

GOVERNMENT OF INDIA  
MINISTRY OF DEFENCE  
DEFENCE RESEARCH & DEVELOPMENT ORGANISATION  
LOK SABHA

UNSTARRED QUESTION NO.3352

TO BE ANSWERED ON THE 18<sup>TH</sup> DECEMBER, 2015

**AIP TECHNOLOGY FOR SUBMARINES**

3352. DR. KAMBHAMPATI HARIBABU:

Will the Minister of DEFENCE j{k k ea=h  
be pleased to state:

- (a) whether there is any proposal with the Defence Research and Development Organisation (DRDO) for development of Air Independent Propulsion (AIP) technology for submarines in the country;
- (b) if so, the details thereof;
- (c) whether the AIP technology has undergone the prototype trials so far; and
- (d) if so, the details thereof?

**A N S W E R**

MINISTER OF DEFENCE

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(SHRI MANOHAR PARRIKAR)

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**(a) & (b):** Yes, Madam. DRDO has undertaken a project on development of Air Independent Propulsion (AIP) for Submarine, based on Phosphoric Acid Fuel Cell (PAFC) Technology. The details of Project are given below:-

- Date of Sanction : 16<sup>th</sup> August 2010.
- Probable Date of Completion (PDC) : 31<sup>st</sup> March 2016.
- Cost of Project : Rs. 216/- Crores.
- Present Status:-

- (i) Pre-Production Floor Module (PPFM) of AIP has been established. Laboratory testing has been completed to prove the concept. Indian Navy has also witnessed the trials.
- (ii) Land Based Prototype of AIP has been realized.

**(c) & (d):** Yes, Madam. The AIP is based on Phosphoric Acid Fuel Cell (PAFC) Technology. The Fuel Cell, stacks along with Hydrogen generation, has been tested continuously and expected power has been achieved in Pre-Production Floor Module (PPFM).

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