

V. S. Rain

**SATELLITE INSTRUCTIONAL TELEVISION
EXPERIMENT (SITE)
REPORTS FROM THE NASA
RESIDENT REPRESENTATIVE
IN INDIA**

HOWARD L. GALLOWAY, JR.

MAY 1976



**———— GODDARD SPACE FLIGHT CENTER ————
GREENBELT, MARYLAND**

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Front Matter and Introduction
by ATS Project Staff

May 1976

GODDARD SPACE FLIGHT CENTER
Greenbelt, Maryland

IN MEMORIAM

I wish to pay tribute today to a man who literally gave his life in this cause, Howard Galloway. He had been Goddard's representative, working all over India, for the past 15 months. Howard died suddenly, in India. This friendly, devoted and vigorous man had long ago acted on an idea that we . . . who think and work globally . . . should consider in this 200th anniversary year: a personal declaration of inter-dependence with the rest of mankind. Let us direct our efforts in Goddard's new era to the vision that Howard Galloway brought so compassionately, yet dynamically, to the work of this center.

Dr. J. F. Clark
Director
NASA/Goddard Space Flight Center
State of the Center Address
January 1976



Howard L. Galloway, Jr., staff engineer in the Applications Technology Satellite, Ground Support Section, at his death was serving as the NASA/Goddard representative for the Satellite Instructional Television Experiment that uses the Applications Technology Satellite-6 to instruct Indians in over 5000 remote villages.

In 1970, Howard received a plaque from Goddard Space Flight Center awarded "in recognition of exceptional contribution to Aerospace Education during the first decade of space exploration."

As trustee to the National Association of Rocketry, he conducted numerous demonstrations of model rocket flights for schools, scout troops, 4-H groups, and teacher workshops. He was a Boy Scout leader for many years, and, in 1964, he received the Halethorpe Community Association Award (for citizen's contributing outstanding service to the community) for his services to young people. That same year the Girl Scouts bestowed upon him their coveted Blue Thanks Badge Award.

In 1968 and 1971 the National Association of Rocketry awarded him a trophy for outstanding service and in 1970, he received a letter of appreciation from President Nixon for his "outstanding record of service to young people."

Howard was a member of the American Institute of Aeronautics and Astronautics, the American Astronautical Society, and the Sigma Pi Sigma physics honor society. He authored several publications on rocket performance for the Naval Ordnance Laboratory and NASA.

Howard is survived by his wife, Dottie; two daughters, Joyce E. Ocampo and Mumtaz V. Sunderji; and his brother, Raymond A. Galloway.

CONTENTS

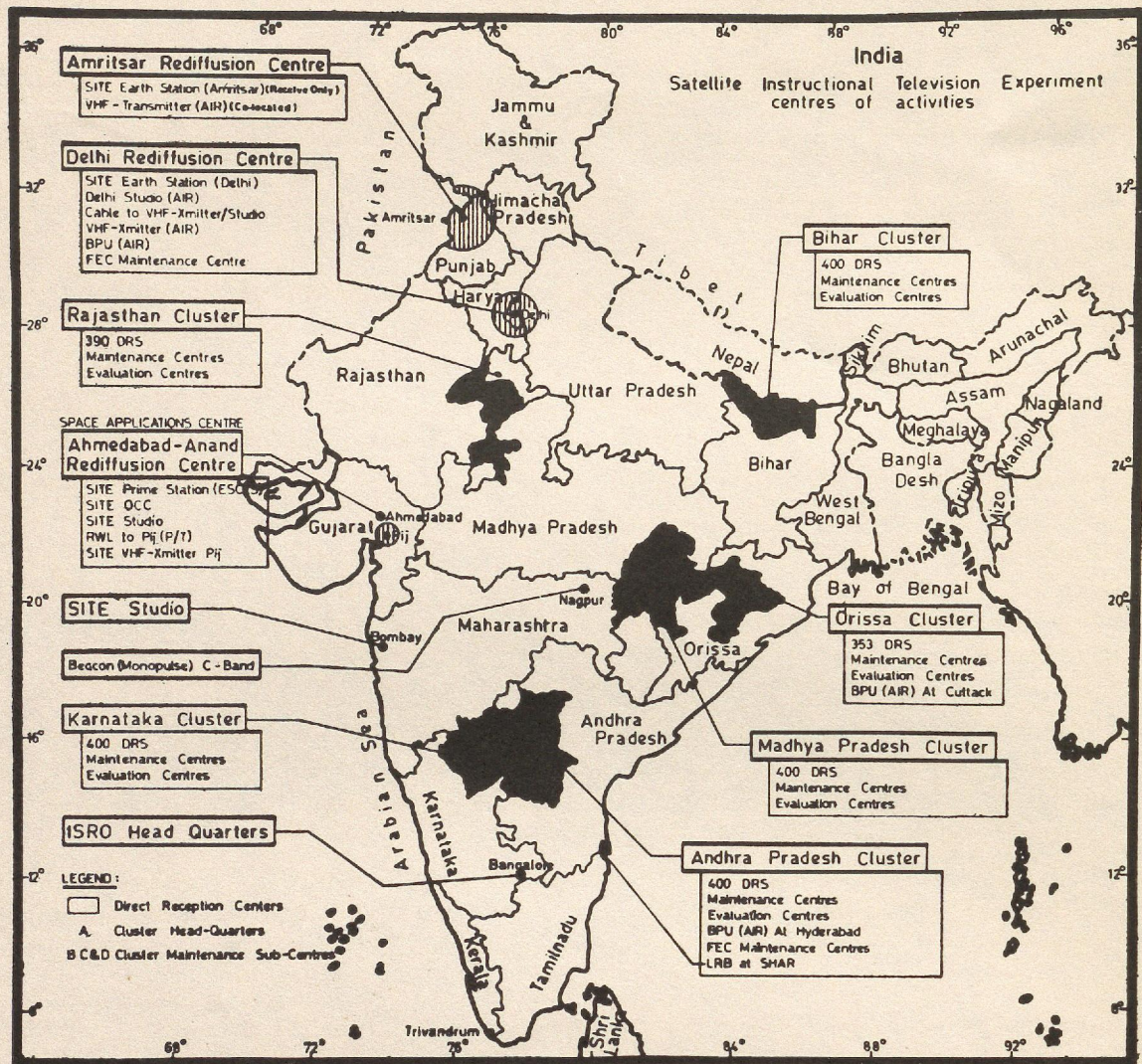
| | <u>Page</u> |
|--|-------------|
| INTRODUCTION | 1 |
| SITE STATUS REPORT 03 AUGUST 1975 | 2 |
| SITE STATUS REPORT 14 AUGUST 1975 | 3 |
| SITE STATUS REPORT 15 AUGUST 1975 | 4 |
| SITE STATUS REPORT FOR THE PERIOD 8/9/75 TO 14/9/75 | 4 |
| 19/1700Z Sep 75 (Teletype Message) | 10 |
| 20/0920Z Sep 75 (Teletype Message) | 11 |
| SITE STATUS REPORT 16 SEPTEMBER 1975 | 11 |
| SITE STATUS REPORT 21 SEPTEMBER 1975 | 13 |
| SITE STATUS REPORT 26 SEPTEMBER 1975 | 14 |
| HOWARD'S CHRISTMAS LETTER TO FRIENDS 30 SEPTEMBER 75 | 15 |
| SITE STATUS REPORT 6 OCTOBER 1975 | 19 |
| 08/1025Z Oct 75 (Teletype Message) | 24 |
| SITE STATUS REPORT 23 OCTOBER 1975 | 25 |
| SITE STATUS REPORT 7 NOVEMBER 1975 | 25 |
| 10/1402Z Nov 75 (Teletype Message) | 26 |
| SITE STATUS REPORT 12 NOVEMBER 1975 | 26 |
| 12/1255Z Nov 75 (Teletype Message) | 27 |
| 15/0230Z Nov 75 (Teletype Message) | 29 |
| 17/1215Z Nov 75 (Teletype Message) | 29 |
| 21/1000Z Nov 75 (Teletype Message) | 30 |

CONTENTS (cont'd)

| | <u>Page</u> |
|--|-------------|
| TRIP REPORT JAIPUR CLUSTER VILLAGE VISITS | 32 |
| SITE Status Report No. 34, 19 November 1975 | 32 |
| 17 October 75/Friday/FM-3/1612-Left LMB 1714 | 38 |
| 18 October 75/Saturday/FM-2/1645-Left LMB 0922 | 38 |
| 19 October 75/Sunday/FM-1/1719-Left LMB 1744 | 41 |
| 20 October 75/Monday/Full moon/1755-Left LMB 0932 | 43 |
| 21 October 75/Tuesday/FM + 1/1834-Left LMB 1013. | 46 |
| 22 October 75/Wednesday/FM +2/1916-Left LMB 0855. | 49 |
| SITE STATUS REPORT 16 DECEMBER 1975 | 55 |
| SITE STATUS REPORT 18 DECEMBER 1975 | 59 |
| SITE STATUS REPORT 19 DECEMBER 1975 | 66 |
| SITE STATUS REPORT 20 DECEMBER 1975 | 68 |
| SITE STATUS REPORT 31 DECEMBER 1975 | 69 |
| SITE STATUS REPORT 17 JANUARY 1976 | 73 |
| SPECIAL REPORT 21 JANUARY 1976 | 75 |
| TYPICAL INSTALLATIONS | 75 |
| APPENDIX A--LIST OF ABBREVIATIONS AND ACRONYMS USED IN HOWARD'S REPORTS | 81 |

ILLUSTRATIONS

| <u>Villages</u> | <u>Page</u> |
|---------------------------|-------------|
| Vijaymukanopura | 76 |
| Pauta | 76 |
| Luniauas | 77 |
| Dantli | 77 |
| Pili Ki Tilai | 78 |



Frontispiece

SATELLITE INSTRUCTIONAL TELEVISION EXPERIMENT
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INTRODUCTION

This report consists of a chronological reproduction of reports submitted by Howard Galloway, Jr. during the period he was acting as the NASA Project Representative for the Satellite Instructional Television Experiment (SITE) at Ahmedabad, India. He was responsible for coordination of all SITE related matters between the ATS-6 Project at Goddard Space Flight Center, NASA Headquarters and the SITE Program in India.

Howard's untimely death while performing his duties has left a gap in both the technical and personal relationship of SITE and the United States. Howard's unique personality allowed him to live and work within a culture that is foreign to many of us.

The reports are reproductions of teletype messages and letters as submitted by Howard so as not to destroy his love for India, its people and SITE that comes out in many of the reports. In addition to exposing the reader to a personal insight to a complicated joint foreign/U.S. cooperative experiment as seen through the eyes and heart of a truly dedicated servant, this compilation is also intended to provide a permanent memorial to Howard Galloway, Jr. It is hoped that the reader will find not only technical appreciation for a complex experiment but will also gain an appreciation for the person that was Howard.

Dr. Clark concluded his state of center address with the following: "I will close by reminding you that what we have to offer the world is becoming more important to our survival with every passing day. Humanity is faced with so many global-scale problems that our skills and talents will be required into the indefinite future in helping to find and apply global scale answers.

Our ATS-6 satellite has been in use in an experiment to distribute educational and adult training programs to low cost TV receivers in 5,000 Indian villages. The broadcasts deal with reading, writing, arithmetic, agricultural methods, hygiene and family planning.

This magnificent effort to help a nation out of illiteracy, malnutrition and disease may help to break the self-perpetuating cycle of poverty which has run for centuries."

SITE STATUS REPORT 03 AUGUST 1975

SITE is off and running. On 1 August 75 my family and I watched the first SITE program on the SAC campus lawn. Although there were only two TV sets, we were among one thousand plus viewers. Many of the engineers and their families changed location to other viewing areas, but the nonengineering friends and their families stayed until spacecraft shut off. I was amazed at how well so many viewers could see and hear.

The Pij transmission had a glitch at the end. Unfortunately a half-inch tape was played back on the poor tape machine that it was recorded on. There was loss of sync and a poor display. This program was re-recorded on one-inch tape and successfully transmitted on Saturday, 2 August 1975.

SOME REPORTS SO FAR:

1. Pij, two thousand viewers
2. Hyderabad, 5000 viewers - required police crowd control
3. M. P. and ORISSA have not reported in yet. All other clusters have sent in good reports.
4. Shar had good limited rebroadcast coverage.

The press coverage has been plentiful and favorable—all looks well so far. I will be in Delhi next week. You may contact me by the following route:

- (a) TLP or voice to SITE/India attention Dr. Rustogi and Dr. Verma
- (b) Ask them to contact Mr. Mahonty at DES.
- (c) Ask him to leave message with Dr. W. Williams at the American Embassy.

Note: SITE plus two days

SITE STATUS REPORT 14 AUGUST 1975

Ahmedabad hit by heavy rains Sunday, Monday, Tuesday, and Wednesday. Tuesday's downpour was a seasonal record of 196.1 mm of rain in 24 hours. Many roads were flooded with knee deep to six feet of water. Some roads washed away and on Tuesday night or Wednesday morning a large old tree fell, completely blocking the ESCES road. Yet, despite all of this—all of the ESCES folk reported on time—mostly on foot or by bicycle—and the SITE program got off right on schedule. Power surges in Delhi have kicked DES off the air several times in the last few days but Ahmedabad took over immediately. The flood situation is improving slightly in UP, but is worsening in Bihar, which is already reeling under the impact of unprecedented floods.

Delhi has been deluged with heavy rain—many roads have washed away and much public transportation came to a halt. Heavy rains are lashing Bombay city and suburbs—flooding all the low-lying areas. This is a good monsoon.

However, the floods have hampered the reporting procedures. I think that the only real way to know what is going on is to visit the villages and observe.

In view of that, I am sending a two-part article from 12 and 13 August, 1975, Indian Express. Here a reporter gives his first hand findings on some of the same villages that I visited in the Jaipur cluster.

Jimmy Rogers, IVC man, Program production, VTR expert, has completed his tweaking up of the Ahmedabad studio VTRs. He left yesterday to correct VTRs in Bombay, Cuttack, Hyderabad, and Delhi.

DRS FOR SHRI LANKA

It is reported that Archur C. Clarke's DRS is working well.

NEW FEATURE

At least for tomorrow, Independence Day, Delhi, Bombay, and Calcutta AIR and TV stations will receive SITE transmissions and rebroadcast them through their regular TV station to all of the city folk. Later, they may continue to do this for the Common Program (news and integration) from 1900 to 1930 IST.

By next SITE status report (SSR), I hope to have facts and figures regarding SITE status—number of sets operating in each cluster, number of programs ahead, etc.

Note: SITE 13 1/2 days over 351 1/2 days left.

SITE STATUS REPORT 15 AUGUST 1975

I have been asked to thank all those involved in making the Prime Minister's Independence day talk available to so many listeners in India. I just finished watching it—beautiful: video, audio, and content. The speech started out with a salute to SITE—which made it possible for villagers to see and hear the Prime Minister, while many city folks could not. The tribute was to the young scientists and to the satellite that made it possible.

Reports back from Bombay and Calcutta indicate that the rebroadcast worked well. Congratulations and thanks.

Note: SITE in day 15, 350 days left.

SITE STATUS REPORT FOR THE PERIOD FROM 8/9/75 TO 14/9/75

During the above period regular morning and evening SITE transmissions were carried out. There were no morning transmissions on September 8, and on September 14; on these days measurements were taken by ESCES and DES.

Ranging measurements started on September 14 from 2400 hours onwards and continued on Monday. SDL checkout was carried out on September 8, but it was only partially successful. When the transmitter was tested prior to the measurement it was showing high VSWR. On checking further, water was found inside the connectors. Many connectors were opened and cleaned and ESCES carrier could come up only towards the end of the period. A spacecraft AGC level of -96.1 dBm was obtained on Hybrid's transmission, SNR of 19.0 dB was measured. Monopulse checkout was conducted on September 10, with 500 milliwatts power transmitted from Nagpur. Spacecraft recorded an AGC level of -93.1 dBm. Satisfactory lock was obtained on the spacecraft and roll and pitch of the spacecraft were controlled by the S-band beacon for the duration of the morning transmission.

On September 14, there was a brief transmission outage for 2 seconds at 2008 hours. The outage was caused by the HPA tripping off due to beam

current overload and arc alarms. The cause for the alarms could not be ascertained and was suspected to be due to surge in the main voltage.

ELECTRICITY

Most of the villages that were to be electrified for SITE have been. However, the normal state of unreliable (time and voltage) distribution of electrical power has considerably worsened during monsoons. It is not possible to say with certain how many villages have adequate power at any given time. ISRO is trying to bring pressure on each State Government to supply the proper power to each SITE village as agreed upon—but it is a tough fight.

COMMUNICATIONS

Because electricity, phones, telegraph, teleprinter circuits are all adversely affected by monsoons (or even gentle rain, for that matter) electronic communications have become very poor. Because of disappearing roads, flooded areas, and general transportation havoc, mail between villages to cluster HQ to here is very poor.

WORK LOAD

Many of the cluster HQ and subcluster maintenance centers people are so overworked in trying to maintain the DRSS that they are not keeping records, or at least, not sending such records back to us.

DRS OPERATION

From the reports that we do get back, it looks as though at least seventy per cent of the DRSS are working at any given time. In many of the areas, the reports of DRS okay as reported by the maintenance crew are substantiated by reports of the research evaluation teams that live in the villages.

I just checked with Dr. Binod Agrawal, Chief of the Research and Evaluation Cell (REC). He gave me the following information. All of his staff take evaluation very seriously. When their DRS has trouble, they get immediate help. Example: Recently Dr. Binod was in a village when the TV cut off, within five minutes his staff man had borrowed a motor bike and set off for the subcluster maintenance center (SCM). Returning shortly, he brought the needed part and put the set back into operation.

If the power fails, and the TV set is left in the ON position, trouble follows. When the power returns, whether in 2 minutes or 2 hours, it returns with a

big surge. This usually causes a fuse to blow, disabling the TV. Because it is as much effort for a service man to get to the village to replace a fuse as a circuit card, the REC staff has relieved his burden. They carry fuses and can enable the TV sets at once. The REC staff are recognized by villagers as Satellite people. On his recent trip, Binod saw a villager from a nearby village come furiously pedalling into a REC village. His TV was overcome—help. The REC staffer, riding on the back of the bike, went to the sick set, replaced the fuse and restored peace in the village. Binod was in one village where the TV spoke the wrong language, he switched from Audio 1 to Audio 2 and became a village hero. Seems like on 15 August 75, when the Prime Minister was speaking on Independence Day, there was a short burst of trouble on Audio 2. In some villages, knowledgeable folk quickly switched to Audio 1, then forgot to switch back. In one area, Binod met a man with ninety-nine DRS under his control, eighty-one operating.

According to Binod, Orrissa is the worst hit area, one place having fifty DRS not working out of one hundred forty. However, in almost all cases the fault was due to no AC power or uncharged batteries. The maintenance men go as far as they can by jeep, then they go the rest of the way by motor bike, bicycle, animal, or foot. It is not practical for them to carry along exchange batteries. Thus, in many villages where the batteries are over, it is necessary to wait until road conditions improve before the batteries can be serviced.

In order for you to understand the electricity problem here, I will give you a little background.

In most rural areas the electricity has been supplied for one purpose—to run the irrigation pumps. Many feeder lines are run from a power substation. These lines are energized on a time-share basis, around the clock. When it is a certain village's turn to receive power, people are present to man the pumps and to distribute the water.

OPELEC (operation Electricity) had received promises from the state governments that all SITE villages would receive power during SITE transmission time. However two main problems have occurred:

1. This agreement was made at high government level, and it apparently takes a long time for this information to percolate down to the man who throws the switch.
2. Villagers along the SITE village feeder seize the opportunity to get extra water by running their pumps—sometimes causing wide variations in voltage. Many areas report voltage, as low as 130 V, to 140 V low to run a DRS-TV.

PROGRAMS

For the most part the programs as received from the BPU are good, technically and content wise. Mr. Jimmy Rogers, IVC-VTR expert, has returned to Ahmedabad after his tour of all BPU. Although all VTRs are now pronounced to be working well, we still get bad tapes from Cuttack. Out of eighteen tapes recently received from Cuttack, four were bad and had to be returned. Additional funds are needed to send bad tapes back to BPUs. So far five boxes have been returned at a cost of Rs300/- for each box. Part of the problem at Cuttack is due to poor organization. Cuttack is out in the boon-docks, and the workers are poorly compensated for the unusual working conditions. Many times, after the production, studio staff just sleep in the studio at night. It is felt that this low morale and seeking ways to escape, contribute to low quality of tapes. Solution is being sought. Because of the present situation, we are short of Orissa tapes and a careful selection of repeat capsules has been made. Effort is being made to correct this BPU problem. However, cheer up, 100% of the capsules are reviewed here before being ok'd for transmission. Each Monday at 1430 we have a total SITE operation meeting where every SITE related thing that has occurred to the last week is reviewed long and loud.

This includes transmission from ESCES and DES, and reception at all LRB (limited rebroadcast station), DRS village, USIS, VIP sets, and the many DRS's located on the ESCES campus. Prof. Chitnis runs a tight ship. Starting on 1 August 75, he has insisted that all possible data be collected daily, signed by the collector, and compiled at least weekly. These data are examined for trends, anomalies (we have an anomaly committee), etc. Prof. Chitnis thinks that the info revealed in this study may be as important as SITE itself.

On each SITE transmission day except Sunday, holidays, and Monday (ops meeting) we have a SITE post broadcast operation meeting. This is attended by representatives of ESCES, ESD, studio production, SMO (SITE management office), financial and anyone who is called in special. These meetings are also chaired by Prof. Chitnis. A very critical analysis is made of the previous night and present morning transmission - SITE and PIJ.

Everyone is very critical of the final program as viewed on the DRSS. No matter how small the error, whether it's human or equipment-produced, the cause is identified and absolutely eliminated. Early SITE producer goofs are almost non existent - wrong sources, wrong audio, blank screen, etc.

The entire SITE program transmission, style, content, presentation, transmission (timing, signal level and purity, reliability) is very professionally handled.

All transmissions are viewed, not only by the producers and the staff responsible for the origin (studio) and the staff responsible for the broadcast (ESCES) but by others who have nothing to do during transmission but to observe and criticize—SMO personnel, Prof. Chitnis, Col. Pant, etc. I observe almost one hundred percent of all transmissions (seven days a week; I also attend all SMO and all ops meetings, six days a week).

Col. Pant sums up the feeling when he says (paraphrased), SITE has no shortcomings on technical ground. Let's make sure that the best possible total programming is transmitted. You never know who's looking.

SOME PROGRAM FAULTS

1. Most of the villagers have never seen TV or cinema before. They believe that an actor is the person that he portrays. Therefore, when they see two different stories on the same night, with the same actor in different roles, they become confused.
2. Unfortunately, some times audio two is dubbed with a voice of the opposite sex. When the villagers see a man speaking with a ladies voice they are fascinated, but miss the message.
3. Some repeat shows, following the first showing too closely cause the viewers to leave the set.
4. A receipt for fertilizer once called for kilograms instead of grams.

SOME GOOD WORDS

(From newspaper - unverified, yet, by me)

1. One villager, after viewing a program on pesticides, said that if had seen that last year, he could have saved his crop.
2. After viewing a program about small pox, the villagers besieged the medical people asking for inoculation. Before the program villagers thought it was good enough to avoid small pox victims.
3. Complaints from Toddy shop owners state that their sales have dropped since SITE offered nightly entertainment. This was verified by a check with local police—arrests for disorderly conduct and drunken brawls have decreased since SITE.

REQUESTS FOR ADDITIONAL DRS's

Each week brings many requests for new DRS's from individuals, groups and state governments. Prof. Chitnis said that if each wish could be granted, SITE deployment would double. A complete DRS may be purchased from ECIL for about RS10,000/-

TELECOM-75

Although Telecom-75 SITE demonstration is technically feasible, and ISRO is ready to go, it is in a hold status. It appears that some European countries have withdrawn their approval of 860 MHz. This problem should be resolved this week.

ARYABHATTA

Electro-cardiogram signals were sent between two terrestrial points by the Indian Scientific Satellite. This makes ECG diagnosis available to the villages.

USIS-DRS

An ESCES visitor from the USIS building (New Delhi) told me that the picture received on the USIS-DRS was the best TV picture that he has seen anywhere in India - bar none.

UPDATE

Today is Sunday, 14 September 75 - birthday of the Star Spangled Banner. Monesa, our Indian bitch, presented us with six new puppies, during the night. They were born in the abutment behind our home. Today the rain weakened abutment collapsed. The hutment dwellers brought the basket full of puppies over to our yard this afternoon.

Unfortunately, that hut was not the only thing adversely affected by the rain.

The following items are from 14 September 75 Times of India.

Deluge in Ahmedabad causes houses and walls to collapse, Kankaria lake overflows, many areas flooded due to heavy rains of last three days. Roads were washed away. Many sections of highway are under waist deep water. Many hutment dwellers had to be evacuated. People are without vegetables and milk. Children cannot go to school. (Today is cool and wet like your labor day.) This year Ahmedabad has had almost twice its average rainfall. (The Sabarmati River level was seven feet yesterday and reached from bank to bank.)

Seven thousand evacuated in Broach district as rivers rise in South of Gujrat.

Tolls in Bulandshahr district rose to sixty dead in flash floods where vast areas of Western Uttar Pradesh were submerged for fourth day. Train service between Ahmedabad and Delhi paralyzed for second day due to breaching of railroad tracks. Also cancelled were the Delhi express, the Delhi mail, the Delhi Janata, the Agra local and the Bhuj express.

A rumor here at ESCES names the cause of this unprecedented rain ATS-6 because heavy rains occur almost each time spacecraft is acquired.

Note: SITE in day 47, 319 days left (1976 is leap year).

Regards,

Gaonwalla

19/1700Z SEP 75 (TELETYPE MESSAGE)

Telecom-75 lives, but SITE will not be there.

Less than one hour ago I talked to Prof. Yash Pal. Much to his regret SITE must withdraw from Telecom-75. Reason: lack of frequency clearance from some countries.

Prof. Yash Pal says that he is sorry that so many at NASA worked so hard toward SITE/Telecom-75 and then cancellation came at last minute.

Please accept all of our regrets.

20/0920Z SEP 75 (TELETYPE MESSAGE)

REF LAHB 008 17/0805Z and your response GSOC 238B 19/0115Z Sep 75

Since LAHB008 was sent, another order of video tapes has arrived. Some of these tapes are good. Some of the first order of one hundred and five are also good.

However, we still have a shortage of tapes and will probably have to destroy programs to have tapes available for the continuation of SITE. Since it costs about RS.500 per minute to make a program and about RS.5 per minute to save the program, it is cost-effective to save for future use.

Therefore, we can use all of the one-hour tapes that you can rush us.

Last night I asked Pillai for fifty tapes, if we can have all seventy, that would be best.

Today, a TLP MSG will come from Prof. Chitnis to Dick Barnes, okaying release of required fund in the Rupee/dollar account. Thank you. 21/1500Z

SITE STATUS REPORT 16 SEPTEMBER 1975

For awhile, these reports will be less precise than in the past as to the exact numbers of DRS deployed, working etc. In order for you to understand why this is so, allow me to give some facts about the present state of affairs in India.

WEATHER

This year has seen an abundance of monsoon rain. Many areas have been inundated for long periods of time. Here in Ahmedabad the drive-in cinema road, one of three alternate routes from city to ESCES, has been under waist-deep water for about one week. Some of the villagers in that area come to work on a bicycle each day. Through that water. The main road to ESCES, which

many of you may remember, has been reduced to a single lane, deep pot-holed road that is congested with pedestrians, bikes, herds of camels, buffalo, cows, goats, and sheep, jeeps, buses, trucks and cars. It is rough going even in my VW. The city bus is no longer able to pass beyond Jodhpurtekra Road, leaving the bus-riding ESCES personnel to walk the half mile to the ESCES gate. Since there may be thirty at a time walking in a congenial bunch in the pouring rain, this adds to the general transportation problem. The middle road to ESCES winds through villages and for much of its length is mud covered.

The other option is to make a big circle through the city—about ten miles, and come from Ganhinagar Road.

A large portion of the road, past Gymnkanna toward the airport, caved in, leaving a deep, wide canyon where the road used to be. On Thursday 28 August 75, 80 mm of rain fell within two hours in Ahmedabad. Our studio was flooded as was the ESCES operation and control buildings (the drums). Because of all of the cable tunnels were filled with water, ESCES took the precaution of not coming on the air. Delhi earth station carried the entertainment show that night.

By the time SITE transmission was over, the water had been shoveled out of our buildings and circuit by circuit had been cautiously tested. Then with a grant of extra satellite time, ESCES went on the air with a test pattern. It worked. A crew laboured throughout the night making sure that Friday mornings SITE schedule could be met. It was. Thursday night, my trusted Volkswagen and I delivered ESCES personnel through the floods to their homes.

Bombay has had several bad floods, disrupting transportation, communication, and mail. The ISRO Bombay studios have had work stoppages due to water damage.

Delhi Earth Station has had water leakage problems.

PIJ also has had water leakage problems but has never missed a transmission.

Many of our SITE villages, though not under water, are isolated by surrounding floods.

Patna, capital of Bihar, has suffered much flood damage and loss of life and is again itself for yet another flood as the rain-swollen rivers converge in it.

I am happy to report that the bad floods in Orissa did not overflow our BPU at Cuttack or the DRS villages. However, the heavy rains did hamper the regular production and maintenance routine.

On 9 September 75, Hyderabad received 15 cm of rain within 24 hours. Over a dozen houses collapsed, killing at least seven people.

Similar conditions exist over most of India at this time.

SITE STATUS REPORT 21 SEPTEMBER 75

In today's issue of the Times of India, Sunday 21 September 75, there is an article called the Magic Box by Darry/Dmonte.

In this article the author offers some observations of his own concerning SITE and much from economics of television in India by B. D. Dhawan. The article attempts to show why education TV is the wrong approach here and should not be followed up.

I will send a copy of this article to Jack Miller.

Jack will be delighted to send you a Xerox copy.

If you are interested, drop a line to Jack so stating.

In Barodas Lokasatta newspaper, Shri V. C. Shukla, Minister of Information and Broadcasting, says that government of India is taking action to continue the SITE program even after the end of the contract with NASA.

This article is in Gujarati, if I can find an English version, I shall send that, too.

The rains have temporarily abated in Ahmedabad the heat has returned with a vengeance.

Peace.

SITE STATUS REPORT 26 SEPTEMBER 75

On 24 September 75 Ahmedabad SITE studio achieved a major technical breakthrough enabling us to use a two thousand dollar portapack half-inch video tape recorder for direct transmission. Machines are completely interchangeable and excellent picture quality is seen. The implications for development of television and flexibility of programming are clear.

This may have a long range impact for the growth of educational and development television not only in India, but in other countries also.

Note: SITE in day 57, 309 days left.

HOWARD'S CHRISTMAS LETTER TO FRIENDS 30 SEPTEMBER 75

We send our greetings to you from India and we'd like to share some of our adventures with you.

Our year started on 1 January 75 as did everyone else's. However, ours started in Bhubaneshwar, south of Calcutta on the east coast. Mumtaz, Howard, and Dottie, two days after Christmas, had embarked on a trip to visit the five Base Production Units (BPU) where television programs are made for the SITE (Satellite Instructional Television Experiment). The first stop was Delhi, then on to Cuttack via Calcutta and Bhubaneshwar. While visiting at the home of Mr. Tiwari, Director of Tourism for Orissa (state) and the Orissa State Representative for SITE, we met a six month old Tigress, Kaira. She came right up to us and let us pet her just as we would pet a dog. She is part of "Project Tiger" and is being raised in a home just as the "Born Free" lions were raised. For us all, it was a thrill and a great way to start the New Year. On the 2nd we again met her at the BPU in Cuttack, "starring" in a film about pets. We waded in the Bay of Bengal at Puri and Gopalpur. Then we went on to Hyderabad where we saw a beautiful sunset, the palace of the Nizam of Hyderabad (who was once considered the richest man in the world), and ECIL, the manufacturers of all the SITE hardware - TVs, antennas, etc. Our next stop was Bombay where, in addition to visiting the BPU and watching some programs made, we toured the All India Radio (AIR) government TV and Radio Station and the famous Elephanta Caves. We came "home" to Ahmedabad on 8 January 75.

On the 14th of January, we helped our fellow Ahmedabadians fly kites. It's a big holiday when just about everyone participates in cutting each other's kites loose with glass encrusted kit string. There's quite an art to it.

India Republic Day - January 26 - found us in Delhi again and watching their big parade. We also saw the very impressive "Beating the Retreat," a carry-over from British days and a very moving ceremony.

Our shipment from U. S. arrived the end of February and on March 8, we brought our car home from Bombay with our very good friend, Pravin, doing the driving.

On March 18, Dottie left for a two months visit to the States while Howard and Mumtaz kept the home fires burning.

Dottie returned in May and Lynn Jones came with her to visit India. Howard and Mumtaz met them in Bombay in a happy reunion.

In June our adventures continued with a trip to the Gir Forest, a lion sanctuary, and the only remaining place in the subcontinent one can find the Asian lion. We went with a film crew from the Satellite station and went to many places that the usual tourists miss. Pravin drove our VW Sunbug and we followed the ISRO (Indian Space Research Organization) bus over unimaginable terrain through ruts and gulleys. We saw and took pictures of 1 lion, 8 lionesses and 4 cubs, blue bulls, spotted deer, many kinds of birds - especially peacocks, the National Bird of India, as well as pictures of the film crew and each other filming the crew and animals. We also saw an African village, all descendants of two families brought over from Africa over 200 years ago. We left the crew at Sasangir and drove to Veraval on the Arabian Sea and up to Porabundar, the birthplace of Mahatma Gandhi. We had our pictures taken with Gandhiji's granddaughter and had a very nice talk with her.

We celebrated U. S. Independence Day by visiting SITE villages in and around Jaipur, the Pink City. We also had great fun riding an elephant up the hill to the Amber Palace just outside of Jaipur. One village gave us the added experience of a ride on a camel. Lynn and Dottie were the first two on and will probably be written into the history of Labana as those two semi-hysterical American women who scared the camel half to death. Fortunately most of the villagers didn't understand the English dialogue of "Howard, you must be out of your mind" (before mounting).

"I want off" (after the camel stood up) and Lynn's "Don't get off until the camel kneels down" (which of course Dottie had no intention of doing). The villagers considered the whole thing very funny. Howard and Mumtaz got on next, but by this time it was "old hat." On the 5th of July, Howard, Dottie and Mumtaz rode to an interior village in two jeeps over the untracked shifting sands of the Great Indian Desert in Rajasthan. When we returned from the Interior we were treated to watermelon that made us think we were back home in Maryland.

August 1, 1975 was SITE INAUGURATION DAY - the beginning of the experiment which was the reason for our coming to India. It was an exciting day full of celebrations at the Space Applications Centre, beginning with the televised speech of Mrs. Gandhi in the morning, through High Tea at four and an outdoor dinner at nine.

Lynn left from Delhi on 6 August 75 and we went with her to see her off, but before she left, we managed a one day trip to Agra to see the magnificent dreamlike Taj Mahal and the old deserted city of Fatehpur-Sikri.

On India Independence Day, August 15, we celebrated Christmas 1974, by opening our gifts from home that finally got through customs on 14 August 75.

Here in Ahmedabad, Pravin has taken us to the Gandhi Ashram where Gandhiji started his famous walk to the sea in protest of the salt tax. We've shaked on the Shaking Towers; we've toured one of the many textile mills; we've taken pictures of monkeys in our yard, camels pulling carts, cows in the middle of the streets, people riding bikes, motorbikes, and rickshaws in the Monsoon rains; herds of camels, buffalo, goats, asses and sheep, and the shepherds that tend the animals. We've celebrated Divali, Christmas, Kite Day, Holi Day, Easter, Lord Krishna's Birthday, Id-Ul-Fitr.

The weather was beautiful Maryland Fall-type temperature until the middle of March. Then it got steadily hotter and reached about 104-106°F in June. The Monsoons came in the middle of June, but it wasn't until August that we received the full fury of a monsoon with daily deluges and flooding in many areas.

We are now studying Gujarati, the language of the state in which Ahmedabad is located. So far, we can say, "The dog has four legs." "The peacock is green." "What is the cost?" "Drink your hot tea." and other such important phrases.

Our home at One Sadma Society is an Indian bungalow - a large two-storied house with five roof terraces, fourteen doors and sixty-three windows. Our neighbors consist of an award winning novelist, well known architects, college professors, building contractors, as well as shepherds, sweepers, bearers, dhobis, and cooks. We are surrounded by colleges, universities, hutments (poor people's shacks) and dairy herds - cattle, water buffalo, and camel. It's an ideal cross-section of India and fortunately we are friends with them all.

The success or failure of SITE itself is yet to be determined. The satellite has proved its value - any problems encountered have been terrestrial such as Monsoon floods and winds. Even now SITE psychologists, sociologists, and anthropologists are living in the villages sending back data on the immediate and long term effects of SITE. Of course the final evaluation will not be completed for a long time, but the short term look reveals that SITE is more than we hoped for.

This brings us up to date which is the end of September. We stop at this point so that you'll receive our greeting for Christmas. You see - seemail takes about 2 1/2 months.

All in all, it's been a wonderful experience and we've enjoyed almost every minute of it. The Indians have welcomed us into their homes and lives. Our friends and relatives in the States have kept in touch. It's been a good year and one we will long remember. Until we meet again - take care.

Howard, Dottie and Muntaz

SITE STATUS REPORT 6 OCTOBER 75

Although tomorrow, 7 October 75, is Ramjan ID, a national holiday, the AIR/ISRO SITE meeting will continue—it started today. All VTR program production problems and the Delhi common program problems are being examined from both the hardware and software sides; results will be reported soon.

Following is an ISRO-produced summary report of SITE to date.

Quote:

Summary Report: Two months of SITE Operation

1. HIGHLIGHTS

1.1 SITE was inaugurated on August 11, 1975. In all the clusters, the inauguration was done by the chief minister/other minister of the state government. Since then, operations have proceeded smoothly with no major problems.

1.2 On August 15, the Independence Day function was broadcast live from Red Fort, Delhi, to the whole SITE network using an OB van and the Delhi Earth Station (DES). For the first time ever, Bombay and Calcutta TV stations were also involved in the live national hookup. This was done by setting simple receiving equipment in just 3 days. The equipment consisted of a 3-meter antenna (the same as is used for DRS) and a high quality (3 dB NF) front end, the output of which was fed to the TV transmitter. The picture quality at both places was reported to be very good.

1.3 Another major achievement was the use of half-inch portable VTRs. At first, these were used for outdoor recording and the program was then transferred for broadcast to 1-inch via a monitor and studio camera. This system worked well and enabled good outdoor coverage without the expense and time involved in using film. Now, an important technical breakthrough has been achieved—it is possible to transfer half-inch directly to 1-inch by a modification of the half-inch VTR and use of a digital TBC. This not only makes the transfer process easier, but assures better quality.

Quote:

2. EARTH STATIONS

2.1 Performance of all the earth stations was very good during the first two months of SITE. The only major problem was on August 28 when the

Ahmedabad earth station (ESCES) was not operated during evening transmission because extremely heavy rains has resulted in flooding of the equipment room, making it risky to operate the equipment.

Poor picture quality for a few seconds has been observed on some days during ESCES transmission. This phenomenon is being investigated.

2.2 On September 15 there was a severe drop in signal level in the North and East parts of the country from 1845 hours to 1920 hours due to a polaris hit experienced by the satellite. As a result, the Amritsar earth station could not feed programs to the TV transmitter from 1905 to 1912 hours.

2.3 In the middle of August, the program tracking mode was commissioned at ESCES. This involves using a computer for prediciting the exact position of the satellite. This has resulted in better pointing of the earth station antenna, so that the AGC level variation is 3 dB at the most as compared to 6 or 7 dB earlier.

2.4 The Nagpur S-band monopulse station, which is a standby for the spacecraft altitude control system, is functioning well. This is checked out every week.

2.5 The special data link, which can provide emergency communication to NASA's ground station at Madrid in case of any problem with the dedicated voice and TTY links, was down; the SDL was used during morning transmission.

2.6 The Earth station reliability figures were as follows:

| <u>Parameter</u> | <u>August</u> | | <u>September</u> | |
|--|---------------|------------|------------------|------------|
| | <u>ESCES</u> | <u>DES</u> | <u>ESCES</u> | <u>DES</u> |
| Total SITE transmission | 110 hrs | 21.5 | 111 hrs | 15 hrs |
| Total system down time | 21 min | 7 min | 64 sec | 2 min |
| Down time due to equipment failure alone | 4.5 min | 6 min | 49 sec | 0 |

| Quote: | <u>August</u> | | <u>September</u> | |
|-----------------------|---------------|------------|------------------|------------|
| | <u>ESCES</u> | <u>DES</u> | <u>ESCES</u> | <u>DES</u> |
| Equipment Reliability | 99.935% | 99.53% | 99.988% | 100% |
| Overall Reliability | 99.7% | 99.45% | 99.984% | 99.78% |

3. DIRECT RECEPTION SYSTEM

3.1 Maintenance operations continue to be bogged down by rains and floods - particularly in Bihar, Rajasthan and Karnataka. Most of the Bihar villages are cut off and communication, even from the cluster offices, is difficult. In Rajasthan over 105 villages are unapproachable. 20 villages each in Andhra Pradesh and Karnataka, and 15 villages in Madhya Pradesh are also unapproachable.

3.2 Blowing of fuses in the TV set has been a major problem. Action has been taken to replace these immediately. A circuit modification has now been worked out to prevent this problem and the modification will have to be done on all the sets in the village itself.

3.3 Battery operated sets in Orissa seem to be doing very well and, in fact, have functioned better than the main sets probably because they are not subjected to the extreme voltage fluctuations.

3.4 A major effort has been mounted to repair all faulty sets in all the villages which can be reached. In fact, even from some unapproachable villages, sets are being brought for repair by boat, the present overall status (excluding unapproachable villages from which no data is available) is as follows:

| <u>Cluster</u> | <u>Sets</u> |
|----------------|---|
| AP | 85% |
| Bihar | 65% |
| Karnatka | 75 to 80% |
| MP | 86% |
| Orissa | 70% |
| Rajasthan | 66% (including unapproachable villages) |

4. STUDIO TRANSMISSION OPERATIONS

4.1 All studio equipment worked well for transmission. The total broadcast interruption in September for SITE program due to equipment problems was only 20 seconds due to a scanner problem on September 15. There were some

minor problems for a few seconds due to operator errors. There were no studio equipment problems in September for PIJ transmission.

4.2 The major problem was the quality of tapes. In August, a total of 16 tapes were rejected for technical reasons (2 from Bombay SITE studio and 14 from Cuttack BPC). In September, 11 tapes were rejected (2 from Bombay SITE studio, 1 from Delhi BPC and 8 from Cuttack BPC). As a result, many programs had to be repeated. A report on this is available separately.

4.3 While the stock of tapes from Delhi BPC, Hyderabad BPC, and Bombay SITE studio has been adequate, the stock of Cuttack tapes has often been very small.

4.4 On some occasions a wrong cut has been played due to error by the production assistant/VTR operator concerned. Steps have been taken to prevent such mishaps.

4.5 The picture quality from Delhi was often poor with the picture jumping or tracking problems of VTR.

5. PIJ TRANSMITTER AND MICROWAVE LINK

5.1 The transmitter has been functioning well. The microwave link has been a major problem area, resulting sometimes in poor video and often in bad audio. In September, video level was particularly bad on September 22, while the audio is noisy fairly regularly. On September 27, the Delhi program did not go for 2 minutes due to a problem with the cable.

5.2 The only problem with the transmitter was a 7-minute interruption due to power failure on September 21. The standby diesel generator was put on.

5.3 The direct receive system, which is a standby so that programs can be received directly from satellite in case of a problem with the microwave link, is tested regularly. The low noise amplifier was out of order for two days due to bad cable connection.

6. PIJ PROGRAM PRODUCTION

6.1 The Ahmedabad SITE studio produced about nine and half hours of Gujarati programs in August and about 12 and half hours in September. These programs are supplemented by programs produced in Gujarati by the Bombay SITE studio, films, and a few programs from AIR-TV Bombay.

6.2 Though a considerable increase was registered in September as compared to August, a further increase in production is essential and steps are being taken to ensure that this happens.

6.3 Use of the half-inch portable VTR has made possible good field coverage on a quicker and cheaper basis than film.

7. RESEARCH AND EVALUATION

7.1 ISRO science programs were pretested in Rajasthan and later in Madhya Pradesh and Orissa. Testing of the same programs was done in Hindi school near Bombay, also to get comparative data. The pretesting results are serving as useful inputs to program production.

7.2 The five major evaluation projects: impact on children, impact on adults, message systems analysis, feedback, and holistic studies are all proceeding well. Baseline data collection for both the children and adult impact survey are over. Message systems analysis and the holistic studies are going on.

7.3 Feedback data has been arriving and coding and analysis is going on. A complete analysis for Kheda data for August has been completed and presented to the producers. One day's analysis of data for all six SITE clusters is also ready. The computer program has now been finalized and analysis will now be available regularly.

7.4 The various smaller in depth studies in Kheda and in SITE clusters are proceeding well. Impressionistic data from some of the researchers is already available.

8. UTILIZATION

8.1 ISRO's efforts in the utilization are limited and are mainly intended to be catalytic. Support is being provided in the following ways: (1) printed material, (2) discussions by experts, (3) discussions among the villagers by forming charca mandals, (4) ensuring supply of necessary physical inputs by interaction with the state officials, (5) arranging other activities like demonstrations, film show, etc.

8.2 The first issue of the wall paper has been printed and sent to all the SITE villages. This is mainly to support the science programs. The next issue is being finalized. Teachers notes for science programs have also been prepared and sent.

8.3 Distribution of the transmission schedule has not been satisfactory. There is great demand for this and the Ministry of Agriculture had distributed a schedule for August. They have no funds to do this now. Changes in scheduled programs also cause problems.

8.4 Charca Mandals have been formed in all the 35 utilization villages and these have been very useful. Discussion by experts have also been arranged on 22 occasions in Rajasthan, Orrisa and Andhra Pradesh. Discussions will also be arranged in the other states.

8.5 An evaluation of usefulness of the utilization activity itself is also planned.

Unquote.

I plan to go to Delhi, with family on 9 October 75. We will update our required shots. I will do American Embassy business, visit USIS DRS, etc. On the return trip, we will visit villages in the Jaipur area, checking first hand on status of DRS and taking documentation slides as required by GSFC PIO.

Note: SITE in day 67, 299 days left.

08/1025Z OCT 75 (TELETYPE MESSAGE)

Once again the streets of Ahmedabad are pulsing with the haunting music of the Gujarati folk dance - the Garaba. This will continue all night for nine nights - wish you were here.

SITE STATUS REPORT 23 OCTOBER 75

This morning we returned from Delhi/Rajasthan trip. Family received update of required shots. I got first American office supplies since I have been here. Reported to Science office about SITE status. Dr. Williams replacement is not on board yet. Visited Delhi earth station, all India Radio Studios, and USIS SITE DRS all during SITE transmissions. We were in TV control during Ahmedabad/Delhi handover, smooth.

We shifted to Jaipur where we visited thirty-one SITE villages. Of about twenty-five villages picked at random, all sets were working except one and one half (ok in morning, not ok at night) (fixed while we were there). Remaining villages were visited with maintenance crew where all sets were repaired. Details will follow in the next status report.

I took colored slides for GSFC/PIO.

Regards.

SITE STATUS REPORT 7 NOVEMBER 75

From 17 to 22 October 75, Dottie, Mumtaz and I visited twenty-nine villages (two were visited twice) in the Jaipur cluster area. A summary of the results, and the narrative will follow later.

During about the time that we were village visiting, so were members of the SITE management office and other personnel from the ESCES campus. When the results of their visits are compiled I'll send to you.

In translating Hindi, Gujarati, etc., into English, the spelling frequently comes out different each time, such as the village names. Not to worry if you see them spelled differently another time.

Note: SITE in day 99, 267 days left

10/1402Z NOV 75 (TELETYPE MESSAGE)

1. We received R. G. Pillai at Ahmedabad airport on schedule on Friday afternoon. All is well. He expressed his great gratitude to all of his friends at NASA for all help during his stay there. He was especially thankful for your help at the end and to Jack Miller for transport to airport. Thank you.
2. Some time ago, at your request, I passed audio tape of Man in Space (or something like that) to PVK. I did so without listening to or recording same. Our Indian friends here have come to know about the program and want a copy of the tape. Since PVK is in Australia and it is tough at best to get copies from him, could you please send one more copy of audio to me.
3. Can you get a 625-line on-inch VTR and monitor so that you can properly view SITE programs? If you can obtain the use of the proper equipment, we are prepared to send you some sample SITE VTR tapes.

Please advise.

SITE STATUS REPORT 12 NOVEMBER 75

While we were on the Jaipur village trip Dottie, Mumtaz and I all took notes and photos in real time and I tape recorded notes and actual conversations.

Since our return all of us have been writing one comprehensive report. Because of work schedule here this is usually done on Sundays and late at night - after SITE operations are over.

Only last night, I was wondering if we were telling you more details than you wanted, although we feel the more background the better, as long as the technical info is clearly visible and not buried in the narrative.

We try to give you insight as to troubles and conditions that exist here and are practically unknown in the USA. Also I think that you want to know the feelings of the final users - the villagers.

So, since your TLP arrived we will double our efforts to get the next SSR report out.

Thank you very much for asking.

- - - - -

It should be noted that when Prof. Yash Pal took his village trip, he also took his family with him.

He, and the social researcher agree with us that a family visiting the villages is better than a lone visitor, since villagers are family oriented.

Peace and thanks.

12/1255Z NOV 75 (TELETYPE MESSAGE)

Dick Jack needs this infor Thurs morning (EST). I plan to talk to him at 1430Z, but please get this to Jack ASAP in case the voice line is down.

| <u>Place</u> | <u>No. of Villages Being Maintained</u> | <u>Serviceability During Oct 75</u> |
|------------------|---|---|
| Andhra Pradesh | | 86% |
| Hyderabad | 124 | |
| Nagarkronool MSC | 96 | |
| Nandyal MSC | 90 | |
| Sangareddy MSC | 90 | |
| Karnataka | | 81.5% |
| Gulbarga | 109 | |
| Bijapur | 92 | |

| <u>Place</u> | <u>No. of Villages Being Maintained</u> | | | <u>Serviceability During Oct 75</u> |
|----------------|---|---------|-------|---|
| Bagalkot | | | 123 | |
| Raichur | | | 75 | |
| Rajasthan | | | | 75% |
| Jaipur | | | 131 | |
| Chomu | | | 134 | |
| Kota | | | 58 | |
| Oyngapur 58 | | | 59 | |
| Madhya Pradesh | | | | 91.25% |
| Raipur | | | 104 | |
| Rajnandgaon | | | 131 | |
| Buiaspur | | | 97 | |
| Mahasamund | | | 68 | |
| Bihar | | | | 66.7% |
| Muzaffrpur | | | 104 | |
| Darbhanga | | | 101 | |
| Samstipur | | | 78 | |
| Motihari | | | 82 | |
| Saharsa | | | 35 | |
| Orissa | Mains | Battery | Total | 90% |
| Sambalpur | 86 | 54 | 140 | |
| Dhenkanal | 50 | 31 | 81 | |
| Angul | 56 | 23 | 79 | |
| Boudh | 11 | 34 | 45 | |
| Overall | | | | 81.74% |

Note: The backlog of daily reports has been cleared and they are being TLP to you now.

Mr. R. C. Garg Operations will continue these reports.

Regards.

15/0230Z NOV 75 (TELETYPE MESSAGE)

On 1 November 75, we had very poor reception of the test pattern doing the S-band test. In the following two weeks all calculations and equipment were checked.

This AM, results were again poor. A check with ATSOCC indicated an off-pointed spacecraft.

As spacecraft was repointed to Ahmedabad a fairly good signal was received at about 0135Z - then vanished as spacecraft pointing passed us by. Now, 0136Z, signal has returned.

To help us to evaluate our results, please send to me ASAP a pointing vs time history for S-band test on 1 and 15 November 75.

It would be grand if reply could be here for 0630Z meeting today.

Just saw (0200Z) quite acceptable S-band TV program, ISRO doing final antenna pointing now.

Thanks for help and I hope, an early reply.

17/1215Z NOV 75 (TELETYPE MESSAGE)

ISRO has received information from (1) Shar Centre (Sriharikota), from (2) Arthur C. Clarke at Sri Lanka, and (3) some location in Orissa concerning the SITE reception at their respective DRS ES.

Although the evening reception is quite acceptable, the morning reception is from very poor to nil. This is up to at least 11 November 75.

Until the beginning of October, the morning programs were also acceptable.

Since (1) no DRS problem has been located, (2) reception was good and is now bad, (3) the same areas were adversely affected in a similar manner when spacecraft was off-pointed (see GSOC 328B 31/0001Z Oct 75). We wonder if perhaps the spacecraft is off-pointed during 0300-0600Z and 1250-1520Z till 31 October and from 0430-0600Z and 1230-1500Z from 1 November 75 to present?

This data will help us to clear up the mystery - or make us look harder for the cause.

Regards.

21/1000Z NOV 75 (TELETYPE MESSAGE)

There is some info that you should know about my Jaipur trip of October 1975:

1. Travel info has been sent to you.
2. I can turn my GTR into a plane ticket only through American Express.
3. In Ahmedabad, AMEX consists solely of a man who operates out of his bedroom com office.
4. GTR F 1,325,010 was turned over to this chap in early October 75.
5. Since he could (would) not get ticket Ahmedabad/Delhi/Jaipur/Ahmedabad in time, ISRO temporarily bought my ticket on their account - Amex to repay next day.
6. ISRO never got paid nor could they locate AMEX man.
7. Last night I located the man and told him serious consequences of holding GTR any longer.
8. Local AMEX man promised to do the needful today.

9. Results - GSFC travel may look in vain for GTR - if you have turned my paper work in.
10. Please tell travel situation and that all is well. Not to worry.
11. I have made better arrangements. In future, I will phone AMEX, Delhi on faith (and backing of American Embassy). They will instantly issue me a ticket to anywhere. Then I will carry or mail GTR to American Embassy who will give it to AMEX.
12. Happy Thanksgiving.
13. Peace and Love.

TRIP REPORT

JAIPUR CLUSTER VILLAGE VISITS

BY

HOWARD GALLOWAY & FAMILY - 17 OCT. TO 22 OCT. 75

December 9, 1975

Prologue

To my Indian Friends and other Gentle Readers:-

I can attest to the accuracy of the indicated day, times, kilometers, reports on, video, audio, etc. (except for any possible undetected typos)-but the feeling of response of the Indian people is strictly our own and may, in fact, be inaccurate. Nevertheless, it is our belief that it is true. Your comments are most welcome.

Below is copied, in its entirety, a recent SITE Status Report. These reports are sent regularly to NASA.

Whenever possible, I include, not only technical data but - just as important - information about conditions in India; social as well as material, to try to let the USA folk realize some facts of day to day life in India as seen through the loving eyes of resident Americans, my family and me.

SITE Status Report No. 34, 19 Nov. 75

Recently, some personnel from the Space Applications Center have travelled to all of the cluster areas. They have examined the log books, financial reports, jeep costs, fault report logs, logistics, and all other things that the SITE Manager should know in order to properly manage. Some of their experiences coincide with our own as to the quantity and quality of the DRSEs that work. Others differ very much. SITE is dynamic and the number of sets working in a given cluster is a function of time, place and circumstances. There are many parameters over which SITE-DRS maintenance teams have no control, among them, floods, electricity and theft.

However, it is fair to say, from what we have seen, all of the maintenance people work far above and beyond the limit that one could reasonably expect for the conditions under which they toil daily. Almost all of the people seem driven by motives that exceed any monetary rewards. There has to be an easier way to just make a living.

Background

In order for you to better understand the situation over here, I am going to take the liberty of telling you some things that you may already know, and maybe some things that you don't care to know, but the reading of this will provide a good backdrop to view the village-visit-scenes.

I. Culture

The typical Indian considers a guest as God. The most respected guest of all is atithi (no date), the one who drops in with no prior warning, the unexpected guest.

No matter how little the host has, it is willingly given to the guest. No-where that we have been, has this true spirit of hospitality been so graciously bestowed upon us, as here in India. Although the wonderful welcome is everywhere here, it reaches its highest fulfillment in the villages.

Also, in the Indian desert of Gujarat and Rajasthan, the guest is immediately given cool water. Just before leaving, hot Indian tea is served. In between all manner of food may be offered. It would be as rude for the guest to not accept these gifts as it would be unmannerly for the host to not offer them. Hence at almost all stops, we had at least water and tea, sometimes food. No problems.

II. Villages

There were three types of village approaches to the villages that we visited:

- a) Roadside villages - we drove right into village.
- b) Off the road villages - we walked the last part of our journey.
- c) Interior villages - we went by jeep over vast stretches of sand through rivers and ploughed fields and finally to the village.

Many of the roads were lined with 1.5 meter high tapered mud walls. Those walls keep grazing animals from wandering into the cultivated fields and gardens. The distance between walls is from 1 to 2 meters wider than the jeep. Since these narrow roads were traveled at speeds of from 50 to 100 Kph and since we never knew when our controlled skid around ninety degree turns would present us with a camel cart or some such, no one fell asleep in the jeep.

III. Season

In SSR 22, 16 July 75, I reported about the vast area of the trackless shifting sands. Now following the monsoons, the desert was covered with lush vegetation. The full moon was on the twentieth of October, so that all of our night vists were made by full moonlight - fantastic!

IV. Travel

My rule of travel in India is to be a burden to no one and on the contrary to have our activity only help SITE. If I had used an ISRO jeep to visit the villages, the maintenance work would have suffered. So I hired a tourist taxi to drive to the reachable villages. While the ISRO jeep crew was responding to maintenance calls on its own, we carried in our taxi a cluster maintenance man and some spare TV parts. Thus, instead of slowing up the maintenance work, we helped it slightly.

V. Personnel

The following persons were very helpful in our adventures and I list them here as a matter of record and gratitude.

- A. Mr. S. K. BHATTACHARYA (Dada), Administrative Assistant, met us at the airport and made arrangements for us at the LMB Hotel and helped in general with our itinerary.
- B. Mr. MOHAN SINGH was our first jeep driver. He is a retired army jeep driver from Rajasthan. Although he served in many parts of the world it is my understanding that he has spent a score of years driving in the Rajasthan desert. His skill with a jeep was most appreciated.
- C. Mr. S. K. SINGH is the Engineer-In-Charge of the Rajasthan Cluster Headquarters. It was he who plotted our tour every day.
- D. Mr. C. T. VYAS - T.V. Maintenance technician.
- E. Mr. V. C. MEHTA - Antenna mechanic.
- F. Mr. N. K. MEHTA - ECIL Engineer-In-Charge of ECIL group at Rajasthan Cluster Headquarters.
- G. Mr. JASWANT SINGH - local taxi driver.

- H. Mr. SANTOSH KHANNA - Research Assistant for Leadership Elite and TV study in the village of Muhana.
- I. Mr. P. K. KEWALIA - Engineer-In-Charge of Choumu subcentre.
- J. Mr. B. R. CHOUDARY - Jeep driver cum helper in the Choumu subcentre.
- K. Mr. K. K. PANDEY - Holistic Research Fellow from the village of Bhuteda.

VI. Morning Programmer (16-27 Oct. 75)

The village teachers usually have one of the following two types of credentials: degree or certificate. The degree teacher attends a four year teacher training program at a college. The certified teacher attends a two-year Senior Teachers Certificate (STC) course at an STC institution such as that found in the village of Goner.

Usually, the morning SITE science programme is from 1000 to 1130 IST. However, the Daseri school holidays were from 14 to 28 Oct. 75. Instead of wasting this precious satellite time, an STC training program was given from 16 to 27 Oct. 75.

A large group of user-teachers received two days instructions at STC centres like the one in Goner. Then these teachers were placed one per each SITE village. Each teacher had an average of ten other teachers-in-training for the daily course which ran from 1030 to 1630 IST.

The training was a multimedia course and worked as follows:

The agenda consisted of lectures, TV programme, lectures, radio programme, demonstrations, field trips, discussion group, daily individual exam papers and final exam papers. Each teacher had a work cum note book. Before the TV programme (11071/2 IST in Rajasthan), the user-teacher gave a lecture preparing the group for the TV programme. Then the TV programme was observed. This was followed by another lecture (tell them what you are going to tell them, tell them, tell them what you told them). This was a very good course and was well received.

At each village, the user-teacher explained the programme to me and said that the TV session was by far the best medium-sight and sound. Most of the teachers told me that the TV class was the most interesting that they had ever received.

They also told me that the school children eagerly look forward to the usual childrens' morning science programme. Because of SITE, it appears that in some villages, the school enrollment is up and even some parents come to school. A common plea that I heard from most villages was "please extend SITE by one or two or more years."

The SITE teachers training plan calls for reaching an average of ten teachers per village for at least twenty-four hundred villages. The training is to be repeated at least three times. Therefore, the SITE teacher's training should affect at least 96,000 teachers. Since each teacher has an average of thirty pupils, SITE training may reach almost three million pupils, not bad for the first year's effort.

VII. Audience Behavior

I have read reports where in many villages, the audience talks and moves about and in general has not developed mannerly viewing habits. Without exception, in all of the villages that we visited, the villagers sat quietly on the ground, on walls, on roofs, in trees, etc., with no talking and with an intense concentration on the screen. This behaviour was not exhibited for my benefit. I know this because until my photoflash went off, the folk were not aware of my presence. During the Rajasthan program, 2010 to 2050 IST, there were sometimes laughter, keeping time to the music, and other signs of enjoyment.

The log books show that audience size of 1000 is not unusual. In one village, Pili Ki Tilai, I was told that they have had as many as 4000 viewers. During our visit, the crowds were somewhat smaller (300 to 500) than normal for two reasons:

1. Because of the full moon, many folk were attending religious ceremonies.
2. The final two weeks of harvest were in progress and many of the villagers were still working in the field. In fact, as the night wore on, villagers appeared at the back of the audience with great loads of crops on their heads and stayed, headload and all, until the programme ended.

VIII. Audio Two

The SITE programme goes out with one video and two audios so that two languages may be telecast simultaneously. Audio two has less volume and more distortion than audio one. During the Bihar/Rajasthan programme, 2010 to 2050 IST, both audio one and audio two carry Hindi. As part of the

SITE evaluation, Rajasthan listens to audio two. Although distortion can be easily measured with electronic instruments, the judging of an audio signal by its final user (a human) is both subjective and relative - relative because it depends on what one has just been listening to. I goofed while on this trip. I should have flipped from audio two to audio one and recorded each on my tape recorder.

But because the audio two sounded so good, clear, and loud, I forgot about the distortion and hence the test.

I think that some of this distortion is similar to the situation of some of my friends in the USA. They have elaborate hi-fi sets, but listen to them with lo-fi ears.

IX. Group Viewing

I must admit that before I knew of SITE, I thought that eight to ten people gathered around a TV would be about the limit. However, we sat on the ground behind everyone, amidst everyone, and in front of everyone, and much to my surprise, we could see and hear very well from all positions. You probably find this hard to believe, but it is true!

X. Village Visits

Now, trying to keep everything above in mind, come with us on the village visits.

Periodically we would go to the Cluster Headquarters and with Mr. S. K. Singh, choose an itinerary for the day. On our first day in Jaipur, Mr. S. K. Singh was at home sick with a fever. However, he had arranged for us to stop by his home to get the itinerary for our first evening's visits - the day we arrived at Jaipur. Left LMB Hotel at 1600, returned at 1705.

VISITS

To appreciate when the daylight hours were, please note. On 20 October 75, sunrise was at 0616 and sunset was at 1759 Indian Standard Time (IST).

The reporting format is as follows:

I, II. . . . Date/Day/Phase of Moon/Moonrise IST.

A, B. . . . Our Village ID No./Village/Arrive IST/Least IST/kilometers traveled from LMB Hotel/ISRO personnel with us.

I. 17 October 75/Friday/FM-3/1612-Left LMB 1714.

A. (1) Kapurawala/1812/1844/31 Mohan Singh, C. J. Vyas, V. C. Mehta.

The TV was not functioning in this village because of a faulty tail end. Unfortunately the replacement tail end was also defective, a not uncommon occurrence. When we left, the TV was still inoperative.

B. (2) Hasanpura Vasnavta/1855/1914/35 km/ -do-

Although this TV was working, it required some sync adjustment and a slight repointing of the antenna to bring the performance up to the usual standard. This was done and the TV was A-OK.

C. (3) Charanwalla/1937/2035/43 km/ -d-

Here the TV was inoperative because of a blown TV fuse. After replacing fuse, the vertical setting was adjusted and the antenna slightly repointed. There was a tree limb interfering in the antenna-ATS-6 line of sight. Although men scampered up the tree and brandished long-handled sickles from the ground, they still could not remove the offending branch. There was some unobjectionable video noise, probably due to the location of a power pole right next to the antenna (right side looking in satellite direction). T. V. A-OK.

Returned to LMB at 2130, total distance was 71 KM.

On all subsequent days we used a local tourist taxi driven by Jaswant Singh. Jaswant is a very pleasant young man who has been called upon many times by cluster headquarters to drive visitors to the villages. He not only knew the locations of all villages, but was also quite familiar with the SITE programme and proudly told me which villages he had taken Arnold Frutkin to in the beginning of August 75.

II. 18 Oct 75/Saturday/FM-2/1645. Left LMB 0922.

A. (0) Cluster Headquarters/0933/0944/8 km/none

B. (4) Luniavas/0958/1008/15 km/N. K. Mehta

We arrived at this village just at SITE programme time. The TV custodian was eating his meal in front of a turned-off TV. Remember there was a school holiday from 14 to 28th Oct. Hence-no children. Because teachers'

training did not start in Rajasthan until 1030, there were no teachers. The custodian turned on the TV and we observed good picture and good sound. Rather than spend time waiting for the teachers we moved on to the next village.

C. (5) Bhavgarh Bundhya/1012/1018/17 km/ -do-

When we arrived there, only two teachers had shown up and the TV was off. They turned the set on for us and we watched a program concerning the motion of the earth about its axis and around the sun. It also showed lunar motion about the earth. TV A-OK.

D. (6) Dantli/1028/1118/23 km/ -do-

In order to reach this village, we left the taxi and walked along a narrow path which was lined on both sides with tapered mud walled about 1.1/2 meters high. These walls contained holes in which lived families of rats. The training was already in progress with the teachers observing the television programme. It was a nice sight to behold. Then voltage fluctuation caused occasional picture collapse. The custodian turned the TV off briefly then back on and then TV remained A-OK. We were served tea and one slice of apple each.

E. (7) Goner/1127/1220/27 km/ -do-

We arrived here just before the SITE morning transmission terminated. The teachers were watching the TV which was A-OK. After transmission we had a brief discussion with the teachers and then we walked over to the Senior Teacher Certificate Training Centre (STCTC). This school serves a large area around Jaipur. Here in the conference room, we met with the headmaster and several of the STC teachers. While we were drinking our water, eating peba, gantiya and drinking hot-tea, we were told of the function of the training course.

Although they have had a multimedia course in the past, this is the first time that it included television. They were very excited and this was only the third day of their television training. Goner STCTC was one of the many training centres where the resource teachers (user-teacher) were trained. The resource teachers then led the multimedia training in each village.

F. (0) CHQ/1305/1341/56 km/ -do- Arrived LMB-1348 (59 km).

G. (8) Archrol/1822/1941/30 km/ -do- Left LMB 1736.

Achrol is a very large village with a population of about 8,000 people. They have a large stone crushing machine for producing stone for road construction. The village boasts a dispensary, post office, 3 primary schools (2 for boys and 1 for girls) and 1 secondary school for both sexes. Only 20 girls attend sixth through tenth standard.

The Hindi program did not start until 1900 and the crowd slowly increased as that time neared. Normally Rajasthan villagers watch from 1900 to 2050 hours. Although the average number of viewers is 1000, sometimes as many as 1500 viewers gather here. Many walk from villages up to six miles away. It is interesting to note that in many places in India, the people use both the British and the metric system as shown here-distances may be given in miles or kilometers.

One young villager, Shamboo Singh Rajawat, attached himself to us and one by one introduced us to everybody in sight. One of the gentlemen that he introduced us to is a monk originally from Kerala. He says he lived in the Himalayas for 60 years, then had to leave for a warmer climate. So he settled in Achrol over 40 years ago. Although he appears to be in his sixties, he claims to be over 100 years old. He took us to his ashram (saintly person's abode).

Here in a small room were all of his simple worldly possessions, a bed, a water pot, oil lamps, candles, and a picture of his God above an altar. It was this picture that he would first see in the morning. As we left this peaceful place, he gave a coconut to the villagers who smashed it. We all shared the coconut for good fortune.

This DRS with MID Antenna had perfect TV video and audio.

Since then we have received a fan letter and photo from Shamboo Singh Rajawat. We, of course, answered the letter at once. Shamboo immediately replied; I have another new pen pal.

H. (9) Dhand/1943/1958/38 km/ -do-

We soon came to the roadside village of Dhand. Since we had toured this village on 3 Jul. 75 (see SSR-No. 22 - 16 Jul. 75), I ran in to check the TV for old times' sake. The TV was perfect. Villagers were scattered about on the ground watching the programme. I spoke briefly to one of the villagers (who recognized me by moonlight) took a few pictures and left.

I. (10) Kookas/2007/2020/43 km/ -do-

Here the TV was displayed from a building into a courtyard which was surrounded by a mud wall. The TV was A-OK. A few days earlier the TV had been reported as being unwell, but it fixed itself. Usually this kind of complaint is caused by low or no voltage and clears up when proper voltage comes.

J. (11) Pili Ki Tilai/2035/2135/51 km/ -do-

This is another large village with a population of 10,000 people. They live in the village proper and surrounding dhanis (hamlets) with about 300 people per dhanis. Ninety percent of the population are farmers and all of them have at least a garden where they raise their own food. A local iron foundry owner and one of his friends donated by building for the school 15 years ago. Three years ago four new rooms were added. This was done at no cost to the government.

The multimedia training occurred in this village too. There were five lady and four men teachers participating. There were many BA and MA degrees in the group. The custodian teacher and the user teacher eagerly showed me their daily log book (one of which is kept in every village and many of which I have since seen) in which are kept notes of each program, quality of video, audio, programme content, and the number of viewers per session. Although nighttime programs have an average of 500 viewers per night, there have been as many as 4,000 viewers here at one time believe it or not. Not only was the TV A-OK but also it has had no faults since 1 August 75.

III. 19 October 75/Sunday/FM-1/1719 Left LMB 1744.

There was a teachers' training morning program on Sunday and unfortunately it was at this time that my 12-hour virus struck. By nighttime I was almost well and we hit the village circuit again. On the way to the villages, 28 minutes (17 km) from LMB we came to a portion of the road that had been under water for six days just one month ago. Even then water was lapping at both sides of the road and it would only take a little rain and once again the road would be under. Then once again all the villages before us would be unapproachable. By 1819 (23 km) we reached the village of Belwa. Since the custodian with the TV room key would not be there until just before 1900, we moved on to the next village.

A. (12) Shivdaspura/1830/1918/29 km/C. T. Vyas.

Since it was not yet 1900, most of the viewers had not gathered for the evening program. Some of the villagers proudly took us on a tour of their village. We took pictures of their temples and other places of interest. A young boy, Giri Raj Prasad Gupta, who spoke fluent English, walked beside us and told us what SITE meant to him. He said the local people knew very little about the mechanics of TV but they used, enjoyed, and gained much by having the SITE program. It is surprising but gratifying to find out how many of the youngsters even in remote villages not only speak English but also know where the U.S.A. is and also that the Satellite comes from the U.S.A. They also seem to know that ATS-6 is parked over Africa and they know that the programs come from Ahmedabad and Delhi.

We went back to look at the TV and it was the best TV picture I have ever seen anywhere. The audio was loud and clear. During the Delphi portion of the program, there was audio/video cross talk during the live news telecast.

NOTE: We were heading for two villages when we came upon a closed railway gate, a familiar sight to the NASA team. Mr. Vyas got out and asked the watchman to please open the gate. The watchman replied that since the Emergency he only works 12 hours a day and therefore locks the gate at night. Mr. Vyas explained that we were ISRO people servicing SITE villages. The watchman replied, "Go send me a telegram from the Government." Mr. Vyas said that he was a representative of the Government. By this time we were surrounded by shepherds and goats who passed through the gates single file. Finally, the watchman became reasonable and opened the gates. As we started to cross he muttered that after we passed he would lock the gate and go home. At 1940, we decided that discretion is the better part of valor and we backed down the road until we could turn around and leave. Mr. Vyas was to report this because this is just one additional hazard that makes some of our villages unapproachable.

Just four minutes later, (34 km) we were stuck in a roadless meadow. We had tried to take a roundabout way to reach the village, but the taxi could not get through. By placing the floor mats under the rear wheels and with a little pushing, we were on our way again. Just 20 days before this meadow was under water.

B. (13) Belwa/2003/2018/43 km/ditto.

The TV was A-OK. The friendly natives gave us a drink of water and we were on our way again.

C. (14) Bhambala/2030/2053/51 km/ditto.

The TV had a beautiful picture and clear audio. The hospitable folks brought us chairs and water. We all sat as did the villagers, quietly and intently watching the program until it was over at 2050. This courtyard was also surrounded by a mud wall. An ancient and small steel plow was placed in the opening of the mud wall to serve as a gate. Returned to LMB at 2116 (66 km).

IV. 20 October 75/Monday/Full moon/1755, left LMB 0932.

NOTE: In the usual spirit of being helpful to one another Dr. Binod Agarwal, on his train journey from Delhi to Ahmedabad, carried a box of repaired tail ends (from Delhi Earth Station) to Jaipur. Mr. S. I. Singh picked these up at the station and took them to Cluster Headquarters.

A. (0) CHQ/0941/1001/3 km/none.

B. (15) Kanota/1020/1040/15 km/N. K. Mehta.

Because we knew from the fault report card that Kanota TV required a new tail end, Mr. Mehta had taken one from the box that Binod had just brought. Unfortunately, in his haste, he did not check the tail end before leaving Cluster Headquarters. Even more unfortunately, the replacement tail end was faulty, so we sadly left Kanota with a bad TV.

C. (16) Vijay Mukandpura/1045/1058/19 km/ditto.

Here the main television fuse was blown when we arrived. After the fuse was replaced TV was A-OK. We drank our water and left.

D. (17) Naila/1105/1158/22 km/ditto.

We arrived here five minutes after the electricity was over. The teachers were all assembled and said that the TV set had been working perfectly. The resource man here had fourteen teachers instead of the usual ten or eleven. Eight teachers were local, one was from a village 5 km away, one

was from Jaipur, four were from villages at least 40 km away. All of these teachers stayed in Naila for this training program. A few minutes after our arrival, the power came back and the picture and sound were very good. The program concerned itself with floatation. For some reason, the program ran late until 1157 IST. Shobba Naresh Modi, the lady announcer from the Pij Program, appeared. She made an announcement in Hindi, explaining that there had been VTR tape trouble and that the program ran over by six minutes. Sorry!

Just as the program was about to end, there was some quiver in the picture, indicative of a noisy tail end. Although noticeable, it was not objectionable yet.

E. (0) CHQ/1232/1327/40 km/ditto.

NOTE: We went to Rajasthan Cluster Headquarters at 1232, planned our evening itinerary, had tea and left. Returned to LMB at 1335 (43 km).

F. (18) Antela/1848/1914/76 km/N. K. Metha. Left LMB at 1712.

Although their language program had not started yet, there were many villagers already watching the TV in a courtyard type setting. The custodian was very friendly. At first, the picture and sound were very good. Then the sound did quit. N. K. Mehta cleaned the contacts on the power supply board and all was well. Because it was late and we still had two more villages including the last SITE village in Rajasthan in that direction, for the first time, we turned down an offer of tea. They understood our problem.

G. (19) Pauta/1932/2025/89 km/ditto.

The SITE TV was in a school which was in a kind of city square inside the main village. Surrounding all this was a sprawling suburb. We wandered around in the suburbs for a while before we could locate the school. We were then told that the set was a TV in the morning and a radio at night. In fact, teachers' training took place there every morning. Since SITE began, these villagers had never seen a night TV picture. At first guess, this would seem to be a voltage related problem. N. K. Mehta started changing circuit boards and at 2010 got a picture, a dog obedience training program.

The problem was due to a faulty relay on the DCR board. At high voltage (daytime) set would work quite well, at low voltage (nighttime) no picture. Since the board was only hand held against the contacts during trouble shooting and would take a little while to properly install, we left Mr. Mehta to work and we drove on to the next and last village for the evening.

H. (20) Pragpura/2032/2106/92 km/none.

This village had a nice large viewing area with the TV placed high up in the air to give a view over a large area. The villagers, the largest crowd that we have seen, were, as in all the villages we visited, quietly sitting and watching the TV. There was an unusual situation in this village. The off-duty policemen, the big Sadarjis (Sikhs) had volunteered to keep order in the crowd. This service may or may not have been necessary because in all the villages the people were very quiet and well behaved. Nevertheless, here were the out-of-uniform policemen mingling with the crowd in a friendly fashion. Jaswant, the driver, said that he thought that this in itself was a remarkable accomplishment because these were the first policemen he had ever seen that didn't talk with a stick. The TV was A-OK and Pragpura also had teacher training in the daytime. Before we left we were treated to hot tea and a local delicacy-home grown water chestnuts-delicious. As we departed, they gave us two bags of water chestnuts as farewell gifts.

I. (19) Pauta/2113/2122/95 km/N. K. Mehta.

Our plan for N. K. Mehta to install the new DCR board during the program was thwarted. The villagers would not allow him to turn the TV off until after SITE program was over. This was understandable because, after all, this was their first nighttime TV show in their whole life. On the way back to the hotel, Mr. Mehta told us of a village (Bari Jori) in Rajasthan that is unapproachable from the Cluster Headquarters direction. The villagers there complained to the Prime Minister that the TV there is not functioning well. The Prime Minister complained to Prof. Dhawan, Chairman of ISRO. Prof. Dhawan, directed Mr. S. K. Singh to go there, but the village still has not been visited. It is still unapproachable. This indicates, though, how much the villagers want their TV. This may also be a portent of when ATS-6 goes home.

J. (0) Shahpura/2202/2217/123 km/ditto.

We stopped at Shalpura for tea. We returned to LMB at 2333 (181 km).

V. 21 Oct. 75/Tuesday/FM + 1/1834. Left LMB at 1013.

A. (0) Sanganer Block Office/1037/1042/15 km/Santosh Khanna.

Santosh delivered a message from S. I. Singh that the TV set from there had checked out O.K. Since the trouble was apparently in the head end and/or cable; we later picked those up for Cluster Headquarters.

B. (21) Muhana/1058/1354/21 km/ -do-.

Muhana is a Research Experimental village. Santosh lives here while he studies the effect of TV on the leaders and the elite of the village. This large village is on one side of the highway and a large body of water is on the other side. While we were photographing the water buffalo in the water, Mr. R. P. Sharma, headmaster of the school, came over to greet us. The TV set was A-OK and the teachers' training group was in session. However, the electricity was over and the TV was not operating at this time. After having a discussion with the teachers, a tour of the school, a walk through the village, and a talk with some of the local folk, we went to a 150-year old building, the home of the local teachers. This structure was the oldest building in the village and had an interior courtyard that was open from the ground through the roof. Each level of the building had a four-sided balcony that surrounded this open shaft. This was formerly a residence of a Maharajah. Mrs. Sharma and her neighbour were cooking a meal on a small fire on the second level balcony just outside of their quarters. We were very cordially greeted and ushered in to the main room. Indian rope beds appeared on which we rested while we were being fanned by our host. After they decided that we were the proper temperature, they brought in stools on which they served us water and their food. Mumtaz asked Mr. Sharma why he was not eating. He said he fasted on Tuesdays. The real reason why no one was eating except the five of us (Dottie, Mumtaz, Santosh, Jaswant, and me) may have been because we ate their meal. They had no warning of our coming and hence could not have prepared the food for us. We were the Atithi. After a very large and delicious meal, we took our leave and headed back toward the taxi. On the way we stopped at the school to bid the teachers goodbye. We were fortunate to see them conducting the following experiment which they would repeat in their schools for their own pupils:

A mud pot (typical round Indian water-container) was lined with aluminum foil. This "Solar Furnace" was placed in the hot sunshine, open end towards the sun. Two small identical containers of water were placed: One in the pot, the other in the sunshine on the ground beside the pot. It did not take

very long nor did one need a thermometer to determine the results. One needed only a finger dipped in the warm water in the container on the ground, then into the very hot water in the container in the pot to feel the effects of the "solar furnace." We again had hot tea and left.

C. (13) Belwa/1413/1538/39 km/ -do-.

The SITE program was over for the morning, of course. The reason we stopped at this village was to keep our 1200 (it doesn't matter) luncheon appointment with Satya Deo Bareth, his wife and two year old son. We had met Deo at our first Jaipur visit in early July and it was, in fact, he who had been given the brother - rakhi by one of the village ladies (see SSR 22-16 July 75). Although we were over two hours late, they had kept the meal in readiness and we consumed another large Indian meal. Since they knew we were coming, they had prepared enough for ten people and encouraged us to eat it all. Very pleasant time. Deo's wife had even boiled water for Dottie, Mumtaz and me!!

D. (0) Sanganer Block Office/1552/1600/50 km/ -do-.

We picked up the head end and cable that had been taken down since morning.

E. (0) Bazaar/1604/1605/51 km/ -do-.

We dropped Santosh at the bus stop so he could return to the village of Muhana.

F. (0) CHQ/1646/1707/66 km/none.

We delivered head end and cable and picked up Mr. N. K. Mehta and our evening itinerary. Returned to LMB at 1715 (73 km).

G. (22) Bagru/1845/1855/29 km/N. K. Mehta. Left LMB 1755.

In this village the TV was going bright and loud and a few village folks were watching on Arissa drama. I was told that this was one of the villages visited by Arnold Frutkin and Dr. W. W. Williams (American Embassy) in beginning August 1975. This village had a lady custodian. As usual the villagers were quietly watching the TV.

H. (23) Mahla/1907/1918/37 km/ -do-.

This village with a population of 1000 was temporarily cut off from vehicular traffic because the road was out. We walked in to the village and found a small group contentedly watching TV in a snug courtyard. TV A-OK.

I. (24) Dudu/1952/2018/65 km/ -do-.

At 1940, a gentle intermittent out-of-season rain began to fall. We found the villagers watching TV in a very tiny room. The rain quit and the viewers moved into a courtyard just after we arrived. Usually they have 500 viewers daily. A rope down the center divided girls on the left and boys on the right. This night, because of the rain, very less folk were here. However, more would probably come by 2010 for the Rajasthan SITE program. The full moon was completely clouded over and the gentle rain started once again.

To get to this village from the highway we had to pass over a causeway through a great lake. During monsoons, the water joined and Dudu became an unapproachable village. Dudu is the last SITE village in Rajasthan in this direction.

J. (25) Bichoon/2047/2120/88 km/ -do-.

Bichoon means centre and so it was; this village was surrounded by mountains. During the monsoons in August to September, the village was covered with mud. It has a population of 6000 people, 1200 camels and 500 cows and buffalo. Although they usually have more than 500 viewers, tonight was less, yet many were sitting there watching in the rain. The SITE antenna was mounted on top of the government primary school. On the antenna was proudly hung a family planning banner. With three minutes left of program time we dashed in to observe and photograph the scene. After the program, the villagers gathered around us, and there was a lot of talking and a lot of laughing as we happily exchanged views on things in general. Eventually they asked us what we thought of India. We told them of our experiences in India and of our love for India and her people.

In order to make our way through the village, we had picked up a villager to guide us through the holes and gullies that used to be a road. On the way out we photographed some of this area.

We also stopped to look at the Panchayat MAKAN (Town Hall) where the Panchayat SAMITI (Council) and the SAR Panch (Mayor) were meeting. In

this village they usually meet once every two weeks, but this was a special meeting to plan for the reception of a visiting state Minister.

It is to be noted that the Bichoon DRS has never failed since it began operation on 1 August 75.

K. (0) Road side Tea House/2210/2235/110 km/ -do-.

Stopped for tea, arrived at LMB at 2312 (141 km).

VI. 22 Oct 75/Wednesday/FM + 2/1916. Left LMB 0855.

A. (0) CHQ/0902/0905/3 km/none.

Mr. Pandey, Research Assistant in Bhuteda, had inadvertently left his keys and a package behind at Cluster Headquarters. We picked them up for delivering later in the day.

B. (0) Choumu Bazaar/0958/1013/38 km/ -do-.

This was the Bazaar at which our host bought Indian sweets for our party in Jetpura on 5 July 75 (see SSR 22-16 July 75). This time Dottie, Mumtaz, and I shifted to a jeep after we delivered the package and key to Mr. Pandey. B. R. Chaudhary was the jeep driver cum helper. Dottie and Mumtaz rode up front with the driver. I rode in the back with P. K. Kewalia (Engineer-in-Charge of Choumu Subcentre), K. K. Pandey (Research Assistant), all of my photographic equipment, and spare parts, tools, etc., for DRS maintenance work. (What one does not take to an interior village is not there.) Jaswant and his taxi were left behind at the Bazaar.

This type of repair work was different from any others that we had experienced. P. K. Kewalia, his driver cum helper and one watchman (at the subcenter) were responsible for one hundred and thirty four villages. These villages are spread out in the Interior. After servicing sets during program time, P. K. K. does all of the office work, fills out all reports to be sent to Cluster Headquarters. Then, examining fault report cards, he plans his itinerary for the next day.

Bad voltage variations cause very much trouble with DRS's in this area. Since the audio/video signal generators are at this time still inoperative and since the satellite program is on for only a total of four hours per day and since the sets can only be serviced during operations with signal, this short working time is compensated for by SPEED. We left on national

Highway No. 11. Although this highway was less than two lanes wide, we drove at a constant 100 kph. When we would overtake or pass a vehicle, one or both would leave the highway temporarily.

C. (26) Govindgarh/1017/1037/41 km/br. Choudhary, P. K. Kewalia, K. K. Pandey.

We arrived here to find the power off and the teacher with the key absent. Teacher and key appeared and at 1026 the electricity, 300 volts, returned. TV had fine audio but no picture. By 1032, components had been checked, sweep board had been replaced and TV was A-OK. We packed up and rushed out.

D. (27) Mallickpur/1042/1122/44 km/ -do-.

We arrived here to find eleven teachers gathered around a TV with a badly torn picture. After drinking our water, we discovered the line voltage was only 150 V. While P. K. K. was frantically trouble-shooting, we enjoyed our tea and learned that the resource teacher was in the hospital with a malaria attack, but still came for duty every day. At 1122, after having its DCR and sweep-boards replaced, the TV was functioning. Because the supply voltage was still only 150 V, the TV picture was less than perfect but usable. We dashed to the jeep and left.

E. (28) Hasteda/1144/1215/57 km/ -do-.

Although the morning SITE program was over (1130 IST) and we had no fault report on this village, we stopped to check on the DRS. The teachers' training was in session-one resource teacher plus eleven teachers-very good session. The resource teacher was giving his post-TV lecture. He was very intent. Our presence did not even slow him up until he had completed his lecture. Since the rush was over (program off), we accepted their offer of tea. When queried about the usefulness of TV training, the resource teacher replied, "There can be no two opinions about this. The TV is by far the most superior method that we have." This village has a maximum of 600 viewers and the TV was reported to be A-OK.

F. (29) Bhuteda/1227/1346/63 km/ -do-.

In order to reach Bhuteda, it was necessary to drive through a partially dry river. This was probably the most exciting and beautiful part of the trip. Bhuteda was Mr. K. K. Pandey's Holistic village and he led us on a grand tour of it. Our first stop was in front of a two-family dwelling where

the families had an ideal view of the DRS TV. They immediately offered us tea. So while they prepared the tea, we took a village tour. Indian Tea is prepared by boiling water, milk, sugar, tea leaves and spices all together. We know the milk was fresh because the host's daughter pushed the calf aside to collect the milk. Our walk through the village led us to many interesting things. We not only spoke to villagers, storekeepers, post office personnel, and other local folk, but we also saw a sad finish to an era of Indian history - the princely states. We walked through an old fort in which still lived the ex-Maharajah and ex-Maharani of the area. Not only were they at home, but they joined our tour. Apparently they were quite wealthy at one time but unwise spending had forced him to sell almost all of his property and now they are just another poor family living with their children in the shadow of their splendid past. We then visited some girls spinning cotton on some small hand-operated spinning machines. This would be a very frustrating job for an American because the mean-time-between-failures (thread broke) was about ten seconds. Here, the Indian patience paid off for the people seemed very happy with their work. We returned for tea. Our host had placed a Kashmir rug on the verandah. Shoeless, we sat on this and enjoyed the Indian hospitality and Indian tea. As we left the village, K. K. P. presented Dottie with a bundle (6 ft tall, 1 ft in diameter) of Peacock tail-feathers. Later, on our flight home, Dottie managed to brush the faces of Dilip Kumar (India's Clark Gable) and Johnny Walker (India's Cantinflas) as we deplaned in Ahmedabad. Oh well!

G. (0) Chouma Maintenance Subcentre/1428/1444/92 km/ -do-.

After a short visit here we headed back to the Bazaar.

H. (0) Choumu Bazaar/1446/1451/92 km/ BRC Houdhary.

There we transferred to our waiting taxi. Jaswant had expected us at 1230. We got in his cab at 1450 (it doesn't matter). We returned to LMB at 1538 (126 km).

I. (11) Pili Ki Tilai/1805/2116/13 km/none. Left LMB-1700.

As promised, we returned here to have further discussion with the resource teacher and the custodian teacher. While the youngsters readied the TV set, tables and chairs for us, one boy left on his bicycle to get the resource teacher, SUWA LAL SONI. He soon returned and SUWA and the custodian teacher spent the next twenty minutes "selling" me on educational television. The national integration portion of the Delhi program had what appeared to be another example of Indian folk dance. Two girls were singing while they

danced. Their message was in praise of India's Gandhi and the Emergency. The message from the two girls was paraphrased: "We are happy. Our husbands are going to buy us saris because business is good, no unemployment, electricity is in the villages - the Emergency is good. Indira is great and good." We stayed until after the SITE program was over, had our tea and took our leave.

J. (0) Truck overturned/2125/2135/19 km/ -do-.

Returning to Jaipur on a Sky Line Drive-type road, we had just passed a huge truck when we heard a scraping noise. Jaswant said that there had been an accident, and Mumtaz, seeing the lights vertically placed, said the truck had over-turned. Jaswant and I walked back to give aid. The truck's brakes had failed and its' front went through the wall on the edge of an overlook. Fortunately the truck turned over instead of plunging down the mountain. No one was injured. We also were fortunate. Had we been 1/2 minute slower, we may have been smashed. Had we not passed at all, we would have had to take a long, long roundabout way to get to the LMB. It probably took many elephants several days to remove the load and truck from the blocked highway. We thankfully returned to LMB at 2154 (25 km).

Note: Jack Miller has about 100 coloured slides that we took through these village visits.

Note: When Professor Yash Pal made his village tours, he took his family. He and the social researchers agree with us that a family visit is more effective than an individual's visit because the villagers are family oriented.

SUMMARY

From 17-22 October 75, Dottie, Mumtaz and I visited twenty-nine villages (two were visited twice) in the Jaipur Cluster area. Below is a summary of the results.

Status Key:

A = TV OK and working during visit.

B = TV OK but program over.

C = TV OK but electricity over.

D = TV working but needed some adjustment. Adjusted during our visit.

E = TV faulty, but repaired during our visit.

F = TV faulty and not repaired during our visit.

| <u>Visit No.</u> | <u>Village</u> | |
|------------------|----------------------|------------------|
| 1 | Kapurawala | F |
| 2 | Hasanpura-Was Nevta | D |
| 3 | Charenwala | E |
| 4 | Luniyawas | A |
| 5 | Bhavgarh Bandhya | A |
| 6 | Dantli | A |
| 7 | Goner | A |
| 8 | Achrol (MID antenna) | A |
| 9 | Dhand | A |
| 10 | Kookas | A |
| 11 | Pili Ki Tilai | A "Never failed" |
| 12 | Shivdas Pura | A |
| 13 | Belwa | A |
| 14 | Bambala | A |
| 15 | Kanota | F |
| 16 | Vijay Mukandpura | E |
| 17 | Naila | A |
| 18 | Antela | A |
| 19 | Paota | E |
| 20 | Pragpura | A |
| 21 | Muhana | C |
| 13' | Belwa | B |
| 22 | Bagwana | A |
| 23 | Mahla | A |

| <u>Visit No.</u> | <u>Village</u> | |
|------------------|----------------|------------------|
| 24 | Dudu | A |
| 25 | Michoon | A "Never failed" |
| 26 | Govindgarh | E |
| 27 | Malikpur | E |
| 28 | Easteda | B |
| 29 | Bhutada | B |
| 11' | Pili Ki Tilai | A |

Total number of DRS that could work (SITE program on) is equal to A + C + D + E + F = 28

$$\text{Percent of DRS working on arrival} = \frac{A}{28} \times 100 = \frac{19}{28} \times 100 = 67.86$$

$$\text{Percent of DRS repaired} = \frac{D+E}{28} \times 100 = \frac{6}{28} \times 100 = 21.43$$

$$\text{Percent with electricity over} = \frac{C}{28} \times 100 = \frac{1}{28} \times 100 = 3.57$$

$$\text{Percent still faulty} = \frac{F}{28} \times 100 = \frac{2}{28} \times 100 = \frac{7.14}{100.00}$$

Note: Percent working at end of visit = 67.86 + 21.43 = 89.29!

(GOANWALLA)

SITE STATUS REPORT 16 DECEMBER 75

The SITE broadcast frequency of 860 MHz has been granted for experimental use only. The regular satellite communications frequencies that India would use may lie in the S-band. It is therefore important that the existing DRS's can be modified to be used for S-band reception. Such modifications have been successfully developed here at ESD and fortnightly tests are conducted to optimize and characterize the equipment. The series started on Friday 31/2330 Oct 20, 1975, and is scheduled for two hours per test. That is, Saturday, November 1975 0500 to 0700 IST. They are planned to continue, every other week until further notice. So far four tests have been conducted:

| <u>Test</u> | <u>Date (IST)</u> | <u>Location</u> |
|-------------|-------------------|-----------------|
| 1 | 1 Nov 75 | ESD Roof |
| 2 | 15 Nov 75 | ESD Terrace |
| 3 | 29 Nov 75 | ESD Terrace |
| 4 | 13 Dec 75 | ESD Drums |

I have attended all of these tests. At this time, 0500 IST, the mornings are dark, cool and beautiful.

The first three tests have been written up and I quote directly from the official S-band report:

QUOTE:

November 29, 1975

S-band Experiment Report

By

Pramod Kale/V. Ramaiah

INTRODUCTION

The S-band experiment at 2670 MHz has been carried out so far three times on 1.11.75, 15.11.75, and 29.11.75. The experiment has been normally carried out between 5.00 to 7.00 a.m. on 15th November, we have got an extension of 15 minutes. The results obtained so far are extremely encouraging and the best results were obtained on 29th November.

DESCRIPTION OF EFFORTS

1. November 1, 1975

On 1 November the spacecraft radiated 2670-MHz signals on time and the carrier level was observed on the spectrum analyser. The carrier level was found to be very much lower than was expected and the change of head-end feeds, etc., was carried out along with change of antenna pointing. The efforts of 2 hours did not yield any satisfactory results. The signal strength measurements are indicated in Table 1. The photograph No. 1 shows the carrier level received on the spectrum analyser. The digital pattern and the audio tones were received, picture was very noisy.

2. November 15, 1975

Considering that on 1st of November, we did not get good results, we suspected that something wrong could be there in our equipment. So the following steps were taken: the head-end noise figure was measured and was confirmed to be between 4 to 4.5 dB. The antenna gain related to standard dipole was evaluated and was estimated to be about 32 to 33 dB. To facilitate the antenna pointing, our 10-foot receiving antenna was mounted on the mount for 15-ft LRB antenna. On 1st of November two feeds were tried out, printed and the short backfire. We suspected that these feeds may not be giving proper illumination on the antenna and hence helical feeds were made in the time available between 1st November and 15th November.

As soon as the spacecraft radiation started, antenna pointing was optimized to get maximum signal strength. The feed was also positioned to get optimum signal strength and yet we did not get proper signal level with short backfire feed. Immediately the helical feed was put on. Again the received signal strength did not change appreciable. At this point of time it was decided to check with ATSOCC spacecraft pointing. Immediately on verification, ATSOCC confirmed that they were not pointing the spacecraft properly to get picture of the beam at Ahmedabad. They moved the spacecraft and we received a very good signal here, but in the movement of the spacecraft, they overshot and came back to Ahmedabad later with proper pointing. One and a half hours extension was given by the spacecraft people to continue the experimentation. Digital pattern with tones was used to initially evaluate the subjective picture quality and later on a tape was played back from the studio VTR. Photographs 2, 3, and 4 indicate the

quality of the received picture. The signal strength received is indicated in Table 1.

3. November 29, 1975

The experience on the 15th November definitely indicated that the ground system as made by us is capable of receiving a very good quality picture at S-band. On 29th November at 5.00 a.m. as soon as the spacecraft radiated at 2670 MHz, without changing or aligning the antenna position, we received a good signal strength carrier as measured on spectrum analyser. For the first 15 minutes the signal strength was measured and was found to be not varying for more than 0.4 dB. The measurements were carried out on Boontan microwatt power meter and spectrum analyser. After measuring the signal strength, digital pattern and tones were sent from studio to ESCES for modulation and the picture was received. Initially we saw some problems in the received picture indicating a slight frequency drift, as well as in the meantime, ATSOCC confirmed that while updating the spacecraft pointing, the spacecraft had moved by more than 0.1 degree. The measurement and observation of the studio signal from VTR was continued and later on the helical feed was changed to printed circuit feed. The helical feed was found to be definitely better at this particular stage and the helical feed was connected again. At this time, the position of the helical feed and the antenna was properly aligned for the maximum signal strength available, which is shown in Table 1.

Encl: Table 1

Description of the S-band receiver
Photograph of receiving system
Preliminary link calculation
Preliminary remarks
Photographs

Preliminary link calculation

| | | |
|---|----|----------------------|
| EIRP | -- | 82.5 dBm or 52.5 dBw |
| Free space loss | -- | -193 dB |
| Expected carrier level at antenna operation | -- | -110.5 dBm |

Expected carrier level at HE input
(antenna gain expected 32 dB) -- - 78.5 dBm

Expected carrier level at input of TE:

(Measured gain of HE -31 dB) -- - 47.5 dBm

(Measured NF of HE 4 to 4.5 dB) --

Best signal received so far is -- - 43.5 dBm

Preliminary remarks:

The antenna pointing was optimized for the best signal received; this indicates that the antenna gain is at least 35 dB or better. Thus, the antenna is performing at above 40% efficiency. Initial estimates were based upon near field comparisons and extrapolation of data obtained at UHF.

Unquote.

A copy of the unofficial report will be sent to Jack Miller. It includes a drawing of the system description. When ESD photos are available, I will send those to Jack also. Meanwhile my film of tests has been sent to Jack for processing and printing. I am sure that he will share any of these with interested requesters. Test no. four yielded the best results yet and the received signal was video taped. I will send this report when it is finished.

Note: SITE in day 138, 228 days left.

Regards,

Goanwalla

Table 1

Data on Signal Strength Measurement at S-Band

| <u>Date</u> | <u>Measured signal strength</u> | <u>Remarks</u> |
|-------------|--|--|
| 1.11.75 | -58 dBm | Signal strength is very much lower than expected. Received picture was very noisy |
| 15.11.75 | -51 dBm | Signal strength is slightly lower than expected level. Received picture quality is close to that of SITE DRS quality |
| 29.11.75 | -43.5 dBm (with helical feed) -53.0 dBm (with printed feed) | Signal strength is very good. The received picture quality is excellent. Feed requires optimization. |

SITE STATUS REPORT 18 DECEMBER 75

The following report is quoted from an independent researcher on his finding during a visit to the village of Barahser (Saharsa) Bihar.

As I have pointed out before, different investigators find different results as a function of time and place. I will send other reports as they are available from time to time. Please do not publish or quote any of these results without a written OK from me* Here we go.

*Permission to publish received from the author of this report.

QUOTE:

A. N. S. Institute of Social Studies
Patna-800001

Sachchidananda
Director

Ref: 2093
November 25, 1975

Dear Binod,

I visited village Barahser which is one of the villages selected for the holistic study in the district of Saharsa. I am enclosing herewith my impressions of this village.

As the findings are interesting, the note may be circulated to other investigators and research personnel under you.

With kind regards,

Yours sincerely,
SD/ -25/11/75
(Sachchidananda)

Encl: As above
Dr. Binod C. Agrawal
Space Applications Centre
Ahmedabad 380015

On a visit to Barahser (Saharsa) Bihar.

1. Pattern of Settlement:

The village Barahser, which has been selected for a holistic study, is situated at a distance of 32 km from the district town of Saharsa. It lies about half a mile off the Saharsa supaul road. The village consists of several hamlets. Four hamlets named Bhairawsthan, Dakhinware, Goriari, and Babhnia Pokhar constitute the main settlement. Chadeshwarque, which is inhabited only by the Maithil Brahmins, constitutes a separate hamlet. There are two more settlements included in the village boundary which are situated at a distance of two miles from the main cluster, one is the Kumharaghat, which is inhabited by six families of Muslims and four families of Hindu Jolahas.

2. Social Anatomy:

The total number of families in all the settlements taken together is 248. The break up according to castes and communities is given below:

| | | |
|--------------------|---|----|
| 1. Maithil Brahmin | - | 22 |
| 2. Mahapatra | - | 8 |
| 3. Bhumihar | - | 85 |
| 4. Kayastha | - | 1 |
| 5. Ahir | - | 11 |
| 6. Kamar (Barhi) | - | 22 |
| 7. Kalwar | - | 12 |
| 8. Mallah | - | 12 |
| 9. Khanuk | - | 17 |
| 10. Kiat | - | 10 |
| 11. Teli | - | 1 |
| 12. Hindu Jolaha | - | 4 |
| 13. Chamar | - | 21 |
| 14. Paswan | - | 27 |
| 15. Dom | - | 1 |
| 16. Muslim | - | 6 |
| 17. Santal | - | 18 |

3. Land, Caste and Lineage:

The total amount of land in the village is roughly about one thousand acres. The Bhumihars hold 90% of the lands. The biggest landholder

is Shri Indradea Khan who owns about 300 acres. The Maithil Brahmins on the average have 2 acres each. Some government land has recently been distributed to the Harijans and the Tribals. Some of the Kalwars also own land but the quantity is little. Other backward castes are share-croppers and agricultural labourers. The Muslim and Hindu Jolaha families are vegetable growers. There is only one Kayastha and one Ahir family in the village. The population pattern in the village is peculiar because of the fact that the Maithil Brahmins and the Ahirs constitute the bulk of the population of the district of Saharsa. Among the 85 Bhumihar families, 75 belong to the same lineage and claim to be original settlers of the village. The rest of the ten families are immigrants from outside and eight of the families are affinal relations of the dominant Bhumihar lineage. None of the landholders in the village was a landlord. All of them were tenants of the Rajput landlord of the neighboring village of Pachgachia.

The dominant lineage is divided into smaller kin groups known as Khuti. The existence of these smaller kin groups is brought to the surface when a death takes place in a particular family or the Chattha Puja is held. When somebody dies, all the members of his Khuti are supposed to attend the funeral without any invitation. Members of other Khuti attend it only if they are invited. On the occasion of the Chattha festival each Khuti performs the sun worship at a different pond.

4. Agriculture and Other Occupations :

Before the building of the Kosi embankments the land was flooded every year and nothing except grass and reeds grew in this area. But now all the village land had become very fertile. Irrigation facilities are also available and it produces a large quantity of paddy, wheat, pulses and jute. This year due to fall in the price of jute none of the villagers has cultivated jute.

Even though the village land is very fertile and irrigation facilities are available, the villagers are not as happy as they should have been. Owing to the fall in prices, paddy is being sold at RS. 20/- per maund in the locality on account of the interdistrict embargo on food grains and also due to poor transportation facilities. Although banana is grown extensively in the area, it is not sold as there is no local market for it. The area produces a lot of milk and curd as people keep a large number of milk animals, such as cows and buffaloes for which there are ample pasture lands.

5. Education:

A large number of persons have received high education in the village and some of them continue to remain in the village and not look for jobs outside. One Mahendra Thakur, who is an M.A., is the president of the district Kisan Sabha sponsored by the C.P.I. The Mukhia, Shri Chandrashekhar Thakur is also a B. SC. He is the president of the District Janwadi Navajuvak Parishad and a member of its state executive. There are four or five other graduates who are engaged in agriculture and also in politics. Education is, however, confined to the Bhumihars and the Maithils alone. The backward castes do not attend the school in large numbers. Among the girls, education is confined to Byumihars. There is just one backward class girl. There is coeducation in the middle school in the village. But even then very few girls are sent to school.

6. Political Consciousness:

The village has a high level of political consciousness. This is due to the activities of the C.P.I. The entire youth of the village is behind the C.P.I. and they are well represented in the C.P. I., Kisan, and youth organization in the village. Until 1972 the village was the scene of great agrarian tension which culminated in the burning of the entire Adivasi settlement in Kumhraghat by some Bhumihar landholders. The arson was the result of strained relations over cultivation of some government land which had been encroached upon by the Bhumihars. Although peace has been restored now, bitter memories of that conflict cloud every conversation in the village. A magistrate along with an armed police party remained in the village for two years after this incident to maintain law and order. Soon after this incident, 30 acres of government land have been given to the Santals and Harijans. It is this land which had been encroached upon by the Bhumihar landholders. The Bhumihars themselves are divided into two factions, one having the support of all the backward classes. The Mukhia Shri Chandrashekhar Thakur belongs to this faction. He is an active member of the C.P.I. even though in all he holds about 100 acres of land. On account of the C.P.I. influence the wages paid to agricultural labourers in this village are higher than in other villages. But still it falls short of the prescribed minimum under the minimum agricultural wages act by half a kilo per day.

7. TV and the People:

The advent of the TV in the village has been held to be an important event. Every evening large numbers of people from different settlements come to view the TV. Even though it was the festival of Soma Chakeva (full moon night of Kartik) and all the women were engaged on it, the total attendance on 18/11/75 was 177 (male 82, female 38, children 57). The agriculturist have taken full advantage of the TV agricultural programs. They have started putting the right kind and quantity of fertilizers and have also adopted a number of improved agricultural practices. It is on account of the TV that the visits of the V.L.W. have become more frequent than before. Before the TV came, nobody in the village recognized the V.L.W. There is also a marked increase in school attendance. Out of 203 children on the rolls 173 or 85% were sent on the 19th November, 1975. School children bring even their younger siblings to view the TV and thus there is a growth in the school going habit. Children have learned a number of songs and are interested in the news. So great was their interest that the guardians were alarmed as on most of the evening the children were busy viewing the TV and they had no time to do their homework. So most of the guardians now allow them to see TV only once a week. Then we find a sizeable number of school-going children and some nonschool-going children in the evening in the TV grounds.

The TV had a great impact on the women folk in the village. It is for the first time that they have come out of their homes and insist on viewing the TV every day. There has been a change in the time of cooking. Food is cooked before the TV time. Men are free to eat either before the TV time or after it even though food becomes cold. Some of the younger women have learned cooking of some new dishes and making of condiments.

Linguistic acculturation was also evident in the use of word Namaskar instead of the commonly prevalent term of greeting Pranam. The use of the Khari Boli has become common among the young girls.

Before the coming of TV the local market was the only source of entertainment. People went to the market even if they had nothing to buy. TV provides a new source of entertainment. They also meet their friends and relations in the TV ground.

People in general are more enthusiastic about the TV and are thinking of putting up a shed so that people can sit comfortably on the ground

specially during winter. They even talk of raising subscription and donating their labour for this purpose. I am hopeful of the shed coming through because there is a lot of community spirit in the village. The village has also some sources of income which it derives by auctioning the fishing rights in the river which passes through the village and also by levying a small fee from all the merchants who come to purchase the surplus foodgrains.

The TV is kept in the library building which is a place where all the young men have been gathering for many years in the evening. The custodian is an enthusiastic young man in whom the spirit of social service is strong. No honorarium is being paid to him.

8. School Teachers and TV:

The school teachers are largely apathetic to the TV programs. They do not take any interest in talking to children about the forthcoming programs or about the programs they have just viewed. The school is in a bad shape and the guardians complain that the teachers do not teach. All the seven teachers belong to the same locality and they consider their job secondary to their agricultural pursuits. Three of them belong to the same village and four of them to the neighboring villages. One of them has been in the school for the last 30 years and hopes to retire from there. Their relations with the village youth are not good and once they stopped children from attending the school TV program.

9. The Anthropologist and the People:

The SAC fellow, Shri M. N. Jha is extremely popular in the village. People run to him for the solution of some of their problems. All the responsibility for good and evil of the TV is shouldered by him. Old men decry him for introducing indiscipline among the women in the village, while the young men shower priases upon him for their daily entertainment through TV. Some people want him to arrange for repetition of programs they like best. He is perspective observer and his daily observation notes are interesting reading.

Unquote.

Note: SITE in day 140, 226 days left.

Regards, Goanwalla.

SITE STATUS REPORT 19 DECEMBER 75

I mentioned in SITE status report 19 November 75 that many of the villagers knew that the TV was coming via USA satellite. The question has come up how do they know? Below are listed some of the ways:

1. Prime minister mentioned in SITE inaugural address on 1 August 75.
2. It was mentioned in Delhi SITE program on Independent Day - 15 August 75.
3. It was explained on TV program for PIJ.
4. All training material for teachers and students describe SITE/ATS-6 in detail.
5. The teachers training program 16 to 27 October 75 repeated this in the training lecture.
6. All wall paper (large bulletin-board material), many pamphlets, news press releases, air news release, akashvani prints, all state government SITE bulletins, NCERT printed manuals for teaching, tell of program.
7. SITE program carries pictures of ATS-6 on each program.
8. This message is being continued (now) in a pre-AIR/ISRO meeting which is about to begin. Mr. S. Krishnamurthy said that in frequent releases via SITE in each of the SITE languages the loan of the ATS-6 from USA is discussed. Many pamphlets are printed in local languages, and English, and freely distributed to all visitors. Many visitors have come to villages and to ESCES because of these pamphlets.
9. He also reminded us that SITE has been discussed in the UN and representatives from many nations will assemble here at ESCES in January 1976.
10. Below is an excerpt from a typical AIR pamphlet:

QUOTE:

August 1, 1975 is a momentous day in the history of mass communication in India. It is on this day that India starts using one of the most

sophisticated and versatile satellites - the Application Technology Satellite-6 (ATS-6) to reach 2,400 villages in 20 districts spread over six states. The total area covered is over three hundred thousand square kilometers - equivalent to the size of Finland in Europe, and population (45 million) almost that of Mexico.

Based on a memorandum signed by India and the National Aeronautical and Space Administration (NASA), the ATS-6 has been made available to India for a period of one year starting August 1, 1975. The project has been christened as Satellite Instructional Television Experiment (SITE).

Unquote.

11. Below is an excerpt from SITE 75-76 printed by Space Application Centre (ISRO) Ahmedabad.

QUOTE:

Satellite. The satellite is called the Applications Technology Satellite-6 (ATS-6). One and a half tonnes in weight, this is the most sophisticated, powerful and complex satellite of its kind. One of its special features is a 9-meter metallised dacron antenna which will enable it to concentrate the broadcast power to make direct reception possible. Launched more than a year back by NASA from Cape Canaveral, the satellite was first used for a TV experiment in USA and 24 other science and applications experiments.

Unquote.

I will get copies of these and other publications and send to Jack Miller.

Note: SITE in day 141, 225 days left.

Regards, Goanwalla

SITE STATUS REPORT 20 DECEMBER 75

It is Saturday night, 2030 IST, and the SITE is over for tonight. However, the two-day AIR/ISRO meeting finished just a little while ago and I want to share some things with you while they are still fresh in my mind.

- A. P. V. Krishnamurthy (PVK), Deputy General (TV) AIR gives talks all over India and other places in the world. He starts each talk about SITE by listing the three team members - NASA, ISRO, AIR. He tells how the ATS-6 is the most important link in the chain and that is in loan from the U.S.A. He recently gave a presentation in Australia. The first question there was the same as he usually gets as the first question - what will happen after 31 July 76 ?
- B. PVK while on a tour in Orissa stopped in a classroom during morning SITE transmission. When he saw the large number of adults around, he asked the teacher why the adults were crowding in the school room. The teacher said - please be quiet. After SITE was over and the adults left, PVK asked the teacher why he had choked him off. The teacher replied, for eleven years I have taught here - no parent came to even see what I was doing. Now, since SITE, the parents come. Seeing that I had no proper roof or floor for the school, they became concerned and fixed everything - they are welcome in my class.

Score another unexpected spinoff for SITE.

- C. Prof. Chitnis said that in many areas, at least in the past, the parents did not want their children to become educated in schools - because such an educated person was lost to farming. If a family had lots of children they may waste one with schooling. Hopefully, this seems to be changing.
- D. PVK has promised to rumage through his news clipping files and send me sample news articles. I'll pass these along to J. Miller.

Note: SITE in day 142, 224 days left.

Regards,

Goanwalla

SITE STATUS REPORT 31 DECEMBER 75

To finish out the old year, I will give you some SITE problem areas that are causing us some grief. In spite of these SITE is still going well.

OVERTIME

SITE staffing was based on the fact that small competent staffs would handle each area of work. Planned overtime was part of this setup. Now, there is a regulation that says that overtime must be cut to a minimum (zero is the goal). It is very difficult for the managers here to keep things going and it is a day to day, job by job, task to keep an adequate staff here at all times. Compensatory time, of course, is no help because there is no time to take comp time. A high level solution is being worked out but meanwhile our daily meetings are lively.

COMMON PROGRAM

It is fair to say that the common program that originates from Delhi is not of the quality that we would like to see on the SITE transmission. Some of the problems are caused because a fire destroyed the main AIR studio in Delhi. The programs originate in a less than adequate studio and there are other technical problems.

Feedback also indicates that the software is not quite as welcomed as that of some of the other programs. Later, time permitting, I will tell more about this when I report on our Delhi visit of early October 1975.

I made a very sad discovery while I was in Delhi at that time. Many of the Delhi viewers think not only that the Common Program comes to Delhi home TVs via the satellite (it does not), but much to my dismay, most viewers think that this is the SITE program.

It is easy to see how that impression is obtained. The program starts with a picture of ATS-6 and a logo that says Satellite Television from Delhi TV Centre 7-7:30 p.m. daily, the next slide says Satellite News. The dismaying thing is that many of the folks that have this impression about the SITE program are members of the embassy, and other learned people. This same info was verified independently by Dick Nickelson by talking to the UNDP group at Delhi.

BASE PRODUCTION CENTERS

In many past reports I have commented about the problems of producing technically acceptable tapes. Without going into reasons why tapes were bad,

I will list below the video tapes that did not pass the technical qualifications in their preview.

Following is the list of bad video tapes from various centres. Substitutes were asked for all the listed tapes but in many cases substituted tapes were not available and bad tapes were telecast.

(ASS, Ahmedabad SITE Studio; BS, Bombay Studio; BPC, Base production Cuttack; BPD, Base production Delhi; BPH, Base production Hyderabad.)

| <u>Month</u> | <u>ASS</u> | <u>BS</u> | <u>BPC</u> | <u>BPD</u> | <u>BPH</u> | <u>Total</u> |
|--------------|------------|-----------|------------|------------|------------|--------------|
| August | 2 | 0 | 13 | 0 | 0 | 15 |
| September | 0 | 2 | 8 | 1 | 0 | 11 |
| October | 0 | 0 | 2 | 3 | 0 | 5 |
| November | 0 | 0 | 0 | 6 | 0 | 6 |

You can see the trend for yourself. We are trying to work things out in the AIR/ISRO meetings that are held here at Ahmedabad.

PIJ

This last month, the Pij transmitter has experienced some of the AIR time due to component failures; details soon. Good news - it was discovered that several panels on the Pij antenna were inadvertently installed upside down. They were electrically reversed. Much improved antenna pattern.

AGC

For reasons as yet undetermined, the AGC level as measured in the spacecraft, varies by a few dBs during ESCES transmission. But is rock steady during Delhi Earth Station transmission. Although this is causing no problem with viewing on the DRS, it does pose an interesting anomaly. All thinkable areas are being investigated. I enclose below into a November 75 summary of the monthly report.

QUOTE:

Summary of the Monthly Report: Period 1st November to 30th November 1975

1. Broadcast Program Interruptions :

SITE broadcast interruptions added to 7 minutes and 27 seconds. Nadiad broadcast was interrupted for 6 minutes and 58 seconds which includes 5 minutes and 40 seconds of interruption from the program production side.

2. Delhi Broadcast:

Video and audio performance of Delhi broadcast had been changing and many time it was below standard of broadcast. Audio level was clipping many times and it was found with hissing noise.

3. Equipment Failure and Maintenance :

All the equipment were repaired successfully except three ARU sync. units and Otari tape recorder which are awaiting spares.

4. Test and Measurement:

The studio has participated in all the regular test and measurements taken on a daily and weekly basis. The studio has also participated in audio performance testing, the S-band experiment, and studio to ESCES interface checkouts.

5. Quality and Availability of Video Tapes :

The technical quality of video tapes from Delhi BPD was bad. Availability of video tapes in time was a problem this month. On many occasions video tapes came the same day or just one day before telecast. This also created problems in preview. Noisy video and change in tracking was the main problem in BPD tapes. Six tapes from BPD had to be rejected due to this reason. There had been problems of background noise and hissing noise in BPC and BPH tapes. Concerned people have been informed to take appropriate action to look into the problems.

6. Quality of Blank Tapes Received by ITU and AIR:

Recent lot of tapes received from 3M-Scotch has many problems. 1500 tapes received by AIR and 105 tapes received by ITU are substandard in quality. Tapes are not at all suitable for recording. All these substandard tapes are being used in all BPUs for recording.

This is going to create major problems during playback in SITE TV studio, Ammedabad. Immediate action is required to avoid problems in the future.

7. Systems Modification:

Processor bypass has been installed in NEC processor for Nadiad and it is working satisfactorily. There are no black patches from the SITE TV studio going to Pij during Delhi broadcast. Half-inch VTR is being modified so that crossover does not occur in the video portion but it will occur during the vertical sync period and it will not degrade performance of 3 to 4 lines of video information. Magna sync has been found to be highly satisfactory for SEP-MAG operation. This had been possible only after it has been modified for sync operation.

8. Installation and Commissioning:

The VTR 5 has been installed in the console and it is functioning satisfactorily. The VTR 1 has also been installed in the console. The second digital TBC has arrived and it has been installed. It is functioning satisfactorily and is being used for SITE broadcast.

9. R and D Work:

The analogue VITS is being tested and it will be used shortly. Five units of pulse distribution AMPR have been made and chassis is being made. Work on interface unit between half-inch VTR and DTBC for DOC has been completed. It will be tested shortly. Work on video switcher is also going on and it is halfway through.

10. Staff

Many people were on leave for a longer duration because of Dipavali. This created a backlog for the preview of video tapes. This has become smooth now.

Unquote.

SITE is alive and well. Despite all of the above news we have more than ninety percent of the DRS sets working in all states except Bihar where there is almost eighty percent working.

Happy New Year to all.

Note: SITE in day 153, 213 days left only.

Regards, Goanwalla

End of message

SITE STATUS REPORT 17 JANUARY 76

At the invitation of India, a two-week SITE winter school, sponsored by the UN in association with UNESCO, is being held in Ahmedabad from January 16, 1976, we have received very encouraging response. There are seventeen participants, all from developing countries. They are Bolivia, Egypt, Indonesia, Iran, Iran, Iraq, Kenya, Kuwait, Malaysia, Nigeria, Pakistan, Phillipines, Sudan, Thailand, Turkey and Tunisa. The participants are from fields such as educational television, broadcasting, communication engineering, mass communication, etc. It is proposed to give the visitors an exposure to the conception, spirit, planning, and implementation of SITE. After the Ahmedabad session, the participants would be taken for a field visit to villages in Rajasthan for two days and then to Delhi for visits to Delhi Earth Station and base production Centre.

The program got off to a fine start yesterday with three speakers: Prof. Chitnis, H.G. S. Murthy and P. V. Krishnamurthy. NASA received much praise in the opening remarks as PVK discussed the three SITE partners NASA/ISRO/AIR. Karen Karnik then read a message from Dr. Fletcher, NASA and from Prof. Dhawan, ISRO and the winter school was open.

I thought that my duty would be only for the Ahmedabad portion, to help by being a host and to share our observations in the villages (aided by my slides and movies).

However, Mr. H. G. S. Murthy, space expert to the outer space division of the UN asked me to help him by accompanying him and the group throughout the trip. Fifteen minutes later, P. V. Krishnamurthy, Deputy Director General of All India Radio-TV asked me to do him a personal favor and come to Delhi

with the group. Today, ISRO said that it would be good if I would stay with the group until school is over.

So, I guess that I will do my duty and go. Actually Dottie, Mumtaz and I are due shots and TB tests at the end of this month. I was going to let this slide a little, but I can combine this winter school trip, our health care (by having Dottie and Mumtaz join me in Delhi) with a chance to get the latest facts on program production. Although our screens have not gone blank, and we do have, on hand, programs for some days to come, no info has come for a long time on actual program production.

Very soon I will have results of the social evaluations for the first few months of SITE. It took a long time to get the first bit of info from the REC, but now that all of the bins and computers are filled, old results should come out about as fast as new data enter. Our satellite viewing family has grown much larger since SITE started. Rebroadcast centers now exist in the following cities: Amritsar, Bombay, Calcutta, Delhi, Lucknow and Madras.

Amritsar and Lucknow rebroadcast the common program from Delhi at 1900 to 1930 IST each day.

Bombay rebroadcast the independent day festivities on 15 August. The viewers thought that they were watching movies from 15 August 74, until the prime minister made some remarks about current events. It was only then that the surprised viewers came to know that they were watching live TV from Delhi.

On 25, 26, and 29 January 76, Bombay, Calcutta, Madras, Amritsar, and Lucknow will rebroadcast the special show for republic day and the beating of retreat. Srinagar will also rebroadcast those days. On 30 January 76, only the ten min. of news will come from Delhi, the remaining twenty min. of the common program will come from Ahmedabad - 180 days of SITE. Delhi AIR will receive the program and rebroadcast to the Delhi city listeners - and so SITE grows.

Note: SITE in day 170, 196 days left only.

Regards, Goanwalla

SPECIAL REPORT 21 JANUARY 76

One of the attendees at our winter school, Arthur C. Clarke, came to our home for a quick rest/snack break before his public lecture "Space and Developing Nations."

If we had gotten him to the Atira auditorium any later, he could not have given his talk. The overflow crowd would have prevented our getting in.

The lecture was over about twenty minutes ago and I want to report. The theme was to improve conditions on Earth - invest more money in space. Then we had about 40 minutes of NASA slides about Applications Satellites, ERTS, Nimbus, Landsat, ATS-6, not pictures of the satellites, but their results. (ATS-6 slide was shown.) These were followed by manned space flight pictures, from Saturn V (fourth) to footprints on the moon. Then, some space art and things to come. Of course SITE was featured as well as crop, mineral, pollution, weather detection and identification. Another good night for NASA.

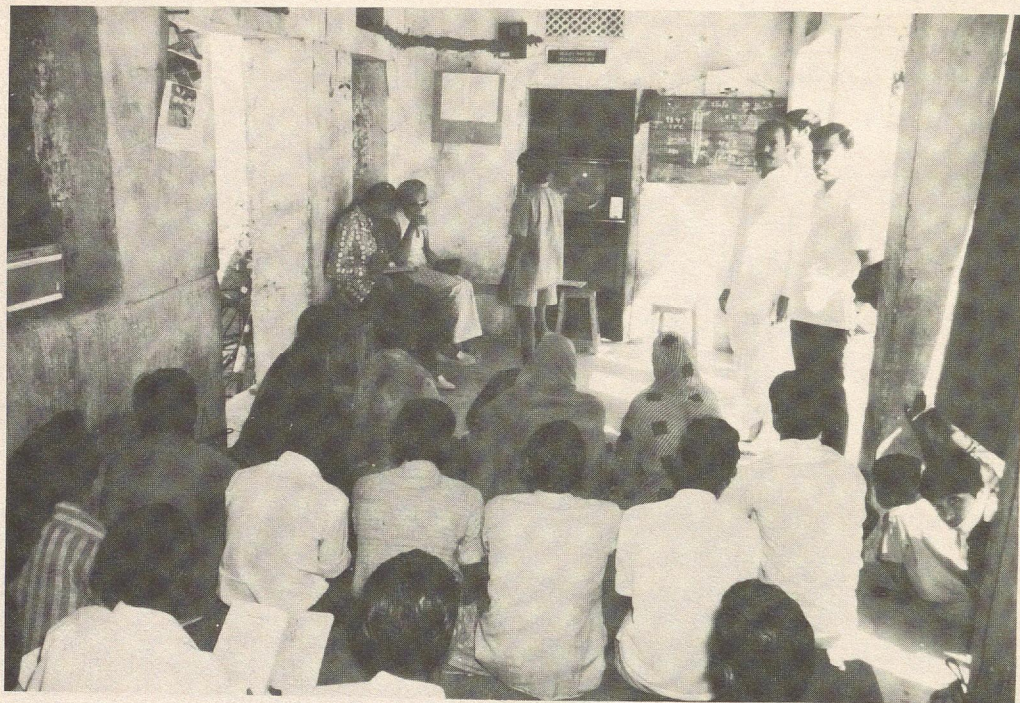
In March, Mr. Clarke will be at MIT, then a visit to GSFC will follow. Be of good cheer.

Note: SITE in day 174, 192 days left only.

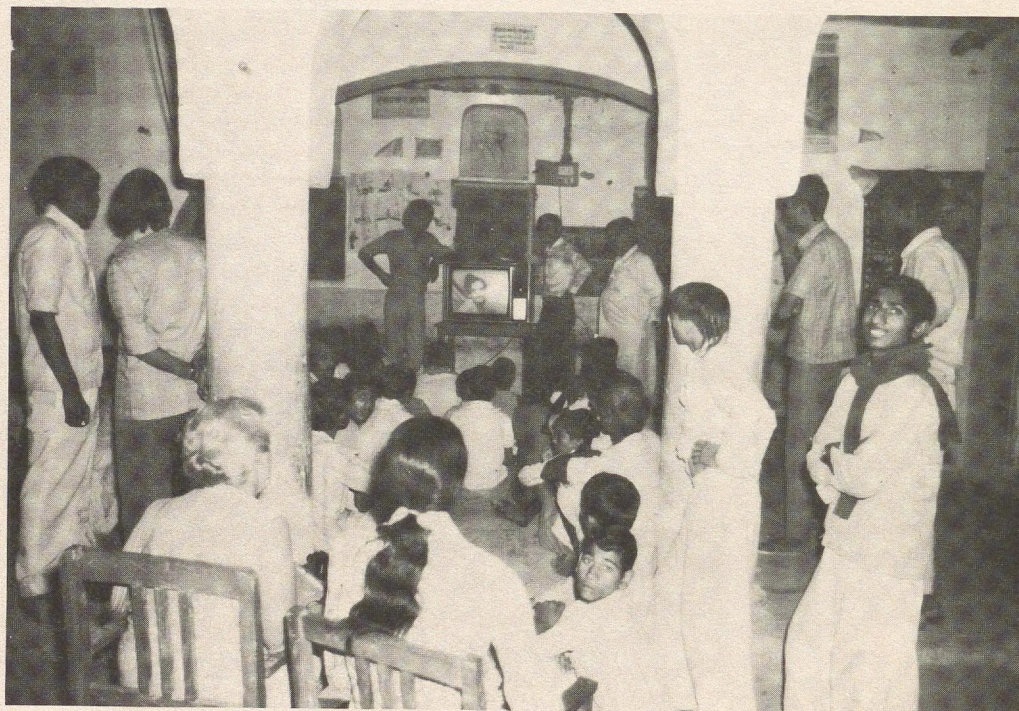
Goanwalla

TYPICAL INSTALLATIONS

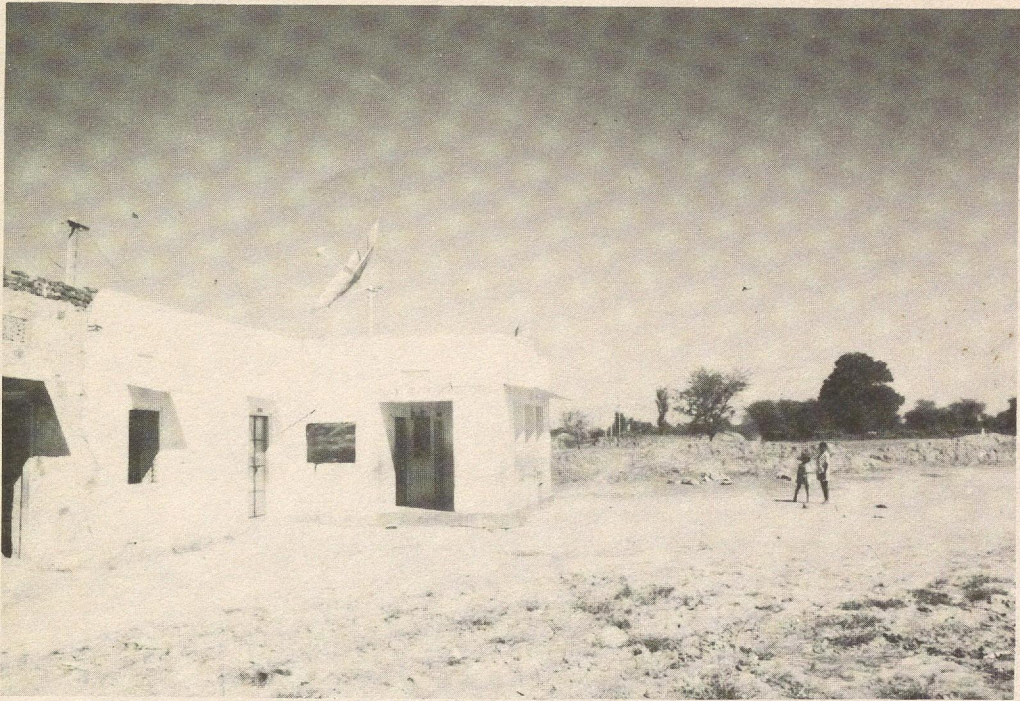
On the following pages are photographs of some of the villages visited by Howard.



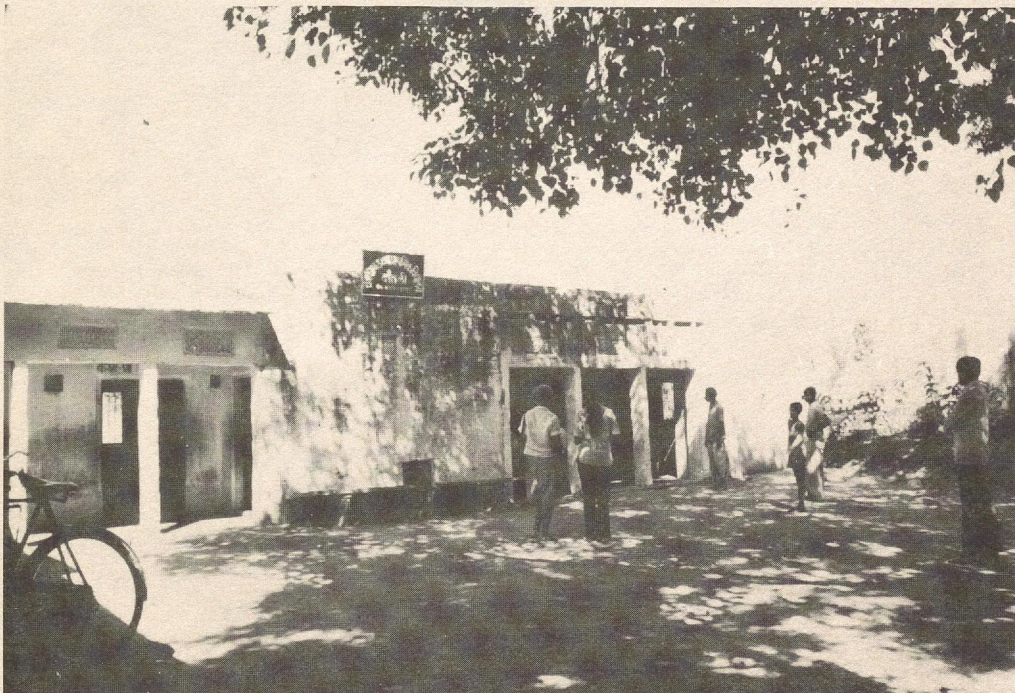
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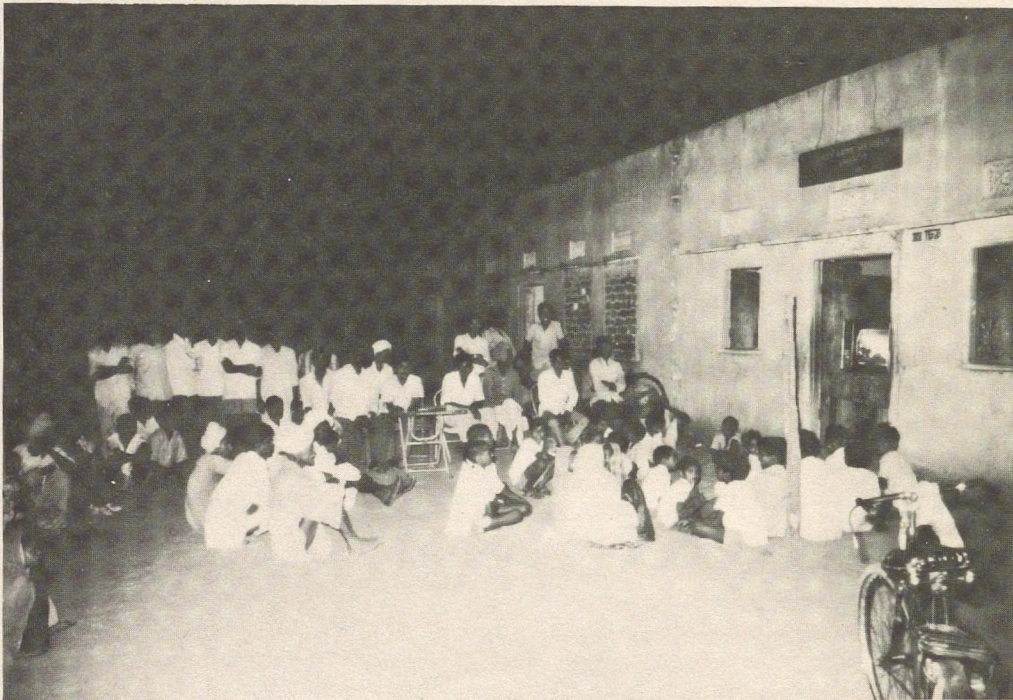
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APPENDIX A

LIST OF ABBREVIATIONS AND ACRONYMS
USED IN HOWARD'S REPORTS

AGC - Automatic Gain Control

ATSOCC - Applications Technology Satellite Operations Control Center

BPU - Base Production Unit

Charca Mandals - Village Meetings

CPI - An Indian Government organization

dB - decibal

DES - Delhi Earth Station, New Delhi, India

DRS - Direct Reception Station

Drums - The building housing the SITE transmitter and C-band receiver equipment is constructed as a series of circular rooms joined by hallways. Howard often referred to this building as the Drums, due to their unique shape.

ECIL - Manufacturer of DRS equipment

ESCES - Experimental Satellite Communications Earth Station, Ahmedabad, India

ESD - Electronic Systems Division, Space Applications Center - Designer of Direct Reception Stations

Goanwalla - Name given to Howard by the Indians. Meaning: fellow villager, good neighbor

HPA - High Power Amplifier

IST - Indian Standard Time (EST plus 10:30)

ITU - International Telecommunications Union

LRB - Limited Rebroadcast

Maund - Slightly less than 40 kg (rarely used since adoption of metric system)

NEC - Nippon Electric Company

NF - Noise Figure

Pij - A village about 50 km from Ahmedabad. A commercial TV transmitter is installed for use as part of the redistribution experiment. The video from the Ahmedabad studio is provided by a microwave link between the two locations.

PVK - P. V. Krishnamurthy, Deputy General, All India Radio (AIR)

REC - Research and Evaluation Cell

SAC - Space Applications Center, Ahmedabad, India

SCM - Subcluster Maintenance Center

SDL - Special Data Link

SITE - Satellite Instructional Television Experiment

SMO - SITE Management Office

SSR - SITE Status Report

TBC - Time Base Corrector

TE - Tail end

TLP - Teleprinter

TTY - Teletype

USIS - United States Information Service

VTR - Video Tape Recorder

Wall Paper - Poster, outdoor advertisement