

**DEPARTMENT OF  
ELECTRONICS AND COMMUNICATION  
ENGINEERING**

**Report on  
Industrial Visit to  
ISRO Sriharikota  
For II & III-Year B. Tech Students  
on 30-01-2024**



## About the Visit:

The department of Electronics and Communication Engineering organized Industrial Visit for a team of 104 students along with 4 faculty members to ISRO Sriharikota on 30.01.2024.

Name of the Event	:	SHAR, Sriharikota Visit
Place of Visit	:	SDSC SHAR (ISRO), Sriharikota
Resource Person	:	SHAR Faculty Member (ASHWIN)
Date	:	30-01-2024
Time	:	09.00 AM to 04.00 PM
No. of Participants	:	104 (Students from II year and III year)
No. of Faculty Members	:	4 Faculty members from ECE Dept.

## Agenda:

Date	Time	Schedule for SHAR Visit
29.01.24	2.30 pm	Boarding Circar Express
30.01.24	5.30 AM	Reaching Sullurpeta
	6.30 AM	Lodging in Designated Hotel Room
	7.30 AM	Breakfast
	8.30 AM	Reaching SHAR in travels bus
	<b>9.00 AM</b>	<b>Visit to ISRO</b>
	<b>12.30 PM</b>	<b>Lunch at SHAR Canteen</b>
	<b>4.00 PM</b>	<b>Closing of SHAR Visit and feedback taken</b>
	4.30 PM	Return to Hotel Rooms
	6.30 PM	Reaching to Sulurpeta Railway station
	7.00 PM	Boarding Circar Express
31.01.24	6.30 PM	Reaching Samalkot



Photo of sending students to Industrial Visit from college to reach Samalkot Railway station along with Principal, Vice Principal, HOD ECE and Staff

The objective of the visit was to provide a Technical Exposure to the students about Space Technology and advancements in Technology. The visit not only provided a good insight into the quality of research happening in the area of space technology but also gave great exposure to the students about the future career prospects and areas of research in applied sciences.

SDSC SHAR is one of India's primary space center subordinated to Vikram Sarabhai Space Center. Indian Research Organization- department of Space, founded by Government of India and involved in the launch complexes provide complete support for vehicle assembly, fueling, checkout and launch operations. Apart from these, it has facilities for launching sounding rockets meant for studying the earth's atmosphere.

As a part of it, we covered SHAR LIBRARY, LAUNCH PADS 1 & 2, STATIC TEST CENTRE, TELEMETRY AND TRACKING CENTRE and MASTER CONTROL FACILITY (MCF).

The visit officially started at 9am, when we reached to Satish Dhawan Space Center on After several security checks and administrative formalities, Students were taken to a central building. B.P Hall, with the help of Guide Mr. Aswin Kumar Ch. In this place, we enter to the SHAR LIBRARY.

## FIRST LAUNCH PAD

After Library visit, Aswin sir guided to First Launch PAD in ISRO. Aswin Sir Explain about Launch PAD importance at the Time of launching. The whole tower moves away from the rocket just before the blast off. As there is a PSLV launch in the next month and that process was taking place at the time, entry was denied and we were allowed to see this from a distance. The first launch pad and its associated facilities were built in the late 1980s, primarily for the PSLV launch requirements. Later, they have been modified for the GSLV launch requirements. It was built on the concept of 'Integrate on the Pad', according to which, the individual stages of launch vehicle are brought from their reparation facilities, one after the other and integrated one over the other on the launch pad itself.



The Mobile Service Tower (MST) equipped with foldable and vertically repositionable access platforms facilitates the integration activity. The spacecraft, which is checked thoroughly and fuelled at its preparation facilities arrives at the launch pad and gets integrated with the launch vehicle. A few hours before the launch, the MST is moved away from launch pad on a rail track. Separate storage, transfer and servicing facilities are available for earth storable liquid propellants such as UH25 and N, O, and cryogenic propellants such as Liquid Oxygen and Liquid Hydrogen. These propellants are fed into the onboard tanks through fluid circuits. The filling operations, which are automated, are controlled and monitored from the Launch Control Centre (LCC), situated 6 km away from the launch pad. A few hours before the launch, the MST, which weighs about 3200 tons moves slowly to its

parking place on 32 wheels, 8 nos. in each corner, on a twin rail track leaving the launch vehicle on the

launch pedestal. Following the final remote checkout and fuelling operations, through the Umbilical tower which houses cable and pipe connections, exactly at 'T-O' of countdown the vehicle takes-off. As the National requirements of the number of launches are increased, Government of India approved the construction of Second Launch Pad (SLP) at SDSC SHAR. Now, FLP is also getting further augmented with PSLV Integration Facility (PIF) in another one year with which 12 to 15 PSLVs can be launched from the FLP itself. After the modifications carried out for PIF at FLP only the PSLVs can be launched from there and GSLVS can continue to fly from SLP.

## SECOND LAUNCH PAD

After first launch pad visit, Aswin sir Guided to Second Launch Pad. We reached second Launch Pad at 12PM. This is the location that we see every time a launch is broadcast on television. The rocket is assembled and brought to the launch pad. The rocket is electrically insulated from lightning by 4 lightning protection towers. These towers also have high resolution cameras at several levels to monitor the various stages of the rocket. These cameras are protected by concrete enclosures.

The launch pad itself is about 70m high. This means that the protection towers are even taller. An anchor is present to hold the rocket in place until the time of blast off. Separate pipes are present to deliver cryogenic fuels, which are supplied at 180 degrees Celsius. Finally, there are exhaust deflection ducts which deflect the exhaust gases through underground tunnels to a place which is a few tens of metres away. In case the flame returns to the rocket, balance will be lost and the rocket may topple.

The tunnels are filled with water to reduce pressure and temperature. Also, cryogenic fuel tanks are available in separate towers. Each floor in the launch pad is 4m high. This launch pad is called 'umbilical' due to the presence of the pipes which feed fuel to the rocket. Second Launch Complex In order to provide additional facilities for launching operational PSLV's, GSLV's and also to have quick turnaround time for launch, an additional launch pad with associated facilities was constructed. It was designed to accommodate, both the present PSLVs and GSLVs, and heavy launch vehicle configuration GSLV-MKIII. This massive facility (52 m x 70 m x 96 m) is three times bigger than the present VAB at SLP.





Photos are taken at the Second Launch PAD along with Faculty Members

### **ISRO Telemetry, Tracking and Command Network (ISTRAC):**

After completing the first and second launch pad, we reached the ISRO Telemetry, Tracking and Command Network (ISTRAC) at 1:30pm. ISRO Telemetry, Tracking and Command Network (ISTRAC), Bengaluru is entrusted with the major responsibility to provide tracking support for all the satellite and launch vehicle missions of ISRO. The major objectives of the centre are: carrying out mission operations of all operational remote sensing and scientific satellites, providing Telemetry, Tracking and Command (TTC) services from launch vehicle lift-off till injection of satellite into orbit and to estimate its preliminary orbit in space and hardware and software developmental activities that enhance the capabilities of ISTRAC for providing flawless TTC and Mission Operations services. Towards, these objectives, ISTRAC has established a network of ground stations at Bengaluru, Lucknow, Mauritius, Sriharikota, Port Blair, Thiruvananthapuram, Brunei, Biak (Indonesia) and the Deep Space Network Stations.



Photos of Students Interaction with ISTRAC manager

ISTRAC manager explained very well about the Telemetry, Tracking and Command Network. Sir explained about the importance and features of the system. Sir, clarified the so many doubts from the student's side. Students and faculty are interacted with ISTRAC Manager sir. This session was very much interested to students.



Photo at the ISRO Telemetry, Tracking and Command Network (ISTRAC)

### **MASTER CONTROL FACILITY (MCF):**

After completion of ISTRAC, we reached the MASTER CONTROL FACILITY (MCF) at 2:45pm. The mission control is the focal point of controlling the vehicle. There are 8 'hold buttons' at different places around the range. In case of abnormalities in subsystems (affecting the health of the rocket), the hold button is used to terminate the countdown. In case the abnormality has been resolved, the first row is used to supervise the control of the launch vehicle. These computers are connected by Ethernet and fibre optics. There is a separate ring safety server which is controlled by a senior scientist. In case of abnormalities in the path of the rocket, this person can detonate the rocket so that the rocket is blown up over the sea and does not affect neighboring human population. There are 45 levels of information relating to the launch of the rocket. The vehicle Director authorizes the launch at (t16) minutes. An automatic sequence program checks the health of the rocket (with respect to various parameters) and ensures that any deviations in the parameters are within specific limits. RANGE OPERATION FACILITIES or (MCF) The Range Instrumentation facilities comprise tracking, telemetry and telecommand systems. High precision radars track the launch vehicle.

The vehicle position information is instantaneously computed in real time from the tracking data and is used for evaluating the performance of the vehicle. The performance data of various systems of the vehicle is acquired by telemetry ground stations. The Mission Control Centre (MCC), situated about 6 km away from the launch complex, coordinates and conducts the launch operations during the countdown phase till the injection of the satellite into orbit. Multi Object Tracking Radar (MOTR) is established with indigenous technology for tracking of the launch vehicles, spacecrafts in orbits, aircrafts and Space Debris.

At around 3:30 P.M. to 4.30 P.M. We had lunch at SHAR. At around 5.30 P.M. in the Evening, the visit was concluded and the students has started to return to **Samalkot**. enroute nellore, and reached **Pragati Engineering college** on the next day morning at 9.00 A.M.

On behalf of the students and faculty, we would like to express our heartfelt gratitude for Mr. Ch. Aswin Kumar's valuable guidance and support during the ISRO Sriharikota trip. His expertise and education helped us gain a deeper understanding of the space program and its significance. His efforts in ensuring a smooth and informative experience for all of us are truly appreciated.



Mr. Ch. Aswin Kumar along with Faculty Members

We (all students and staff member/s) are very much thankful to the Dr. P Krishna Rao, Chairman, Mr. M V Haranatha Babu, Director of management, Dr. K Satyanarayana, Principal, Dr. G Naresh, Vice- Principal, Mr. M Satish, Vice President, Pragati Engineering college and Mr. V Prasanth, Assoc. Prof., Head of Electronics and Communication Engineering Department for giving their valuable support.

#### ISRO Visited Student List

S.No	Roll Number	Student Name
1	21A31A0401	Addanki Gayathri Pushpa
2	21A31A0418	Tammiseti Sri Venkata Sai Gayatri
3	21A31A0420	Thadoju Ganga Bhavani
4	21A31A0424	Vipparthi Suma Sri
5	21A31A0425	Viratam Pujitha S Mahalakshmi
6	21A31A0428	Yekkirala Sri Bhanu Harini
7	21A31A0432	Beri Manikanta Sanyasirao
8	21A31A0456	Mattaparthi Pavan Kumar
9	21A31A0458	Rasamsetti Venkata Aditya
10	21A31A0467	Akula Rajeswari
11	21A31A0471	Bosukonda Sri Surya Sai Pravallika
12	21A31A0472	Bulipe Pravallika
13	21A31A0473	Choppella Sravya
14	21A31A0477	Kotha Geethika
15	21A31A0480	Marella Lahari
16	21A31A0483	Nedunuri Alekhya
17	21A31A0485	Penaganti Durga Vasavi
18	21A31A0489	Sana Navya
19	21A31A0490	Tella Poorna Sri

20	21A31A04D6	Anisetti Sresta
21	21A31A04D7	Boppe Lavanya Jyothi
22	21A31A04D9	Gomatham Sriya Srivalli
23	21A31A04E0	Gosala Srilakshmi
24	21A31A04E1	Gudala Satya Sai
25	21A31A04E4	Kalyanapu Priyanka
26	21A31A04E9	Nikitha Sai Rema Kottapalli
27	21A31A04F3	Manchyala Lakshmi Renuka
28	21A31A04F6	Peddinti Vineetha
29	21A31A04F8	V V Lakshmi Lalitha Rimmelapudi
30	21A31A04J9	Aarsi Mohana Sri Akshaya
31	21A31A04K3	Chukka Aasritha Kavya
32	21A31A04K9	Koilada Komali Venkateswari
33	21A31A04L0	Kokkirimetla Uma Maheswari
34	21A31A04L2	Mamidipalli N S Surya Sowjanya
35	21A31A04M2	Chodisetty Sudha Mounika
36	21A31A04M5	Somisetti Vijaya Durga
37	21A31A04N7	Bonthu Raghu Ram
38	21A31A04O1	Gandreti Satya Siva Sai
39	21A31A04P2	Kundeti Sri Sai Vikram
40	21A31A04Q8	Asha Latha Peddisetti
41	21A31A04Q9	Ch Usha Priyamvada
42	21A31A04R3	Jajula Ramatulasi
43	21A31A04R6	Kudupudi Sai Sri
44	21A31A04S6	Asa Pramathi Puppala
45	21A31A04S7	Reddy Jhansi Renuka
46	21A31A04U1	Sudheer Aravinda Vardhan Gundarapu
47	21A31A04W9	Veeramreddy Venkata Naveen
48	22A35A0404	Thapita Sravanthi Terissa
49	22A35A0406	D. Nikhil
50	22A35A0422	Juttuka Sri Nithin
51	22A35A0425	Koppula Priyanka
52	22A35A0427	Arimilli Jagadeesh Venkata Sai
53	22A31A0402	Vinnakota Naga Satya Vyshnavi
54	22A31A0403	Bondada Sai Lakshmi Bhavya
55	22A31A0406	Chodisetty Padma Tejasri
56	22A31A0413	Panuganti Satya Harshitha
57	22A31A0416	Pyla Ammulu
58	22A31A0417	Rekha Sravanthi
59	22A31A0418	Revu Navya Sree
60	22A31A0425	Iynaparathi Shashank Kumar
61	22A31A0428	Allada Sriharish
62	22A31A0431	Budi Ramnath
63	22A31A0435	Dongara Abhiram
64	22A31A0454	Oleti.Vijaykumar
65	22A31A0466	Vulleti Poojitha
66	22A31A0475	Gali.Mounika Asraya
67	22A31A0476	Kada Anjani Mani Sri Deepika
68	22A31A0483	Madiki Ramya Sruthi
69	22A31A0490	Rayudu Sravana Sandhya Rani
70	22A31A0492	Sigireddi.Neeraja Devi
71	22A31A04B0	Koppana Chakra Lakshmana Vara Prasad
72	22A31A04B1	Korubilli Venkata Sai
73	22A31A04C7	Tapeswarapu Satya Ganesh



74	22A31A04D0	Aakumarthi Keerthi
75	22A31A04E1	Mangali Renuka
76	22A31A04E5	Mummidi Lakshmi Sowjanya
77	22A31A04E6	K.N.V Sai Meghana
78	22A31A04E8	Polukonda Yaswitha
79	22A31A04F3	Tolem Sai Nikhitha
80	22A31A04G4	Dasam Harisaran
81	22A31A04I0	Penkey Nanda Sri Gopal
82	22A31A04I2	Kowshik Sai Raghav Penumarthi
83	22A31A04I4	Ramoju Mahendra Sai
84	22A31A04I7	Sorapalli Yaswanth Pallav
85	22A31A04J5	Zafirah Sultana Mohammed
86	22A31A04J8	Devata Haasini
87	22A31A04K0	Geddami Meghana
88	22A31A04K6	Kattamuri Lalita Rathnam
89	22A31A04K7	Lokarapu Balabharathi
90	22A31A04L0	Nimmala Hema Amrutha
91	22A31A04L7	Uddandapu Sravani Jyothi
92	22A31A04M0	Voomika Gandreti
93	22A31A04M5	Ch.Pavan Kumar
94	22A31A04P2	T.Narendra
95	22A31A04P7	Badugu Aksha Nikhitha
96	22A31A04P8	Vuyyuri Sri Vishnu Priya
97	22A31A04Q4	Bondapalli Renuka
98	22A31A04Q5	B. Jahnavi
99	22A31A04Q6	Chinta Satya Sahithi Lakshmi
100	22A31A04R2	Korada Prasanna Lakshmi
101	22A31A04R5	Malyala Satvika Anjani
102	22A31A04S1	Sowbhagya Lakshmi
103	22A31A04S7	Vanapalli Jayasri
104	22A31A04V1	Mudunuri Veera Venkata Satya Varma

**Report Prepared by**  
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