assist Indian Manufacturers to tie up with Foreign NPP's existing Suppliers.

b) Introduce a specific clause in Inter Government Agreement to encourage such tie ups and remove requirements such as products of such tie up to be exported through Foreign Country Port etc.

c) Resolve financial credit related issues for such tie ups.

d) Encourage centralized training on teaching Foreign Codes & Practices to Indian Prospective Companies, free of cost or some reasonable cost.

INDICATIVE DISCUSSION POINTS & WIL RESPONSE

(Continued)

4 & 5. Developing Local vendors, their qualification for Imported NPP in Fleet mode (Continued)

e) Encourage acceptance & utilization of equivalent materials for foreign equipment and establish qualification of such materials as a centralized responsibility of NPCIL. NPCIL should get this done through either organization such as BARC or by contract through reputed national or international agency. This will enable use of standard locally available materials and cut down in cost and time.

f) NPCIL to centrally procure critical raw materials & supply as FIM

g) In past few years AREVA, Westinghouse and ROSATOM has visited Indian Companies and carried out Audit from their supply chain management point of view and accepted some companies in their supply chain. You may kindly accept those findings and not repeat as it is loss time and it costs a lot.

INDICATIVE DISCUSSION POINTS & WIL RESPONSE (Continued)

6. Systematic improvement in understanding of ASME, PNAG & RCC-M Codes

a) All Codes, Standards and referred other codes should be centrally available with NPCIL and they should provide them to all concerned at some nominal cost. They should be available in English language not in French or Russian language.

b) NPCIL should have central pool of Russian, French translators, interpreters and they should be available to Indian Manufactures as required during interactions at some nominal cost.

c) Presently, industry does not need to understand Design, Engineering related Code requirements for supply of equipment. Only requirement is from Quality Assurance and Quality Control requirements. Hence immediate focus should be on QA aspects.

d) Indian Nuclear Society may be given specific task to arrange Training Sessions on these Foreign Codes and manufacturing processes of some complicated equipment so that likely suppliers will benefit from it and produce good quality equipment meeting required standards.

d) Indian Suppliers must learn to understand Foreign NPP documents, drawings and work with them