

Brochure on

SAFETY RESEARCH PROGRAMMES

FUNDED BY ATOMIC ENERGY REGULATORY BOARD (AERB)



Government of India

Atomic Energy Regulatory Board

Mumbai

Table of Contents

Contents

| | |
|--|-----------|
| SAFETY RESEARCH PROGRAMMES..... | 2 |
| 1. ADVISORY COMMITTEE FOR SAFETY RESEARCH (ACSR)..... | 2 |
| 2. RESEARCH PROJECTS..... | 2 |
| 3. TOPICS OF RELEVANCE..... | 5 |
| APPENDIX-I TERMS AND CONDITIONS OF GRANT-IN-AID FOR AERB SPONSORED RESEARCH PROJECTS | 6 |
| Annexure-I: FORMAT FOR APPLICATION FOR GRANT-IN-AID | 13 |
| FOR NEW RESEARCH PROJECT | 13 |
| Annexure-II: UNDERTAKING FROM ORGANIZATION | 17 |
| Annexure-III: REQUEST FOR RELEASE OF GRANT-IN-AID (First Installment) – CLAIM FORM I (YEAR: 20 - 20)..... | 18 |
| Annexure-IV: ACCEPTANCE CUM RECEIPT | 19 |
| Annexure – V: APPLICATION FOR ANNUAL GRANT FOR SANCTIONED RESEARCH PROJECT (Please indicate whether it is the 1st, 2nd etc.)..... | 20 |
| Annexure – VI: REQUEST FOR RELEASE OF GRANT-IN-AID (Second and Subsequent including Final Year) CLAIM FORM II (YEAR: 20XX- 20YY)..... | 23 |
| Annexure-VII: UTILISATION CERTIFICATE | 24 |
| Annexure-VIII: AUDITED STATEMENT OF ACCOUNTS | 25 |
| Annexure-IX: INVENTORY OF EQUIPMENT | 26 |
| Annexure-X: FORMAT FOR THE CONSOLIDATED FINAL REPORT | 27 |
| Annexure-XI: BRIEF REPORT ON ACSR-AERB FUNDED PROJECT | 30 |
| Annexure-XII: FORMAT FOR COMPENDIUM ON SAFETY RESEARCH PROJECTS | 31 |
| FUNDED BY AERB | 31 |
| Annexure-XIII: AREAS OF RELEVANCE TO AERB | 32 |

SAFETY RESEARCH PROGRAMMES

The Atomic Energy Regulatory Board (AERB) was set up in November 1983 to carry out certain regulatory and safety functions in the fields of radiation safety on a countrywide basis and industrial safety in all units of the Department of Atomic Energy (DAE) under its purview. One of the functions of AERB is to promote and fund research on reactor safety, radiation safety, front end and back end fuel cycle safety related problems and industrial safety as part of its mandate.

AERB has set up the Safety Research Institute (SRI) at Kalpakkam, Tamil Nadu to carry out safety related research and analysis in select areas of relevance to regulatory decision- making. AERB also looks for collaboration with suitable institutes/agencies to conduct safety research under its 'Safety Research Programmes' by theoretical modeling and/or through simulated experimentation to gain insight and understand the safety aspects w.r.t. the problems encountered related to the design and operation of Indian Nuclear Reactors and other Nuclear/Radiation Facilities.

The scope of this brochure is to bring out the guidelines and procedures adopted for inviting, scrutiny, selection and award of grants for research projects in related topics. The Safety Research Institute of AERB is the nodal agency for the coordination and monitoring of activities under safety research programmes which are funded through Grant-in-Aid.

Details about funding and list of research areas of interest of AERB are available in the website www.aerb.gov.in, under Safety Research Programme.

1. ADVISORY COMMITTEE ON SAFETY RESEARCH (ACSR)

The Advisory Committee for Safety Research (ACSR) which is constituted by Chairman, AERB has the mandate to, to evaluate and recommend for funding safety related research projects of interest to AERB submitted by academic institutions / research laboratories and other similar institutions outside the DAE. The ACSR will also periodically review progress, prioritize and provide guidance on safety research activities as part of the AERB funding and suggest changes as considered appropriate and recommend renewals / extensions.

2. RESEARCH PROJECTS

2.1 Eligibility

Funds from AERB for appropriate research projects are made available to faculties of academic institutions and other research organizations outside DAE. Proposals from persons who apply in their individual capacities and not through an organization are not considered. Hence, applications for grants have to be made through the Head of the Organization in which the project is proposed to be carried out.

Organizations seeking the funding support of AERB are expected to have the basic infrastructure needed to carry out such research projects. The facilities available with the organization may be suitably augmented, to a limited extent, with the help of the research grant to be provided by AERB subject to acceptance of the project proposal. The organizations involved in such research projects could, on their own initiative, make

special arrangements with other organizations for the use of any special research facilities that may be needed to supplement their own efforts.

2.2 Tenure

The normal duration of a research project would be 2 to 3 years. Financial grants will be sanctioned on an annual basis after review of progress by ACSR. The project progress report will be submitted by the Principal Investigator (PI) on half yearly basis for review. Time extension to the project is not given except under exceptional case with due review by the Committee. Projects may be terminated, in between, if the progress is not satisfactory, and mid-term correction is not possible.

2.3 Components of Research Grants

AERB will fund the research projects for the equipment cost, staff JRF/SRF/RA salary, consumables, computer charges, contingencies and overheads that may be required to complete the project successfully. Any other components of grant will be considered by the Committee on case to case basis. Only those approved items including equipment, which are essential for carrying out the project effectively and expeditiously, will be considered.

The Principal Investigator (PI) and additional members of the faculty who may be working as Co-investigators (CI) are not eligible to draw grants under staff salaries. The project staff appointed exclusively for the research project are only eligible for drawing the salary.

Grants will be provided to attend progress review meetings and conferences within India but are not provided for funding foreign travel. No part of the project fund can be diverted for foreign travel purpose.

Generally, the grant given under a particular head should not be reallocated to another head of account. However, in case of minor changes like reallocation requirement or change of research staff etc., PI should submit formal request to the Member Secretary, ACSR with endorsement of the AERB Project Coordinator.

2.4 Procedure for Application

Each project proposal should have one PI and at least one Co-PI. Two signed copies (prints) and pdf / word / scanned and legible soft copy of the application for research proposals, in the format given in Annexure-I, along with the undertaking certificate given in Annexure-II, should be submitted to Member Secretary, ACSR with a copy to Head, SRI-AERB, Kalpakkam.

The scientific background of the project, work experience of PI and CI in the related fields, scientific scope of the research scheme and relevance to AERB's functions and mandate should be clearly brought out in detail in the proposal. The application and duly filled undertaking certificate submitted should be endorsed by the Head of the Organization, or, Dean (R&D), as the case may be.

The PI, Co-PI and the organization where the work would be carried out should accept the terms and conditions as stated separately in Appendix-I.

2.5 Scrutiny of Applications

The applications of proposed project, undergo preliminary review by SRI, AERB. If the project is found relevant, then it is forwarded to the ACSR. PI is required to make a presentation on the proposed project to the ACSR. The Committee, while reviewing,

may consult other experts in the respective field and makes its recommendation to the AERB management. The decision on the acceptance / rejection of proposed project will be communicated to the concerned organizations by SRI, AERB. The time for processing the project proposal is normally 3 to 4 months from the date of its receipt.

Each approved project will have one Project Coordinator (PC), who is a scientist / engineer from AERB and may have additional coordinator from DAE units, as recommended by the Committee. The responsibilities of PC/s are given below.

2.6 Responsibilities of PC

AERB Project Coordinator maintains constant communication with PI, additional coordinator, if any, and Member Secretary, ACSR for smooth monitoring of the project. ACSR and/or AERB representative may make visit to the institute of PI, for progress review and discussions on the project.

The PC will constantly follow-up and maintain records of project proposal, technical evaluation, JRF selection, half yearly progress reports, mid-course changes in the scope, budgetary changes, yearly grant, or, any other query / requests from PI. PC will ensure the contents of research papers to be published do not contain classified / sensitive / confidential / erroneous data, before granting permission to publish the paper, also as required the ACSR may be consulted in these matters. All the correspondence from PI should be submitted through PC along with his/her comments / remarks to Member Secretary, ACSR with copies marked to Head, SRI, AERB.

The PC also maintains records of initial approval, statement of accounts, utilization certificate, release of yearly grants and other correspondences with the PI for ready reference.

2.7 Payment of Grant-in-Aid

While the project is generally expected to receive support for about 2 to 3 years, the amount will be sanctioned and released only for one year at a time. After receiving the sanction letter, PI should submit claim form (Annexure-III) duly signed by PI and Head of the Organization in duplicate to Member Secretary, ACSR. The grant for the first year will be paid in full to the PI on receipt of the claim form. PI should send acceptance cum receipt form (Annexure-IV) to Member Secretary, ACSR on receiving the payment for first year.

The date of acceptance cum receipt form received from PI is considered to be the commencement date of the project.

2.8 Release of Grant

The PI should apply for release of the grant every year, as required, well in advance, to allow processing. Release of grant is subject to satisfactory progress and a certificate to that effect by the PC/s. The application for annual grant in the prescribed format (Annexure-V) should be submitted to Member Secretary, ACSR through PC at least one month before completion of previous year for consideration.

Two signed copies (prints) and pdf / word / legible scanned copy of the application for release of grant, progress report of previous year, and publications, duly endorsed by the Head of the organization should be submitted to Member Secretary, ACSR.

For grant release of the ongoing projects, PI makes a presentation on the progress of the work, any mid-course corrections and other related issues, if any.

Grant release application is reviewed by ACSR along with recommendations of PC. Based on the recommendations of ACSR, sanction will be intimated. PI should submit claim form (Annexure-VI) in duplicate to Member Secretary, ACSR. The utilization certificate (Annexure-VII) and statement of accounts (Annexure-VIII) as per the format will be submitted to Pay & Accounts Officer, AERB with one copy marked to Member Secretary, ACSR. Yearly grant will be released to the PI once the above documents are scrutinized and accepted. Payment of the grant will be limited to an amount after deduction of any unutilized amount from the already released grant. Committed expenditure will not be considered as utilized amount. Interest earned for the budget, needs to be refunded to AERB by a Demand Draft addressed to PAO, AERB payable at Mumbai.

2.9 Extension of Project Tenure

Generally, no extension is granted for any project, however in case of unavoidable circumstances, PI shall submit an application for extension to Member Secretary, ACSR explaining the reasons for non-completion of the project. ACSR will decide whether the reasons for delay are justified or not. The decision of ACSR will be final for extension or termination of the project beyond the sanctioned time.

2.10 Consolidated Final Reports

The PI should submit, on receipt of the written consent of PC, two copies of consolidated final report within three months of the completion date of the project and one copy each to Head, SRI, AERB, the Member Secretary, ACSR and each of the coordinators identified for the project. However, prior to formal submission of the final report, PI may be required to give the presentation to the ACSR on the overall work carried out under the project. The pdf / word / scanned copy of same should be sent to AERB. The consolidated report should be a self-contained complete document and not a compilation of papers published. The report should contain inventory of equipment (Annexure-IX) and other information mentioned in Annexure-X. Two copies of all the papers published / submitted for publication based on work under the AERB project should also be sent along with the report. Along with the final report, brief report (Refer Annexure-XI) and input required for preparing the AERB compendium of completed projects should be submitted by PI. This should bring out how the deliverables of the project is useful for AERB and further work to be taken up based on project outcome (Refer Annexure-XII). PC should review and endorse the input given by PI.

3. TOPICS OF RELEVANCE

Funding support will be provided only for the research projects on topics/areas related to nuclear, radiation and industrial safety, which are of importance and relevant to the mandate of AERB.

A detailed list of the topics / areas of relevance to AERB is given in Annexure-XIII.

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

1. Sanctioning of Project

Based on the recommendations of ACSR, AERB will issue a formal sanction to the organization for the entire period of the project indicating the details of grant-in-aid for the first year along with claim form and anticipated amounts for subsequent years. If there is no change in the yearly grant amounts, no further approval is required from AERB management.

2. Payment of Grant-in-Aid

2.1 After getting the sanction, it is recommended that, a separate bank account should be opened for the project where all transactions are recorded. The accrued interest should be returned to AERB as Demand Draft in the name of **PAO, AERB payable at Mumbai** and should not be taken into account while claiming subsequent installments. In exceptional cases where organizations are not able to open separate account for the project, a certificate to that effect should be submitted from the Head of the Institute / Organization.

2.2 While the project is generally expected to receive support for about 2 to 3 years, the amount will be sanctioned and released only for one year at a time. The grant for the first year will be paid in full to the PI on receipt of the relevant claim form (Annexure-IV) in duplicate.

If the duration of the project is more than two years, the grant from the 2nd year onwards (but not for the final year) will be released after evaluating the progress of the project submitted.

Along with the yearly grant application, PI should submit the utilization certificate and statement of accounts for the financial year countersigned by Head of the organization (i.e. from 1st April of the year to 31st March of the subsequent year, i.e., each financial year) irrespective of the date of sanction of the project certified by the Head of the organization.

The grants for 2nd and 3rd year will be paid after deducting the unutilized amount from the previous year's grant.

All interest and other earnings, against the released Grant shall be remitted immediately after finalization of accounts at the end of each financial year.

2.3 For the final year of the project, the grant will be released in two installments. Only 25% (excluding the staff salaries) or Rs. 25,000/- whichever is less will be retained by AERB as second installment of the final year grant. The rest of the money along with the full staff salaries for the final year will be released at the beginning of the terminal / final year on receipt of utilization certificate, statement of accounts for the preceding year and the claim. The second installment of the final year will be paid on submission of the claim, supported by the following documents:

- i. Audited statement of accounts from a Statutory Auditor or a Chartered Accountant for the grant-in-aid during the previous years (Annexure-IX).
- ii. Utilization certificate to the effect that the grant received during the years were utilized for the purpose for which it was sanctioned (Annexure-VIII).

- iii. An inventory of equipment purchased for the project out of the grants released (Annexure-X).
- iv. A final consolidated report including the information specified in Annexure-XI.

- 2.4 The final report shall be submitted within three months after the date of the completion of the project.
- 2.5 If any organization does not fulfill the specified terms and conditions, AERB and ACSR have exclusive rights for not considering any further proposals from the same organization.

3. Appointment of Staff

The staff for the project should be appointed within two months from the starting date of the project. The staff, appointed exclusively for the research project are only eligible for staff salaries. The categories of staff granted under the project are separately indicated in the sanction.

- 3.1 The staff sanctioned for the research project should be appointed on the basis of academic credentials, previous experience in similar areas, and personal interviews. Selection should be in accordance with the recruitment procedure of the organization concerned. An appropriate selection committee should be constituted locally for the purpose by the organization / institute. The Member Secretary, ACSR should be contacted for the nomination of a representative of the ACSR in the committee. The committee meeting should be arranged in consultation with this representative.
- 3.2 To ensure continuity of work, staff appointed for 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, ACSR and PC.

3.3 Details about the Research Fellowships

- 3.3.1 The stipends of Research Fellowship with effect from January 01, 2019 are as given below:

| S. No. | Name of Fellowship | Qualification* | | Rate of fellowship |
|--------|-------------------------------|--|--|---|
| 1. | Junior Research Fellows (JRF) | M.Sc./ B.E./ B.Tech./ B.VSc./ B.Pharm. | | Rs.31,000/- p.m. (1 st & 2 nd year); Rs. 35,000/- p.m. for subsequent years. |
| 2. | Senior Research Fellows (SRF) | M.Tech./ M.E./ M.V.Sc./ M.Pharm./ M.B.B.S. / BDS. M.Sc./ B.E./ B.Tech. with 2 years of experience | | Rs.35,000/- p.m. |
| 3. | Research Associates (RA) ** | RA– I: | Ph.D. in Science / MD OR M.Tech / M.E / M.V.Sc / M. Pharm /M.B.B.S./ BDS with 2 years' experience. | Rs.47,000/- p.m. |

| | | | | |
|----|--|--|--|------------------|
| | | RA– II: | Ph.D. in Science / M.D. OR M.Tech / M.E / M.V.Sc. / M. Pharm. / M.B.B.S. / B.D.S. with 2 years' experience and possessing exceptional record. | Rs.49,000/- p.m. |
| | | RA– III: | Ph.D. in Engineering OR as in RA-II and selected through interviews under specific DAE schemes such as KSKRA etc. | Rs.54,000/- p.m. |
| 4. | Post- Doctoral Fellows (PDF) ** | PDF who have submitted Ph.D. thesis and yet to receive their Ph.D. degree (provisional or otherwise) | | Rs.32,000/- p.m. |
| | | Fresh PDF with Ph.D. degree. (provisional or otherwise) | | Rs.33,000/- p.m. |
| | | PDF with Ph.D. degree and with one year experience | | Rs.34,000/- p.m. |
| | | PDF with Ph.D. degree and two or more years of experience | | Rs.35,000/- p.m. |

* If a student having higher qualification such as M.Tech. / M.B.B.S. etc. competes with students having lower qualification such as B.Tech. / M.Sc. etc. he will be paid the Fellowship at the rate applicable to later.

** Research Associates / Post-Doctoral Fellows may be fixed at one of the specified pay levels depending on qualifications and experience. The Organization may decide the level in which a particular PDF / RA should be placed based on experience.

3.3.2 On completion of two years, JRF shall be promoted to SRF after recommendation of the organisation and due evaluation by CSRP.

3.3.3 **House Rent Allowance (HRA), Medical Allowances (MA):** HRA & MA may be allowed to all the categories of Fellowships, i.e., JRF / SRF / RA / PDF, as per the rules of the organization in which they are working. For this purpose, the fellowship amount for JRF / SRF / RA / PDF may be taken as basic pay. However, HRA will not be admissible if hostel accommodation is provided. HRA & MA, as admissible, may be claimed separately by furnishing a copy of the order regulating these allowances as per the rules of the respective organization.

3.3.4 **Leave:** The staff working under the project is entitled for leaves as per rules of the organization. Participation in any scientific event in India or abroad may be treated as on duty.

While pursuing course work during the 1st year of Ph.D. programme or for any extended duration, leave will be limited to regular vacations as per the programme of the Institute / R&D Centre.

3.3.5 **Dearness Allowance:** JRF, SRF, RA and PDF are not entitled to this allowance.

- 3.3.6 Encouragement for pursuing higher degrees: SRF / JRF may be encouraged to register for higher degrees. Tuition fees and registration fees to undertake such studies may be reimbursed to them from the contingency grant sanctioned under the project grant.
- 3.3.7 Benefits to Host Organization: Towards meeting their costs for overhead expenses including infrastructural facilities, an amount of 15% of the total cost excluding contingencies will be given to the organization.
- 3.3.8 Bonus and Leave Travel Concession (LTC) are 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 at par with employees of and subject to the administrative control of the organization where the project is located. After completion of the project, these staff will not have any right to claim for regular / compassionate appointment, with the parent institute, and / or, AERB.
- 3.5 The staff employed on the research project financed by AERB may be encouraged to give lectures and / or courses restricted to not more than two hours duration per week in the organization where the project is located. Such permission may be granted by the PI of the project in consultation with the PC and Head of the Organization.
- 3.6 Staff appointed for AERB research project may be allowed to utilize 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 organization concerned, subject to the following conditions.
- (i) The journey should have the approval of the PI.
 - (ii) The grant for contingencies could be utilized for payment of travel expenses to the staff employed on the research project,
 - (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 be eligible for next higher scale of pay after completion of 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.
- 3.8 The PI should inform AERB if he intends to go on long leave, visit abroad or any other sabbatical tenures. He should also indicate the name of the person from the organization who would carry on the research programme in his absence. To meet such exigencies, including / indicating alternate PI during the project proposal stage is mandatory. In case of such absence by the PI without any prior information, the project will be terminated with immediate effect.

4. Equipment

- 4.1 All the major items of equipment will be indicated in the sanction letter. Only such items of equipment, as have been sanctioned by AERB should be purchased by the organization out of the grant sanctioned as equipment head. A transparent procurement procedure shall be followed. Specifications for the equipment to be procured, names of

the suppliers and documents in support of the estimated cost, quotations / proforma - invoice in respect of the major equipment should be submitted to ACSR for record purpose.

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 ACSR along with the recommendation from PC. AERB does not assume financial responsibility for any equipment purchased without their prior approval. The organization should not purchase items like air conditioners, refrigerators, exhaust fans, furniture, typewriters, etc., out of the grant sanctioned for the project.

- 4.2 All the major equipment purchased against AERB projects will be the property of the AERB and after completion of the project AERB has the right to transfer the equipment to another project or to AERB Office, after closure / termination of the Project or in case of unsatisfactory performance of the project.
- 4.3 The organization, through PI, should maintain a proper and separate stock register of all items of equipment and stores, both capital and consumables purchased out of the grant. Equipment purchased 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 the grant should be prepared as per the format given in Annexure-X.

5. Consumables

The consumables required (list along with price) for the execution of each project should be identified by PI before the start of the project and stated in the project application.

6. Computer Charges

The grant under this head is a one-time payment depending on the requirement by the PI and limited to Rs. 50,000/-, subject to the submission of actual bill. The claim for grant for computer charges should be supported by vouchers along with the certification to the effect that computer facilities were not available with the organization for this project or if available, have to be paid for.

7. Contingencies

The PI can utilize the sanctioned contingency grant per annum for any purpose indicated below without getting the prior approval of the ACSR subject to the condition that a consolidated accounting is submitted at the end of the year as part of the audited statement countersigned by Head of the Organization.

- (i) To buy any urgently required laboratory items for the project.
- (ii) To meet the travel expenditure (within India) of the investigator(s) and staff engaged on the project for attending symposia relevant to the project. This is at the discretion of PI.
- (iii) Towards payment of honorarium for visiting scientists to give lectures which have direct bearing on the project work

- (iv) Tuition fees and registration fees for higher studies.
- (v) To meet the expenditure towards advertisement for the post of Research Fellows.
- (vii) Towards purchase of apparatus, reprints connected with the work, purchase of stationery and fees for the audit of project accounts.
- (viii) Miscellaneous expenditure for execution of project.

8. Overheads

This grant shall be used for covering the cost of using existing infrastructure, utilities such as water, electricity, communication and administrative services provided by the university / institute. This will be the amount claimed by PI subject to a maximum of 15% of the project excluding the contingency.

Re-appropriation of funds without prior permission of the ACSR is not permissible. Unspent balance of the previous year will be deducted from the sanctioned amount, while releasing grant for the subsequent year. Appropriation of funds without approval of AERB/ACSR is not allowed.

9. Audited Reports by Comptroller and Auditor General of India

The account books of the organization (related to the project) in receipt of grant-in-aid will be subjected to a random / test check by the Comptroller and Auditor General of India at his discretion. Utilization certificate and audited statement of accounts should be submitted at end of each year of project tenure (see Annexure - VIII & IX). This will enable timely release of grant for next year.

10. Yearly Release of Grants

The PI of the project should submit application for release of grants on the project each year. Application and report are required to be submitted as per format given in Annexure-VI to the Member Secretary of ACSR through PC. Application received late is not likely to be considered and this will adversely affect the release of the Grant-in-aid and progress of the project, in-turn.

11. Monitoring

The activities of the research project will be monitored through PC, additional coordinator(s) and Member Secretary, ACSR through correspondences, site visits and / or a combination thereof. All decisions of the PC or his representative, with the approval of Head, SRI shall be binding on all matters concerning the research projects.

12. 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 can publish their findings in journals of their choice, however, prior to submission for publication PI must send copies of the manuscripts to AERB to obtain the written consent of the AERB coordinator, mainly to ensure that no classified / sensitive data/content(s) is included in the paper. AERB's financial support to the project must be acknowledged in the publication. The responsibility for the contents of publication is exclusively that of the author / authors.

13. Final Report Submission

The final report shall be submitted within three months from the date of the completion of the project / date of giving presentation to ACSR, whichever is earlier. The report should also contain inventory of equipment and the information specified in Annexure–XI. Further details which are found necessary for completion of information may be added by PI.

14. Patent Rights

All patent rights on designs and inventions derived from the research work financed or aided by AERB **shall** belong to the Government of India or its nominees. AERB 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, with prior approval.

**Annexure-I: FORMAT FOR APPLICATION FOR GRANT-IN-AID
FOR NEW RESEARCH PROJECT**

(Please send two signed hard copies and word/pdf/scanned soft copy to Member Secretary, Advisory Committee for Safety Research (ACSR) with copy to Head, SRI, Atomic Energy Regulatory Board, IGCAR Campus, Kalpakkam – 603102, Tamil Nadu. Applicants may please note that incomplete proposals may not be considered.)

| | | | |
|-----------|---|---|-------|
| 1. | Project Title and Duration | | |
| a. | Title of the Project | : | |
| b. | Duration of the Project | : | |
| 2. | Details of Organisation | | |
| a. | Name and Address of the Organisation | : | |
| b. | Department where Research is to be performed | : | |
| c. | Status of the organization (Whether Government or private) | : | |
| 3. | Project Personnel | | |
| a. | Principal Investigator | | Photo |
| | Name and Designation | : | |
| | Academic Qualifications | : | |
| | Date of Birth | : | |
| | Telephone No. (O) | : | |
| | Mobile No. | : | |
| | E-mail Address | : | |
| | 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 referred journals (Journals in which original articles are published) | : | |
| (ii) | Others | : | |
| b. | Co Investigators | | Photo |

| | | | | |
|--|--|--|---|--|
| | | Name and Designation | : | |
| | | Academic Qualifications | : | |
| | | Date of Birth | : | |
| | | Telephone No. (O) | : | |
| | | Mobile No. | : | |
| | | E-mail Address | : | |
| | | 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 referred journals (Journals in which original articles are published) | : | |
| | (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 | : | |
| 4. | Is the Principal Investigator/Co-investigator likely to go abroad? If yes, what is the duration and Name of the person who will carry on the research programme in his absence | | : | |
| 5. Scientific Background of the Project | | | | |
| | a. | Importance of the Problem | : | |
| | b. | Related Work already Performed or in Progress at your Organization. | : | |
| | c. | Similar/Related Work in Progress or already Performed at other places in India or Abroad. | : | |
| 6. Details of the Project | | | | |
| | a. | Scientific Scope of the Research Scheme (up to 400 words) | : | |
| | b. | Detailed Work Plan for First year, indicating Proposed Methods/Techniques to be used. | : | |
| | c. | Work plan for the consecutive years | : | |
| 7. | Deliverables of the project. | | : | |
| 8. | Important mile stones and time schedule of the project | | : | |

| | | | | |
|-----------|--|---|--|--|
| 9. | Details of projects already negotiated by the Principal Investigator and Co-investigator with any Funding Agency, including AERB (Details to be provided as per table below in each case) | | | |
| | 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. | | |

| S. No. | Title | Funding Agency | Amount Sanctioned | Present Status |
|--------|-------|----------------|-------------------|----------------|
| | | | | |

10. Budget Estimate for the Project

| Budget head | 1 st year | 2 nd year | 3 rd Year | Total |
|---|----------------------|----------------------|----------------------|-------|
| Staff Salary | | | | |
| HRA | | | | |
| Equipment (Give the list and Price for each item & justification) | | | | |
| Consumables (Give list of items) | | | | |
| Contingencies | | | | |
| Computer Charges (if any) | | | | |
| Overheads (15% excluding contingencies) | | | | |
| Total | | | | |

11. Project funding (indicate as a %)

- a. Amount to be contributed by the Organisation

..... %

- b. Amount expected from Other Sources (name of the sources and items)

..... %

- c. Amount requested from AERB for this Project

.....%

Certificate

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

Signature of the
Principal Investigator

Signature of the
Head of the Organization

Name

Name

Designation

Designation

Date

Date

Seal of the Principal Investigator

Seal of the Organisation

Annexure-II: UNDERTAKING FROM ORGANIZATION
(Certificate from the Head of the Organization of PI)

Project Title:

1. Certified that this organization agrees to the participation of

| PI | CI |
|-------------|-------------|
| Prof. /Dr. | Prof. /Dr. |
| Designation | Designation |
| Address | Address |

For the above project which is being submitted for financial support to AERB, Mumbai.

2. Certified that the infrastructural facilities related to the project activity available in this organization including equipment, manpower and other facilities will be extended for the project.
3. Certified that the management takes the responsibilities for the timely submission of audited statement of accounts and utilization certificate, details of staff recruited and equipment purchased and other related information under project. In case there is delay in establishing this, responsibility of submitting the UC and Technical report is ensured by Head of Organization.
4. Certified that if PI is not able to execute the project due to some reason (retirement, resignation, transfer, etc.), CI or any nominee from the Organization executes and completes the deliverables identified in the proposal.
5. Certified that no paper will be published/presented in any journal/conference/symposium/workshop/seminar related to the project without obtaining written permission from AERB.

Date:

Name & Signature of Head of Organization

Place:

Seal

**Annexure–III: REQUEST FOR RELEASE OF GRANT-IN-AID (First Installment) –
CLAIM FORM I (YEAR: 20 - 20)**

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

To
The Member Secretary,
Advisory Committee for Safety Research (ACSR)
Safety Research Institute (SRI), AERB
IGCAR Campus, Kalpakkam - 603102
Tamil Nadu

Title of the research project :

Sanction letter No. and date :

Name of the Organisation :

| Particulars | Staff Salary | Equipment | Consumables | Computer Charges | Contingencies | Overheads | Total Amount |
|--------------------|--------------|-----------|-------------|------------------|---------------|-----------|--------------|
| Amount Sanctioned | | | | | | | |
| Amount Claimed Now | | | | | | | |

Details for transfer of grant by NEFT:

| Name of Bank | Branch Name | Account Name | Account Number | IFSC Code | Cash Credit or Current A/c |
|--------------|-------------|--------------|----------------|-----------|----------------------------|
| | | | | | |

ACCEPTANCE FORM

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

Signature of the Principal Investigator

Name :

Designation:

Date:

Seal of the Principal Investigator:

Signature of the Head of the Organisation

Name:

Designation:

Date:

Seal of the Organisation:

Annexure–IV: ACCEPTANCE CUM RECEIPT

(To be filled & submitted within 15 days of receiving the grant)

To
Member Secretary
Advisory Committee for Safety Research
Safety Research Institute (SRI), AERB
IGCAR Campus, Kalpakkam - 603102
Tamil Nadu

Subject: Sanction No. _____ dated _____ for total
grant-in-aid of Rs. _____ for 1/2/3 year duration from 20____ to
20____ for the safety research project
titled _____

Sir/Madam,

- 1) The terms and conditions of the grant-in-aid communicated by AERB are accepted.
- 2) The first/second/third year grant has been received in the organization.
- 3) Date of commencement of the project: _____

Signature of the Principal Investigator
Name :
Designation:
Date:
Seal of the Principal Investigator:

Signature of the Head of the Organisation
Name:
Designation:
Date:
Seal of the Organisation:

Annexure – V: APPLICATION FOR ANNUAL GRANT FOR SANCTIONED RESEARCH PROJECT (Please indicate whether it is the 1st, 2nd etc.)

(Please send 2 signed copies along with report & publications and word/pdf/scanned soft copy to Member Secretary, ACSR, Safety Research Institute (SRI), AERB, IGCAR Campus, Kalpakkam – 603102, Tamil Nadu)

-
1. Title of the research project:
 - a. Number and Date of First Sanction of Scheme:
 - b. Date of Actual Commencement of Work:
Reason for difference between sanction and actual commencement, if any.
Department where Research is being Performed:
Name and Address of the Organization:
-

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. Is the Principal Investigator/Co-investigator likely to go abroad? If yes, what is the duration and Name of the person who will carry on the research programme in his absence?
-

4.
 - a. Name, Designation and Address of the Person to whom formal correspondence be made.
 - b. Telephone No.
 - c. E-mail Address
-

5. List of Major Equipment already Procured/Fabricated.

| AERB Inventory No. | Date of Purchase | Description of Equipment | Name of Supplier | Price Paid (Including Taxes) | Remarks, if any |
|--------------------|------------------|--------------------------|------------------|------------------------------|-----------------|
| | | | | | |

6. The summary should include all work done to date. Detailed technical report prefaced by a summary highlighting major achievements is to be enclosed with each copy (500 words)
-

7. a. Deviations, if any, from the programme of work and expenditure originally approved.
- b. Reasons for above.

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

9. Details of Grant:

| | Year wise Received () | Year wise Actually Spent () | Commitments Pending Payments upto 31 st March of the Current Year | Grants requested for the Next Year |
|--|------------------------------|---------------------------------------|---|---|
| Staff Salary (Research Fellows and Associates) | | | | |
| Equipment (Give list of major items and their individual cost) | | | | |
| Consumables (indicate type of Consumables and their individual cost) | | | | |
| Contingencies | | | | |
| Overheads | | | | |
| Interest accrued | | | | |
| Total: | | | | |

10. Project Personnel and Estimated Percentage of Total Working Time Devoted to the Project.

| Personnel | Time (%) | Estimated cost (Rs.) |
|-----------|----------|----------------------|
| | | |
| | | |

11. Highlights of Detailed Programme Report of work completed covering procurement of equipment, its utilization, experiments conducted, literature survey, theoretical work, papers published/presented in conferences, etc.

- a. Adherence to important milestones with time schedule. Reasons for deviations, if any, and revised time schedule.

b. 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 Organisation

Name:

Designation:

Date:

Seal of the Organisation:

.....

Annexure – VI: REQUEST FOR RELEASE OF GRANT-IN-AID (Second and Subsequent including Final Year) CLAIM FORM II (YEAR: 20XX- 20YY)

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

The Member Secretary
Advisory Committee for Safety Research
Safety Research Institute (SRI), AERB
IGCAR Campus, Kalpakkam - 603102
Tamil Nadu

Title of the research project :
Sanction letter No. and date :
Name of the Organization :

| Particulars | Staff Salary | Equip-ment | Consum-ables | Computer Charges | Continge-ncies | Overheads | Total Amount |
|---|--------------|------------|--------------|------------------|----------------|-----------|--------------|
| Amount Sanctioned | | | | | | | ** |
| Unutilized Balance if any, from Previous Years/ Installment | | | | | | | |
| Net Amount Claimed Now | | | | | | | |

**** should also include the bank interest, if any, earned during the year**

Details for transfer of grant by NEFT:

| Name of Bank | Branch Name | Account Name | Account Number | IFSC Code | Cash Credit or Current A/c |
|--------------|-------------|--------------|----------------|-----------|----------------------------|
| | | | | | |

Name:

Name:

Designation:

Designation:

Date:

Date:

Seal of the Principal Investigator:

Seal of the Organization:

Annexure–VII: UTILISATION CERTIFICATE

Certified that grant-in-aid (***including bank interest earned during the year, if any***) of Rupees _____ (Rs. _____) sanctioned by the Atomic Energy Regulatory Board, Niyamak Bhavan, Anushaktinagar, Mumbai - 400 094 vide their letter No. _____ dated _____ and already paid in the month of _____ for the years has been fully / partly utilised during the financial year (20XX-20YY) to meet the expenditure on _____ and there is balance of Rs. _____ of the Grant as on _____.

Principal Investigator

(Seal)

Date

Audit Officer/Chartered Accountant

(Seal)

Date

Annexure-VIII: AUDITED STATEMENT OF ACCOUNTS
(To be submitted at end of each year of the Project)

| | Amount received | | | Amount Spent | | |
|----------------------|-------------------------------|-------------------------------|---|-------------------------------|-------------------------------|--|
| | 1 st Year (-) | 2 nd Year (-) | 3 rd /Final Year (-) | 1 st Year (-) | 2 nd Year (-) | 3 rd / Final Year (-) |
| Staff salary | | | | | | |
| Equipment | | | | | | |
| Consumables | | | | | | |
| Computer charges | | | | | | |
| Contingencies | | | | | | |
| Overheads | | | | | | |
| Bank Interest earned | | | | | | |
| Total | | | | | | |

Principal Investigator
Date

Auditor / Chartered Accountant / A.G.
Date

(Seal)

(Seal)

Remarks:

Annexure-IX: INVENTORY OF EQUIPMENT

Inventory of equipment purchased for the project entitled:

| | | |
|----|--|----------------------|
| 1. | AERB sanction number and date | |
| 2. | Amount sanctioned for equipment | |
| 3. | List of equipment sanctioned for project | 1. 2. 3. 4. |

| | | | | | | |
|----|-------------------------------|-----------------------|----------------------|------------------|--------|---------|
| 4. | Details of equipment procured | | | | | |
| | AERB Inventory No. | Name of the equipment | Name of the Supplier | Date of Purchase | Amount | Remarks |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Project Investigator

Head of the Organization

Date

Date

Seal

Seal

Annexure-X: FORMAT FOR THE CONSOLIDATED FINAL REPORT

(2 hard copies through Head of Organization along with pdf/scanned/word document to AERB)

TITLE OF PROJECT & NAME OF THE INSTITUTE

1. Name and Address of the institute:
2. Title of the Project, Reference No. and Date of first sanction:
3. Name, Designation and Full address including E-mail address and Phone No. of the Principal Investigator and Co-investigator of the project:
4. Date of Commencement of actual work on the project:
5. Details of the grant (name and designation of staff, name and cost of equipment, consumables (give heads) received during the tenure of the Project:

| Name | Designation | Date of joining | Date of Resignation |
|-------------|--------------------|------------------------|----------------------------|
| | | | |
| | | | |

Details of Grant

| Budget Head | Sanctioned | | |
|-----------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| | 1st YEAR () | 2nd YEAR () | 3rd YEAR () |
| Staff Salary (JRF & SRF) | | | |
| Equipment | | | |
| Consumables | | | |
| Analytical Characterization | | | |
| Contingencies | | | |
| Computer Charges | | | |
| Overheads | | | |
| Total | | | |

6. Detailed Technical report of the Entire Work done on the Project

| S. No. | Contents | Page No. |
|---------------|-----------------|-----------------|
| 1. | | |
| 2. | | |
| 3. | | |

LIST OF FIGURES

| S. No. | Figures | Pg. No. |
|--------|---------|---------|
| | | |

LIST OF TABLES

| S. No. | Tables | Pg. No. |
|--------|--------|---------|
| | | |

DETAILED TECHNICAL REPORT

1. Scientific background of the project
2. Literature review
3. Scientific scope of the research project
4. List of deliverables as defined in the proposal
5. Equipment purchased
6. Methods & materials
7. Investigations undertaken
8. Experiments carried out
9. Results and discussion
10. Deliverables achieved with reference to initial proposal. Justification for deviation, if any.
11. Conclusion for the completed work
12. Impact of above studies on nuclear/radiation safety
13. Deliverables yet to be met including yearly plans
14. Bibliography
15. Publication in refereed journals
16. Other publication including paper presented in symposium or conferences
17. Whether any of the staff was awarded research degree on the basis of the work carried out on the project, if so, degrees, title of the thesis and the years of the submission/ award
18. Particulars such as the title of the project, funding agency, duration of any other project under your charge in similar areas
19. Details of all the previous DAE/AERB and other schemes under your charge (scheme title, total funds, duration).
20. Brief summary of achievements in not more than 300 words
21. Other specific remarks/suggestions

22. Annexures to be added to include the project monitoring activity, such as
- a) Presentation of progress to CSRP with date and outcome
 - b) Visit of coordinator to PIs institute or vice versa with dates and minutes of technical discussions.
 - c) Photographs of equipment/lab/PI/Co-Pi and research staff working on the project.

Annexure-XI: BRIEF REPORT ON ACSR-AERB FUNDED PROJECT

(pls submit word as well as pdf file)

| | |
|---|--|
| Sanction Number: pls attach soft copy of the first approval and project proposal | |
| Date of Start: | <div style="border: 1px solid black; padding: 5px; width: 100px; margin: 0 auto;"> Insert Passport size </div> |
| Date of Completion: | |
| Date of submission of final consolidated report: Pls attach soft copy | |
| Duration of project as per initial sanction (in years): | |
| Total duration taken for completing the project, indicate extension approval (if any) and reason for extra duration: Pls attach copy of extension approval | |
| Total Amount Sanctioned (in Lakhs): | |
| Amount Received (in Lakhs with date): | |
| Amount utilized and consolidated UC (in Lakhs): Pls attach copy of final UC and SOE | |
| Title: | |
| Name of PI & Affiliation: (Name, Designation and Full address including E-mail address, Phone No.) | |
| Name of CI & Affiliation: | |
| Name of PC & Affiliation: | |
| Name of major Equipment procured and their cost : Present working status of the Equipment: Number of other users & their affiliation and % use by others | |
| Details of the High cost consumables used | |
| Patent with brief description (if any) | |
| Number of Journal Publications with impact factor (attach list as Annex- I): Number of symposia presentations: | |
| Number of staff trained under the project: | |
| List of Objectives as mentioned in original proposal <i>(List accomplishments/ short falls against each of the objectives)</i> | |
| Accomplishments of the projects in 3 to 4 bullets Summary in about 300 words (which is understandable by general scientific fraternity) bringing out the novelty of the work. Insert two photographs representing outcome of the project. | |

Signature of PI with date

**Annexure-XII: FORMAT FOR COMPENDIUM ON SAFETY RESEARCH PROJECTS
FUNDED BY AERB**

1. Introduction & Brief Details of the Project

| | |
|--|--|
| Project No. | |
| Project Title | |
| Principal Investigator | |
| Project Co-ordinators | |
| Amount Sanctioned from AERB | |
| Amount utilized | |
| Equipment purchased for the project | |
| Sanctioned duration | |
| Starting date | |
| Date of completion including report submission | |
| Extension granted, if any and its duration | |

2. Objectives of the project

3. Deliverables of the project

4. Outcome summary of the project

5. Achievements of the project and usefulness of deliverables for AERB

6. The following publications have been brought out during the course of this project in referred journals

7. Actions taken / suggested for utilising the outcome of Project

Annexure-XIII: AREAS OF RELEVANCE TO AERB

Safety Studies in the areas of nuclear energy and radiation facilities are of relevance to AERB, out of which, a few areas / topics are indicated below. Please refer to the AERB website for updated list of areas of research.

1. **Generic Areas:** Nuclear Reactor Physics & Engineering, Multi-component / Multi-phase / Multi-scale phenomena in Reactor Thermal Hydraulics / Fluid Structure Interactions / Accident Studies in Nuclear Reactors / Critical Heat Flux (CHF) Studies, Nuclear Fuel Safety Studies, Deterministic and Probabilistic Safety Studies for Nuclear Reactors, In-Vessel and Ex-Vessel nuclear accidents, Validation of NPP models, Aging of Nuclear Reactors, Human & Organizational Technical (HOT) Factors for Nuclear/Radiological Applications, Safety Culture, Integrated Nuclear/Radiological Safety Management Systems.
2. Environmental / Radiological Impact Assessment (RIA) - Experimental studies on Atmospheric dispersion using tracers under different stability conditions
3. Development of methodologies for the removal of Fission Products (Cs, Iodine, Ruthenium).
4. Radioactive Waste Management and Final Disposal.
5. Civil, Geotechnical and Structural Engineering.
6. Experiments to simulate sodium fire for estimation of pressure rise in the containment and validate with available codes.
7. Study of Synergistic Effect in Equipment Qualification based on Test and Analysis.
8. Effect on Performance of Microprocessor and FPGA based Digital Devices in Nuclear Radiation Field.
9. Assessment of state-of-art methodologies on design of RCC structure for secondary loads: Temperature, Creep and Shrinkage.
10. Effect of material degradation during NPP operation on its fatigue-ratchet behavior.
11. Study of phenomenon of Core Disruptive Accident in Fast Reactors.
12. Application of electrochemical techniques in the evaluation of material ageing and life extension of nuclear facilities
13. Hydrogen mitigation studies.
14. Thermodynamic behaviour of corium at high temperatures.
15. Probabilistic Assessment of Reactor Overpower Protection System (ROPS) in Indian PHWRs.
16. Development of methodology for taking into account of ageing into PSA models.
17. Application of Risk Informed Decision-Making methodologies.
18. Software Reliability of Digital I&C for NPPs.
19. Hydrodynamic load on stability analysis of spent fuel trays stack during seismic event.
20. Effect of NPP component ageing mechanism on its fatigue-ratchet behavior.

21. Aerosol behaviour in containment under accident conditions for establishing the plate-out factors towards aerosol removal.
22. Studies on spray cooling of the BWR core under low flow conditions.
23. Development of integrated tool for source term estimation, dispersion and dose assessment.
24. Nuclear fuel behaviour code for steady and transient nuclear and thermo-mechanical behavior of fuel rods.
25. Experiment to determine flammability limit of heavy hydrogen and CO.
26. Study of passive system reliability.
27. Development of CFD model to study the effect of spray cooling on “steam concentration and aerosol particles” in the containment.
28. Radiation protection: Medical / Industrial Applications of Radiation
29. Applied Metallurgy / Radio metallurgy for Nuclear/Radiological Applications.
30. Use of Radiation Sources for Research Purposes
31. Radiobiology / Radiation Dosimetry / Radiation Protection
32. Transport of Radioactive Material
33. Integration of HOT factors in PSA of NPPs
34. Bio-remediation of contaminated soil and water.
35. Corium chemistry and severe accident progression.
36. Radiation Protection and Radiological Risk Assessment
