GOVERNMENT OF INDIA
SCIENCE AND TECHNOLOGY
LOK SABHA

UNSTARRED QUESTION NO:3828
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Collaboration with US Defence Production Firms
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Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

(a) whether Indian companies' collaboration with the US defence production firms have grown in the recent past;
(b) if so, the details thereof;
(c) whether India has joined the select club of Head Up Display (HUD) technology;
(d) if so, the details thereof; and
(e) the details of salient features of indigenously developed HUD system developed for LCA by the Central Scientific Instruments Organisation?

Answer

MINISTER OF STATE FOR SCIENCE AND TECHNOLOGY AND EARTH SCIENCES

(SHRI Y. S. CHOWDARY)

(a) In recent years, with the growth of the Indian private sector defence industry, the opportunities for collaboration between Indian and the United States of America (USA) defence firms have grown steadily.

(b) In May 2001, the Defence Industry sector, which was hitherto reserved for the public sector, was opened up to 100% for Indian private sector participation with Foreign Direct Investment (FDI) permissible up to 26%, both subject to licensing. Vide Press Note No 7 (2014 series), Department of Industrial Policy & Promotion, Ministry of Commerce & Industry has raised the FDI limit in defence sector up to 49% from Government route and above 49% through Cabinet Committee on Security on case-to-case basis.

Leading Indian industrial houses such as the Tata Group, the Mahindra Group, Kirloskar Brothers, Hindustan Aeronautics Limited, Larsen & Toubro and others are building up defence manufacturing capabilities to meet domestic defence requirements, and some of them have found US partners. USA aerospace majors, including Boeing, Lockheed Martin, Aerovironment, Honeywell, GE Aviation, United Technologies Corporation Aerospace Systems (UTAS), Cobham and others are working with several Indian firms in defence aerospace design and manufacturing. In most cases, the collaboration is industry to industry, wherein the Indian entities manufacture parts of the system/aircraft/equipment or make sub assemblies.

Till July 2015, Government has issued 287 Industrial Licenses for manufacture of a wide range of defence items to Indian companies and 34 Foreign Investment proposals of Indian companies have been approved in the defence sector for manufacture of defence equipment.

(c) Yes, please. India has joined the select club of HUD technology by developing the HUD System for Tejas-Light Combat Aircraft (LCA) Air Force and Navy versions.

HUD is a transparent display system which allows the viewing of data without requiring the viewer to look away from the main control, which is vital in combat aircraft. The other countries in the world engaged in HUD technology for defence are: USA, France, United Kingdom (UK) and Israel.

(d) CSIR-Central Scientific Instruments Organization, Chandigarh has developed the HUD technology for Tejas-LCA with the active participation of Indian Institute of Science Bengaluru, Aeronautical Development Establishment of DRDO, Aeronautical Development Agency, Bharat Electronics Limited (BEL) Panchkula and BEL Machilapatinam. The HUD is currently being manufactured by BEL Panchkula. The spin-offs from LCA programme are used for Intermediate Jet Trainer of HAL and it is actively being considered as replacement HUD for other aircraft programmes.

(e) The salient features of the indigenously developed HUD system are as follows:

â€¢ The system has a modular design, is compact, low-weight and has been specifically customized for Air Force and Navy versions of LCA Mark 1 cockpit.
â€¢ There is no ghost image or jitter, and the display brightness ranges from total blank to full brightness enabling full readability and glare-less operation even under bright sunlight.
â€¢ It incorporates a charged coupled device camera to record HUD image superimposed on outside world image for post-flight analysis and transmission through telemetry to ground stations for online training of pilots.
â€¢ It is highly reliable, is equipped with electronic stand-by-sight and extensive online built-in-test facility, besides conforming to airworthy military standards.
â€¢ Other features include both Cursive and Raster modes of operation for day and night flying, and noiseless thermal management.

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