

# Leadership and management for safety

National Conference on Regulatory Interface NCRI-2017

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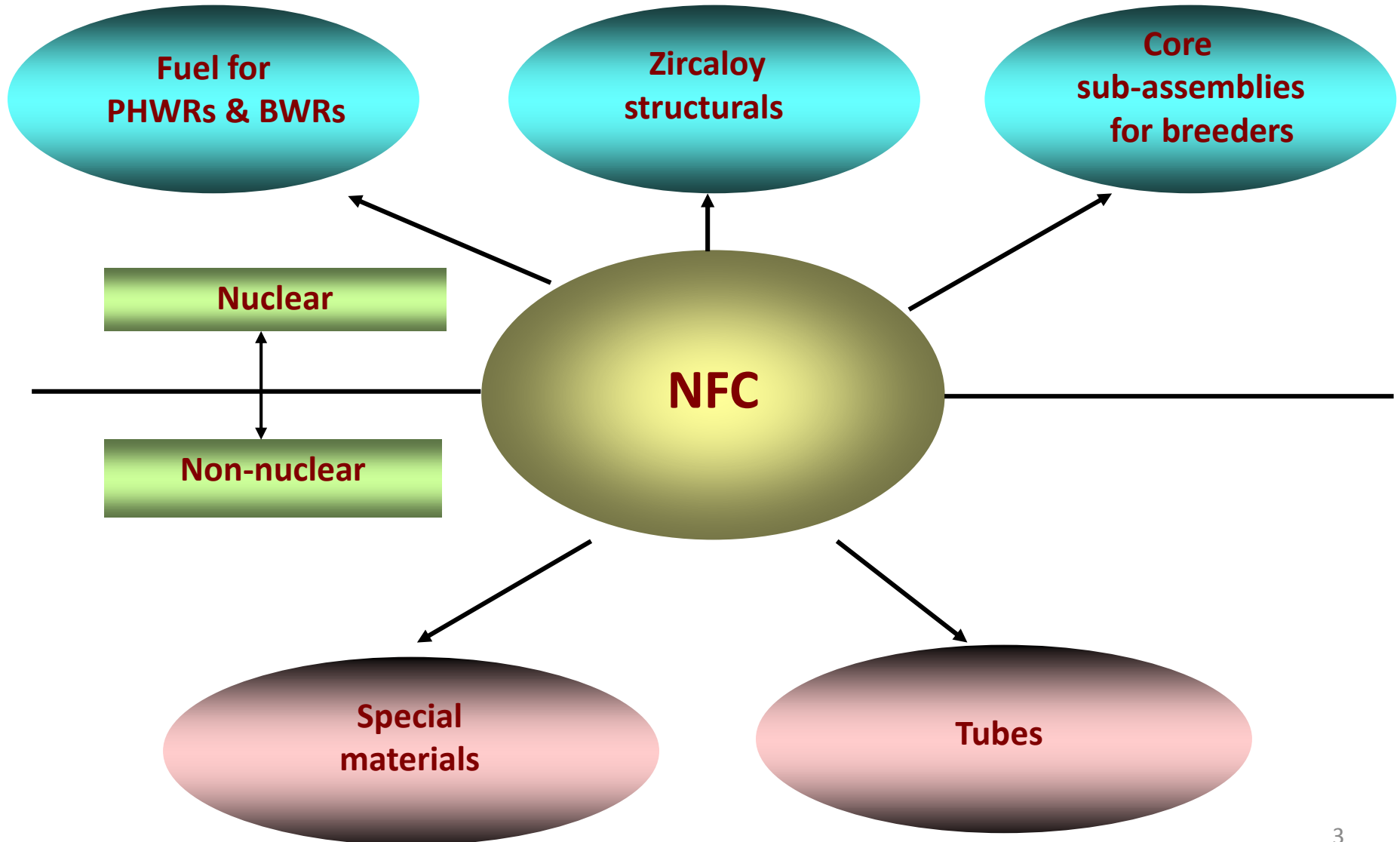
Nuclear Fuel Complex, Hyderabad

# Nuclear Fuel Complex

## **Manufactures**

- **Fuel for PHWRs**
- **Fuel for BWRs**
- **Reactor structurals (calandria tubes, coolant tubes, square channels, etc.)**
- **Reactivity mechanisms**
- **Special materials like tantalum, niobium, high purity materials**
- **Seamless stainless steel tubes**

# NFC Activities



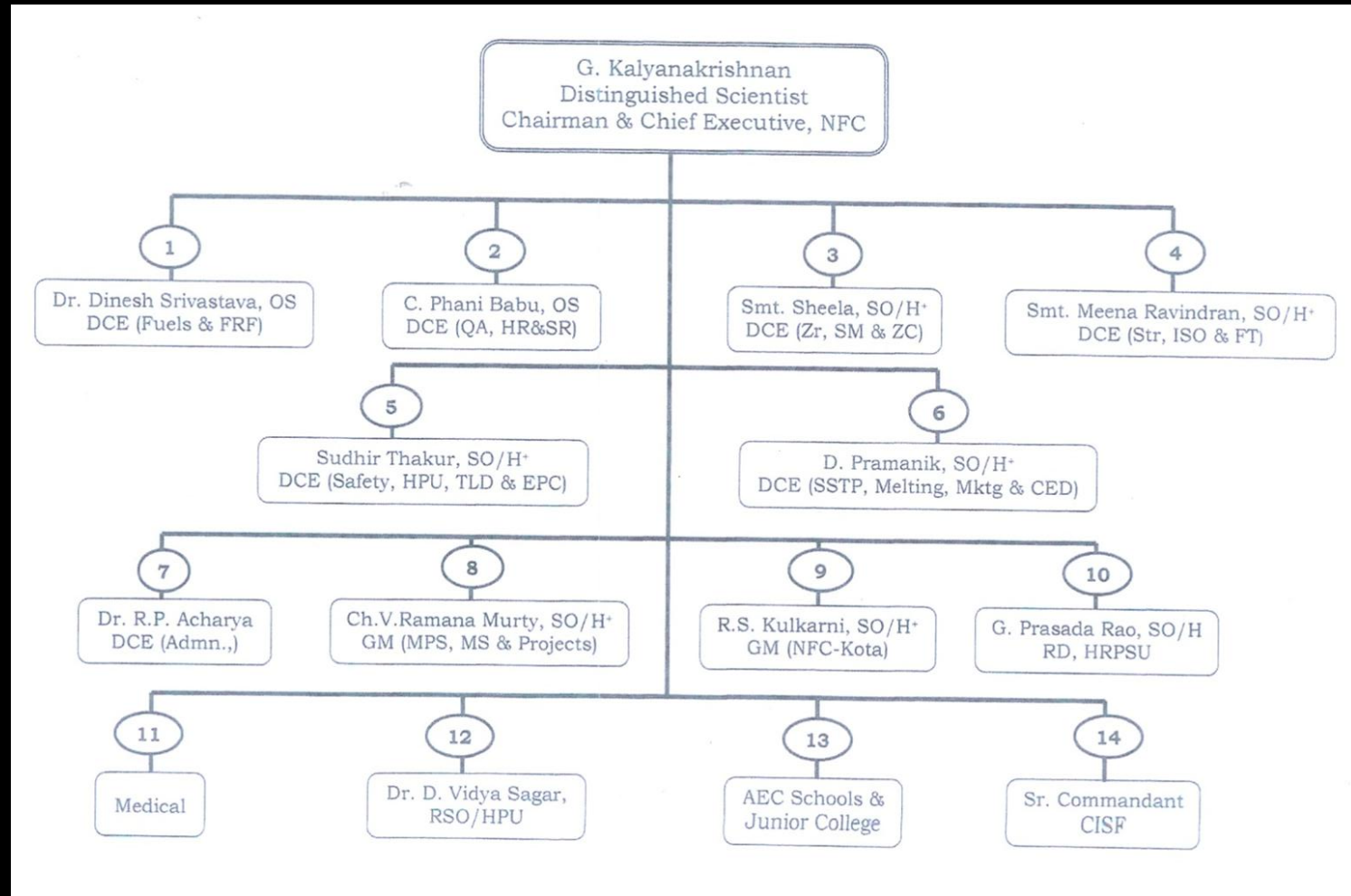
# NFC Activities

- Entire manufacturing facilities are based on the technologies developed completely **indigenously**, initially at BARC and later at NFC.
- **Indigenously developed** technologies are being **upgraded on a continuous basis** based on experience, inputs from customers, etc to improve the operational efficiencies, product quality, safety and waste management.
- NFC is having a number of plants that carry out different operations.
- Material handling operations are more in many plants at NFC.
- Changes in processes, process parameters, modification/ replacement of equipment, automation are being done to improve quality, safety, environment and productivity.

# NFC Activities

- **Development** activities carried out at NFC
  - Environment-friendly resistance welding of appendages on fuel tubes in place of beryllium brazing
  - Slurry extraction unit to extract uranium and zirconium from slurries directly
  - Seamless zircaloy calandria tubes
  - EC unit for treatment of non-process effluents
- **Indigenization** of critical equipment
  - Vacuum annealing furnaces
  - Special purpose welding machines
  - High temperature sintering furnaces
  - Pilger mill
  - Electron beam furnaces

# NFC – Organization structure



# Safety and quality during manufacturing

- Preparation of QEHS policy
- Listing of requirements  
(customer/statutory/internal)
- Establishment of plan/procedure to meet requirements, approval, implementation, review

# Safety and quality for purchase / procurement

- **Preparation** of specifications based on existing facility, inputs from customers / other organizations / suppliers
- **Design** done internally / put in supplier scope
- **Review** by different departments/committees (standardization committee, ECAC, EC, SEC, SPC, SED, safety committee) for quality, safety, cost, vendor evaluation issues, etc as per the function
- Tendering and evaluation
- **PDI**
- Safety work permit system for unloading / erection / commissioning
- Performance monitoring



# Fostering culture for safety and quality in nuclear industry – assessments and challenges

- Quality, safety and production – **all are important**
- Quality gets more attention than safety
- Loss from poor quality is visible immediately/in a short time, compared to safety
- All SRDs do not translate into accidents immediately – loss of priority
- Cost of poor safety is treated as one-off phenomenon
- No insurance / protection cover for quality defects, insurance/compensation is available for loss/damage due to poor safety consequences
- Safety requirements are treated as reasons for delay in deliverables/cost over runs, as they are not thought in design stage (generally)

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# Fostering culture for safety and quality in nuclear industry – assessments and challenges

- **Making persons to realize** the importance of all aspects of quality and safety for seamless production by learning about
  - cost of defects/ incidents,
  - enforcement actions,
  - imposition of additional requirements through changes/ improvements with more checks,
  - impact on total industry due to lapses in one organization,
  - possible law suits, etc
- Finance is not a problem in the department
- **Willingness** of the persons at all levels matters most

# Leadership and role of organization in safety and quality culture

- Everybody is a leader in his domain of work.
- Organizations **progress** only when all have the feel of **collective ownership** of their organization and work for its progress in all respects.
- Like sweet home, it should be their sweet organization.
- The persons holding official positions are like coordinators.
- **Confidence in leaders** will develop from frequent interaction, body language, access to persons, solving the issues at the work front and developing rapport at personal level to the extent possible
- **Training, job rotation, performance review** can lead to understanding of the issues and implementation.
- **Equal weightage** for production, quality and safety during **annual assessments (APARs)** of the employees too will help.

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# Leadership and role of organization in safety and quality culture

- Organizations should implement **participative management engaging all categories of employees** in the work front, **decision making** and **distribution of benefits**.
- Benefits can be in the form of recognition, appreciation letter, award, promotion, nomination to outstation programmes, etc. Now a days, for most of the employees, money matters less compared to other forms. **Keeping self esteem** of the persons in the group to higher levels is the best, a leader should strive for.
- **Reporting / suggestion** of anything having impact on production, safety, quality, security, etc **should be encouraged**. One should not reprimand the persons coming forward, for lack of substance / failures. He should be listened attentively and accept positively.

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# Leadership and role of organization in safety and quality culture

- **Corrections** should be introduced in place of punishments.
- Employees follow their leaders, either for good or bad. Yatha raja, thatha praja.
- Talking on safety / quality is to be supported with resources.
- **Resources** should be available in line with work load. Addition of works one after another without resources will lead to **burnout**. **Planning** for additional activities / expansion / new projects, etc without addition of suitable manpower and other resources leads to increased stress and burnout. Automation, improvements help to some extent only. This calls for proper planning and practicable schedules.

# Activities in place at NFC for development of safety culture

- Selection as per department requirements and placement
- Classroom training
- On the job training under supervision
- Working under supervision
- Acquiring of additional qualifications by sponsoring for courses as per identified requirements
- Sending to training programmes organized by experts
- Contractor safety management
- Colloquiums / talks / demos / seminars by experts / suppliers and feedback
- Communication of alerts / information through posters / public circulars

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# Activities in place at NFC for development of safety culture

- **Inclusion of attributes and more weightage** on quality, safety, environment, health and HRD in addition to production for PRIS-G
- Duty officer system – all night shifts & general shifts on holidays
- Safety inspection on holidays
- Quality circles
- Conduct of competitions on the occasion of safety day, fire safety day, world environment day, quality month, vigilance week, security week, etc
- **Daily field visits and interaction** by CE and other top management with shopfloor employees
- **Regular interactive meetings** between top management and employee representatives
- Field visits by employee representatives and discussion for promotion of safety, quality, production
- **Performance assessment** of the individual for productivity, quality, safety
- **Inclusion of safety in screening of award proposals** for Republic Day, Independence Day and DAE awards
- Review at various levels – PSCM, GRC, SC, PRC, EC, Board for quality, safety

# Some suggestions

- Engaging experts from units for regulatory inspections in other units
- Awareness programmes on regulations / updates / trends for units
- Horizontal communication of best practices / major accidents in units/ organizations for implementation as appropriate
- Developing checklists on assessment of culture in consultation with units for use by units and for review by units and regulator
- Visits by senior officials of regulatory bodies to units



Thanks