

NASA Report



In February 2010, Vishvaksen Reddy Vaka and I represented the Hyderabad Public School at the school students' quiz conducted by the Society of Petroleum Geophysicists as a part of their 8th Biennial Conference in Hyderabad. **We won the quiz and were thus given the once in a lifetime opportunity to visit NASA and R&D centre of Schlumberger, at**

Houston along with one parent each. Thus it was that on a cool winter's evening in December, we found ourselves at the Hyderabad International Airport, waiting to catch a flight to Houston. As the flight was in two parts, whiling away the hours at hand became the major effort throughout the 23 hours fro Hyderabad to Dubai and then onwards to Houston. Thought the route we took was circuitous, over Turkey, Scotland, Iceland and Greenland, several large books and on board movies saved us from certain death from boredom. As we flew westward, the sun began to catch up to us, and for a time it seemed we were trying to outrun the dawn.

As we began touchdown at Houston, the rear camera feed on board showed a landscape I had not expected. I had imagined vistas of endless sand, with rocks and cactus for flavour, but the coastal coniferous forest and open plains I saw were a complete surprise.

As Mr. Dhananjay Kumar, chapter president for SPG N America drove us to our hotel, he explained how instead of growing upward, Houston had only grown outward, and thus distances between places were vast, and having a car became a must.

American cars, of course matched American people – huge and several feet longer in every direction. It seemed Houston was populated only by cars, not people, for we rarely saw any people on our way around Houston.

The Doubletree, our hotel, was a tall brownstone building overlooking the huge mall known as the Galleria, and we were welcomed with several huge delicious chocolate cookies, which were definitely the best part about the hotel. Later in the evening, Mr. Ravi Chhibber, from the Schlumberger Oil Company came to meet us, and we chalked out a plan for our time in Houston.

The next morning, we were all raring to go after an early breakfast, and found that Schlumberger had assigned us a car and driver. Soon, Mr. Juan Rivera, our small but enthusiastic driver was piloting us down to Clearlake, the site of NASA's Lyndon B. Johnson Space Centre, more famously called mission control; further immortalised in the statement – "Houston, we've got a problem", from space.

Armed with passes, we hopped on to the tram that took us on a guided tour of the entire facility. The first stop was Space Shuttle Mission Control. Since no mission was currently in operation, this room was empty, and we got a clear view of the organisation and hierarchy of the place, from the Flight Activities Director, who overrules the President, to CAPCOM, or Capsule Communications, who relays messages to astronauts, Trajectory, who keeps the shuttle on its intended flight path, and Payload, who controls what equipment the shuttle carries up into space.

On the left side of the room were hung the mission plaques, designed by mission control teams themselves, to mark successful missions. On the right side however, in a tight cluster, were four plaques, for *Columbia*, *Challenger*, *Apollo1* and all those NASA astronauts who had died while on duty or in training. These men and women, as well as the shuttles and capsules are considered to still be on active duty and their plaques serve to remind everyone that at NASA mission control, failure is not an option.

Down the hallway, was International Space Station Control, which is manned 24x7, as someone is always on the ISS, and thus ground staff must always be ready to support the astronauts and cosmonauts who live in space.

We also saw the Space Vehicle Mockup Facility or SVMF, where astronauts are trained for space missions. This hangar contains life size models of the ISS cabins as well as the shuttle's Canadarm, and other tools that are used in space. We also saw the Neutral Buoyancy Lab, in which zero gravity is simulated to train astronauts for space flight.

Our last stop was the Rocket Park, a site at which some of NASA's retired rockets, along with other space equipment is kept on display. The main attraction however is the Saturn V. One of the most massive rockets ever, the Saturn V has been carefully preserved in a special hangar. This is the rocket that carried all the Apollo Moon Missions and along the length of the hangar one can see the various mission flags from Apollo 1 to Apollo17. After spending some time at the hangar, we returned to the main building. We then visited the Starship Gallery museum, where we saw both early and modern forms of space equipment, and also samples of lunar soil and rocks. In the demonstration "The Feel of Space", we were shown how astronauts live and work in zero gravity conditions on board the ISS, while in Blast Off, we were given a briefing on all the current space programs.

We headed next to the port city of Galveston. Once a centre for commerce and trade in cotton and machinery, Galveston was almost completely destroyed by Hurricane Ike.

The city then changed from trade to heavy industry, and we could see the many oil refineries that were situated along the coast. As we reached the seafront, we could also see oil tankers anchored offshore, as well as an oil rig in the distance. This vast industrial presence was a stark contrast to the coastal swamps of the region which we passed on our way back to Houston.



The next day, Mr. Chhibber was to give us a tour of the Schlumberger facility in town, but he was held up for a while, so we visited the Galleria which was next door to our hotel. We also saw the fountain known as the Waterwall, since it was in the form of a cascading wall of water. Around noon, Mr. Chhibber took us to Sugar Land, which was Schlumberger's centre in Houston. There he showed us and explained the workings of an

oil rig on land, and also how the rig would differ had been offshore. He also explained Schlumberger's role as a services provider in the oil sector. Unlike many companies, Schlumberger was only involved in the exploration aspect of the oil industry, and supplied data about where oil *could* be found to its clients. We also learnt that Schlumberger was only one of the 2500 oil companies in Houston, making it the capital of the oil world. Since Schlumberger only prospected for oil, it could invest in revolutionary development while not competing with other companies, thus staying at the top position in exploration.

Mr. Chhibber also explained how an oil well is 'read' using highly specialised tools that have quality standards above even those used by NASA. He discussed the **Deep Water Horizon oil rig in the Gulf of Mexico**, and the causes of the oil spill, and what steps were taken to correct it, and which features in an oil rig prevented such accidents. He also spoke of the oil and energy sector in terms of employment opportunities, and explained how it was a stable career option. He also talked about the rise of developing nations like China and India in the oil sector.

Later in the evening, we visited the tallest building in Houston, the 70-odd storied JP Morgan Chase Tower, from whose observation deck Houston was laid out like a map on paper. We also visited the Downtown Aquarium, where we saw many species of aquatic animals; mainly fish from around the world, but also caimans and other creatures. Many oil companies fund the museums in Houston, and in the Aquarium, had helped to set up a large shark tank, to conserve endangered species of sharks.

The next day we visited Houston's extensive museums, in the aptly named Museum District. First on the list was the Museum of Natural Sciences. This was very comprehensive, and while not as large as some of America's other National Museums, it definitely covered every field, from fossils of dinosaurs and mammoths to the large collection of shells and minerals from around the globe. It also had a large section on oil and energy, which being Houston was but natural.

We also visited a section on Native American art and culture, which showed both the tribal lifestyles of the North Americans, as well as the imperial, autocratic and advanced ways of the South and Central Americans. The museum also had a large butterfly park, where many species of butterflies were kept, along with a giant orange coloured iguana. After the cold air of the museum, the rainforest like humidity of the butterflies' dome of glass left us hot and sweaty.

We next visited the zoo, where we saw many species of animals new to us, like the okapi, half giraffe and half zebra, and a type of cow from Indonesia with horns to shame any Texan longhorn. Many exotic species of birds, animals and insects later, we emerged from the zoo. Right outside was statue of General Sam Houston, the person after whom the city was named, pointing his troops in the direction of San Antonio, where he won a great battle against Mexico.

As it was our last day in Houston, Juan took us on a loop around the city, and we saw Houston by night for the last time.

The next morning I left for Washington DC, while Vishwak returned home to India. It was a wonderful experience, which could only have been possible because of many people at both SPG India and Schlumberger.

Pratik Gupte