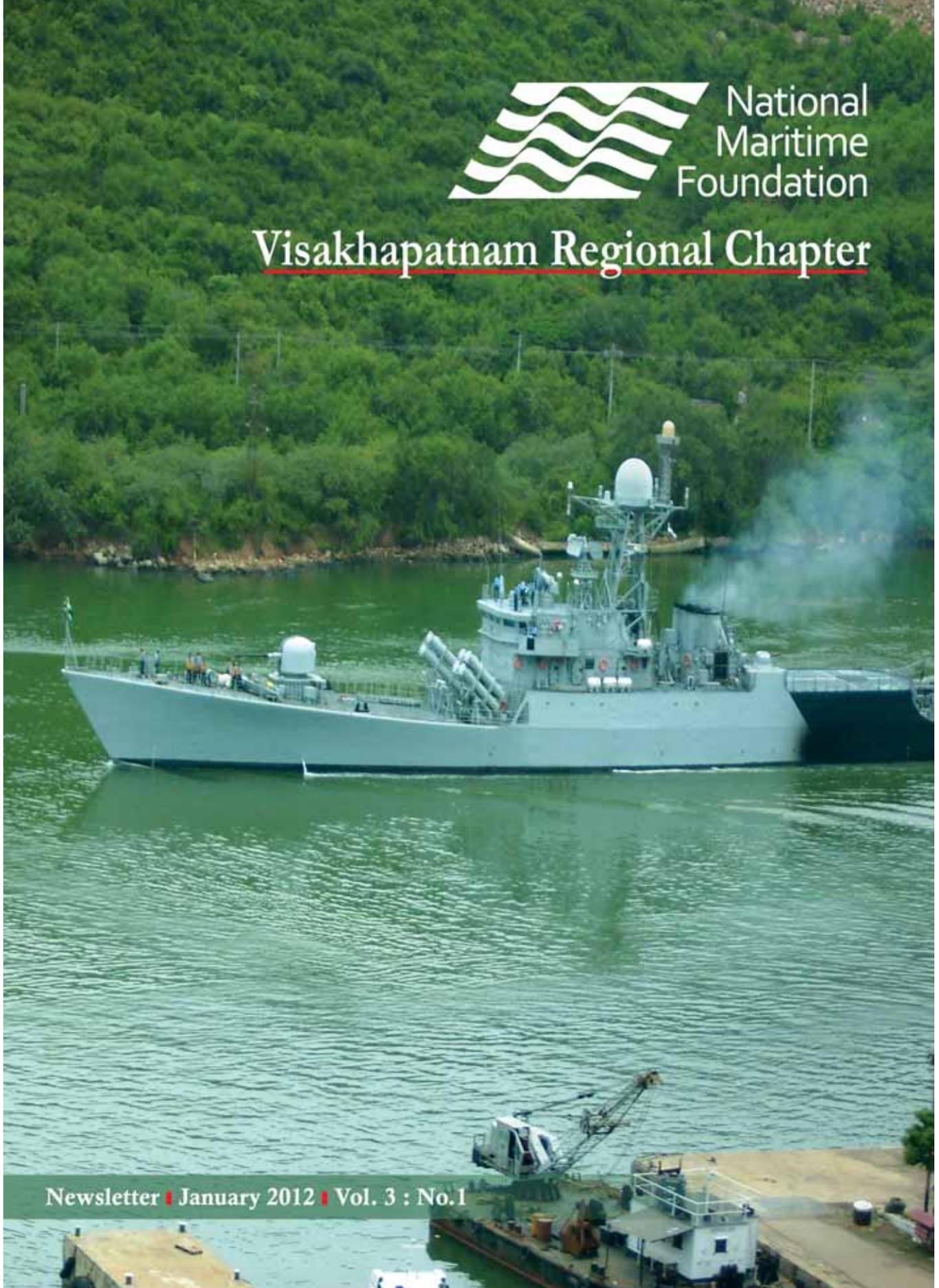




National
Maritime
Foundation

Visakhapatnam Regional Chapter



Newsletter | January 2012 | Vol. 3 : No.1

Welcome to New Chairman **Admiral Sureesh Mehta, PVSM, AVSM**



Chairman's Message...

1. In the short span that I have been in the Chair here in Delhi, I have had occasion to review the work being done by our Regional Chapters. I am particularly happy to note that our Vizag Chapter is continuing to propagate the aims of the National Maritime Foundation - which really encompass a very wide horizon of all affairs maritime - with due diligence.

2. India, for all practical purposes, is an 'island', surrounded as we are by the ocean on three sides and the mountains on the fourth. This, therefore, intrinsically links the oceans to our destiny, prosperity and indeed our very way of life - an aspect not easily comprehended by the vast majority of our population. As such, one of the primary tasks of the Foundation and its outlying Chapters today is to increase the maritime awareness amongst the general population. We need to keep this uppermost in our minds so that we can target a wider cross-section of the public - the professionals through a higher dose of intellectual subjects, and the newly initiated or non-initiated with the grass-roots developments. I trust the Vizag Chapter will continue to move firmly in this direction, and I wish the organization all the best in the year ahead in propagating the same.

My best wishes for all happiness, and great intellectual participation, in 2012 !

*Visakhapatnam Regional Chapter offers its best wishes to Chairman **Admiral Sureesh Mehta** for a successful tenure.*

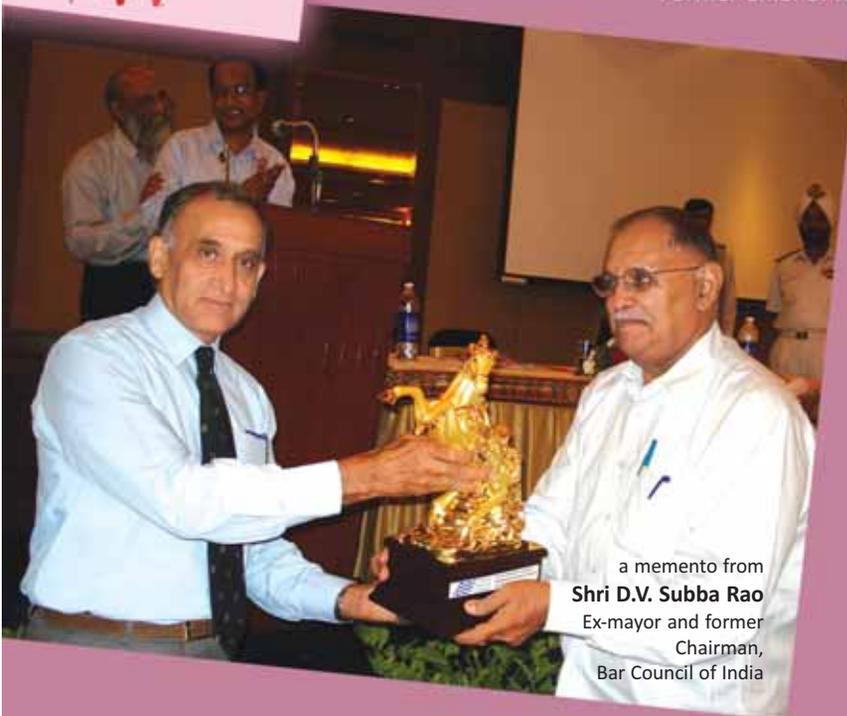


Farewell to **Admiral Arun Prakash** PVSM, AVSM, VrC, VSM (Retd)
Ex-Chairman, National Maritime Foundation
Former Chief of Naval Staff

Visakhapatnam Regional Chapter conveys its profound gratitude to Admiral Arun Prakash for his inspirational leadership and invaluable guidance and wishes him a long life of good health.

In memorable words Admiral Arun Prakash, then Chief of Staff, Indian Navy, had said in 2005 that "in the maritime reawakening of the eastern seaboard Visakhapatnam is at the heart of the process".

Admiral Arun Prakash described the inauguration of the Vizag Regional Chapter as 'a significant event'.



a memento from
Shri D.V. Subba Rao
Ex-mayor and former
Chairman,
Bar Council of India

Development or Dispossession? Challenge of 21st century

In a thought - provoking article published in *The Guardian Weekly* of December 2, 2011, Stephen Corry raises the question : What's "development" for? The subtle emphasis on the word development conveys it all. Stephen Corry, the Director of Survival International, and author of *Tribal peoples for Tomorrow's World*, reveals how in the name of 'development' the world's 150 million tribal people are being turned into 'dispossessed paupers.' His article unfolds the poignant story of tribes people in North America and Australia. In the name of development, focusing on housing and education, tribal heritage is severely damaged. " In West Papua", he writes " "tribes people put their pigs in the new houses and live in the old." Dams and mines, the so-called infrastructure of development, are meant "invariably to enrich the elites while impoverishing the locals."

Same, if not worse, is the story in most parts of India. Developmental projects, often times, strike the poor like *tsunami*, in displacing and dispossessing them. Hundreds of people are rendered homeless when dams and mega projects are built, becoming refugees in their own land. Their cultural heritage is swept away and thrown into the dustbin of history by the bulldozing might of modern technology. North Andhra and Visakhapatnam figure prominently on the radar of the builder and the bulldozer. Overtly and covertly the strikes occur. To the naked eye the most glaring and disturbing sight is Vizag's once beautiful hill range shorn of greenery. The hill tops look like tonsured human heads. More tragic is the disappearance of some hills during the last few decades in the name of quarrying for construction! The beautiful north Andhra coastline of India's largest maritime state is facing quite a few threats due to increasing pollution, environmental degradation, and growing mechanization affecting the livelihood of several fishermen .

Not so visible is the other menace, more disastrous, of course. That is the threat to our history and culture. Andhra Pradesh has many ancient habitation sites, many of which are Buddhist dating back to 3rd and 4th centuries B.C. Some of them are located on the north eastern seaboard. *Bojjanna Konda*, *Bavi Konda*, *Thotla Konda*, and *Erramatti Dibbalu* (Red Sand Dunes) are among the famous sites of historical significance. These are place once visited by people from Sri Lanka, Vietnam and Kampuchea. Popular belief is that the cave on the hill once known as *Buddhikonda* (hill of the Buddha) was a place of worship two thousand years ago. North Andhra, once part of the famous Kalinga empire, abounds in centuries old architectural marvels, like the *Mukhalingam* temple, monuments and historical sites that bear silent testimony to our glorious culture and heritage. The need to protect and preserve them cannot be overstated and while the government is mainly responsible for it, civil society must act as a watchdog in safeguarding our heritage and culture. Let us join hands in protecting our heritage, and maritime tradition and culture.

Visakhapatnam
January 2012


A. Prasanna Kumar
Regional Director



Welcome to
Vice Admiral Anil Chopra, AVSM

Flag Officer Commanding-in-chief,
 Eastern Naval Command



Vice Admiral Anil Chopra was commissioned into the Indian Navy on 01 Jul 1975. He is a graduate of the National Defence Academy (NDA), Khadakvasla, the Defence Services Staff College (DSSC), Wellington, the Naval War College (NWC), Mumbai and the National Defence College (NDC) New Delhi. He is the recipient of the 'Binoculars' for standing first in the merit as a Naval Cadet, the Sword of Honour as a Midshipman, the Admiral RD Katari Trophy for heading the Long Gunnery Course, the Scudder Medal at the DSSC, and the Colonel Pyarelal Medal at the NDC.

Admiral Chopra was appointed to various gunnery billets onboard the Navy's new acquisitions during the earlier part of his career, including INS Vijaydurg (1978-79), INS Rajput (1981-83) and INS Gomati (1987-89). He has commanded the missile corvette INS Kuthar (1993-94), the destroyer INS Rajput (2000-2001) and the aircraft carrier, INS Viraat (2003-2004).

His appointments ashore have included Principal Director Naval Plans at Naval Headquarters, Chief Staff Officer (Operations) at Headquarters, Eastern Naval Command, Naval Assistant to the Chief of the Naval Staff and Senior Instructor (Navy) at the DSSC. The Admiral was posted to Rome, Italy, in the mid-eighties (1985-87) in connection with the induction of combat systems for the Navy's frontline units. He has also spent a year in Washington DC, as a Senior Fellow at the United States Atlantic Council. On promotion to Flag Rank in Aug 2005, the Admiral was appointed Chief of Staff, Headquarters, Eastern Naval Command. During his tenure, the maiden 'President's Fleet Review' on the Eastern Seaboard was held in Visakhapatnam in Feb 2006. After a short assignment as the Assistant Controller of Carrier Projects, he was appointed the Assistant Chief of Naval Staff (Policy & Plans) at Naval Headquarters in early 2007. Thereafter, Admiral Chopra assumed command of the Western Fleet in 2008.

The Admiral assumed charge as Director General Indian Coast Guard a few days after the 26/11 Mumbai attacks. At the helm of the service for three years, he propelled and oversaw an exponential increase in the Coast Guard's force levels and operational deployments. In his capacity as DGICG, he was also the Chairman, Offshore Security Coordination Committee; Chairman, National Maritime Search and Rescue Board; and Chairman, National Oil Spill Disaster Contingency. The Admiral was appointed as Flag Officer Commanding-in-Chief, Eastern Naval Command on 31 Oct 2011.

The Flag Officer was awarded the Ati Vishist Seva Medal for distinguished service in 2007. He is an alumnus of the Lawrence School, Lovedale; the Sherwood College, Nainital; and the La Martiniere College, Lucknow. He comes from an Army family, and has two children.

Message

1. It gives me great pleasure to extend my greetings and best wishes to the National Maritime Foundation, which was launched to redress the historic, strategic neglect of India's maritime frontiers, by providing a platform for a nation-wide discourse on maritime matters.
2. India's emergence as a nation of global significance has brought with it the recognition that both our national security, and our economic prosperity have deep linkages with the maritime environment. The NMF renders yeoman service to the nation by highlighting the nuances of the maritime domain.
3. I would like to compliment the efforts of the NMF, Visakhapatnam Chapter for providing the much needed interface between various maritime stakeholders in the region.

Jai Hind

Feb 12


(Anil Chopra)
 Vice Admiral

In grateful admiration

of **Vice Admiral Anup Singh** PVSM, AVSM, NM
FOC-in-Chief, Eastern Naval Command



Vice Admiral Sunil Lanba
Chief of Staff, ENC
presenting the citation to
Vice Admiral Anup Singh

The month of August is dear to every Indian heart, the month in which we made our tryst with destiny in 1947, awakening to life and freedom as the world lay asleep. August 2009 heralded the advent of a new dawn for the eastern seaboard and Visakhapatnam, the City of Destiny, when Vice Admiral Anup Singh took charge as the Flag Officer-Commanding-in Chief of Eastern Naval Command. After completing an outstanding tenure as Flag Officer Commanding Western Fleet, the author of the fabulous coffee-table book 'A Salute To The Sword Arm - A Photo Essay on Western Fleet' Vice Admiral Anup Singh took charge of the Eastern Naval Command, described as the *Eastern Shield*. Sword or Shield wielding



Prof. A. Prasanna Kumar
reading out the address

it with commanding authority and admirable ease is what makes Anup Singh an Admiral with a difference.

On the eve of the historic occasion of maiden fleet review by India's President Dr A.P.J. Abdul Kalam in February 2006 Chief of Naval Staff Admiral Arun Prakash prophesied that Visakhapatnam would be at the heart of the maritime reawakening of the Eastern Seaboard. It was a defining moment in the history of the navy and the nation. Three years later Vice Admiral Anup Singh as the FOC-in-Chief of Eastern Naval Command began to translate the vision into a reality and added a new dimension to it by involving the civilian population in the process of promoting awareness of maritime heritage and culture. A month after he took charge of the Eastern Naval Command, the National Maritime Foundation launched its Visakhapatnam Regional Chapter. The Vice Admiral nurtured the infant body with care and vision and organized a spectacular inaugural function and a high level seminar on April 27 and 28, 2010. He delivered scholarly and inspiring lectures on the Eastern Seaboard, the Indian Navy, and the ocean's resources. In January 2011 he hosted a seminar on the history of Visakhapatnam and maritime tradition of Andhra Pradesh, India's largest maritime state. Six months later the Vice Admiral hosted the prestigious two day national seminar on July 14 and 15, 2011, on *Strategic Contours of India-China Relations* with former foreign secretary Shyam Saran as the chief guest and leading analysts and experts taking part in it. Vice Admiral Anup Singh's gesture of prefacing the intellectual exercise with a public lecture by Shri Shyam Saran on *Transition from Look East to Engaging East* for the benefit of the people of the city carved a niche in the hearts of the people for the Eastern Naval Command in particular and the navy in general.



Joining the Indian Navy in 1973, he has held several key positions with dignity and distinction during the last thirty eight years and four months. Vice Admiral Anup Singh has, during his two years and two months tenure as the Flag Officer Commanding-in-Chief of Eastern Naval Command, brought the navy closer to the people. At the intellectual level his erudition and oratorical skills evoked the admiration, besides envy too, of the elite and the academia while his humility has always endeared him to the larger public. His noble wife, Mrs Nani Singh, took care of the house and the family while her illustrious husband was away at sea in the service of the nation. Visakhapatnam Regional Chapter of the National Maritime Foundation offers its most grateful thanks to Vice Admiral Anup Singh and wishes him and members of his family good health, long life and many more years of service to the nation.

October 25, 2011
Visakhapatnam

Regional Director and Members of the
Visakhapatnam Regional Chapter

*...saying it with
flowers*

*Shri S.V. Rangarajan
Director, NSTL*



*Dr. S.Vijaya Kumar
CMD, Vijay Nirman*



*Mrs. Vanaja Prasanna Kumar
presenting a memento to
Mrs. Nani Singh*



'Strong foreign policy need of the hour; says former diplomat'

'Individual whims and fancies cannot take precedence over a system'

(Newspaper report on the lecture delivered by former Ambassador Shri K.P.Fabian, IFS Retd., on Feb. 17, 2012)



Former ambassador to Finland, Qatar and Italy K.P. Fabian said that India as a country lacked a basic structure for formulation of long-term foreign policy other than what was initiated by India's first Prime Minister - Jawaharlal Nehru and M. K. Gandhi.

Speaking on the subject, India's Foreign Policy: The Big Picture, at the lecture organised jointly by the Centre For Policy Studies and the National Maritime Foundation at the Public Library here on Friday, he said that the country lacked a system wherein the foreign policy was evolved based on discussions by stakeholders in a brain-storming session involving the civil and defence officials. "Regrettably, individual whims and fancies took precedence over a system of evolution of policy which did not exist. Governments would come and go but a strong foreign policy foundation with a national outlook is the need of the hour," he said.

'No foresight'

The former ambassador dwelt on past experiences of our country's foreign policy which reflected inconsistency, lacking in foresight and devoid of long-term vision and betrayal of national interests in some cases. Mistakes were made with regard to policy formulation towards Iran and in the process national interests with regard to laying of a pipeline from Iran to India touching Pakistan had been affected.

A proper analysis of repercussions of the country voting against Iran had not been made. Similarly we had failed to fathom the designs of China with regard to their claim over Arunachal Pradesh, he said. Chinese still consider Arunachal Pradesh as part of their territory by calling it Southern Tibet. Indians who apply for a visa from that State to visit China were being told that they needed no visa as it is part of their territory. A blind policy of 'India-China Bhai Bhai' was followed and Chinese aggression opened our eyes belatedly.

Defining that foreign policy is one that should protect national interests, Mr. Fabian cited the example of Union Carbide which offered a mere \$ 470 million as compensation to the Bhopal gas tragedy victims against the demand made by India for \$ 3.03 billion. "This is a clear case wherein our country's interests could not be protected."

Soft-peddalling

On the 26/11 terror attack in Mumbai, our country's policy in still negotiating with Pakistan on punishing the culprits is under attack. Our policies on several issues appeared to be soft-peddalling, lingering and confused with regard to articulating our stand. He maintained that our failing to see the writing on the wall with regard to fall of Hoshni Mubarak of Egypt and Libyan President Gadaffi and our assessment of things were wrong. He felt that there should be a strong U.S presence in East Asia to check the hegemony of China.

(Courtesy : The Hindu, Feb. 18, 2012)

Maritime History of Visakhapatnam

- Mrs. Rani Sarma

Convenor, INTACH



(Lecture at the Visakhapatnam Regional Chapter on Nov. 24, 2011)

Visakhapatnam is the headquarters of the Eastern Naval command. In the mid-1980, While on a routine reconnoitering mission, a young pilot of the Indian Navy noticed that some of the hill tops in the neighborhood of the city were marked with man-made structures. The pillars on the hill of Thotlkonda were particularly conspicuous, as was the stupa mound on another hill close by called Bavikonda. The Navy alerted the state Government to the fact. The first inspection of the sites of the Thotlakonda and Bavikonda hills revealed that they belonged to the early historic period and were untouched since they were abandoned, for whatever reasons, seventeen hundred years ago. Once the accumulated debris and the soil that covered the structures were cleared, the true character of the sites came to light. The sites revealed Buddhist structures dating back to 300 BC. Among the remains were noticed Roman coins and Roman pottery along with Satavahana coins more or less of the same period. Hot on its heels came the information that a third such ancient monastery was sited at a short distance from the twin sites of Thotlakonda and Bavikonda. This third site was situated on a hill called Pavurallakonda in the town of Bhimunipatnam some 15 miles away from Thotlakonda.

Thus three archaeological sites, of immense cultural significance were discovered more or less simultaneously. Bavikonda was the first site to be excavated in the year 198-87, followed by Thotlkonda, from 1987 for five seasons. At present Pavurallakonda is still under investigation.

However, the three Buddhist sites that pushed the history of Visakhapatnam by a thousand years did not exist in isolation. They, in fact, form only a small link in the long chain of Buddhist sites that dot the coast of north coastal Andhra. Similar sites were identified almost all along the coast of Srikakulam, Vijayanagarm, Visakhapatnam and East Godavari districts. A bulk of the Buddhist sites were dated to 200 BC to 300 AD.



What was the context in which so many Buddhist sites of early period existed two thousand years ago? Why were those sites situated along the coast and also the river fronts?

Kalinga was one of the important janapadas of ancient India and is mentioned from the Mahabharata times onwards. Ancient Kalinga could be said to have encompassed broadly the territory lying between the two Rivers Mahanadi and Godavari. Geographically, Kalinga lay on the highway that connected the fertile Gangetic plains of northern India with the spice rich tracts of South India. Several ancient routes connected these two prosperous regions, most of which passed through Kalinga.

In the ancient times, the history of Kalinga was a long saga of commercial concourse in the region; there was vigorous trade between Kalinga and Sri Lanka on one side and Kalinga and Suvannabhumi on the other. Pali and Jain literature allude to such trade as do the western writers, like Pliny and Ptolemy.

So prosperous were the Kalingan ports that they were coveted by the rulers of Magadha. One of the Nanda rulers, who preceded Ashoka at Magadha, is said to have conquered Kalinga, with the intention of annexing the flourishing port cities of Kalinga to Imperial Magadha. Their importance to Magadha lay in the fact that the Kalingan ports were the only outlets through which the land-locked Magadha could trade. The command of Kalinga on the trade of Bay of Bengal was such that poet Kalidas, (4th or 5th century AD), described the king of Kalinga as 'Mahodhipati' or the Lord of the Ocean in his work Raghuvamsha. That Visakhapatnam was located in Madhyama Kalinga is borne out by inscriptional evidence available. Thus it was that the district of Visakhapatnam, which was a part of Kalinga came to be studded with many trading centers.

Such trade seems to have been already at an advanced stage by the 600BC, during the lifetime of the Buddha. The first two men to accost the newly enlightened Buddha, in Bodhgaya, were two merchant brothers of Odhra (Orissa), by name Tapussa and Bhallika. These two men had just returned to Orissa after trading with Burma; they were passing through Magadha with 500 cartloads of merchandise, which they brought from Burma. According to a legend, Buddha gave the two merchants eight strands of hair from his head, which are enshrined in the Shwedagan Pagoda in Yangon, in Burma.

Many such references illustrate the cultural and trade contact between Magadha, ancient Odhra (Orissa/Kalinga) and the countries of Suvannabhumi and Sri Lanka. The Indian merchants possessed phenomenal wealth, all of which was earned from overseas trade. Buddhist Pali literature makes frequent references to such wealth. A trader of Rajagriha, by name Kumbhaghosha left behind forty crores of gold coins to his son, when the family had to flee the city because of an epidemic. Another Sresti called Ananda, who was a miser, was said to be in possession 80 cores of gold coins. Caravans of as many as 500 carts, crisscrossed the country loaded with valuable merchandise. One such trader of Sravasti, who was on his way to Kosambi with merchandise on 500 carts, had to abandon his proposed journey when a conspiracy of highway robbers to plunder him came to his ears. Then there was the classic case of the famous

banker of Savatthi, by name Anandapindika, who bought an arama for the bhikku samgha headed by the Buddha , by covering the entire area of a pleasure garden with gold coins !!

Trade links between the Visakhapatnam region and the wealthy northern cities like Sravasthi and Kosambi was discovered from an innocuous looking fishing hamlet, called Gopalapatnam in the District of Visakhapatnam. Trial trenches dug at the dusty village revealed NBP ware, which indicate that the ports of Visakhapatnam region had trade links with the prosperous towns of Gangetic plains. Thus it becomes clear that the ports of Visakhapatnam region participated in the brisk trade that the Kalinga saw.

The Department of Archaeology and Museums of the Government of Andhra Pradesh excavated the ancient mud fort of Danta-Vaktrunikota in the district of Srikakulam and identified it with Dantapura, which was a famous emporium in the 6th century BC and was said to have been well connected to many other commercial centers. Pali literature further mentions Dantapura, lying in Kalinga, as one of the seven famous cities of India (of the time) and was ruled by a king called Sattabhu. Among the antiquities unearthed at the site were beads of carnelian, jasper, agate, bangles of glass and shell, iron nails, strips and rings of copper and collyrium rods, all of which might have been the articles of trade.

Trade links of Kalinga with Sri Lanka too may be traced back to the sixth century BC, at the least. Buddhist chronicles speak of the invasion of Ceylon in the 6th century B.C. by Vijaya Simha, a native of Kalinga, who gave his name to the island; hence the name Simhala. He is said to have sailed to Ceylon in a ship which could hold over seven hundred people; of those, the boat "carried 500 merchants aboard." "Datha Dhatu Wamso," another Buddhist chronicle, graphically describes a boat that was about to set sail to Ceylon,

"a vessel bound for Ceylon, firmly constructed with planks sewn together with ropes, having a well rigged, lofty mast, with spacious sails, and commanded by skillful navigators, (was) on the point of departure."

The exports from Kalinga to countries like Sri Lanka included elephants, cotton, salt and silk. Kautilya's Arthashastra tells us that traders considered the "southern route" which necessarily had to pass through Kalinga, more profitable than the northern one. The availability of luxury items in the south, like gold, pearls, diamonds, and other gems was too valuable to ignore. Pali literature abounds in references to gems and their inlay work. The murals of Ajanata, of a later period show that Kings, queens and commoners alike wore gem encrusted jewelery. The Tamil word 'muttu' entered Sanskrit as 'muktha' (pearl). Beryl, we are told, was available only in India in the ancient times. Beryl is a precious blue-green 'color-of-seawater' stone called "Veluriya" in Prakrit, and Vaidhurya in Sanskrit. The word meant, "to become pale." Like Muthu, Vaidhurya is said to be Dravidian in origin, before it passed into Sanskrit vocabulary. South India was said to be the only producer of vaidhuryas in the ancient world. Nearer home, many semi-precious gems are available in the hilly region of Visakhapatnam. The trade route that became a conduit for the passage of such luxury items, passed through Kalinga.

That is just one side of the maritime history of Kalinga. The second part of the commercial



activity of ancient Kalinga is the contact with the west. From the first century onward Indian maritime trade with Rome picked up and Kalinga, particularly north coastal Andhra Pradesh, participated in that trade. Most of the Buddhist sites of Srikakulam, and Visakhapatnam districts revealed Roman coins and Roman pottery, confirming such a commercial contact.

Rome's Maritime trade with India started with Augustus Caesar conquering Egypt in 30 B.C. Augustus and his successors worked at wresting the control of trade from the Arab traders and pirates and developed a direct sea trade between India and the Roman empire. Strabo, the Greek geographer, claimed that in 25 B.C. he was witness to about 120 ships ready to set sail to India from Myos Hormos, located at the mouth of Red Sea. While most of these ships were originally bound for the west coast of India, in the later years they started to travel further, round the tip of the Indian peninsula beyond ancient Amradwipa, and finally arrived at the marts of Tamilnadu and Kalinga. During that period Kalinga saw trade with Rome and Africa as well.

Ptolemy, the Greek cartographer and Pliny, the Roman historian (100 AD) mention the many sea ports on the coast of Kalinga. In his book "Ancinet India" McCrindle writes that the detailed accounts given by Ptolemy are so informative that his sources must have been Indian. Another foreigner who wrote about Indian trade of the time was the anonymous Greek seafarer, Hippaulus, who is credited with the discovery of the trade winds. From the months of June to September the summer monsoon winds blow from the southwest, from Ceylon towards Kalinga. From December to early March, the retreating monsoon winds blow in the reverse direction. Southeast Asia has similar seasonal wind patterns. The navigators of the ancient times appear to have taken advantage of those seasonal winds to sail to India.

The trade between Rome and India intensified when the west learnt about the advantages of the favorable trade winds and the seasons when they blew. Hitherto all such information like the ability to read the color of the sea water, stars and the movements of homing birds like sea crows as aids to navigate in the high seas, was known only to the Indian and Arab merchants.

Armed with the information that they learnt from the Indian traders, the Romans established direct trade routes with India. Merchant boats started from Myos Hormuz, entered the Arabian sea, visited the towns of the Indus ports of western India, sailed to the coast of Kerala to ports like Muziris, rounded the Sri Lankan Island, halted at Kaveripatnam and finally headed for the ports lying at the mouth of the River Ganges. Those that went to Burma and beyond broke away from

the coast, north of Visakhapatnam at a place called Barua, and sailed across the sea to reach Suvannabhumi or Golden Chyse. They could not have sailed along that route without visiting the ports of Coromandal Coast. To ascertain which towns or ports they visited, we depend on the archaeological Buddhist or habitation sites and the occurrence of Roman coins and Mediterranean pottery therein.

The articles of trade between India and Rome were those that were needed in the temples of Rome, like the aromatic substances; the custom of the Romans burning incense at important ceremonies, and at the temples demanded large quantities of aromatic substances. When the famous Roman commander and law maker Sulla died, it is recorded that large quantities of aromatic stuff from India was used in his cremation. Apart from aromatic substances, precious gems, diamonds, pearls, silk cloth, and Indian cottons called mulmuls too were sold to Rome. The rich and the fashionable at Rome demanded the silks, and luxury items like gems, pearls, silk cloth, Indian cotton cloth, sesame oil, sugar and raw cotton from India. Apart from these substances ginger and pepper were also in great demand. Tiberius Caesar is said to have banned the use of the Indian cloth since it was so very transparent and revealing. Romans also imported tigers, rhinoceroses, elephants and serpents to be used in the Roman circuses.

Such was the craving for the luxury goods from India that Aralias Caesar bemoaned the drain of Roman bullion into India, a fact further confirmed by both Pliny and Periplus. The value of Indian trade is such that Pliny says that near about 20 million sesterces had gone into India, every year. Tamil Sangam literature too refers to the immense trade that took place between the Yavanas of "harsh speech." The reference includes the 'cool wines' and large quantities of gold that such trade brought in. This stupendous trade led to political contact between India and Rome. History tells us that as many as nine embassies were sent from India to Rome. Most such trade was regulated by the guilds or corporations like weavers, perfumers, grain merchants and oil merchants.

Where there was trade there was Buddhism. A part of the wealth thus accrued from overseas trade was diverted to build and maintain monasteries for the Buddhist monks.

It is against such background that the newly discovered Buddhist sites of Visakhapatnam have to be viewed. For, the very presence of the many Buddhist sites indicates the immense trade that the region saw. The discovery of Roman coins and Roman pottery in many of the Buddhist establishments only strengthens such an assertion.



Wings of hope and joy ...across the fertile Konaseema

the southern part of the fertile East Godavari district is called Konaseema, meaning tailend treasure, because of its location in the corner of the district. The lush green landscape is dotted by coconut and banana gardens and innumerable palmyrah trees. The ever flowing canals that make the area the rice bowl of the state also add to the allure of konaseema.

The long coastline on one side...
and the eastern ghat hill range on the other,
with a landscape of lush green fields in between,
make Andhra Pradesh a land of natural splendour.



Naval Technologies - a profile



Shri S.V. Rangarajan

Outstanding Scientist and Director
Naval Science and Technological Laboratory
Defence Research and Development Organisation
Visakhapatnam

(Lecture delivered at the Visakhapatnam Regional Chapter on January 9, 2012)

In a stimulating lecture Shri SV Rangarajan, Director, Naval Science and Technological Laboratory (NSTL) and *Outstanding Scientist*, explained the silent happenings in world class Defence R&D at NSTL, a premier defence laboratory of DRDO. At the outset, the Director introduced to the audience the changing trends in the war scenario and in the field of weapons.

He said that superiority in terms of defence capabilities will continue to be an important indicator of a nation's progress, even in the 21st century. The perspective of a nation's military strength being determined by sheer numerical superiority and a sustained capability to fight and inflict maximum damage to the adversary is changing. Today, technology determines the assessment of military strength. With newer threats posed by electronic warfare and information warfare, characteristics like - weapon effectiveness and force mix, rapid response to threat and precision strike potential - play a major role. The threats of proxy wars and sponsored terrorism lead to low intensity conflicts in a highly diffused battle field that would call for deployment of beamed energy and sometimes paradoxically, non-lethal weapons also. Added to this are the likelihood of crowded geo-orbits, cyberspace, and glaringly, large unexplored underwater space. Naval Science and Technological Laboratory, under the aegis of DRDO, established in 1969, is primarily chartered to operate in this inaccessible and hostile space.

The laboratory carries out design, development and testing of underwater weapons, hydrodynamic studies of surface and sub-surface platforms and bodies, and development of stealth technologies for naval platforms leading to production and induction into service of various state-of-the-art systems. The laboratory also hosts world class facilities for hydrodynamic and environment tests.

Shri Rangarajan then introduced to the audience the underwater war scenario. Anti submarine warfare involves detection, classification, location, tracking, and attack to destroy hostile platforms. Also, it is necessary to deny hostile submarines access to their targets – viz. our platforms.

The main constituents of anti-submarine warfare are the various platforms and systems like ships, submarines, weapons, countermeasures, counter-countermeasures, fire control systems, stealth features and tactics/doctrines. The weapon systems by themselves constitute the launcher, weapon (torpedo, underwater mine), decoy, fire control solutions and delivery systems.

The speaker chose to introduce the torpedo in detail, it being a prime anti-submarine warfare weapon. He said that autonomous mechanical torpedoes came into existence around 1866 and since then they have remained the single-most class of effective weapons in naval warfare. Efficacy of their offensive role since World War-I remained beyond doubt.

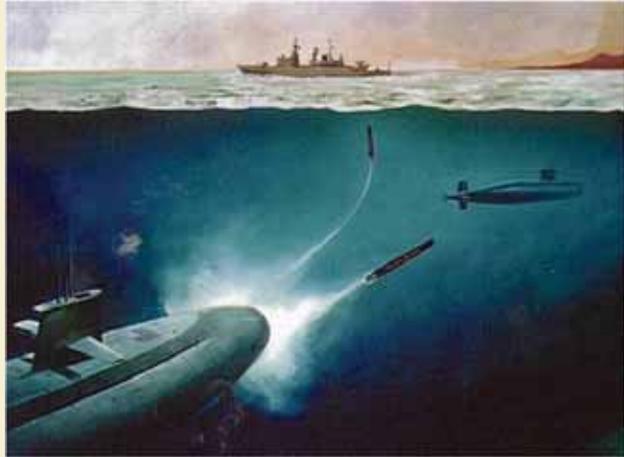
The torpedo is a multi-launch, multi-target weapon, capable of sinking a ship/submarine at one go. Torpedoes are classified based on weight (lightweight and heavyweight), launch capability (air, ship, sub, missile, multi), propulsion systems (electrical or thermal), homing (acoustic-passive, active), speeds, guidance (autonomous, wire-guided) and warhead type.

To be a potent weapon, characteristics desired of a torpedo are to be stealthy – in order not to be detected by target platform; to have sufficient speed to chase and overtake high speed target; to have sufficient range and endurance to carry out search, attack; to have good homing - to detect and track the target; to have maneuvering capabilities for search and attack, to have



guidance to navigate the torpedo towards the target and most importantly to be equipped with counter countermeasures not to be deceived by enemy decoys.

NSTL realized the importance of indigenous development of torpedoes back in late seventies and started working on them accordingly. In two decades of initiative itself, the Lab had established all the basic technologies needed for torpedoes like – propulsion, control, sensors, homing, actuation, hydrodynamics, shells, onboard computers, instrumentation, wire guidance, launchers, fire control systems, navigation, guidance, warhead and recovery in respect of practice torpedoes. With that prowess, NSTL could develop the torpedoes namely, TAL in light weight category and TAKSHAK in heavyweight category for both ship and submarine use. Out of these, TAL is being inducted into the navy.



However, the fast changing trends in international R&D now prompts the Lab to develop indigenous batteries and motors also to have complete wherewithal to compete with global state-of-the-art torpedoes. Currently, the research is in progress in these areas also. This energises the torpedoes of NSTL to have matching speeds and endurances of their global counterparts – as in all other areas, we are on par, or even excel.

Shri Rangarajan then introduced the members to another important system, called the Fire Control System. This is used to launch the torpedoes and provide them with pre-launch, launch and post-launch guidance with increased probability of kill. For achieving this objective the FCS tracks the target and estimates the intercept point of the target. The FCS interfaces to the platform's target detection sensors and motion sensors (Log which senses speed, Gyro for sensing heading and GPS for sensing position on earth). Taking into consideration of all the errors due to the measurements, like roll, pitch of own platform, reverberation, bottom bounce, surface reflections, multipath propagation of acoustic waves in water etc., the FCS will ensure that the weapon is guided to the uncertainty zone where the weapon will seek the target with its own sonar sensor. As the weapon's own sensors have limited detection ranges, the weapon will not be able to detect the target in the initial phase of its travel especially when fired at long ranges. Hence at the time of launching the weapon, the FCS provides necessary intelligence to the weapon by transferring pre-set parameters.

NSTL has successfully developed Weapon Fire Control Systems for Submarine, Surface (Ship) and Air Platforms. The first System developed was 'Panchendriya' Tactical Weapon Control system



for submarines in 1999 and two systems were inducted into the navy. In the year 2006 NSTL has delivered an Integrated Anti-submarine Warfare Systems (named IAC MOD '0') for front line Naval Frigates of the Indian Navy. This was followed by Helicopter Fire Control systems for launch of Air launched torpedoes and depth charges in the year 2007. NSTL is playing a key role as chief designer and consultant for upgrades of the FCS, which Navy has taken up with the industry. NSTL has also developed several induction support equipment for torpedo support such as: Torpedo Simulators, Portable Torpedo Pre-setters, Air-borne Pre-setters and Drill & Practice Electronic Units used for training

and practice. With the successful induction of these indigenously produced FCS equipments, India is self reliant in these technologies today.

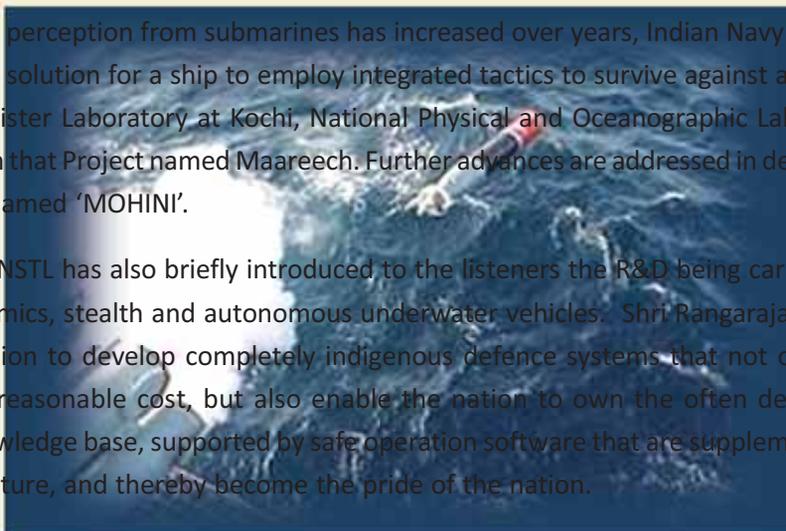
Talking about anti torpedo defence systems being developed by NSTL, the Director said that decoying, especially in littoral waters is a complex activity at present and requires utilizing a 'Layered Defense Principle'. The prime objective is to detect and locate the incoming weapon embedded in a hostile environment and use this information tactically to survive. Torpedo attack is an end game phenomena and the target platform is required to have a minimal human participation to maximize the response time.

NSTL in mid 80's successfully developed a submarine fired decoy and got it productionized by M/S Bharat Dynamics Limited which is in the arsenal of the navy.



As threat perception from submarines has increased over years, Indian Navy tasked DRDO to offer a system solution for a ship to employ integrated tactics to survive against a torpedo – both NSTL and its sister Laboratory at Kochi, National Physical and Oceanographic Laboratory (NPOL) are working on that Project named Maareech. Further advances are addressed in decoys in a project at NSTL codenamed 'MOHINI'.

Director NSTL has also briefly introduced to the listeners the R&D being carried out at NSTL on hydrodynamics, stealth and autonomous underwater vehicles. Shri Rangarajan concluded his talk with a vision to develop completely indigenous defence systems that not only achieve the objectives at reasonable cost, but also enable the nation to own the often denied and highly restricted knowledge base, supported by safe operation software that are supplemented with local upgrades in future, and thereby become the pride of the nation.





Visakhapatnam Regional Chapter

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AVSM

FOC-in-Chief, Eastern Naval Command

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Chairman, Visakhapatnam Port Trust

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Visakhapatnam Port

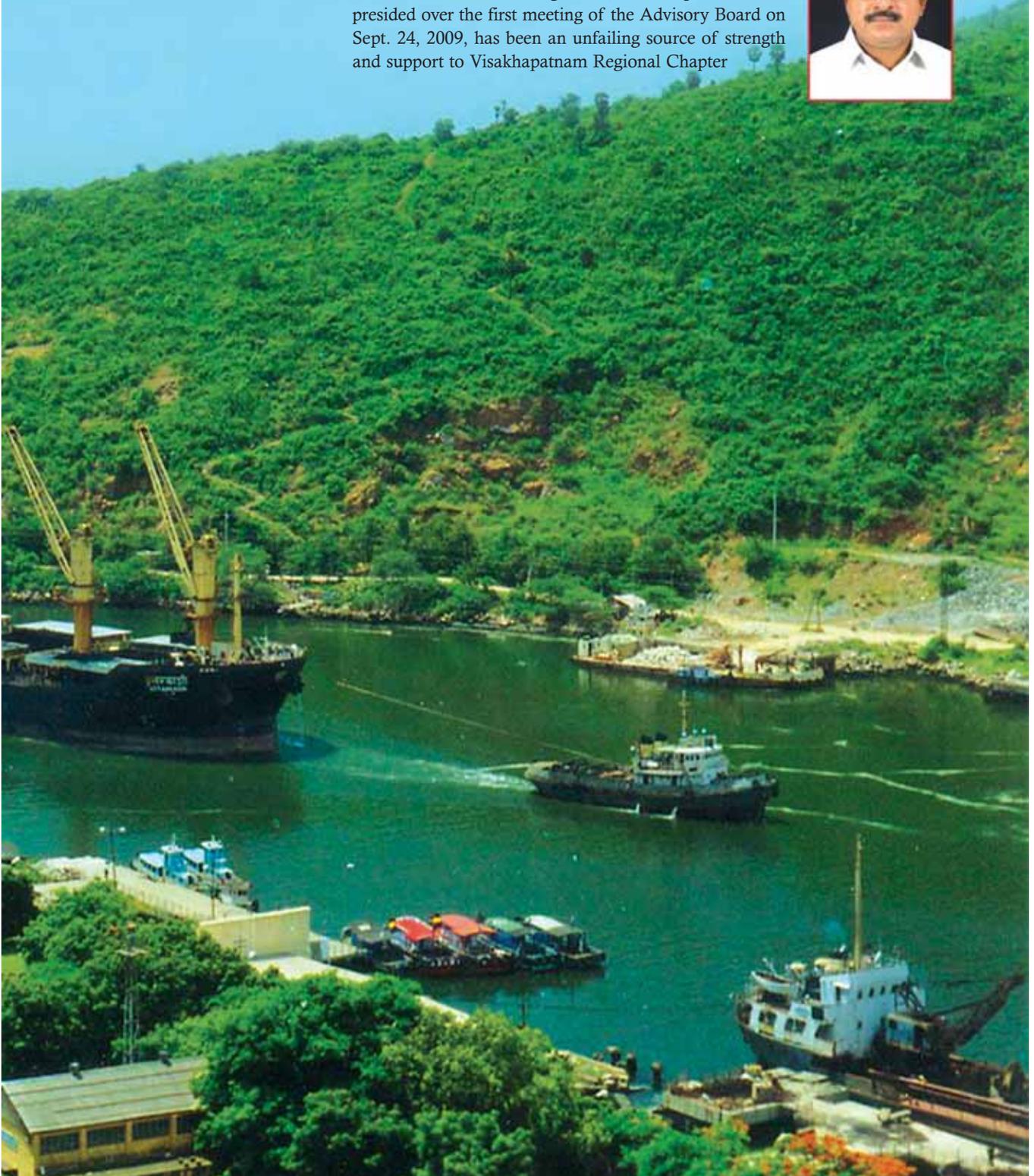
The Visakhapatnam Port, one of India's leading ports, is famous for its natural harbour. Its growth since the 1930s and record-breaking performance during the last few decades, facilitated Vizag's rapid industrial development.

Port of Visakhapatnam stood 2nd among Major Ports by achieving a record cargo throughput of 68.04 MMT in 2010-11. The record quantity of 37.88 MMT of traffic moved by the Port Railways is the highest among Major Ports. Port of Visakhapatnam handled the highest import of coking coal among major ports. The port also handled 26% of the total volume of finished fertilizers handled by all major ports. During the last five years VPT has registered a CAGR of 5% in traffic handling from 56.39 MMT in 2006-07 to 68.04 MMT in 2010-11.

The capacity of the port stands at 65 MMT. A record number of 1.45 lakh TEUs were handled during 2010-11 from 0.56 lakh TEUs handled during 2006-07 registering a growth of nearly 160%. The port of Visakhapatnam recorded a total income of Rs.816.31 crores during 2010-11 surpassing previous best of Rs.717.67 crores in 2009-10. The net surplus during 2010-11 was Rs.174.08 crores.

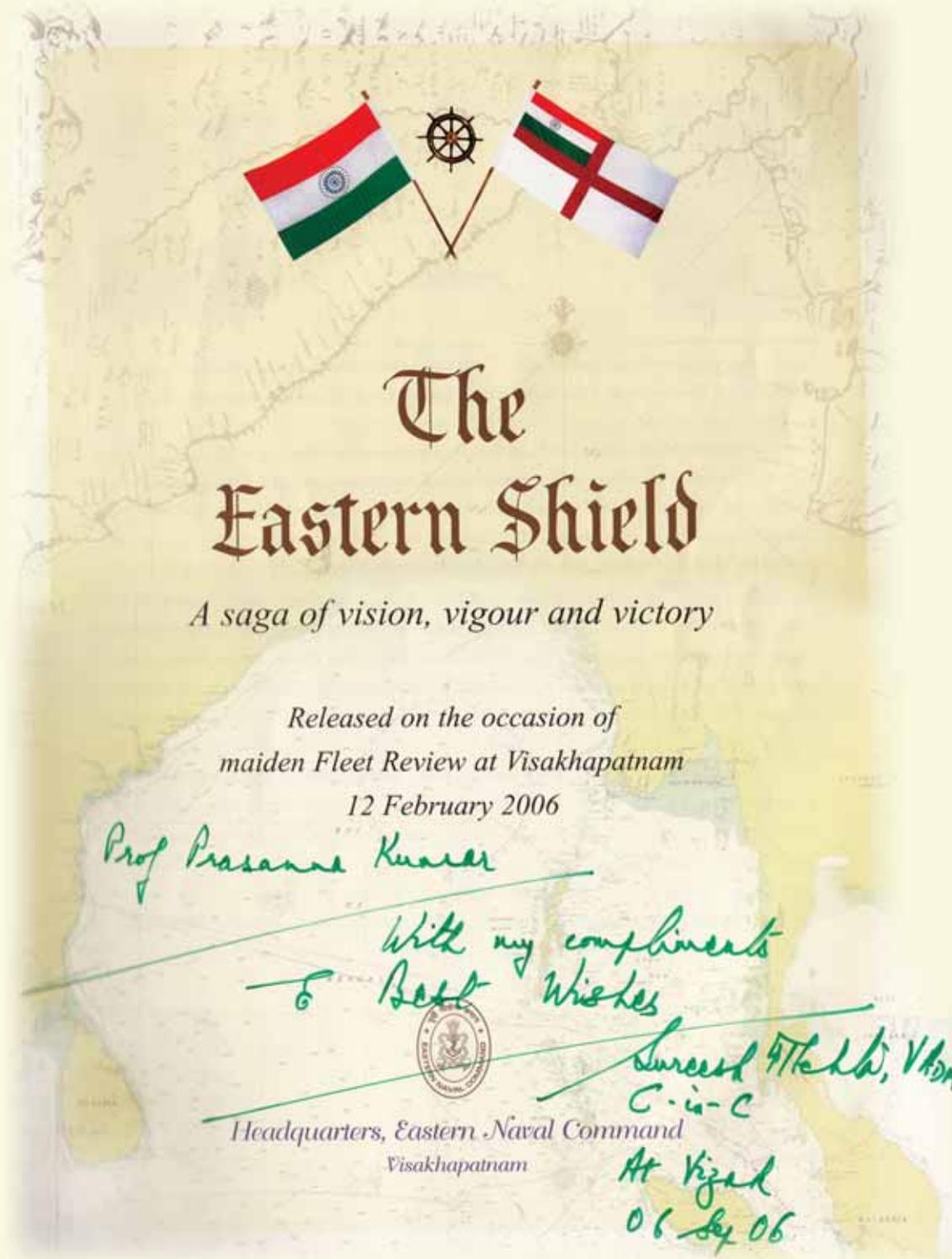
Visakhapatnam Port Trust has been playing a steadfast and significant role in enhancing national maritime capabilities

Shri Ajeya Kallam I.A.S.,
Chairman, Visakhapatnam, Port Trust and former
Collector & District Magistrate, Visakhapatnam who
presided over the first meeting of the Advisory Board on
Sept. 24, 2009, has been an unfailing source of strength
and support to Visakhapatnam Regional Chapter



two facets of...

*A gift from **Admiral Sureesh Mehta**, the then C-in-C, ENC on Sept. 6, 2006 on the eve of his departure from Vizag to Delhi before assuming charge as Chief of Naval Staff*



The Eastern Shield

A saga of vision, vigour and victory

*Released on the occasion of
maiden Fleet Review at Visakhapatnam*

12 February 2006

Prof Prasanna Kumar

*With my compliments
& Best Wishes*



*Headquarters, Eastern Naval Command
Visakhapatnam*

*Sureesh Mehta, VADM
C-in-C*

*At Vizag
06 Sep 06*

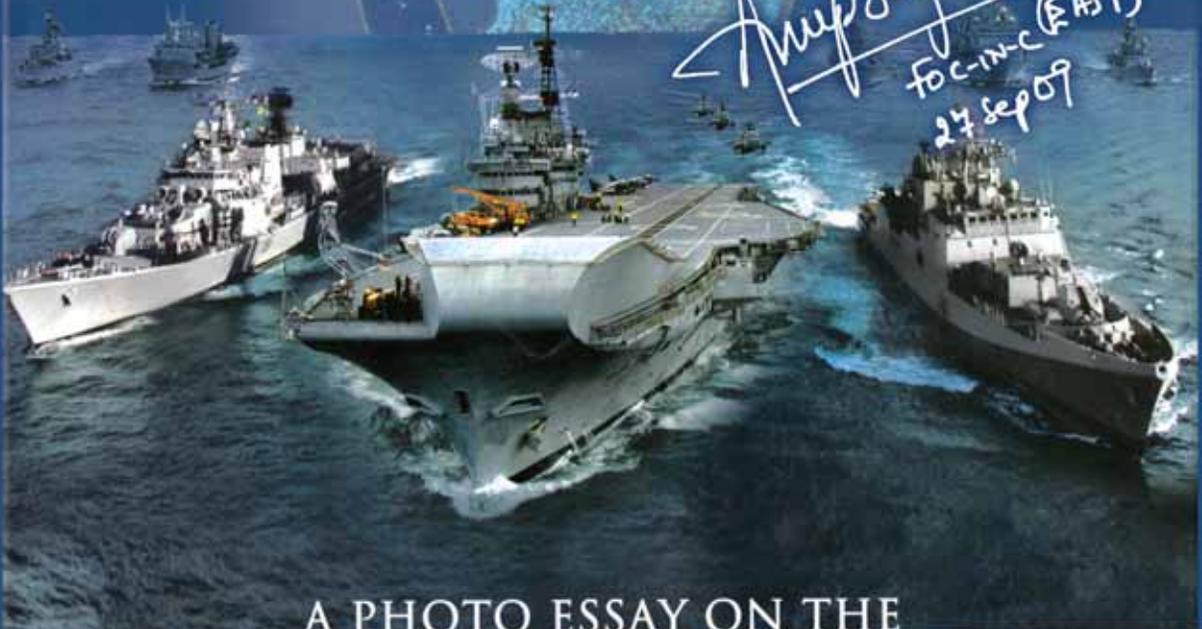
...our naval strength

A gift from Vice Admiral Anup Singh, the then C-in-C, ENC
on 27th September 2009

A SALUTE TO THE SWORD ARM

To My Dear friend
Prof. A Prasanna Kumar
With fond regards

Anup Singh
FOC-IN-C (EAST)
27 Sep 09



A PHOTO ESSAY ON THE
WESTERN FLEET

Borra Caves...



Design @ Sathguru Design Centre, 98660 74783
Print @ Sathyam Offset Imprints, 984 999 6538

The million year old Borra Caves offer a beautiful natural spectacle in the Borra village near Anantagiri, 35 km from the Araku hill station. The limestone caves were formed by the Gosthani river flowing over the limestone area. The pressure of the ever flowing river water on the mineral deposits resulted in the limestone getting dissolved gradually leading to the formation of the caves. With loss of pressure, the dissolved drops of limestone saturated with calcium carbonate on the floor of the cave solidified to form stalagmites while some of the water drops from the roof solidified to form stalactites. Over a period of time the calcium carbonate deposits of stalagmites and stalactites took different shapes, growing upwards and downwards respectively adding in the process to the breathtaking beauty of the caves. Discovered in 1807 the caves are located in an area inhabited by tribal people who built a temple for Lord Shiva worshipped by them on Shivaratri every year. Connected by rail and road the Borra caves have become a major tourist attraction.