



Garden Reach Shipbuilders & Engineers Ltd.

(A Government of India Undertaking)

(Ministry of Defence)

43/46 Garden Reach Road, Kolkata – 700024

EXTRACTS FROM THE MINUTES OF THE 305 MEETING OF THE BOARD OF DIRECTORS HELD ON 22 JUN 12

Item -XVI Research and Development Policy

80. Initiating discussion on the subject, Director (Shipbuilding) briefly explained the proposal.

81. The Board deliberated on the Draft Research & Development Policy and suggested that the terms used as 'Principal Investigator' and 'Associate Investigator' may be defined and also objective of "Research & Development" in the organization may be clearly brought out in the R&D policy paper.

82. The Board, after deliberations, approved the draft Research & Development Policy with above minor amendments.

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GRSE R & D POLICY

Garden Reach Shipbuilders & Engineers Ltd
43/46 Garden Reach Road, Kolkata-700024

GRSE POLICY ON RESEARCH & DEVELOPMENT
Doc No. R&D/CDO/005

1. PREAMBLE

- a) The so called globalization of the world economy has generated problems on the one hand and created opportunities on the other hand and there is hardly any doubt that continuous innovation is the only solution to stay afloat in these competitive times.
- b) It is true that remarkable achievements have occurred in a number of isolated sectors but generally speaking the true potential of India as a global R&D hub has not been realized as yet.
- c) At the time of independence in 1947 our country did not have a strong and organized scientific/technological infrastructure and as a result the first thrust of Indian development initiatives were based on imported technologies. It is now internationally recognized that India has the world's third largest scientific and technological manpower. Expertise is thus in abundance to promote advancement in basic and applied sciences. The time is now ripe to focus on R&D for accelerating development and consequent economic growth of the country.

2. OBJECTIVE

- a) The Objectives of having an R&D Programme at GRSE are as follows

- i. *Technology Development*
- ii. *Product Development/ Improvement*
- iii. *Process Development/ Improvement*
- iv. *Efficiency Improvement*
- v. *Performance Improvement*
- vi. *Quality Improvement*
- vii. *Value Engineering*
- viii. *Cost Reduction*
- ix. *Import Substitution for strategic reasons*
- x. *Providing Solutions to generic problems (non –routine)*

- b) The following clauses will also apply

- i. *R&D Activities shall be original and planned and shall result in new knowledge.*

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- ii. *The application of R&D shall result in new/improved products or processes or services that shall be new to the company, or new to the region or new to the world.*
 - iii. *The search for knowledge shall be related to product, material, device, process, system or services; It also includes application of research findings for new or substantially improved materials, products, processes or systems or services prior to commencement of commercial production or use which may include*
 - iv. *Setting up of demonstration/pilot plants for the first time by the organization.*
- c) GRSE as a responsible corporate citizen shall utilize a part of the company's net profit for Research and Development activities. (As per current guidelines the amount is 0.5 % of PAT.) This allocation will be revised based on additional/further guidelines issued by the Department of Public Enterprises from time to time.

3. SCOPE

- a) In the Guidelines issued by the DPE with respect to R&D in Defense Public Sector Undertakings elaborate reference have been drawn to the definition of **Research and Development** as given in various Govt Documents.(Eg; Accounting Standard 26 (AS26); Direct Tax Code Bill 2009 etc).
- b) However it has been concluded that for the purpose of MOU the activities as listed under the head **OBJECTIVES**, as relevant to the current and future business needs of the organization shall be considered as R&D Activities.

4. BUDGET / FUNDING

- a) R&D Budget shall be allocated in each financial year, co related to the net profit of that fiscal year in accordance with the DPE Guidelines which may vary from time to time. R&D Budget for the next 3 years shall be clearly indicated. However the projected annual expenditure for the year under consideration will be taken as the target for the year.
- b) The unspent amount in the R&D Budget in the financial year, if any, will not be allowed to lapse and will be transferred to the **R&D Fund**, (Which will be created exclusively for R&D Activities) which will accumulate as in the case of the Non lapsable Pool for the North East States.

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- c) In line with GRSE's status as a Miniratna; three R&D Projects shall be taken as target in the MOU. (Ref : DPE Guidelines on R&D in Defence PSUs)
- d) R&D teams will be empowered with sufficient delegation of power for smooth implementation of R&D Projects. The R&D Project leader may be empowered to procure materials/components/equipments/software tool from foreign sources as per established procedure or as decided by the Board of the Company. Similarly if the R&D team finds it essential to consult an expert individual/agency/institute after ensuring availability of the resource for desired results, the team may be empowered to hire such services/competencies as per established procedure or as decided by the Board of the Company. The R&D team should be empowered to travel and interact with peers on need basis. Visits to foreign Universities, Technical Conferences for interaction/collaborative association may be simplified/streamlined/facilitated.
- e) In view of the close relation GRSE has with the following Institutions they may be roped in as partners in GRSE R&D Activities
 - ✧ Indian Institute of Technology (IIT), Kharagpur
 - ✧ NST Laboratory, Visakhapatnam
- f) GRSE as a MiniRatna shall allocate 0.5 % of the Profit after Tax as the minimum expenditure on R&D.

5. PLANNING for R&D

- a) GRSE shall have a **R&D Committee**. GRSE shall have **#R&D Manuals** relevant to each department engaged in R&D and a specific **Annual R&D Plan**. The R&D Plan shall be prepared by the R&D Committee. To acquire the objectives and goals it is necessary to prioritize R&D Projects depending on the benefits that are likely to accrue. The specific R&D Plan and the R&D budget shall be approved by the Board of Directors of GRSE
- b) The R&D Plans shall specify mandatory documentation of the R&D efforts as well as results achieved. It shall also where applicable, include provisions for obtaining /maintaining recognition of its R&D Centre by the Department of Scientific and Industrial Research so that applicable tax/duty benefits can be claimed by the Company. Specific R&D plans shall contain projects to be undertaken. They should specify.
 - i. *Projects to be undertaken*
 - ii. *Activities to be undertaken for each project*

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- iii. *Budget allocation as a percentage of PAT*
 - iv. *Responsibilities and authorities*
 - v. *Major measurbles and perceivable results expected*
 - vi. *Knowledge Management systems and HR issues of manpower, incentives and rewards*
 - vii. *Proposed networking with academic/research institutions, customers and vendors.*
- c) Projects labeled as R&D shall not overlap with projects under CSR or Sustainable Development.
- d) A separate paragraph in the Annual Report shall be dedicated to implementation of R&D activities/projects.
- e) If at any point of time GRSE management feels that investment in R&D would be unnecessary for them; a written submission can be made to the Task Force Syndicate Convener to that effect. Only on receipt of a written exemption duly signed by such Convener would a profit making CPSE be allowed to forego R&D activities. Such an exemption would be valid only for one performance year.

6. GOALS of R&D and IMPLEMENTATION

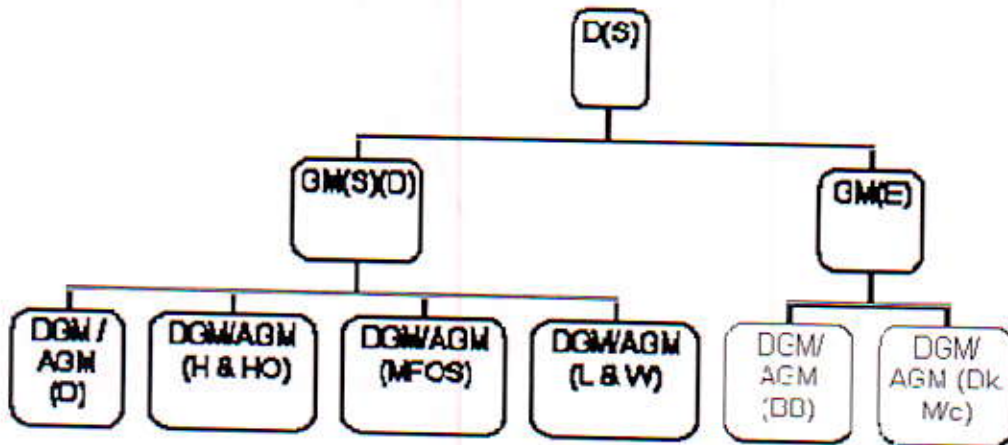
- a) R&D will be developed as a 'discipline' through a systematic approach. A mechanism/process will be developed for taking up R&D projects along with other parameters such as cost, benefits expected, time period etc taken into consideration. The mechanism for the implementation of the project shall be constituted in the beginning of the project.
- b) R&D Projects shall be identified keeping in mind the business needs of the organization. The project selected shall be in line with the core activities and the outcome of the R&D shall help in achieving the long term goals of the organization and shall yield measurable economic/social benefits.

7. INTERNAL ORGANISATION FOR R&D

- a) The **R&D Committee** will be an internal organization put in place to coordinate /regulate R&D activities of the company. The **Director (Shipbuilding)** will be the overall in charge of the R&D activities of the company. The R&D committee shall have representatives from all divisions of GRSE involved in design/production etc; namely Ship Div, Engineering Div, Engine Div and Bailey Bridge Div.

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b) The Structure of the R & D Committee will be as follows to start with:-



Note : The senior most GM will serve as the leader of the R&D Committee.

- c) R&D proposals (based on problems faced in real life design or production scenarios) may be forwarded to the R&D Committee by anybody in GRSE through their respective Departmental heads.
- d) The R&D Committee will scrutinize these proposals and prepare a shortlist. After further deliberations it shall forward the proposals with maximum merit for further processing/ approval of the board of Directors of GRSE before the projects are taken up by R&D Committee.
- e) The R&D Committee shall hold meetings at periodic intervals (eg : Monthly) to monitor progress etc.

8. PROCEDURE

- a) R&D Activities will be initiated in the Design Departments of the following Departments; namely
 - i. Ship Division : Central Design Office
 - ii. Baily Bridge : Baily Bridge Design Dept.
 - iii. Deck Machinery Div: Deck Machinery Design Dept

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- b) Subsequently dedicated manpower will be recruited for R&D Activities. These persons will be engaged solely in R&D. Additional manpower may be transferred to R&D Dept from time to time.
- c) It has been seen throughout the period of known human history that binding research activities in the straightjacket of fixed procedures does not yield positive results. Many a time new processes /better products have been obtained as result of doing something which was not previously planned. In other word which has happened as an accident. Keeping this in mind it is found prudent not to bind R&D activities at GRSE into fixed procedures.
- d) Procedures to be adapted shall be decided by the *Principal Investigator of the Project in consultation with his *Co-Principal Investigator/Associate investigators in the project depending on the nature of the Project.
- e) As described in the paragraph on BUDGET/FUNDING the R&D team members shall have sufficient liberty to design procedures in their respective R&D activities to take it to completion.

9. NON DISCLOSURE OATH

- a) The persons involved in R&D activities at GRSE shall be under Oath not to disclose any details of the R&D activities to outside parties.

10. CONCLUSION

- a) GRSE is committed to enhancing the quality of its products and services by investing a certain portion of its PAT on R&D; as per the guidelines provided by Department of Public Enterprises.
- b) Every effort will be made in this direction by recruitment and allocation of proper human resources and selecting suitable projects to obtain satisfactory results .

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Each Department carrying out R&D shall prepare its own **R&D Manual**. The purpose of the R&D manual is to guide the researchers. The Manual shall incorporate the Dos and Don'ts relevant to research in that department. The R&D Manual shall incorporate lessons learnt from past experience in R&D in that department if any.

The embryo of an R&D Manual as relevant to **Ship Design Department** , **Baily Bridge Design Department** and **Deck Machinery Design Division** are enclosed here as **Annexure A**. These are to be developed further by the relevant department.

** The head of any R&D Project is known as the **Principal Investigator**, whereas his/her assistants are known as **Co-principal Investigator/ Assistant/Associate Investigator** as applicable. Refer Application form for R&D with **National Centre for Antarctic and Ocean Research** enclosed herewith..
Annexure B.

Annexure A

Embryo of R&D MANUAL – Ship Design Department

1. **Ship Design Department** : There is a steady demand for the following types of crafts from miscellaneous users
 - a. **Fast Interceptor Boats** : 9 M to 15 Meters : These types of crafts built in GRP are in heavy demand from the Police Forces of various States, BSF, Indian Coast Guard, Indian Navy. The same type of boats with some modifications also serve the Various Port Authorities as Pilot Boats, Offshore Oil Companies as Crew Boats etc.
 - b. **Offshore Support Crafts** : 45 Meters to 75 Meters : With increased activities in the Offshore Sector of the Oil & Gas Industry, these type of crafts, built in Steel are in great demand all over the world. They are the workhorses of the Offshore Oil Industry. Crafts falling under this category are Anchor Handling Tugs, Supply Vessels, External Fire Fighting Vessels, Offshore Platform Support Vessel, or a combination of these. Development of complete designs of these crafts; so that other smaller companies, which do not have design capability may build these crafts with the help of these designs/drawings will qualify as R&D Activities.

Embryo of R&D MANUAL Bailey Bridge Design Department :

2. Bailey Bridge Design Department

Bailey Bridge Panels are fabricated in 61 Park of GRSE. After fabrication they are painted and stowed in the open in 61 Park premises. During the rainy season water falls on these panels. A lot of water accumulates inside the panels as there is no ready outlet for this water. With time this accumulated water accelerates rusting of the panels. Measures to prevent rusting : Limber holes may be strategically located on the panels, without causing any loss of strength such that the

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accumulated water will drain out by gravity saving the panels from premature rusting.

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Embryo of R&D MANUAL - Deck Machinery Design Department :

3. Deck Machinery Design Department

- a. The deck machinery division designs and manufactures miscellaneous deck machinery for GRSE ships as also ships built by other shipyard/ organizations.
 - b. A common item is anchor windlass/winch for various types of ships.
 - c. For small boats and ships the anchor is often cast and lifted by hand. But there is a limit on this depending on the weight of the anchor. Once the weight of the anchor exceeds 20 kg it is difficult to handle manually. For such boats electric power operated windlasses are required. However ; these windlasses can not be heavy as that will be detrimental for the boat. Moreover small ships have very little spare space on the foredeck. Hence they are often designed such that they are hung under deck with the anchor rope coming out through an orifice on the deck. Designing such windlasses for smaller ships may be a challenging activity for deck machinery div which will qualify as R&D Activity.
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