

MEMORANDUM OF UNDERSTANDING

BETWEEN

INSTITUTE FOR PLASMA RESEARCH

&

PANDIT DEENDAYAL PETROLEUM UNIVERSITY, GANDHINAGAR

## MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (MOU) made on the August 21, 2015 between The Pandit Deendayal Petroleum University, Gandhinagar and Institute for Plasma Research an autonomous R & D organization under the Department of Atomic Energy (DAE), Government of India.

### 1.0 Preamble

WHEREAS Institute for Plasma Research (herein referred as IPR) is a premier research organization involved in research in various aspects of plasma science including basic plasma physics, magnetic confinement of hot plasmas and plasma technologies for industrial applications.

WHEREAS, The Pandit Deendayal Petroleum University (herein referred as PDPU), is a Private University established by Gujarat Energy Research and Management Institute (GERMI) through the State Act enacted on 4th April, 2007. The University offers programs to address the need for trained human resources in the domains of Science, Technology, Management and Humanities. It intends to broaden the opportunities for students and professionals to develop core subject knowledge which are duly complemented by leadership training interventions, thereby helping the students to make a mark in the global arena. This objective is being further addressed through a number of specialized and well-planned undergraduate, post-graduate and doctoral programs as well as intensive research projects.

NOW, THEREFORE, IT IS HEREBY AGREED TO BY AND BETWEEN IPR AND PDPU AS UNDER:

### 2.0 Scope

2.0 IPR and PDPU hereby agree to work together for the realization of the commitments made by IPR in the following areas:

- a) Electromagnets and superconducting magnets: *design and fabrication of large magnets for fusion applications.*
- b) Power Supply Design and fabrication: *High Voltage/Low current and low voltage/high current for variety of applications.*
- c) Development of Computational Codes: *For thermal Hydraulics and other applications.*
- d) R & D on remote handling equipment and Robotic arms for sophisticated Manipulations: *Establishment of Virtual Lab*
- e) Modeling and Simulation: *Monte Carlo, Molecular Dynamics, Safety analysis codes--LOCA/LOFA- RELAP, etc.*
- f) Development of Fusion Reactor Technology: *Establishment of Design Study Group.*
- g) Neutronics: *Laboratory establishment for Am-Be and <sup>252</sup>Cf neutron sources to conduct basic neutronics related experiments.*

- h) Nano Sciences and Technology: *R&D on First wall, Shielding, Radiation hardened Materials*
- i) Materials Science and Technology: *Computational Material Science, Physics of damage and damage propagation leading to cracks, Characterization of special Materials*
- j) Radiation detectors and safety equipment: *single crystal Diamond material development for detector applications.*
- k) R & D in Basic Plasma Science & Technology: *Production of plasma by different methods and measurements & analysis of various physical phenomena.*
- l) Any other area/topic of mutual interest:

2.1 IPR and PDPU will explore opportunities for the exchange of Faculty for joint teaching and research program in each of the areas enlisted in para 2.0.

2.2 IPR will provide the necessary guidance to the interested PDPU students and faculty members who want to carry out research in the areas enlisted in para 2.0.

2.3 IPR will provide academic interaction by delivering Special Lectures at PDPU in each of the areas enlisted in Para 2.0.

2.4 This forms a general frame work in which individual tasks will be defined more precisely focusing on the definite deliverables and time schedules etc.

### 3.0 Methodology:

3.0 A joint collaboration has to be realized through time bound projects, participation of PDPU to develop each phase within stipulated time frame will result in seamless transfer of knowhow. Modalities will be considered on mutual agreement. The detailed methodology of realizing the work packages will be evolved by constituting taskforces to define the work packages in each of the areas enlisted in para 2.0 herein above.

3.1 PDPU may act as a beneficiary with coordinated support from IPR to take up research and development work and also by involving the students and faculty interested in research in the fields enlisted in para 2.0 above or any other item of mutual interest.

3.2 Task Forces will be created for specific technical areas. The task forces will prepare detailed project proposals on identified work-packages. The proposals will outline the scope, list of deliverables, project implementation cost, milestones, infrastructure needed etc.

3.3 Based on such proposals, IPR may issue specific work contracts to PDPU identifying scope of work, deliverables, schedules which will form Addendums to this MoU.

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- 3.4 IPR will ensure the availability of necessary resources for the realization of the commitments made in the areas enlisted in Para 2.0
- 3.5 IPR will extend all possible support to PDPU in preparing documents calculations/simulations mandatory for getting AERB clearance to start a nuclear laboratory in PDPU.
- 3.6 Periodic progress report will be submitted by PDPU to IPR during the course of the implementation of the projects.

#### 4.0 Confidentiality and non-disclosure

The parties shall keep in confidence all information, data, drawings, documents etc. exchanged/obtained under this MoU and shall not divulge the same to any third party without prior written consent of the other party, unless such information is ;

- i. In the public domain.
- ii. Already in the possession of the receiving party.
- iii. Required by Govt. Ministries/agencies, court of law or the law of land.
- iv. To be disclosed to third parties/consultants for which the receiving party(ies) should sign similar confidentiality agreement.

#### 5.0 Intellectual Property

Any intellectual property right arising out of this MoU can be shared published or commercially exploited only with mutual consent of the parties.

#### 6.0 Project Monitoring Committee (PMC)

Individual specific tasks will be executed and managed by technical task leaders from both the institutes and the progress of each task will be monitored by Project Monitoring Committee from time to time.

The PMC will review & approve all technical & commercial recommendations made by the task forces. PMC may co-opt additional members and form sub-committees for this purpose.

**7.0 Resolution of Disputes**

7.0 In the event a dispute arising in connection with the interpretation or implementation of this MOU, the Parties shall attempt in the first instance to resolve such dispute through friendly consultations between the authorized representatives nominated by Chief Executives of both the Parties.

7.1 If the dispute is not resolved through friendly consultations between the authorized representatives nominated by the Parties within 30 days after commencement of discussions or such longer period as the Parties agree in writing, then the same shall be referred for resolution by the Chief Executives of the Parties within the next (30) days.

**8.0 Effect of MOU**

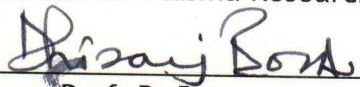
This MoU shall enter into force upon signature and shall remain in force for a period of two years, and shall be renewed thereafter on a yearly basis by mutual agreement to this effect. After the termination of this MoU the effects of para 4.0 and 5.0 shall not be affected and activities already undertaken shall continue till their completion.

**9.0 Amendments**

Amendments to this MoU may be made at any time by mutual consent between the Parties, in writing.


**IN WITNESS WHEREOF** the Parties hereto have executed this writing on the day and the year first hereinabove written.

For  
Institute for Plasma Research

  
Name: Prof. D. Bora  
Designation: Director  
(Chief Executive)

Date: 21/08/15

For  
PDPU

  
Name: Prof. H.B. Raghavendra  
Designation: Director General  
(Chief Executive)

Date: 21/8/15