SAFETY RESEARCH PROGRAMMES

GOVERNMENT OF INDIA

ATOMIC ENERGY REGULATORY BOARD

VIKRAM SARABHAI BHAVAN
IV FLOOR, NORTH WING
ANUSHAKTI NAGAR
BOMBAY-400 094

AERB SUPPORTED RESEARCH FELLOWSHIPS AND PROGRAMMES

The Atomic Energy Regulatory Board (AERB) has been set up in November 1983 to carry out certain regulatory and safety functions in the field of radiation safety on a countrywide basis and industrial safety in all operations of the Department of Atomic Energy. One of the functions of AERB is to promote and fund radiation safety research and industrial safety research as part of its programme.

AERB AND ITS ADVISORY COMMITTEE

Atomic Energy Regulatory Board has constituted a Committee for Safety Research Programmes to frame rules, regulations and guidelines and to recommend, evaluate and monitor the research projects. The Committee also recommends financial assistance to Universities, research institutions and professional associations for holding symposia and conferences of interest to AERB after scrutinising the applications from the organisations. The present membership of the Committee is given in Annexure-I. The Committee normally meets twice in a year.

Institutions seeking the support of the Atomic Energy Regulatory Board are expected to have the basic infrastructure needed to carry out such research projects. The facilities available may be suitably augmented to a limited extent with the help of research grants made by AERB. The institutions involved in such research projects could, on their own initiative, make special arrangements with other organisations for the use of any special research facilities that may be needed to supplement their own efforts. AERB does not get involved in making these arrangements.

RESEARCH PROJECTS

Eligibility

AERB funds for appropriate research projects will be made available to members of faculties of universities and other research institutions. Proposals from persons who apply in their individual capacity and not through an institution will not be considered. All applications for grants should be made through the Head of the Institution in which the project is proposed to be carried out.

Tenure

The normal duration of a research scheme would be two to three years from the date of the issue of sanction. However, financial grants will be made on an annual basis. The progress of the projects will be reviewed while renewal applications are considered. Approval for extensions upto six months can be given in consultation with the Chairman of the Committee. The tenure of the fellows attached to this project can be extended by three months after the terminal date of the project at the discretion of the Committee, for preparing the consolidated report.

Procedure for Applying

Ten copies of the application for research proposals for the year should be submitted to Member Secretary, Committee for Safety Research Programmes, Atomic Energy Regulatory Board, Vikram Sarabhai Bhavan, Fourth Floor, Anushaktinagar, Bombay-400 094 in the format that is enclosed in Annexure-II on or before November 30. This is for funding in the ensuing financial year. At least one copy of the proposal sent to AERB should be endorsed by the Head of the Institution in which the proposed work is to be carried out. The proposer and the institution in which the work will be carried out will be required to accept the terms and conditions stated separately in Annexure-III. A statement to this effect as shown in Annexure-II has to be included when the request for an AERB grant is made. Applications for annual renewal of grants have to be submitted as in Annexure-IV.

The decision on proposed projects may be communicated to the concerned institutions by the first week of April.

Scrutiny of Applications

The proposals will be studied by the Committee for Safety Research Programmes. The Committee may consult other experts as considered necessary and make recommendations to the Chairman, AERB.

Topics of Interest

A list of the general topics of interest to the advisory committee are listed in Annexure V. Investigations on topics related to (a) safety aspects of nuclear technology including industrial safety in nuclear and allied installations; and (b) safety aspects of radiation applications in agriculture, industry, medicine and research will be considered for support.

Renewal of Projects

The investigator is expected to apply to the Board for renewal of the grant every year. Renewal is subject to satisfactory progress. The application for renewal in the prescribed format should be sent to the Member Secretary, Committee for Safety Research Programmes by November 30, for obtaining the grant for the next financial year.

The progress during the first year is likely to be modest in view of the time taken to recruit fellows and to procure equipment. However, the investigator must send the renewal application promptly to ensure continuation of support to the project.

Consolidated Terminal Reports

Every investigator must submit five copies of a consolidated terminal report within three months of the terminal date of the project to the Member Secretary of the Committee for Safety Research Programmes. The consolidated report should be a self-contained complete document and not a compilation of papers published. The report must contain information as shown in Annexure-VI. Two copies of all the papers published/submitted for publication based on work done under the AERB project should also be sent along with this report.

Components of Research Grants

Basically, AERB will fund the research project for items such as equipment, consumables, stipends for stall exclusively employed for the project, and computation charges and other contingencies that may be required to complete the projects successfully. Only those items including equipment, which are essential for carrying out the project effectively and expeditiously are granted by AERB. Travel grants may also be provided from contingencies in cases where there is a well defined requirement. Grants for foreign travel will not be provided. No part of the project funds can be diverted for this purpose. No payments are made to the Principal Investigator and additional members of the faculty who may be working as Co-investigators. The categories of staff granted under the project are separately indicated in the sanction. Their mode of selection is explained in Annexure III under terms and conditions.

CONFERENCES, SYMPOSIA AND WORKSHOPS

The investigator should present and discuss the results of all research and development work in Conferences. This is essential to promote science and technology. AERB extends financial support to organisations and institutions to organise seminars, workshops, conferences or symposia on safety related topics. These meetings encourage interaction among scientists and promote interdisciplinary contacts - an essential factor in promoting radiological, industrial and nuclear safety. Publication from these meetings is easily available all over the country to a wider section of professionals.

AERB Form 'A' in Annexure - VII may be submitted by the conveners of national/international meetings conferences, seminars, symposia and workshops to get AERB funding. Support is generally extended in the form of co-sponsorship with other agencies. The requests for support should reach the Member Secretary, Committee for Safety Research Programmes by December 31 for anticipatory support for the subsequent financial year.

AERB funding is subject to the following conditions:

1. Two representatives from AERB will be allowed to attend meeting free of charge.
2. A copy of the proceedings of the meeting must be supplied free of charge to the AERB Library.

Annexure - I

Membership of the AERB Committee for Safety Research Programmes

1.	Mr. S. L. Kati, Formerly Member, Atomic Energy Commission, G-104 Hrushikesh, Apna Ghar Unit No. 1 Co-Op. Hsg. Society, Swami Samartha Nagar, Andheri (West), Mumbai 400 053.	Chairman
2.	Dr. R. B. Grover, Scientific Secretary, Board of Research in Nuclear Sciences and Head, TT & CD, Bhabha Atomic Research Centre, Mumbai 400 085	Member
3.	Prof. U. N. Gaitonde, Department of Mechanical Engineering, Indian Institute of Technology, Membai 400 076.	Member
4.	Dr. U. C. Mishra, Director, Health, Safety and Environment Group, Bhabha Atomic Research Centre, Mumbai 400 085	Member
5.	Prof. K. Sri Ram, Formerly, Head, Nuclear Engineering and Technology Programme, Indian Institute of Technology, Kanpur, Plot 547, Road 27, Jubilee Hills, Hyderabad 500 033.	Member
6.	Prof. V. V. Kutumba Rao, Director, Jawaharlal Nehru Aluminium Research, Development and Design Centre, Opp. Wadi PS, Amravati Road, Wadi, Nagpur 440 023.	Member
7.	Dr. C. S. P. Iyer, Head, Department of Marine and Analytical Reference Standards, Regional Research Laboratory, Trivandrum 695 019.	Member
8.	Dr. R. N. Kulkarni, Scientific Officer (G), Atomic Energy Regulatory Board	Member
9.	Dr. K. S. Parthasarathy, Secretary, AERB	Member-Secretary

Annexure-II
(for new projects)

Government of India
Atomic Energy Regulatory Board

Date:

APPLICATION FOR GRANT-IN-AID FOR RESEARCH SCHEME

(Please send 10 copies to Member-Secretary, Committee for Safety Research Programmes, Atomic Energy Regulatory Board, 4th Floor, Vikram Sarabhai Bhavan, Anushakti Nagar, Bombay-400 094)

1. (a) Title of the Project

(b) Duration of the Project

2. Project Personnel

(a) Principal Investigator:

(Name) (Designation)

Academic qualifications :

Date of Birth :

Previous research experience :

Percentage of time to be spent on the project :

Recent Publications:

(within the last 5 years. Include earlier publications only if relevant to present proposal)

(i) In refereed journals (Journals in which: Original articles are published)

(ii) Others :

(b) Co-investigators:

Names	Academic Qualifications	Date of Birth

Previous research experience :

Percentage of time to be spent on the project :

Recent Publications:
(Within the last 5 years. Include earlier publications only if relevant to present proposal)
(i) In refereed journals :
(ii) Others :

(c) Details of Research fellows/associates, if any, : Supported by agencies such as DAE, CSIR etc. Who are not recruited under this project but will Participate in the project work

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3. Is the Principal Investigator/Co-investigator likely to : go abroad? If yes, what is the duration?

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4. (a) Name and address of the University/Institution :

   (b) Department where research is to be performed :

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5. (a) Name, designation and address of the person : with whom formal correspondence in respect of this research scheme is to be conducted.

   (b) Telephone No. :

   (c) Fax No. :

   (d) Telegraphic Address :

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6. Scientific background of the project

   (a) Importance of the problems:

   (b) Related work already performed or in progress at your University/Institution.

   (c) Similar/related work in progress or already performed at other places in India or abroad.

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7. (a) Scientific scope of the research scheme.

   (b) Detailed work plan for first year, indicating proposed methods/techniques to be used.

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8. List facilities in your Institution (equipment, material, etc.) presently available, which would be used for the project.

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9. Details of projects already negotiated by the Principal Investigator and Co-investigator with any funding agency, including AERB.

   (a) All projects submitted in last 3 years, indicating agency to which submitted.

   (b) Projects currently under negotiation by Principal Investigator/Co-investigator with agencies for which decision is awaited.

   (c) Projects currently being conducted by the Principal Investigator/Co-investigator.

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10. Budget Estimate for the first year of the project.

    (a) Staff salary

Project personnel recruited for the project

Personnel	Estimated Cost (Rs.)

(b) Equipment

_____
_____
_____

(c) Consumables (Give a list of items) Cost (Rs.)

_____
_____
_____

(d) Contingencies

_____
_____
_____

(e) Computer Charges (if any)

_____

(f) Overheads

_____

Total:

_____

11. Project funding (indicate as a %)

(a) Amount to be contributed by the University/Institute _____%

(b) Amount expected from other sources (name of the sources and items) _____%

(c) Amount requested from AERB for this project. _____%

12. If the project requires more than one year to complete please give estimate of funds required for each year.

Year	Salaries Rs.	Equipment Rs.	Consu-mables Rs.	Contin-gencies Rs.	Computer Charges Rs.	Total Rs.	Requested from AERB Rs.
1st							
2nd							
3rd							

Certificate:
The terms and conditions of the grant-in-aid are acceptable to us and all facilities of the institution will be available for conducting this research scheme.

Signature of the Principal Investigator	Signature of the Head of University/Institution
Name:	Name:
Designation:	Designation:
Date:	Date:
Seal of the Principal Investigator:	Seal of the Institution:

Annexure - III

TERMS AND CONDITIONS OF GRANT-IN-AID FOR AERB SPONSORED RESEARCH PROJECTS

1. Sanctioning of Project:

The Atomic Energy Regulatory Board will issue a formal sanction for the entire period of the Project indicating, inter alia, the details of the amount of grant-in-aid for the first year and approximate anticipated amounts for subsequent years. The terms and conditions under which the grant-in-aid would be paid, will be communicated as soon as the recommendations of the Committee for Safety Research Programmes are accepted.

2. Payment of Grant-in-Aid:

2.1 While the Project is generally expected to receive support for about two to three years, the amount will be sanctioned and released only for one year at a time. Grant for the first year will be paid in full to the investigator directly on receipt of the bill in duplicate in relevant Claim Form enclosed with the terms and conditions. The investigator must ensure that this reaches the Member Secretary, Committee for Safety Research Programmes, Atomic Energy Regulatory Board, Vikram Sarabhai Bhavan, 4th Floor, Anushakti Nagar, Bombay-400 094.

2.2 If the duration of the project is more than two years, the grant from the second year onwards (but not for the last year) will be released after evaluating the renewal application and only after receipt of the bill in duplicate in the prescribed Claim Form along with the statement of accounts signed by the Accountant of the Institution.

2.3 For the final year of the Project, the grant will be released in two installments. First installment to the extent of 50% of the grant sanctioned for the year will be released on receipt of the bill in duplicate in relevant Claim Form along with the statement of accounts signed by the Accountant of the Institution. The remaining 50% of grant for the final year will be paid on submission of the final statement of accounts audited by a Chartered Accountant/Statutory Auditor. The final report can be submitted within three months after the completion of the project. It may be noted that it will not be possible for the Board to release funds for the project unless the claims in the prescribed form duly supported by the appropriate documents mentioned above are submitted to the Board.

2.4 Final claim supported by the audited statement of accounts may be submitted along with the consolidated report of the project within three months from the date of termination of the project. If the claims are not received within the stipulated period, it is presumed that the investigator has no further claim. An inventory of equipment referred to in para 6.3 below should also be enclosed.

3. Appointment of Staff:

3.1 The staff sanctioned for AERB Research Project should be appointed on the basis of personal interviews. Selection should be in accordance with the recruitment procedure of the institutions concerned. An appropriate selection committee should be constituted locally for the purpose by the Institution/University. A representative of the Board should be included in the Selection Committee for recruitment of Research Fellow(s) and Research Associate(s). The Member Secretary of the Committee for Safety Research Programmes should be contacted for the nomination of a representative of the Board in the Selection Committee and the Committee meeting should be arranged in consultation with this representative.

3.2 To ensure continuity of work, staff appointed in the project should be required to serve for a minimum period of one year. A copy of the appointment order and joining report of the staff should be sent to the Member Secretary of the Committee.

3.3 Details about the Research Fellowships:

3.3.1 The value of Research Fellowship of the Board is as under:

Category	Fellowship	Qualification & Experience
1. Scientific Discipline		
Junior Research Fellowship (JRF)	Rs. 1800/- p. m.	M.Sc. (1 Class) or BE/B.Tech.
Senior Research Fellowship (SRF)	Rs. 2100/- p.m.	M.Sc. 1 Class with 2 years research experience. BE/B.Tech with 2 years research experience.
2. Medical/Engineering Discipline		
Junior Research Fellowship.	Rs. 2400/-	ME/M.Tech or MBBS with one year internship.
Senior Research Fellowship	Rs. 2500/-	ME/M.Tech with two years research experience. MBBS with one year internship and two years research experience.

3. Research Associates may be fixed at a consolidated amount within one of the slabs given below.

Rs. 2200-100-2700

Rs. 2700-100-3200.

Note:

(1) The Associateship will depend upon the assessment of their academic achievements and research capability.

(2) Upward revision of Fellowships and Associateships is undertaken from time to time.

3.3.2 The local institution will review after two years whether JRF/SRF should continue for the third year and a certificate may be sent to AERB to this effect. Similarly, at the end of the third year, the institution should review the cases to decide whether the extension for another year should be given.

3.3.3 Junior Research Fellows, Senior Research Fellows and Research Associates are eligible only for Casual Leave as per the rules of the institution where they are working. However, maternity leave may be given wherever applicable under the normal rules.

3.3.4 House Rent Allowance (HRA) and Medical benefits may be allowed to all categories (JRF, SRF, Research Associates) as per the rules of the institution where they are working. The fellowship amount paid to the fellows should be taken as basic pay for this purpose.

3.3.5 Bonus and Leave Travel Concession (LTC) not admissible to any category.

3.4 The members of the staff appointed on the research projects are, for all practical purpose, to be treated as employees of and subject to the administrative control of the institution/university where the project is located.

3.5 The staff employed on the research project financed by the Atomic Energy Regulatory Board may be encouraged to give lectures and/or courses restricted to not more than two hours duration per week in the Institution where the project is located. Such permission may be granted by the Investigator-in-charge of the project in consultation with the Head of the Institution.

3.6 Staff appointed for AERB research project may be allowed to utilise the contingency grant to meet travel expenses in connection with the work of the projects or for attending symposia etc. at the rates admissible to regular employees of the Institution concerned, subject to the following conditions.

(i) The journey should have the approval of the Investigator-in-charge.

(ii) The grant for contingencies could be utilised only for payment of Travelling Allowance and Dearness Allowance to the staff employed on the research project, and

(iii) The expenditure involved will not result in any excess over the amount provided under sub-head "contingencies" and no additional funds will be provided on this account.

3.7 (i) The JRF and SRF appointed for the project will not be eligible for next higher scale pay unless they complete 2 years in the project.

(ii) Persons doing course work may not be appointed in the project as JRF or SRF, except where the course work is mandatory for obtaining a degree by research.

4. Contingency:

The Contingency Grant could also be utilised for the following:

(i) To buy any urgently required laboratory items for the project.

(ii) To meet the travel expenditure of the investigator(s) and staff engaged on the project for attending symposia relevant to the project. This is at the discretion of the Principal Investigator.

(iii) Towards payment of honorarium for visiting scientists to give lectures which have direct bearing on the project work.

(iv) Tuition fees, registration fees for Ph.D., apparatus, reprints connected with the work, purchase of stationery and fees for the audit of project accounts upto a maximum of Rs. 200/- per year.

(v) The investigator-in-charge can utilise the sanctioned Contingency Grant per annum for any purpose indicated in this para without getting the prior approval of the Board subject to the condition that a consolidated accounted is rendered at the end of the year. The Investigator should inform the Board if he intends to go abroad. He should also indicate the name of the person who will carry on the research programme in his absence.

5. Overheads:

This amount is meant for partly meeting the cost of administering the Project. This will be 5% of the project cost subject to a maximum of Rs. 5,000.

6. Equipment and Stores:

6.1 All the major items of equipment are indicated in the sanction letter. Only such items of equipment, as have been sanctioned by the Board should be purchased by the Institution out of the grant sanctioned as Equipment Grant. In case any change in the equipment (item or cost) is considered essential, prior approval is required. This should be obtained before the purchase of such equipment by writing to the Member Secretary of the Committee. The Board does not assume financial responsibility for any equipment purchased without their prior approval. In no case should the Institution purchase items like air conditioners, refrigerators, exhaust fans, furniture, typewriters, etc., out of the grant sanctioned for the project.

6.2 All the major equipments purchased against AERB projects will be the property of the Board and is subjected to verification.

6.3 The University/Institution should maintain a proper and separate stock register of all items of equipment and stores, both capital and consumables purchased out of AERB grant. Equipment purchase should be marked either with a metal disc or painted boldly with the letters AERB. All equipment should be serially numbered. An inventory of equipment and consumables purchased out of AERB grants should be sent to the Board immediately after the close of the financial year in the following proforma to the Member Secretary, Committee for Safety Research Programmes.

AERB Inventory No.	Date of purchase	Description of the equipment	Name of the Supplier	Price paid including taxes	Remarks if any

A. Capital Equipment

……

B. Consumables

……

6.4 All equipment purchased by the Institution/University for work on the research project remains the property of the Board and is required to be returned to Board after the termination of the Project. The Board may however consider the question of allowing the Institution/University to retain the same on payment of suitable price to be mutually agreed upon. The Board has also the right to transfer the equipment to another project after the termination of the Project or in case of unsatisfactory performance of the Project.

7. Audited Reports by Comptroller and Auditor General of India:

The accounts of the Institution in receipt of grant-in-aid in excess of Rs. 1.00 lakh per annum will be subject to a test check by the Comptroller and Auditor General of India at his discretion.

8. Renewal Application:

The Investigator-in-charge of the Project should submit renewal application on the Project each year. Ten copies of the Report are required to be submitted not later than November 30 to the Member Secretary of the Committee. Application received late is not likely to be considered and this will adversely affect the renewal of the Grant-in-aid.

9. Publication of Papers:

The following procedure has been laid down for the publication of papers on the work done under AERB research programmes.

The researchers are free to publish their findings in journals of their choice. They must send copies of the manuscripts to AERB. AERB's financial support to the project must be acknowledged in the publication. The responsibilities for the contents of the publication is exclusively that of the author/authors.

10. Patent Rights:

All patent rights on design and inventions derived from the research work financed or aided by AERB shall belong to the Government of India or its nominees. The Board may, at its discretion, allow any benefit thereof to be retained by the Inventor or may direct that some benefit thereof be given to the inventor.

Annexure - III (Contd.)

REQUEST FOR RELEASE OF GRANT-IN-AID (I INSTALLMENT)
CLAIM FORM I
(YEAR 19 - 19)
(To be filled and submitted in duplicate)

To
The Member-Secretary,
Committee for Safety Research Programmes
Atomic Energy Regulatory Board,
4th floor, Vikram Sarabhai Bhavan,
Anushaktinagar,
Bombay 400 094

Title of the research project :

Sanction letter No. and date :

Name of the Institution/University :

	Particulars	Staff salary	Equip-ment	Consum-ables	Computer charges	Contin-gencies	Over-head	Total
1.	Amount (Rs.) sanctioned in current year (19 -19)							
2.	Net amount claimed now							

ACCEPTANCE FORM

The terms and conditions of grant-in-aid communicated by the Board are accepted:

Signature of the Principal Investigator

Name:

Designation:

Date:

Counter signature of the Head of the Institution.

Name:

Designation:

Date:

Seal of the Principal Investigator:

Seal of the Institution:

Annexure - III (Contd.)

CLAIM FORM II
Request for Release of Grant-in-Aid (Year 19 -19)
for Second and Subsequent including Final Year

(To be filled and submitted in duplicate within one month of receiving the sanction letter)

To
The Member-Secretary
Committee for Safety Research Programmes
Atomic Energy Regulatory Board
IV Floor, Vikram Sarabhai Bhavan
Anushaktinagar
Bombay 400 094

Title of the research project :

Sanction letter No. and date :

Name of the Institution/University :

	Particulars	Staff salary	Equip-ment	Consum-ables	Computer charges	Contin-gencies	Over-head	Total
1.	Amount (Rs.) sanctioned in current year (19 -19)							
2.	Amount received so far							
3.	Total balance Admissible under The Project							
4.	Unutilised balance if any, from previous years/ installment							
5.	Net amount Claimed now							

Authority at the institution in whose favour the Demand Draft is to be drawn.

Signature of the Principal Investigator

Counter signature of the Head of the Institution.

(Seal)

Annexure - III (Contd.)

Utilisation Certificate

(if the grant is fully utilised)

Rupees …… sanctioned by the Atomic Energy Regulatory Board, IV Floor, Vikram Sarabhai Bhavan, Anushaktinagar, Bombay 400 094 vide their letter No. ……. dated …… and already paid in the month of …….for the years has been fully utilised during the financial year to meet the expenditure on ……..

Principal Investigator Audit Officer/Chartered Accountant

(Seal)

Utilisation Certificate

(if the grant is partly utilised)

Rupees …… sanctioned by the Atomic Energy Regulatory Board, IV Floor, Vikram Sarabhai Bhavan, Anushaktinagar, Bombay 400 094 vide their letter No. ……. dated …… and already paid in the month of …….for the years has been fully utilised during the financial year to meet the expenditure on …….. and there is an unutilised balance of Rs. …… of the Grant as on ……..

Principal Investigator Audit Officer/Chartered Accountant

(Seal)

Annexure - III (Contd.)

CLAIM FORM III
(To be submitted after the termination of the Project)

CONSOLIDATED STATEMENT

Amount received							Amount Spent							
Year	Staff Salary	Equip-ment	Consum-ables	Travel	Over-heads	Conti-ngency	Total	Staff Salary	Equip-ment	Consu-mables	Travel	Over-heads	Conti-ngency	Un-utilised	Total
I Year (19 -19)															
II Year (19 -19)															
III Year (19 -19)															
IV/Final Year (19 -19)															
Total															

Note: III and IV year to be included only if the payment is sanctioned for more than two years.

Principal Investigator

Auditor/Chartered Accountant/A.G.

(Seal)

Remarks:

Annexure - IV

(For renewal of Projects)

Government of India
Atomic Energy Regulatory Board
Safety Research Programmes

APPLICATION FOR* RENEWAL OF GRANT-IN-AID FOR RESEARCH SCHEME

(*Please indicate whether it is the 1st, 2nd etc. renewal)

(Please send 10 copies to the Secretary of the Committee for Safety Research Programmes, AERB, 4th Floor, Vikram Sarabhai Bhavan, Anushaktinagar, Bombay 400 094.)

1. Title of the research project:

2. (a) Principal Investigator.

   Name :

   Position held :

   (b) Co-investigator(s).

   Name :

   Position held :

   (c) Research fellow(s) recruited for the project and their date(s) of joining.

   Name :

   Date of joining :

3. (a) Number and date of first sanction of scheme:

   (b) Date of Actual commencement of work:

4. Department where research is being performed.

5. Name and address of the University/Institution.

6. Is the Principal Investigator/Co-investigator likely to go abroad? If yes, what is the duration?

7. (a) Name, designation and address of the person to whom all letters are to be addressed.

   (b) Telephone No.
   (c) Fax No.
   (d) Telegraphic Address.

8. List of major equipment already procured/fabricated.

9. Detailed technical report prefaced by a summary highlighting major achievements is to be enclosed with each copy. The summary should include all work done to date.

10. (a) Deviations, if any, from the programme of work and expenditure originally approved.
    (b) Reasons for above.

11. List of papers and copies of papers published/communicated is to be included with each copy.

12. Details of grant:

	Yearwise received		Yearwise actually spent		Commitments pending payments upto 31st March of the current year	Grants requested for the next year
	(I)	(II)	(I)	(II)		
(a) Staff salary (Research fellows and associates)						
(b) Equipment (Give list of major items and their individual cost)						
(c) Consumables (Indicate type of consumables and their individual cost. Indicate Radiochemicals Separately).						
(d) Contingencies						
(e) Computer Charges (if any)						
(f) Travel (Including travel for Computer work. The purpose and justification must be recorded)						
(g) Overheads						
Total:						

13. Project personnel and estimated percentage of total working time devoted to the project.

Personnel	Time (%)	Estimated Cost

14. Detailed plan for the next year.

Signature of the
Principal Investigator

Name:

Designation:

Date:

Seal of the Principal Investigator:

Signature of the
Head of the Institution

Name:

Designation:

Date:

Seal of the Institution:

Annexure - V

AREAS OF INTEREST TO AERB

The studies in some areas are of special interest to AERB. Some such areas and the preferred topics under these areas are indicated in the following list.

1. Industrial Applications of Radiation

(i) R&D aimed at developing improved techniques to obtain greater safety in industrial radiography; application of radioisotope sources for gauging systems; product counting; tracer methods; fire detection; irradiation for preservation/disinfection. Laboratory and large scale irradiators for radiation processing.

(ii) Nuclear techniques in pollution monitoring.

II. Medical Applications of Radiation

(i) R&D aimed at developing improved techniques to obtain greater safety in diagnostic radiology & imaging techniques, radiotherapy and nuclear medicine.

III. Radiobiology/Radiation Dosimetry/Radiation Protection

(i) Investigations on low dose, dose rate effects, dosimetry.

(ii) Population surveys on levels and effects of natural radiation environments.

(iii) Studies on/surveys for assessment of exposure levels due to radiation and radionuclides in the environment, studies to determine transfer coefficients for radioactive iodine from pasture to cow to milk and for caesium from pasture to meat.

(iv) Anthropometric surveys for compilation of data on Indian Standard Man.

(v) Development of radiation monitoring/measuring equipment and radiation protection accessories.

(vi) Development of battery operated air samplers.

IV. Applied Chemistry in Nuclear Industry

(i) Development of instrumentation for monitoring conventional pollutants such as H_2S.

(ii) Development of iodine filter system with provisions for cooling.

(iii) Studies relating to determination of source term in severe accident situations, namely chemical speciation, release from fuel, aerosol formation and transport behaviour of fission products (in particular iodine) and associated aerosols in containment atmosphere; transport, distribution and reactions of hydrogen in containment atmosphere and development of catalytic methods for controlling the reaction rate.

(iv) Studies relating to obtaining early warning about fires through methods based on detection of vapour released during combustion of table sheaths, paints and other substances.

(v) Studies on development of more effective and environment-friendly extinguishers in case of fires in general and with special reference to fires involving liquid sodium.

(vi) Development of techniques for chemical removal of radioactive contamination on exposed surfaces of reactor components/primary heat transport system.

V. Techniques for radioactive waste management

(i) Laboratory and field investigations on chemical behaviour of radioactive wastes in ground water, determination of the rates of movement and development of models to allow prediction of waste dispersion/movement.

(ii) Development of ultra filtration techniques for treatment of alpha wastes containing colloidal particles.

(iii) Development of methods for treatment and immobilisation of liquid wastes in suitable solid matrices, determination of leaching rates for wastes so fixed.

(iv) Theoretical and field studies on atmospheric dispersion and ground deposition of aerosols under different weather conditions, in diverse terrain; development of models for prediction of atomspheric concentrations and extent of ground deposition.

(v) Development of methods for control of spread of ground deposits of radioactive substances through quick drying polymer films.

VI. Applied Metallurgy/Radiometallurgy

(i) Studies on causes of failure of reactor components such as pressure tubes and calandria tubes in pressurised water reactors; application of methods based on fracture mechanics for failure prediction.

(ii) Studies on the long term influence of neutron radiation on properties of structural materials with particular reference to fast reactors.

(iii) Corrosion behaviour of steam generator materials.

(iv) Studies on life extension measures for safety related components of nuclear power plants.

(v) Studies on long-term operational integrity of containment vessel.

VII. Thermal Hydraulics/Fluid Structure Interactions

(i) Analysis of events involving failure in the primary coolant system.

(ii) Analysis of events involving steam line/feedline break in the secondary coolant system.

(iii) Analysis of the effectiveness of the suppression pool in a loss of coolant accident scenario.

(iv) Heat transfer analysis applicable to post dry out period.

(v) Behaviour of Pressurised Heavy Water Reactor core under severe accident conditions.

(vi) Modelling of underground mine ventilation system.

(vii) Pump behaviour under two phase flow conditions.

(viii) Studies on vortex formation in emergency core cooling system accumulators.

(ix) Evaluation of necessary and sufficient conditions for explosive thermal interactions between molten materials and liquids.

(x) Theoretical and model studies on propagation of pressure waves through fluid media and determination of effect on structures.

VIII. Civil and Structural Engineering

(i) Assessment of structural behaviour of RCC containment structures subjected to internal pressure loading (including beyond design basis); evaluation of responses of RCC structure to missile impacts, by aircraft crash and to impacts of internal missiles generated by turbine failure; study of factors influencing leak rates through concrete containment structures.

(ii) Development of liquid alkali metal resistant concretes.

IX. Safety Evaluation Methodology

(i) Generation of failure data for electrical, electronic and process system components for purposes of reliability assessment.

(ii) Model development for applications to probabilistic safety assessment.

(iii) Development of models for human reliability analysis (HRA) for integration with probabilistic safety assessment (PSA); characterisation of operator errors of commission and omission arising from misdiagnosis and other relevant factors for the purpose of HRA; supporting data based on accidents that have occurred in large facilities.

X. Applications of computers and appliances

(i) Development of expert systems as operator aids in safety surveillance and operation of nuclear plants.

(ii) Development of robotic techniques for a variety of unmanned operations such as inspection of structures, material welding, radiation survey, application of protective coatings, chemical decontamination etc.

Annexure VI

INFORMATION TO BE INCLUDED IN THE CONSOLIDATED REPORT

1. Name and address of the institution.
2. Title of the scheme, reference number and date of first sanction.
3. Name, designation and full address of the Investigator in-charge of the scheme.
4. Date of commencement of actual work on the scheme.
5. Detailed technical report of the entire work done on the scheme.
6. Publications in refereed journals (Copies of reprints to be attached).
7. Other publications including papers presented in Symposia/Conferences.
8. Whether any of the staff was awarded research degree on the basis of work carried out on the scheme. If so, degrees, titles of thesis and the years of submission/award.
9. Details of grant (name and designation of staff, name and cost of equipment, consumables (give heads) received during the tenure of the scheme).
10. Particulars such as the title of the scheme, funding agency, duration of any other schemes under your charge in similar areas.
11. Details of all the previous DAE/AERB and other schemes under your charge (scheme title, total funds, duration).
12. Brief summary of achievements in not more than 300 words.
13. Other specific remarks/suggestions.

Annexure VII

AERB FORM A

APPLICATION FOR THE GRANT OF FINANCIAL ASSISTANCE FOR ORGANISING SYMPOSIA/SEMINARS BY OTHER AGENCIES

1. Topic of symposium/seminar :

2. Name of the convener/organising secretary :

3. Full postal address of the convener/organising secretary including Telephone No., Fax No. and Telex :

4. Name of the scientific society/specialist association organising the meeting :

5. Whether it is main society or branch of the main society and status of the organisation :

6. Dates of holding the seminar/symposium etc. :

7. Venue of holding the seminar/symposium etc. :

8. (a) Topics being covered (name technical sessions) :
   (b) Relevance and importance of the topic in the context of national needs :

9. (a) How many delegates are expected to participate? Indicate the number of national & foreign delegates separately :
   (b) How many of the delegates are expected to read papers? :
   (c) For how many delegates TA/DA is offered and at what rate? :

10. What is the total expenditure anticipated?
    Please give details under the following heads.
    (a) Publication of abstracts, proceedings etc. :
    (b) Boarding and lodging expenses of delegates :
    (c) Entertainment :
    (d) Other: transport, conference hall arrangements, etc. :

11. Amount requested from AERB : Rs. ……..

12. Details of grants requested/received from other agencies

Name of Agency	Grant requested	Grant received	Items for which grant asked for

(1)

(2)

(3)

(4)

13. Name of the authority who will be responsible for submitting the audited statement of accounts/utilisation certificate and other reports :

14. Name, designation and address of the authority in whose favour payment of grant is desired :

15. Any other information :

Place: Signature of the Convenor

Date: Name:

Seal of Institutions/Organisations