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New Delhi – 110 011

0/91

23 Sep 2019

Registrar
Goa University
Taleigao, Goa-403206

SANCTION OF PROJECT UNDER NAVAL RESEARCH BOARD (NRB)

Under the powers vested in the NRB vide Government of India, Ministry of Defence, letter No. DNRD/0100/NRB/4179/D (R&D) dated 20 Aug 96, amended from time to time and in terms of Sl. No. 3.1 of GOI, MOD letter no. DRDO/DFFM/PL/83226/M/01/1174/D(R&D) dated 28 Jun 2018, I am directed to convey the sanction of the CFA i.e. DG(TM) for the following project:-

Title : "Analysis of optical properties of coastal and estuarine waters and development of algorithm to retrieve chromophoric dissolved organic matter from an optical sensor"

Project No. : NRB- 461/OEP/19-20

PI : Dr. Harilal B. Menon, Professor
School of Earth, Ocean and Atmospheric Sciences
Goa University, Goa – 403206

Lab Collaborator: Dr. P V Hareesh Kumar, Sc- 'G', NPOL

2. **Cost and duration of the project:** - Total budget for the project is Rs. 46, 31,240/- FE (8 Lakhs) (Rupees Forty Six Lakhs Thirty One Thousand Two Hundred Forty Only) for 03 years duration. The breakup of fund for various activities of the project is as given below: -

(Cost in Rs.)

Head	1st Year	2nd Year	3rd Year	Total (Rs.)
(a) Research Staff (RA-II,FA)	802080	802080	802080	2406240
(b) Specific Equipment	800000	0	0	800000
(c) Consumable Stores + Boat Hiring Charges	200000	250000	0	450000
(d) Contingencies	50000	40000	35000	125000
(e) Travel (TA/DA)	50000	50000	50000	150000
(f) Institute Overhead	100000	100000	100000	300000
(g) Others (Calibration of Radiometer)	200000	100000	100000	400000
Grand Total (in Rs.)	2202080	1342080	1087080	4631240

Contd....2/-

3. **Aim of the Project:** Development of algorithm to retrieve chromophoric dissolved organic matter (CDOM), from a remote sensor.
4. **Objectives of the project:**
 - Development and formulation of an algorithm to retrieve CDOM in optically complex waters from a remote sensor.
 - Delineate the physical forcing to understand the lateral pollutant transport mechanism.
 - Spatial and temporal variability of aerosol optical depth (AOD) generated as a part of atmospheric correction to generate CDOM from a remote sensor.
 - Understand the role of small-scale estuarine and coastal fronts in the dispersal of CDOM and their effects on radiant heating rate and underwater communication.
5. **Likely outcome/deliverables:**
 - An optical algorithm in retrieving CDOM from case 2 waters applicable to optical remote sensors onboard satellites. The algorithm as a tool will be provided in a CD along with SeaDAS and .SNAP.

Release of Funds and Accounting

6. Contingent bill, duly completed, stamped and signed by the competent/ Executive Authority of the institution will be forwarded to Member Secy. NRB, for countersignature and onward transmission to PCDA (R&D), New Delhi for fund release. Duly filled in ECS proforma for direct crediting of amount through the PCDA (R&D) may also be forwarded to NRB, if not already submitted.
7. Six monthly progress will be submitted by the PI to NRB. Audited Statement of Accounts and Utilization Certificate duly certified by the executive financial authority of the institute for each financial year are required to be submitted by 30 Jun of the ensuing financial year. Excess expenditure, beyond the total sanction, unless authorized by NRB in writing, shall be the responsibility of the grantee institution.
8. The date of receipt of the first installment of the grant would be reckoned as the date of commencement of the project (unless otherwise specified), which has to be intimated to the Member Secy. NRB, without any ambiguity.
9. As per GFR 2017 Rule 230(8) all interests or other earnings against grants in aid or advances (others than reimbursement) released to any Grantee Institution should be mandatorily remitted to the consolidated Fund of India immediately after finalization of the accounts. Such advances should not be allowed to be adjusted against future releases. Refund the accrued interest to NRB in form of **DD/Cheque addressed to PCDA (R&D), New Delhi along with contingent bill for the release of next year grant.** On completion of the project, the grantee institution should send the unspent money to Member Secy. NRB through a Cheque/Draft in favour of PCDA (R&D), New Delhi

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10. A list of inventory of equipment purchased out of NRB grant shall be intimated year-wise, along with its cost and source of procurement, to Member Secy. NRB. On completion of the project, the grantee institution would forward the consolidated list with request, if any, for retention of any equipment for another project or for in-house R&D.

Review of the Project

11. The progress review of the project will be carried out periodically by the OEP Panel (minimum twice in a year) during the panel meetings chaired by the Panel Head and/or as deemed fit by NRB.

12. **Ownership of Intellectual Properties.** As far as intellectual properties generated by this project are concerned, following conditions will apply: -

- a) All foreground information and foreground intellectual property created during the performance of the project, whether or not legally protected, shall be owned jointly by DRDO and Grantee institution. DRDO and grantee institution shall be deemed to have a royalty-free license to use such joint information and foreground intellectual property for their own R&D Purposes.
- b) Grantee Institute shall promptly report to DRDO about any Intellectual Property generated during the performance of the Project. DRDO and Grantee Institution shall confer and consult each other regarding preparation, filing, prosecution, maintenance of Intellectual Property Rights application including patent application covering foreground information, generated during the performance of the project. DRDO shall be responsible for filing, prosecution, grant and maintenance of such Intellectual Property applications including patent application and Grantee Institute shall render all possible help to DRDO regarding the same. DRDO shall also bear all expenses related to filing, prosecution, grant and maintenance of such Intellectual Property Application including patent applications.
- c) Grantee Institution may commercially exploit any foreground information and foreground Intellectual Property, generated during the course of the Project, whether or not legally protected, for purpose other than Government Application only after conclusion of separate agreements to be negotiated between Grantee Institution and DRDO. Grantee Institution shall maintain an account of its incomes arising out of such commercial use and any royalty income shall be shared equally between DRDO and Grantee Institution.
- d) DRDO shall not be responsible and shall not accept any liability for infringement, innocent or otherwise, by PI or the Grantee Institute of the intellectual Property Rights of third parties.
- e) The term of the above provisions shall survive the term of the project.
- f) The Grantee institution shall maintain an account of its incomes arising out of commercial use and any royalty income shall be shared equally between DRDO and grantee institution.

13. **Publication of Technical Papers.** The PI will seek prior clearance from DRDO for the publication of technical papers, if any, related to the project work, in Indian as well as foreign journals. The PI should also consider submitting one or two papers, out of the research work carried out under the project, to the Defence Science Journal (DSJ), being published by Defence Scientific Information & Documentation Centre (DESIDOC/DRDO, Metcalfe House, Delhi - 110054). The PI's will accordingly forward advance copy of the papers to the NRB. NRB will accord necessary clearance/issue further directions within 07 days on receipt of the request from the PI.

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14. **Workshop.** Towards the end of the project, a workshop may be organised by the PI in consultation with the Panel Head and the Member Secy. NRB for dissemination of work done in the project.

15. **Closure Report.** A Closure Report, alongwith soft & hard copies of detailed technical report, a certificate that objectives of the project have been achieved, executive summary & unspent amount & interest accrued if any, will be submitted by the PI within 02 months of completion of the project.

16. PCDA (R&D), New Delhi will make disbursement of money as sanctioned.

17. The expenditure is debitable to Defence Services Estimate Major Head 2080-Defence Services-R&D, Minor Head 004-Research/Research & Development, Code Head 852/03(Technical Activities).

18. The Sanction Code for the project is DGTM/NRB/GIA/19-20/0202 dated 20-09-2019.

19. This sanction has the concurrence of IFA (R&D) New Delhi vide their UO No. IFA/R&D/0031/NRB/2019/Vol./00857 dated 18-09-2019.


(Shobha Verma)
Sc'G' & Member secretary
Naval Research Board

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