

INS ARIHANT - A New Chapter In Indian Military

• **INTRODUCTION**

In 2016 Indian Navy secretly inducted INS ARIHANT into its fleet. It is the first vessel in its class and is a working technology demonstrator. Induction of Arihant was a big milestone for the nation as India became 6th nation in the world to operate a nuclear powered nuclear warhead carrying submarine whose power was only matched by Chinese in Asian continent. This vessel totally marks Indian presence in Indian ocean region and help us to project our power in a vast domain far from Indian lands. Second vessel of this class INS ARIGHAT is undergoing sea trials as of now.



• **PROLOGUE**

In 1998 when Indian missiles program was at its peak developing new nuclear missiles of various ranges need was felt to make it more versatile and agile. It was decided that India will develop nuclear triad i.e develop platform to deliver nuclear weapons via land , air and sea. Land based systems were already in place with Prithvi , Agni series missiles and its upgrade in the pipeline. IAF had fleet of Jaguars fighter that could deliver nuclear bombs of low yield and was already looking for a heavy weight long range fighter and had plans to develop nuclear missile to suit the same (BRAHMOS).

Indian Navy on the other hand had a lot of work to do. It was looking for partners to develop a whole new technology which was totally new to India and its research infrastructure.

• **DEVELOPMENT**

Indian Navy was aspiring to acquire a nuclear submarine which was at par with US OHIO class , British Vanguard class and Russian Typhoon class

subs. Due to various complexities of the process it was decided that the project would be based on Public-Private partnership in which various groups like Bhabha atomic research centre (BARC) , Indra Gandhi Centre for Atomic research (IGCAR) , Larsen and Tubro (L&T) , TATA power SED etc were made partners. Due to no initial experience in this field India also took help from its old ally and submarine pioneer Russia. The project had the full backing of the government in terms of money and man power.

It was planned that 5 such submarines will be built for Indian Navy and would be under command of both Eastern and Western Command. The number 5 was chosen keeping in mind that at any given time at least one such vessel in on patrol in sea with 2 more in standby and rest in overhaul/repair.

- **TECHNOLOGY**

The vessel was by far most complex project undertaken under indigenous vessel program. Russian assistance was taken in building nuclear reactor that could be fitted in the hull of the vessel.

BARC with few trails and error was able to develop the technology. An 83 MW water cooled nuclear reactor was chosen because such reactors were active on Indian soil.

A heavy duty reinforced hull was designed to keep the vessel silent as well as give its structural strength. L&T was tasked with this work and the end results were very promising. As far as its weapons were considered DRDO was having a tough time developing them. The missile pioneer was tasked to fit an nuclear missile with range equal to AGNI series but almost half of its size. DRDO came up with K (KALAM) Series of missiles. K-15 SAGARIKA with 750 km range was the first missile developed and was tested successfully in both development and user trials. As of now K-4 Intermediate Range Ballistic Missile with 3500 km range is in process of being inducted



.The vessel can carry 12 K-15 and 4 K-4 missiles. The vessel also has torpedo tubes to launch medium weight torpedo which is mostly for defensive role.

The internal circuits , control panels and communications were developed with assistance of TATA SED. A very secure and encrypted communication was developed with Indian Nuclear Command as one of the end. The submarine uses very low frequency radio signals to communicate which neither reduces stealth feature of the sub nor can be easily intercepted.

The submarine has speed of 24 knots submerged and 20 knots surfaced. Its nuclear reactor turbines are designed to complement its stealth. The turbine blades are designed to reduces bubble formation and provide enough power at same time. Over 50 decades of modern sea faring Indian Navy hasn't operated a submarine a fraction as completed as ARIHANT. In order to give Indian submariners experience an AKULA class nuclear attack sub NERPA (INS CHAKRA) was taken on lease from RUSSIA as both subs were similar in operating procedures and design.

- **RELEVANCE**

A nuclear submarine is far more than a submarine. It is a symbol of power and is diplomatically used to turn tide on your side. Its is a symbol of unmatched technology, wealth and military strategy of a country. In event of a conflict this weapon will bring fear to the enemies.

Due to the use of nuclear fuel the submarine has unlimited range and is limited only by food and other supplies. It is refueled once in every 20 years. During any conflict there is a serious chance that enemies may target our land based nuclear systems. In that case INS ARIHANT SSBN provides us second strike capability. Furthermore detecting any nuclear missile launch from these subs is not very easy as missiles could be launched from anywhere in the world and even from under the water. These missiles do not require target coordinates during launch and may be assigned after launch making it very potent After launch these missiles follow ballistic path so their interception is nearly impossible. With integration of Multiple Independent Re-entry Vehicles(MIRV)

the vessel with acquire ability to attack multiple targets simultaneously. With 5 such vessel India will become unmatched force in Asia.

- **CONCLUSION**

INS ARIHANT is a very ambitious and important project of India. It once completed this would put India on par with the BIG FIVE and we will be on path to become world leader and military superpower. This project has also started a new era in India ship building industry which at present is doing wonders and has a lot of potential to fulfill our maritime needs.

In 2018 INS ARIHANT officially completed its first patrol. As of now INS ARIHANT is in service with second vessel INS ARIGHAT at sea trials and reset submarines are either under construction or on design board. Initially the vessel suffered various accident due to human error but Indian Navy is now able to devise a doctrine and plan for strategic deployment of these vessels in Indian ocean as well as our area of interest. This vessel also establishes our power in International Waters.