

**CHHATTISGARH STATE POWER  
TRANSMISSION COMPANY LIMITED (CSPTCL)**

**DGPS Survey of Forest Patches for Diversion  
Proposal of Forest Land in Surguja district for  
132KV DCSSEHT Transmission Line from  
Vishrampur to Parsa**



DGPS SURVEY AND GIS MAPPING DONE BY:  
**Geotrax International Services**  
**Raipur, Chhattisgarh.**

## Table of Contents

1. Introduction and Background .....	3
2. Scope of Work.....	5
3. Deliverables .....	6
4. Brief description of the Technical approach .....	7
4.1 Input Data .....	7
4.2 GIS Data Preparation.....	10
4.3 Establishment of Primary Control Point .....	10
4.4 Establishment of Temporary Benchmarks (TBM) .....	11
4.5 DGPS Survey.....	12
4.6 Creation of Vector Layers of the 132KV Transmission Line.....	12
4.7 Geo-referencing of cadastral map .....	13
4.8 Creation of Forest Patches.....	14
4.9 Specification of DGPS Equipment .....	15
5. Results .....	17
6. Background of Organization .....	19
6.1 Company Profile: Geotrax .....	19
7. Annexures .....	21
7.1 Annexure – 1: PCP Observation Processing Report .....	21
7.2 Annexure – 2: DGPS Surveyed co-ordinates of Centreline .....	28
7.3 Annexure – 3: DGPS Surveyed co-ordinates of Forest Patches .....	32
7.4 Annexure – 4: DGPS Surveyed Map of 132KV Transmission Line showing proposed forest diversion area .....	35

## 1. Introduction and Background

Government of India, Ministry of Coal has allotted Parsa East & Kente Basen Coal block situated at Village: Parsa, Tehsil-Udaipur, Distt-Surguja to M/s Rajasthan Rajya Vidyut Utpadan Nigam Limited for fulfilling the requirement of Coal for Thermal Power Stations situated at Kalisindh & Chhabra in the State of Rajasthan.

Further to the above approvals, for fulfilling the power requirements at PEKB Open cast Coal Mines, Chhattisgarh State Power Distribution Company Limited has sanctioned 15MVA Load Requirement vides letter no: 02-02/EE-IV/BLS-309/4473 dated 21/03/2013. Further Chhattisgarh State power Transmission Company limited Raipur has approved the final Route of transmission line from 220/132kv Substation situated at Vishrampur, Dist.-Surguja to 132/33kv substation situated at Village: Parsa. Total Route length of transmission line is 80.4kms (approx.).

132kV Vishrampur-Parsa Transmission line passes through two Districts, i.e. Surajpur & Surguja, and five tehsils of these districts. It passes through two forests Division; Surajpur Forest Division, Surajpur & Surguja forest Division Ambikapur.

In Surajpur forest Division, Transmission line passes through two forests ranges i.e. Surajpur forest Range & Ramanujnagar/Premnagar forest Range. Total Revenue forest land proposed to be diverted in the Surajpur Division is 15.766 Ha.

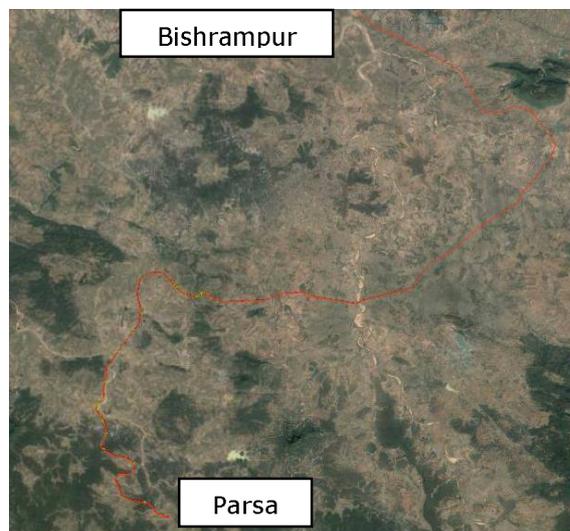
In Surguja forest Division, Transmission line passes through three forest ranges i.e. Ambikapur, Lakhanpur & Udaipur Forest Ranges, Total Revenue forest land proposed to be diverted in this division is 3.619 Ha.

This transmission line only Infringing REVNEUE FOREST LAND, and there is no Reserved and Protected forest land in the proposed transmission line corridor.

**Total Forest land proposed for diversion is 19.385 Ha.**

Specially designed towers are used for transmission line passing through the forest patches such that the ground clearance of bottom conductor is above 14 meters.

This Project will overcome all the drawbacks of existing power system, since this proposed land is best located for the incoming & Outgoing Vishramapur-Parsa transmission line with proper road Connectivity. This Project will also fulfill the Electrical Connectivity for upcoming power requirements.



*Fig-1: 132KV Transmission Line Corridor on Satellite Imagery*

*As per directives of Ministry of Environment & Forests dated 8th July 2011; all applications seeking diversion of forest land for non-forest purpose under Forest Conservation Act, 1980 must be accompanied with Geo-referenced shape file (both soft copy and hard copy maps) of the forest land proposed for diversion prepared using Differential GPS (DGPS).*

To meet this requirement of MoEF, CSPTCL entrusted the DGPS survey work to M/s Geotrax International Services, Raipur, which is specializing in such assignments.

## 2. Scope of Work

1. Establishment of one base station for DGPS Survey and temporary benchmarks at every 10km.
2. Fixation of corridor boundary point by DGPS (Boundary point fixed at every corner and turning point. It also includes
  - a. DGPS survey to collect the 132KV Pylon/Tower coordinates
  - b. DGPS Survey of revenue forest khasra boundaries
3. Data processing and Interpretation
  - a. Geo-referencing of cadastral map and identification of revenue forest khasras
  - b. Creation of Tower centerline layer using DGPS coordinates and creation of conductor corridor
  - c. Superimposition of Tower corridor layer on Georeferenced cadastral maps
  - d. Creation of forest patches (comprise one or more adjoining forest khasras) from the Geo-referenced cadastral maps and computation of forest area of individual forest patches, per village
  - e. Preparation of Geo-referenced forest map and creation of an area statement showing proposed area for forest diversion
  - f. Preparation of DGPS survey report along with soft copy of – maps in shapefile format and kml file
4. Printing of report and Geo-referenced maps (7sets) and Technical compliance.

### 3. Deliverables

The deliverables envisaged for the assignment are described below

1. Post processed DGPS observations data as well as raw data in RINEX format.
2. DGPS Reports - Base line & network adjustment report for the primary and temporary benchmarks.
3. Geo-referenced cadastral maps & forest block maps (for PF/RF areas, if any) based on DGPS observations.
4. Geo-reference shape file (Soft copy) of Forest Patches, tower centerline and conductor corridor.
5. Area statement as per DGPS Survey showing proposed area for forest diversion
6. DGPS Survey and mapping report

## 4. Brief description of the Technical approach

### 4.1 Input Data

The land plan and maps required for geo-referencing were provided by Sarguja Rail Corridor Private limited to M/s Geotrax International Services. The certified revenue maps and No Objection Certificate (NOC) (pertaining to revenue forest land) is given by honorable District Collector of Surajpur and Surguja Districts. This NOC was used to identify the revenue forest khasras falling in the transmission line corridor.

Annexure-I

**FORM - I**  
(For linear project)  
**Government of Chhattisgarh**  
**Office of the District Collector : Surguja**  
**TO WHOMSOEVER IT MAY CONCERN**

No. 1674 Dated 24/09/2016

In compliance of the Ministry of Environment and Forests (MoEF) Government of India's letter No. 11-9/98 FC (pt.) dated 3rd August 2000 wherein the MoEF issued guidelines on submission of evidence for having initiated and completed the process of settlement of rights under the Scheduled Tribes and Other Traditional Forest dwellers (Recognition of Forest Right) Act 2006 (FRA for short) on the forest land proposed to be diverted for non-forest purposes, read with MoEF's letter dated 5th February 2013 wherein MoEF issued certain relaxation on respect of linear projects, it is certified that 3.619 Hectares of forest land proposed to be diverted in favour of Chhattisgarh State Power Transmission CO. LTD. For Transmission Line from Vishrampur to Parsa from 220/132kV S/s Vishrampur to Village Parsa for power requirement of Parsa East and Kete Basen Open Cast Coal Mine Project in Surguja district falls within jurisdiction of respectively Bankipur, Krishnapur, Madesa, Fatehpur, Sapana Villages in Ambikapur tehsil and Puhputara, Koraja villages in Lakhanpur tehsil and Salhi villages in Udaipur tehsil.

It is further certified that :

- (a) The complete process for identification and settlement of rights under the FRA has been carried out for the entire 3.619 hectares of forest land proposed for diversion. A copy of records of all consultations and meetings of the Forest Rights Committee (s), Gram Sabha (s), Sub-Division Level Committee(s) and the District Level Committee are enclosed as annexure -1- to annexure -2-.
- (b) The diversion of forest land for facilities managed by the Government as required under section 3(2) of the FRA have been completed and the Gram Sabhas have given their consent to it.
- (c) the proposal does not involve recognised rights of Primitive Tribal Groups and Pre-agricultural communities.

Encl : As above

  
**COLLECTOR**  
**DISTRICT - SURGUJA (C.G.)**



कार्यालय अनुविभागीय अधिकारी (रा0) अम्बिकापुर जिला सरगुजा(छ0ग0)

क्रमांक 2927/मु0लि0/2016  
प्रति,

अम्बिकापुर दिनांक 09/09/2016

✓ कलेक्टर सरगुजा  
(भू-अभिलेख शाखा)

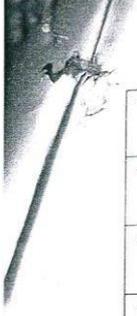
विषय:- 132 के व्ही.डी.सी.एस.ई.एच.टी.विद्युत पारेषण लाईन ग्राम सतपता(विश्रामपुर) से परसा तक निर्माण हेतु मार्ग में आने वाले राजस्व वन भूमि का गैर वानिकी उपयोग हेतु संशोधित अनापत्ति प्रमाण पत्र बावत।

संदर्भ:- आपका पत्र क्रमांक 1545/स.अ.भू.अ.-2/2016 दिनांक 06.09.2016

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विषयान्तर्गत 132 के व्ही.डी.सी.एस.ई.एच.टी.विद्युत पारेषण लाईन ग्राम सतपता(विश्रामपुर) से परसा तक 79 कि.मी. विद्युत लाईन बिछाये जाने की स्वीकृति प्राप्त होने पर उपरोक्त प्रस्तावित विद्युत लाईन बिछाये जाने से प्रभावित तहसील अम्बिकापुर के ग्राम बांकीपुर,फतेहपुर,सुखरी,सपना,मुड़ेसा,कृष्णापुर तहसील लखनपुर के ग्राम पुहपुटरा,कोरजा तथा तहसील उदयपुर के ग्राम साल्ही में आने वाले राजस्व वन भूमि का गैर वानिकी उपयोग हेतु संशोधित अनापत्ति प्रमाण पत्र की चाही गई जानकारी निम्नानुसार है:-

क्र.	तहसील का नाम	ग्राम का नाम	ख.क्र.	कुल रकबा हे.मे.	उपयोग हेतु मांगी गई भूमि का रकबा हे.मे.	भूमि का किस्म
1	अम्बिकापुर	बांकीपुर	465/1	0.229	0.030	छोटे झाड़ का जंगल
2	-----"-----	बांकीपुर	435/1	1.724	0.204	छोटे झाड़ का जंगल
3	-----"-----	कृष्णापुर	567/1	32.262	0.114	छोटे झाड़ का जंगल
4	-----"-----	मुड़ेसा	17/1	5.284	0.441	छोटे झाड़ का जंगल
5	-----"-----	फतेहपुर	103	4.400	0.278	छोटे झाड़ का जंगल
6	-----"-----	सपना	943/1	0.716	0.207	छोटे झाड़ का जंगल
7	लखनपुर	पुहपुटरा	142/1	16.074	0.253	छोटे झाड़ का जंगल
8	-----"-----	पुहपुटरा	775/1	12.144	0.512	छोटे झाड़ का जंगल
9	-----"-----	कोरजा	1179	0.146	0.062	छोटे झाड़ का जंगल



10	उदयपुर	साल्ही	779 / 5	2.617	0.386	छोटे झाड़ का जंगल
11	-----"-----	साल्ही	795	2.792	0.058	छोटे झाड़ का जंगल
12	-----"-----	साल्ही	735 / 1	7.225	0.540	छोटे झाड़ का जंगल
13	-----"-----	साल्ही	735 / 7	0.605	0.200	छोटे झाड़ का जंगल
14	-----"-----	साल्ही	767 / 1	15.290	0.334	छोटे झाड़ का जंगल
कुल योग			14	101.515	3.619	

- (2) प्रस्तावित खसरो पर वन अधिकार पत्र प्रक्रियाधीन नहीं है।  
 (3) प्रस्तावित खसरो/भू-खण्डों पर पी.टी.जी./के निवासरत एवं प्रभावित होना नहीं पाया गया है।  
 (4) संबंधित ग्राम सभाओं की कार्यवाही विवरण एवं उप खण्ड स्तरीय वन अधिकार समिति की कार्यवाही विवरण की सत्यापित प्रति संलग्न है।  
 उपरोक्तानुसार प्रतिवेदन सादर प्रेषित है।  
 संलग्न:- उपरोक्तानुसार।

न  
 अनुविभागीय अधिकारी(रा0)  
 अम्बिकापुर

## 4.2 GIS Data Preparation

Based on the input data (maps, tower details) and information provided by *Revenue Department of Surguja and Surajpur*, the DGPS base station - Primary and Temporary Benchmarks Control Points (PCP and TBM) in the project area are planned. One PCP with 72 hours observation was planned and established on the roof top of the Forest Department Guest House (Shiv Park), Surajpur. Using satellite imagery TBM are planned at an average of every 10km distance along the 132 KV Towerline.



*Fig-2: Satellite Image showing the location of the Primary Control Point*

## 4.3 Establishment of Primary Control Point

The Primary Control Point (PCP) with 72 hours of DGPS Observation was established as the DGPS base station. The PCP was established in the roof top of the Forest Department Guest House (Shiv Park) in Surajpur. As per Survey of India (SOI) Guideline, the PCP is to be fixed through continuous observation for 72 hours duration. The 72 hours of observation was carried out using DGPS from 21<sup>st</sup>Jan 2016 to 23<sup>rd</sup>Jan 2016. The observed data was processed with reference to the data of International GNSS Service (IGS) stations as per SOI guideline (IGS processed report is enclosed as Annexure-1).

The coordinate of the PCP is as follows:

Latitude: N23°12'52.39830", Longitude: E82°52'59.05540"

Easting: 692697.708m, Northing: 2568519.766m (as per UTM Zone 44N)

Elevation (EGM2008): 546.155m, Ellipsoidal Height: 486.573 m.



*Fig-4: Images showing Primary Control Point (PCP)*

#### **4.4 Establishment of Temporary Benchmarks (TBM)**

The Temporary Control Point with 4-6 hours of static observation was established at an average of 10km distance on near permanent locations along the 132 KV tower corridor. All the TBM's are connected to the Primary Control Point (PCP).

Below table lists the coordinates of TBMs:

Point Id	Latitude	Longitude	Ellipsoidal Height (m)	Easting (m)	Northing (m)	EGM96 Height (m)
TBM_1	23°10'38.71605"N	082°56'58.19404"E	492.0627	699552.2575	2564496.97	551.55108
TBM_2	23°04'54.85331"N	083°05'34.66846"E	518.3599	714393.7152	2554122.17	577.69118
TBM_3	22°59'13.05503"N	082°56'30.45343"E	504.9623	699043.6476	2543393.73	564.74607
TBM_4	22°52'35.94602"N	082°47'30.32419"E	441.1331	683809.4341	2530982.78	501.27169



## **4.5 DGPS Survey**

DGPS survey was carried out using a pair of DGPS instrument. One DGPS Instrument was used as Base Station. The Base station for the survey was established at the nearest TBM. The distance between the Base Station PCP/TBM and rover was always less than 5km.

The other DGPS instrument was working as Rover. The survey was conducted in Real Time Kinematic (RTK) mode. The Survey team carried out DGPS Survey of 132KV tower centerline by walking along the corridor. DGPS readings were collected at every 50m distance along 132KV transmission line and at prominent locations such as culverts, bridges etc. were recorded. For Geo-referencing village maps on an average of 10 GCPs were collected for each village.

The static data is Post Processed using Trimble Business Centre software for obtaining the TBM coordinates.

## **4.6 Creation of Vector Layers of the 132KV Transmission Line**

The power line centerline points captured through DGPS were plotted in the GIS Software and the centerline was created by joining the points. Along with power line centerline, the corridor points captured using DGPS were also plotted and the corridors were created. Several DGPS points (TBM) taken at prominent near-permanent locations were also plotted. After editing the layers, the final centerline and Tower line corridor is created as per the requirement of CSPTCL.

## 4.7 Geo-referencing of cadastral map

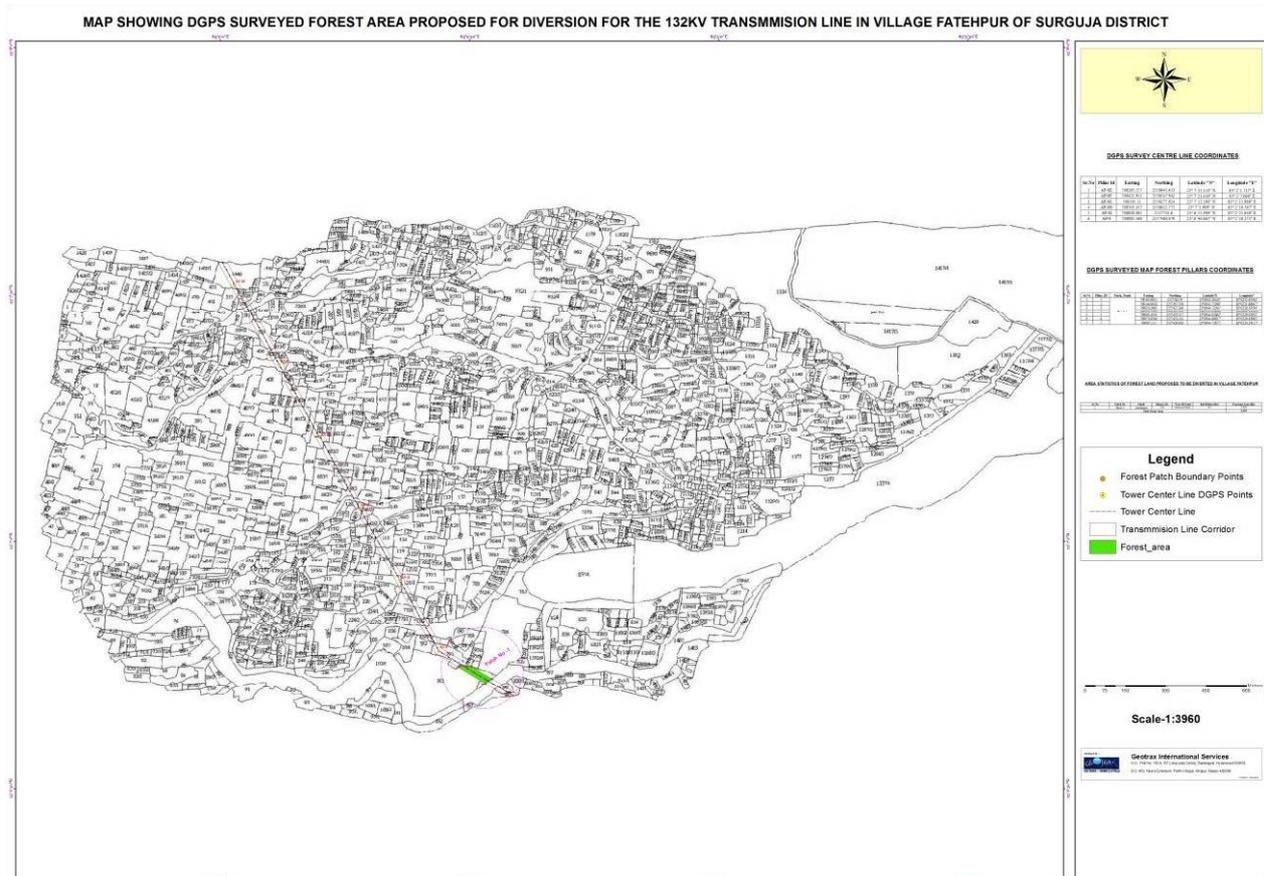
The Ground Control Points (GCP) fixed through DGPS survey were used to geo-reference the digitized cadastral maps by applying the co-ordinate value of the field observation to the corresponding point on the map.

Table of DGPS Surveyed GCP's for Geo-referencing Cadastral Maps					
Sl.No.	Name of the Village	Northing (m)	Easting (m)	Latitude	Longitude
1	Bankipur	2555104.798	714263.696	23°5' 26.848" N	83°5' 30.596" E
2	Bankipur	2555104.731	714263.73	23°5' 26.845" N	83°5' 30.597" E
3	Bankipur	2555214.596	713991.612	23°5' 30.542" N	83°5' 21.093" E
4	Bankipur	2555748.261	714062.544	23°5' 47.853" N	83°5' 23.853" E
5	Bankipur	2555828.688	714339.502	23°5' 50.337" N	83°5' 33.623" E
6	Bankipur	2556112.58	714224.304	23°5' 59.617" N	83°5' 29.719" E
7	Bankipur	2555603.132	714325.38	23°5' 43.014" N	83°5' 33.013" E
8	Bankipur	2555683.812	714321.712	23°5' 45.637" N	83°5' 32.925" E
9	Bankipur	2555979.453	715067.252	23°5' 54.897" N	83°5' 59.265" E
10	Bankipur	2555385.877	715298.063	23°5' 35.499" N	83°6' 7.073" E
11	Bankipur	2555263.635	715290.435	23°5' 31.530" N	83°6' 6.744" E
12	Brindawan	2539130.2	682536.367	22°57' 1.279" N	82°46' 49.125" E
13	Brindawan	2539584.379	682463.857	22°57' 16.071" N	82°46' 46.773" E
14	Brindawan	2539559.404	682199.751	22°57' 15.363" N	82°46' 37.492" E
15	Brindawan	2539565.941	682113.89	22°57' 15.609" N	82°46' 34.481" E
16	Brindawan	2539569.875	681799.038	22°57' 15.861" N	82°46' 23.432" E
17	Brindawan	2539397.094	681259.719	22°57' 10.456" N	82°46' 4.429" E
18	Brindawan	2539488.471	680760.588	22°57' 13.621" N	82°45' 46.948" E
19	Brindawan	2539659.536	682733.588	22°57' 18.408" N	82°46' 56.272" E
20	Brindawan	2539627.388	682753.048	22°57' 17.355" N	82°46' 56.941" E
21	Brindawan	2539465.819	683485.392	22°57' 11.814" N	82°47' 22.577" E
22	Brindawan	2539523.262	683585.425	22°57' 13.641" N	82°47' 26.113" E
23	Brindawan	2539740.87	683717.985	22°57' 20.662" N	82°47' 30.859" E
24	Brindawan	2540322.608	684031.6	22°57' 39.447" N	82°47' 42.116" E
25	Brindawan	2540325.044	683984.373	22°57' 39.545" N	82°47' 40.460" E
26	Brindawan	2540348.502	683940.348	22°57' 40.325" N	82°47' 38.924" E
27	Brindawan	2540378.864	683871.793	22°57' 41.339" N	82°47' 36.531" E
28	Brindawan	2540448.107	684009.531	22°57' 43.535" N	82°47' 41.395" E
29	Brindawan	2540448.262	684009.411	22°57' 43.540" N	82°47' 41.391" E
30	Brindawan	2540635.156	682970.041	22°57' 50.027" N	82°47' 4.988" E
31	Brindawan	2540529.667	682717.036	22°57' 46.698" N	82°46' 56.062" E
32	Brindawan	2539627.388	682753.048	22°57' 17.355" N	82°46' 56.941" E
33	Brindawan	2539465.819	683485.392	22°57' 11.814" N	82°47' 22.577" E
34	Brindawan	2539523.262	683585.425	22°57' 13.641" N	82°47' 26.113" E
35	Brindawan	2539740.87	683717.985	22°57' 20.662" N	82°47' 30.859" E
36	Brindawan	2540322.608	684031.6	22°57' 39.447" N	82°47' 42.116" E

## 4.8 Creation of Forest Patches

After application of geometric corrections (geo-referencing of cadastral), and overlaying the 132KV power line corridor layer, the forest patches were extracted from individual cadastral map (as per land schedule revenue forest and non-forest khasra are identified) along with computation of DGPS coordinates of forest land patch boundary.

The geo-referenced forest land map (showing forest patches) was prepared by integrating the geo-referenced cadastral map sheets and 132KV power line vector layers (tower centerline along with corridor).



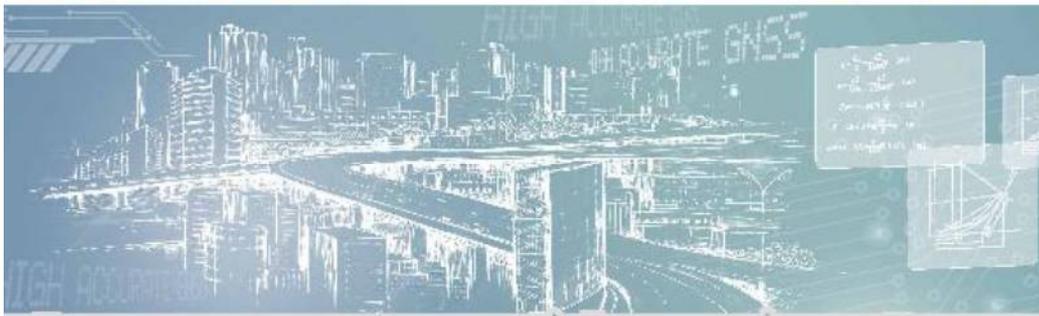
*Fig-2: Image showing DGPS Survey alignment of 132KV transmission line on cadastral map of Village Fatehpur in Surguja district.*

## 4.9 Specification of DGPS Equipment

Geotrax deployed the most advance and hi-precision devices to carry out the DGPS survey. The DGPS performance specifications are given below. The corresponding fact sheets are placed below for ready reference.

# COMNAV

## T300 GNSS Receiver



### Features

- Ultra small
- Super light
- Many user-friendly conveniences built in
- GPS L1/L2/L5, BeiDou B1/B2/B3, GLONASS L1/L2
- Low power consumption
- Support long baseline E-RTK<sup>1</sup>

### RTK robust enough for challenging environments, in a device that is light and easy to carry

With decades of experience in the surveying GNSS receiver, the T300 is a product which combines lots of market proved advantages together. It can track all the working GNSS constellations. By using ComNav's unique QUAN™ algorithm technology, it can function in RTK mode with all the GNSS constellations or by using any single GNSS constellation such as GLONASS or BeiDou. The strong anti-interference ability of the receiver makes it possible to work in any environment.

### Design driven to improve user experience

Our R&D people are always thinking about how to improve the physical experience of users and workflow in the field. With this in mind, the T300 integrates a cutting edge GNSS board, Bluetooth®, UHF (Rx&Tx) into a compact board. Smart design makes the T300 the lightest and smallest (volume) receiver in the world.

### Hot swap battery design

Extending the field working time is also a passion for our R&D people. They do lots of tests and analysis to reduce the power consumption, and make the whole system work more efficiently. In parallel, they've designed in the capability to hot swap the battery source. When the warning sounds and LED flashes, put your second battery in place. Then recharge the first while you keep working.

### Consumer grade batteries... always available

Losing power in the field is significantly inconvenient for users, as the batteries for GNSS receivers are often unusual types and not readily available. Once again our R&D people developed a solution so that the T300 runs on normal consumer batteries.

## Signal Tracking

- 256 channels with simultaneously tracked satellite signals
- GPS: L1 C/A, L1 C, L2 P, L5
- BeiDou: B1, B2, B3
- GLONASS: L1, L2
- SBAS: WAAS, EGNOS, MSAS, GAGAN

## Performance Specifications

- Cold start: <50 s
- Warm start: <30 s
- Hot start: <15 s
- Initialization time: <10 s
- Singal re-acquisition: <2 s
- Initialization reliability: >99.9%

## Positioning Specifications

- Post Processing Static
  - Horizontal: 2.5 mm + 0.5 ppm RMS
  - Vertical: 5 mm + 0.5 ppm RMS
- Real Time Kinematic
  - Horizontal: 8 mm + 1 ppm RMS
  - Vertical: 15 mm + 1 ppm RMS
- E-RTK<sup>1</sup> (baseline<100 km)
  - Horizontal: 0.2 m + 1 ppm RMS
  - Vertical: 0.4 m + 1 ppm RMS
- Code differential GNSS positioning
  - Horizontal: 0.25 m+ 1 ppm RMS
  - Vertical: 0.5 m + 1 ppm RMS
- SBAS: Typically <1 m 3D RMS
- Standalone: <1.5 m 3D RMS

## Communications and Memory

- 1 Serial port (7 pin Lemo), Baud rates up to 921,600 bps.
- Radio modem: Tx/Rx with full frequency range from 410-470 MHz<sup>2</sup>
  - Transmit power: 0.5-2W adjustable
  - Range: 1-4 km
- Position data output rates: 1 Hz, 2 Hz, 5 Hz, 10 Hz
- 5 LEDs (indicating Power, Satellite Tracking, Bluetooth<sup>®</sup> and Differential Data)
- Bluetooth<sup>®</sup> : V 2.X protocol, work compatible with Windows 7, Windows mobile and Android

## Data Format

- Correction data I/O:
  - RTCM 2.x, 3.x, CMR (GPS only), CMR+ (GPS only).
- Position data output:
  - ASCII: NMEA-0183 GSV, RMC, HDT, VHD, GGA, GSA, ZDA, VTG, GST, PJK, PTNL
  - ComNav Binary update to 20 Hz

## Physical

- Size(WxH): 15.8 cm x 7.5 cm
- Weight: 0.95 kg (include 2 batteries)

## Environmental

- Operating temperature: -40 °C to +85 °C (40 °F to 149 °F)
- Storage temperature: -40 °C to +85 °C (40 °F to 185 °F)
- Humidity: 100% condensation
- Waterproof and dust proof: IP67 protected from temporary immersion to depth of 1 meter, floats
- Shock: survives a 2 meter drop on to concrete

## Electrical

- Input Voltage: 5-27 VDC
- Power consumption: 2.85 W (3 constellations)<sup>3</sup>
- Li-ion battery capacity: 2 x 1800 mAh, up to 8 hours typically
- Memory: 256 MB internal with up to 16 GB pluggable memory card

## Software

- ComNav field data collection software CGSurvey
- Carlson's SurvCE field data collection software (optional)
- MicroSurvey's FieldGenius field data collection software (optional)

<sup>1</sup> E-RTK, BeiDou B3 signal used in RTK calculate engine; concern the current situation, this mode can be used in APAC.  
<sup>2</sup> 410-470 MHz, 3 frequency range, 410-430, 430-460, 460-470, need to clarify when place the order.  
<sup>3</sup> Power consumption will increase if using internal radio modem transmitter.  
 Specifications subject to change without notice.

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## 5. Results

The forest area proposed for diversion is computed from the Geo-referenced map and the area of each Revenue Forest Khasra was compared with the village ROR data given by Revenue Department. DGPS Survey processing report and co-ordinates of the PCP are in Annexure-1, and DGPS coordinates of TBM and 132KV transmission line Centerline coordinates is in Annexure-2. The geo-referenced co-ordinates of forest land patches for each village is in Annexure -3.

The area statement is given in the following below tables:

### **Total Forest Diversion Area Summary**

<b>Area Statement of Forest Area proposed for diversion</b>			
<b>Sl.No.</b>	<b>District Name</b>	<b>Revenue Forest Area as per NOC (Ha)</b>	<b>Revenue Forest Area calculated through DGPS Survey (Ha)</b>
1	Surguja	3.619	3.619
2	Surajpur	15.766	15.766
	<b>TOTAL</b>	<b>19.385</b>	<b>19.385</b>

### **Forest Diversion Area Details in Surguja District**

<b>Sl.No</b>	<b>Tehsil</b>	<b>Village</b>	<b>Khasra Number</b>	<b>Type Of Land</b>	<b>Proposed Area (Ha)</b>
1	Ambikapur	Fatehpur	103	Chote Jhad Ke Jungle	0.278
2		Sapna	943/1		0.207
3		Bankipur	465/1		0.03
4		Bankipur	435/1		0.204
5		Mudessa	17/1		0.441
6		Krishanpur	567/1		0.114
7	Lakhanpur	Puputra	142/1		0.253
8		Puputra	775/1		0.512
9		Korja	1179		0.062
10	Udaipur	Salhi	779/5		0.386
11		Salhi	795		0.058
12		Salhi	735/7		0.2
13		Salhi	735/1		0.54
14		Salhi	767/1		0.085
15		Salhi	767/1		0.173
16		Salhi	767/1		0.035
17		Salhi	767/1		0.041
<b>Total Area</b>					<b>3.619</b>

### **Non-Forest Area statement in Surguja district**

Sl.No	District	Tehsil	Village	Proposed Area (Ha)
1	Surguja	Ambikapur	Fatehpur	4.944
2			Sukhri	1.396
3			Dhangawan	3.755
4			Sapna	5.942
5			Runpur	3.415
6			Bankipur	4.482
7			Mudessa	4.768
8			Krishanpur	3.950
9		Lakhanpur	Puputra	10.575
10			Ganeshpur	3.606
11			Janakpur	3.003
12			Korja	6.533
13			Latauri	5.857
14			Umrauli	4.308
15		Udaipur	Chainpur	7.238
16			Khamariya	6.031
17			Nunera	7.309
18			Karaundi	7.872
19			Ghunchapur	1.936
20			Lalati	5.396
21			Salhi	11.638
22			Parsa	6.526
<b>Total Non Forest</b>				<b>120.479</b>



## 6. Background of Organization

### 6.1 Company Profile: Geotrax

Geotrax International Services ([www.geotrax.in](http://www.geotrax.in)) is a Professional Land Mapping and Services provider across India established in the year 1999. During the last 14+ years, we had an opportunity to execute a variety of surveying jobs all over India and in the Middle East to various customer specifications for RIS, LIS, and Municipal GIS oriented jobs. Cadastral Surveys using ETS/DGPS and Provision of Ground control conforming to stringent accuracy standards using high end instruments as RTK/GPRS DGPS is our specialty. We also have a UAV (Drone) and Ground Penetrating Radar (on Roaster).

Geotrax is headed by Mr. V.V.S Bandhakavi (Ex-Survey of India employee) who has more than 40+ years' experience in the field of surveying in India and abroad.

Some of our major clients include:

- Odisha Space Application Centre (ORSAC)
- Steel Authority of India (SAIL)
- National Thermal Power Corporation (NTPC)
- Survey Settlement and Land Records Department (Govt. Of Gujarat)
- Survey Settlement and Land Records Department (Govt. Of Madhya Pradesh)
- Irrigation Dept. (Govt. of Jammu and Kashmir)
- National Remote Sensing Agency (Hyderabad)
- Meinhardt India Private Limited (Delhi),
- Nagarjuna Construction Company (NCC, Hyderabad)
- Consulting Engineering Services (CES, New Delhi)
- Lee Associates of South Asia (LASA, Delhi)
- Power development Corporation (Govt. of Jammu and Kashmir)

Geotrax expertise covers:

- ❖ DGPS Surveys for Mining lease boundary, and Forest Diversion
- ❖ Consultancy services for Mining Plan & EIA
- ❖ Boundary and cadastral surveys using DGPS and Total station;
- ❖ Topographic surveys.
- ❖ Ground control surveys for photogrammetric projects, including Airborne GPS.
- ❖ Only one of the two companies in India who are empanelled by NRSA for DGPS survey for ground control point collection
- ❖ Route and alignment surveys combining conventional and photogrammetric methods.
- ❖ Construction and cross-section surveys (from road design to precision layout and quality control).

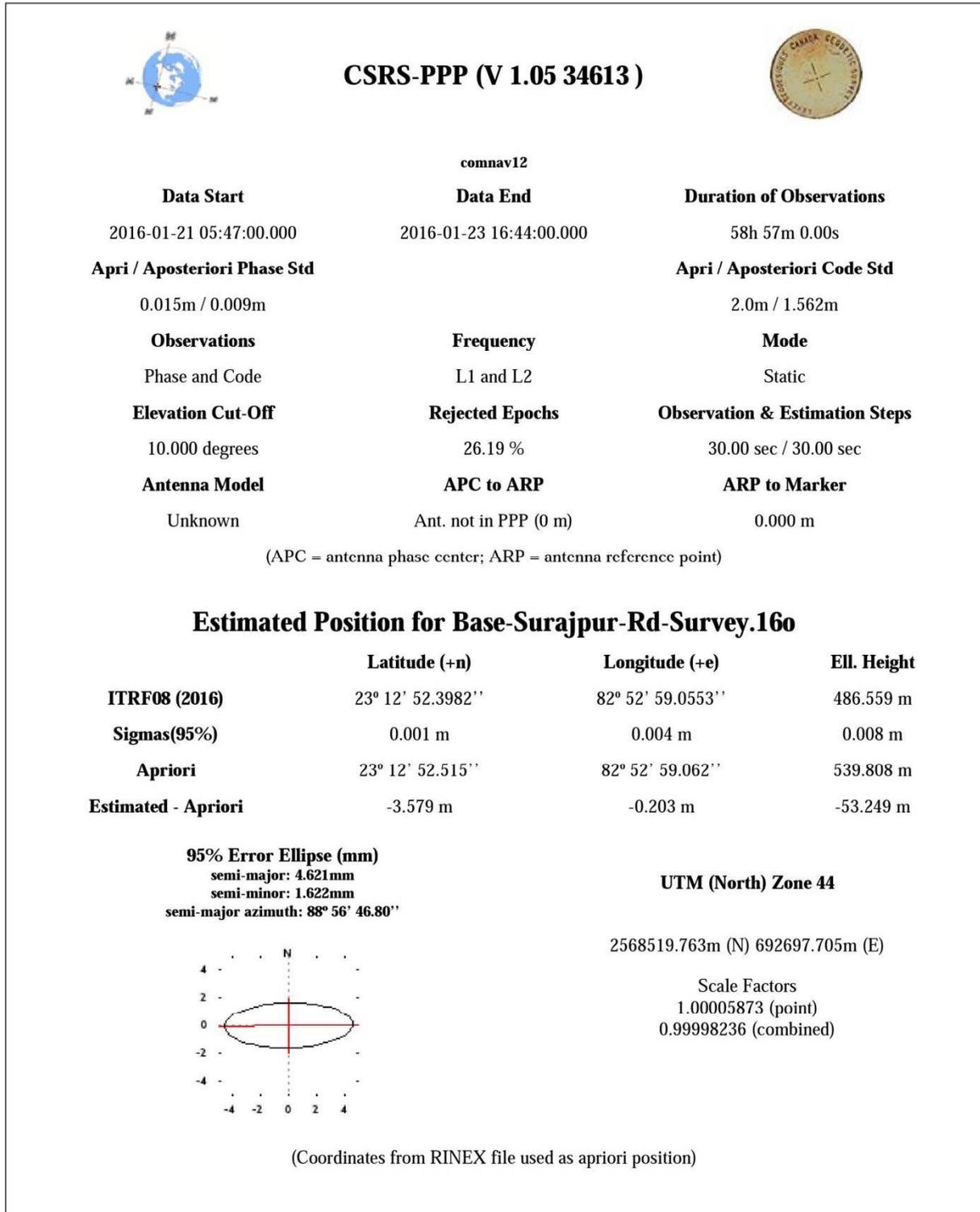


Being a client focused organization, Geotrax's combination of survey equipment, personnel, and computer resources allow for the tailoring of the project approach to match the orders of accuracy and precision requirements for each project. Geotrax's equipment resources include 250 DGPS, 33 hand-held GPS units, theodolites, electronic digital and automatic levels, 19 Electronic Total Stations, and data collectors.

On the mapping side, our CAD and GIS professionals assist the survey projects by creating accurate maps. We have dedicated CAD experts who have extensive experience with different CAD software.

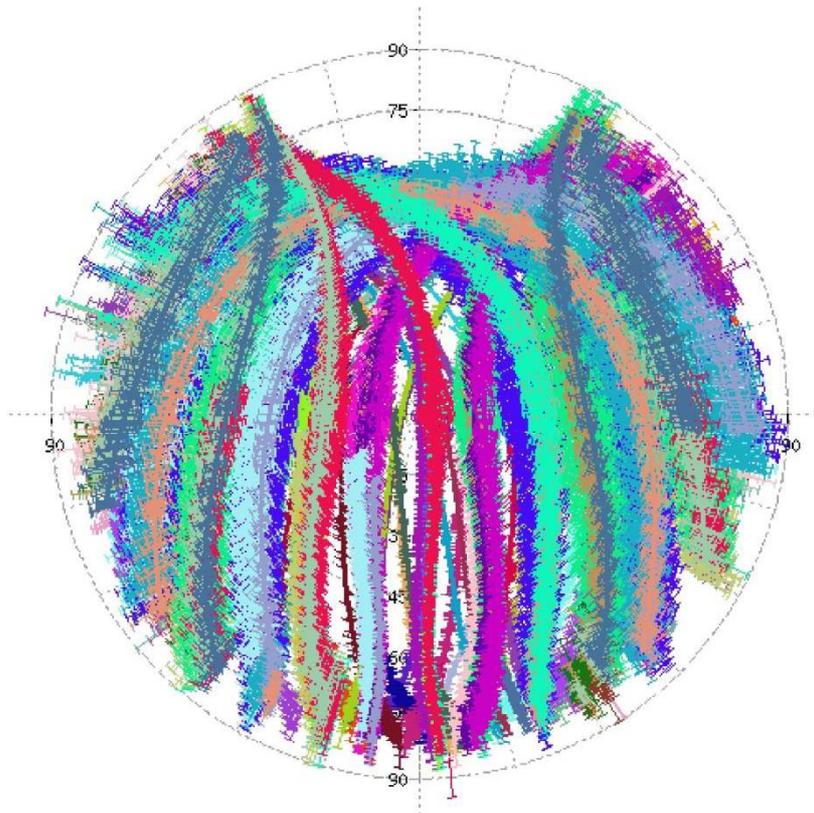
## 7. Annexures

### 7.1 Annexure – 1: PCP Observation Processing Report

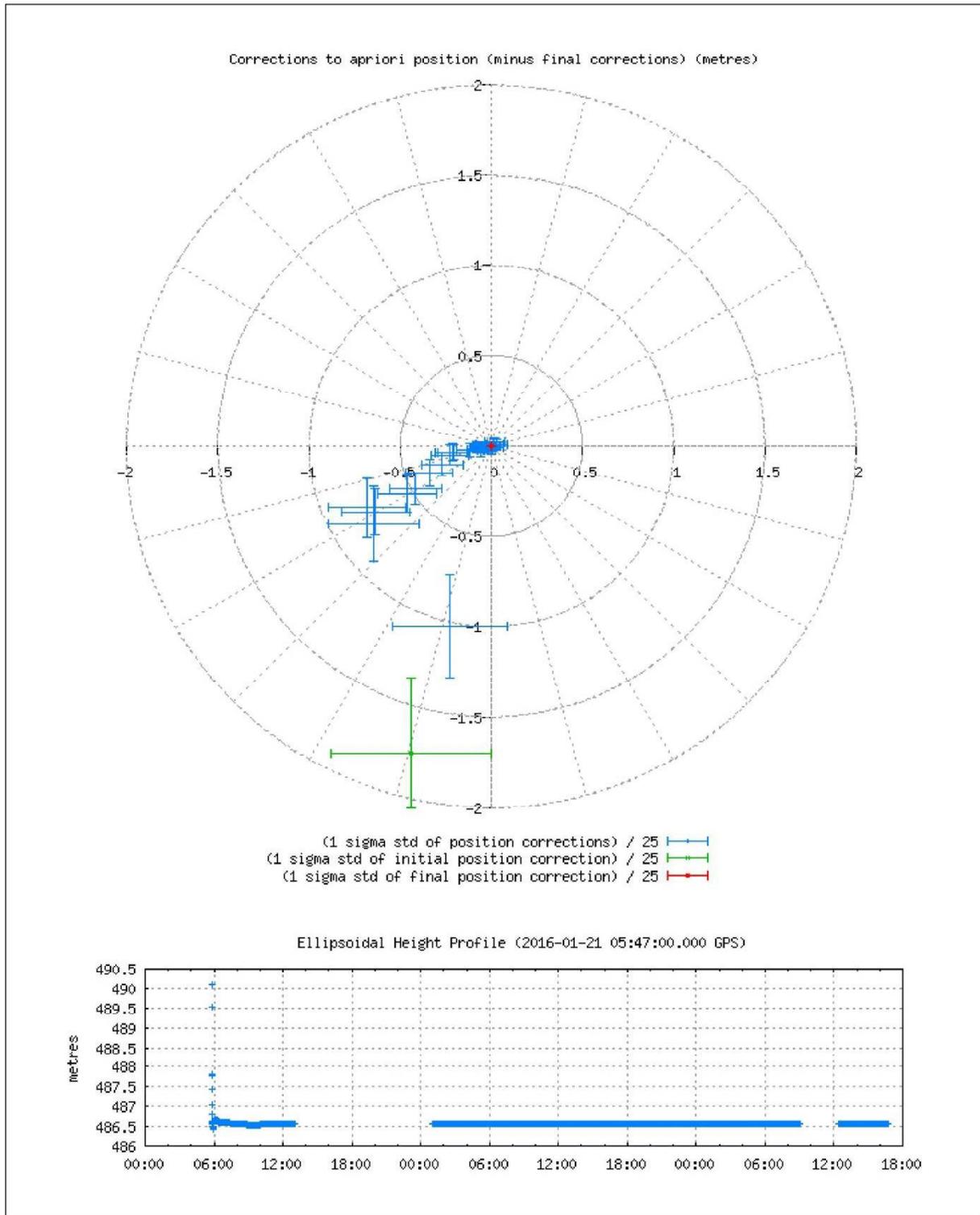


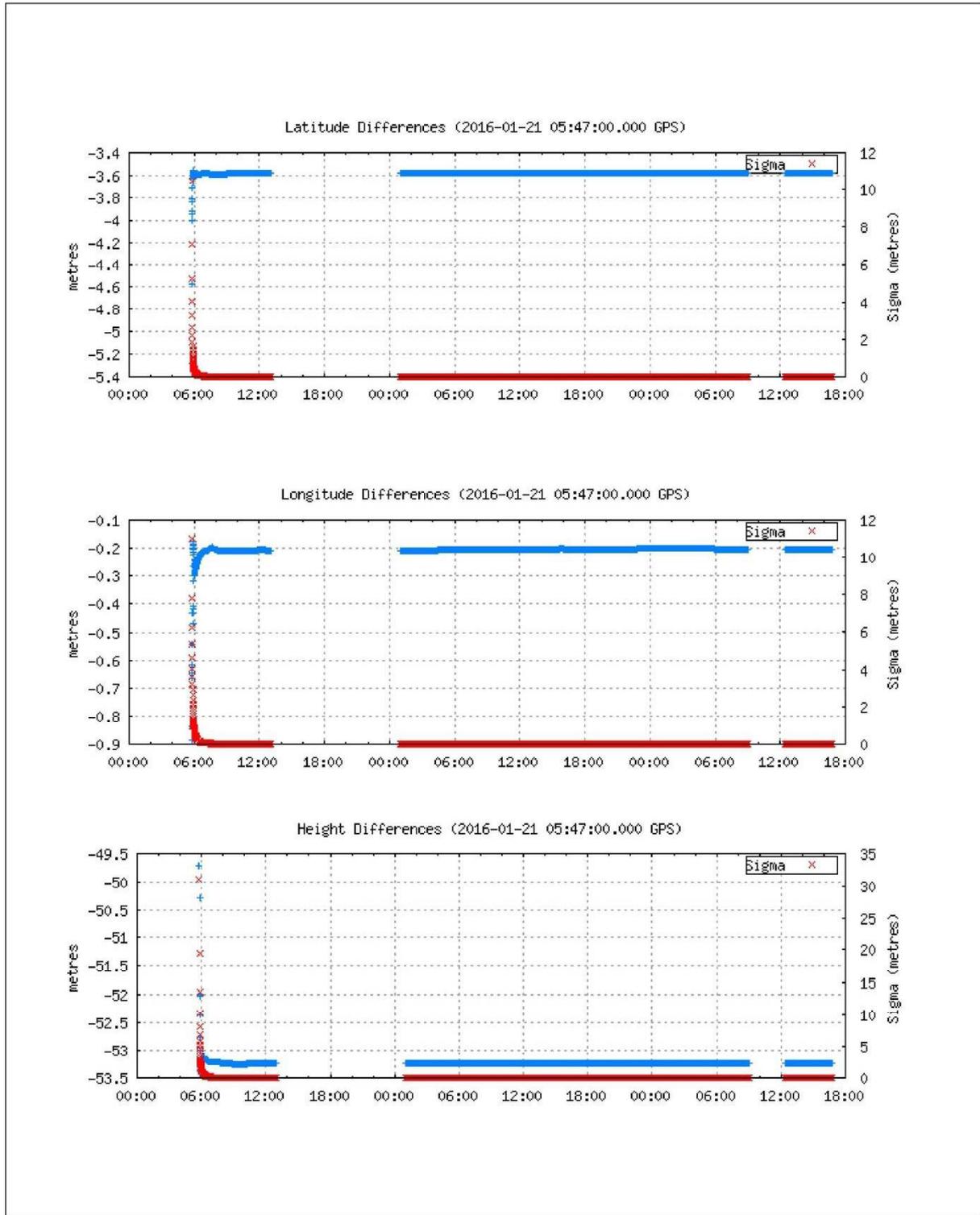
## Estimated Parameters & Observations Statistics

Pseudo-Range Residuals Sky Distribution



PRN01	PRN09	PRN16	PRN23	PRN30	R_05	R_12	R_20
PRN02	PRN10	PRN17	PRN24	PRN31	R_06	R_13	R_21
PRN03	PRN11	PRN18	PRN25	PRN32	R_07	R_14	R_22
PRN05	PRN12	PRN19	PRN26	R_01	R_08	R_15	R_23
PRN06	PRN13	PRN20	PRN27	R_02	R_09	R_16	R_24
PRN07	PRN14	PRN21	PRN28	R_03	R_10	R_18	
PRN08	PRN15	PRN22	PRN29	R_04	R_11	R_19	

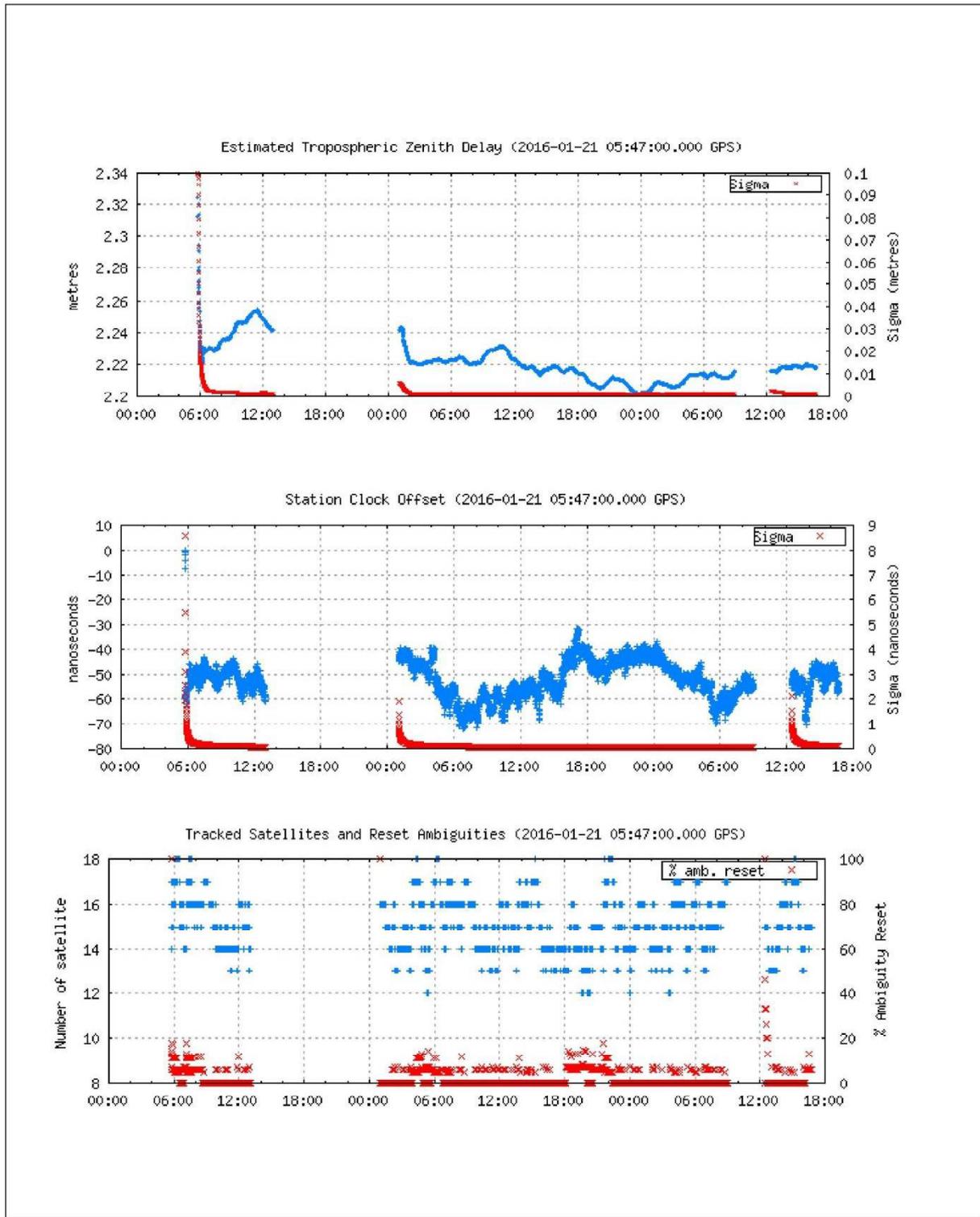




IGS Final

4

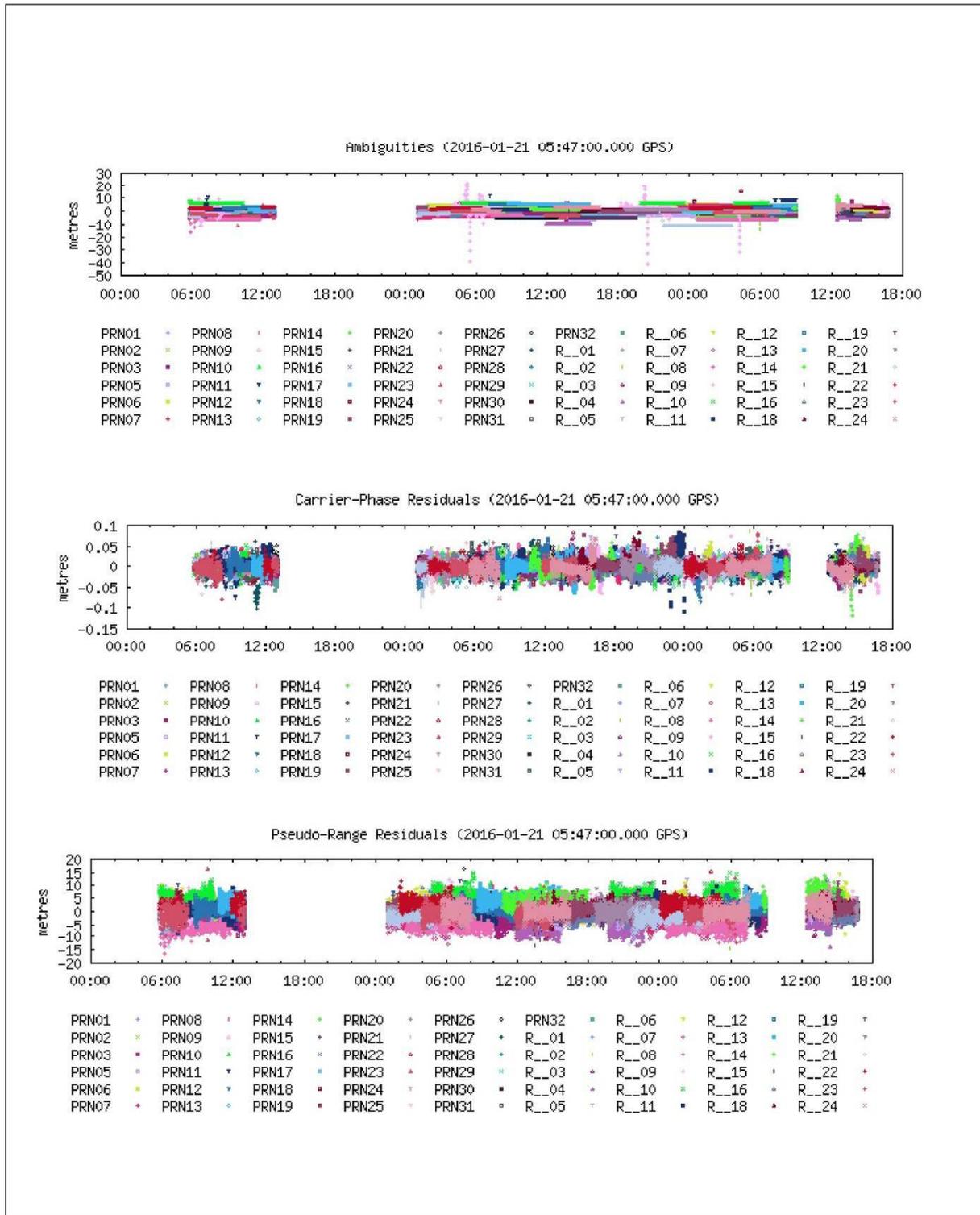
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00:50:44 UTC 2016/05/02 / Base-Surajpur-Rd-Survey.16o

5

IGS Final



--- Disclaimer ---

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**If you have any questions, please feel free to contact:**

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Ottawa, Ontario K1A 0E9  
Phone: 613-995-4410 FAX: 613-995-3215  
EMail: [information@geod.nrcan.gc.ca](mailto:information@geod.nrcan.gc.ca)**



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Canada

Canada

## 7.2 Annexure – 2: DGPS Surveyed co-ordinates of Centreline

Sl.No	Tower Id	Easting	Northing	Latitude "N"	Longitude "E"
1	8F	708421.911	2558547.942	23°07'21.43011"	83°02'07.06648"
2	AP-10	709261.646	2557307.553	23°06'40.73690"	83°02'35.96235"
3	AP-11	710503.657	2557349.350	23°06'41.52831"	83°03'19.62055"
4	AP-12	711435.129	2557833.031	23°06'56.81993"	83°03'52.58774"
5	AP-13	712712.371	2557416.971	23°06'42.70937"	83°04'37.25583"
6	AP-14	714475.829	2554972.218	23°05'22.44014"	83°05'37.98085"
7	AP-15	714179.099	2554085.897	23°04'53.77439"	83°05'27.11162"
8	AP-16	712400.452	2551735.482	23°03'38.21280"	83°04'23.46338"
9	AP-17	712124.188	2551580.773	23°03'33.31217"	83°04'13.68379"
10	AP-18	711774.350	2550674.329	23°03'04.01458"	83°04'00.94731"
11	AP-19	709384.220	2549084.654	23°02'13.44251"	83°02'36.22898"
12	AP-20	709096.571	2548949.159	23°02'09.16943"	83°02'26.06171"
13	AP-21	706717.741	2546868.622	23°01'02.62364"	83°01'01.52145"
14	AP-22	705490.642	2546207.090	23°00'41.67121"	83°00'18.11878"
15	AP-23	703974.151	2544236.534	22°59'38.29881"	82°59'23.93561"
16	AP-24	700320.577	2543223.255	22°59'06.96307"	82°57'15.19965"
17	AP-25	700021.570	2543013.108	22°59'00.26237"	82°57'04.60517"
18	AP-26	696860.620	2543484.619	22°59'16.94338"	82°55'13.86025"
19	AP-27	695952.598	2543791.208	22°59'27.29381"	82°54'42.12402"
20	AP-28	694317.961	2543682.314	22°59'24.44424"	82°53'44.68826"
21	AP-29	694061.362	2543491.297	22°59'18.34344"	82°53'35.59341"
22	AP-30	693213.604	2543183.212	22°59'08.68476"	82°53'05.69291"
23	AP-31	690083.998	2543026.888	22°59'04.90039"	82°51'15.75604"
24	10A	709535.068	2557316.115	23°06'40.89063"	83°02'45.57316"
25	10B	709826.904	2557326.039	23°06'41.08006"	83°02'55.83161"
26	10C	710175.593	2557338.258	23°06'41.31791"	83°03'08.08869"
27	11A	710802.860	2557504.409	23°06'46.43047"	83°03'30.20975"
28	11B	711097.954	2557658.623	23°06'51.30684"	83°03'40.65436"
29	12A	711746.510	2557730.856	23°06'53.35605"	83°04'03.47734"
30	13A	712870.077	2557195.306	23°06'35.43261"	83°04'42.68575"
31	13B	713056.968	2556935.288	23°06'26.89588"	83°04'49.12165"
32	13C	713253.963	2556661.124	23°06'17.89468"	83°04'55.90522"
33	13D	713427.442	2556424.193	23°06'10.11434"	83°05'01.88106"
34	13E	713607.249	2556178.192	23°06'02.03625"	83°05'08.07448"
35	13F	713783.230	2555937.133	23°05'54.12049"	83°05'14.13577"
36	13G	713942.172	2555715.862	23°05'46.85568"	83°05'19.60824"
37	13H	714101.798	2555494.642	23°05'39.59216"	83°05'25.10460"
38	13I	714292.934	2555229.097	23°05'30.87345"	83°05'31.68540"
39	14A	714376.792	2554679.118	23°05'12.96104"	83°05'34.35433"
40	14B	714271.624	2554362.122	23°05'02.70818"	83°05'30.50059"
41	15A	713383.695	2553030.608	23°04'19.84837"	83°04'58.64378"
42	15-B	712784.665	2552244.186	23°03'54.56780"	83°04'37.21108"

Sl.No	Tower Id	Easting	Northing	Latitude "N"	Longitude "E"
43	15-C	712598.742	2551998.220	23°03'46.66004"	83°04'30.55847"
44	17A	712003.629	2551273.271	23°03'23.37417"	83°04'09.29686"
45	17B	711884.250	2550963.184	23°03'13.35156"	83°04'04.95028"
46	18A	711505.101	2550492.173	23°02'58.21826"	83°03'51.40139"
47	18B	711230.830	2550310.363	23°02'52.43532"	83°03'41.67949"
48	18C	710980.879	2550144.727	23°02'47.16671"	83°03'32.81987"
49	18D	710711.146	2549965.996	23°02'41.48140"	83°03'23.25928"
50	18E	710443.725	2549788.355	23°02'35.83029"	83°03'13.78064"
51	18F	710194.524	2549623.768	23°02'30.59495"	83°03'04.94845"
52	18G	709915.715	2549437.822	23°02'24.67877"	83°02'55.06623"
53	18H	709647.010	2549259.541	23°02'19.00692"	83°02'45.54281"
54	20A	708853.236	2548736.984	23°02'02.38402"	83°02'17.41320"
55	20B	708620.728	2548533.192	23°01'55.86601"	83°02'09.14920"
56	20C	708386.671	2548328.215	23°01'49.31006"	83°02'00.83045"
57	20D	708148.016	2548120.334	23°01'42.66166"	83°01'52.34905"
58	20E	707921.028	2547922.191	23°01'36.32434"	83°01'44.28229"
59	20F	707708.699	2547736.477	23°01'30.38424"	83°01'36.73649"
60	20G	707455.132	2547514.294	23°01'23.27732"	83°01'27.72521"
61	20H	707222.631	2547310.951	23°01'16.77308"	83°01'19.46298"
62	20I	706972.046	2547091.802	23°01'09.76311"	83°01'10.55837"
63	21A	706503.599	2546753.239	23°00'58.96947"	83°00'53.94699"
64	21B	706221.860	2546602.816	23°00'54.20657"	83°00'43.98238"
65	21C	705943.545	2546452.052	23°00'49.43087"	83°00'34.13800"
66	21D	705717.845	2546329.675	23°00'45.55414"	83°00'26.15476"
67	22A	705292.876	2545949.955	23°00'33.40214"	83°00'11.05185"
68	22B	705108.765	2545711.442	23°00'25.73212"	83°00'04.47350"
69	22C	704907.633	2545449.745	23°00'17.31607"	82°59'57.28669"
70	22D	704718.219	2545203.685	23°00'09.40294"	82°59'50.51899"
71	22E	704520.337	2544947.237	23°00'01.15583"	82°59'43.44927"
72	22F	704338.505	2544711.509	22°59'53.57493"	82°59'36.95314"
73	22G	704132.336	2544443.623	22°59'44.95954"	82°59'29.58751"
74	23A	703722.665	2544164.985	22°59'36.08428"	82°59'15.07302"
75	23B	703394.980	2544074.979	22°59'33.30327"	82°59'03.52676"
76	23C	703097.659	2543989.812	22°59'30.66594"	82°58'53.04883"
77	23D	702782.155	2543902.331	22°59'27.96118"	82°58'41.93160"
78	23E	702491.584	2543821.984	22°59'25.47715"	82°58'31.69311"
79	23F	702169.381	2543732.624	22°59'22.71381"	82°58'20.34002"
80	23G	701845.286	2543643.541	22°59'19.96007"	82°58'08.92076"
81	23H	701536.631	2543558.840	22°59'17.34179"	82°57'58.04569"
82	23I	701237.066	2543475.905	22°59'14.77673"	82°57'47.49064"
83	23J	700918.414	2543388.256	22°59'12.06655"	82°57'36.26345"
84	23K	700638.752	2543310.710	22°59'09.66759"	82°57'26.40980"
85	25A	699697.578	2543062.557	22°59'02.00951"	82°56'53.25495"
86	25B	699397.282	2543107.306	22°59'03.59346"	82°56'42.73427"
87	25C	699070.560	2543156.000	22°59'05.31681"	82°56'31.28767"

Sl.No	Tower Id	Easting	Northing	Latitude "N"	Longitude "E"
88	25D	698745.415	2543204.307	22°59'07.02668"	82°56'19.89616"
89	25E	698453.439	2543247.716	22°59'08.56291"	82°56'09.66666"
90	25F	698126.709	2543296.288	22°59'10.28165"	82°55'58.21945"
91	25G	697796.821	2543345.822	22°59'12.03278"	82°55'46.66172"
92	25H	697523.126	2543386.571	22°59'13.47417"	82°55'37.07249"
93	25I	697185.011	2543437.028	22°59'15.25839"	82°55'25.22619"
94	26A	696536.724	2543593.239	22°59'20.61151"	82°55'02.53961"
95	26B	696226.749	2543697.512	22°59'24.13224"	82°54'51.70550"
96	27A	695618.784	2543768.387	22°59'26.69340"	82°54'30.39461"
97	27B	695283.771	2543745.654	22°59'26.09612"	82°54'18.62316"
98	27C	694969.525	2543724.739	22°59'25.54892"	82°54'07.58160"
99	27D	694627.463	2543701.730	22°59'24.94516"	82°53'55.56258"
100	29A	693759.651	2543381.694	22°59'14.90754"	82°53'24.95193"
101	29B	693503.305	2543288.884	22°59'11.99828"	82°53'15.91075"
102	30A	692906.487	2543167.847	22°59'08.31353"	82°52'54.90448"
103	30B	692565.085	2543150.646	22°59'07.89670"	82°52'42.91164"
104	30C	692240.433	2543134.946	22°59'07.52145"	82°52'31.50748"
105	30D	691900.746	2543118.393	22°59'07.12447"	82°52'19.57514"
106	30E	691304.983	2543089.157	22°59'06.42099"	82°51'58.64739"
107	30F	691045.573	2543076.136	22°59'06.10497"	82°51'49.53480"
108	30G	690706.461	2543059.589	22°59'05.70708"	82°51'37.62265"
109	30H	690377.008	2543042.876	22°59'05.29956"	82°51'26.04950"
110	31A	689768.682	2543173.853	22°59'09.80672"	82°51'04.75172"
111	8E	708265.557	2558843.613	23°07'31.11011"	83°02'01.71743"
112	8G	708565.110	2558277.924	23°07'12.58976"	83°02'11.96569"
113	8H	708705.457	2558012.771	23°07'03.90877"	83°02'16.76691"
114	8I	708848.085	2557743.600	23°06'55.09614"	83°02'21.64613"
115	AP-9	708983.369	2557486.079	23°06'46.66542"	83°02'26.27289"
116	69A	683733.109	2530662.020	22°52'25.55000"	82°47'27.51000"
117	AP-70	683652.904	2530365.091	22°52'15.93000"	82°47'24.57000"
118	70A	683361.036	2530243.105	22°52'12.08000"	82°47'14.28000"
119	70B	682697.878	2530247.998	22°52'12.50000"	82°46'51.02000"
120	AP-71	682532.004	2530031.875	22°52'05.54000"	82°46'45.11000"
121	71A	682400.947	2529906.929	22°52'01.53000"	82°46'40.46000"
122	71B	682394.134	2529668.116	22°51'53.77000"	82°46'40.12000"
123	AP-72	682562.880	2529457.878	22°51'46.87000"	82°46'45.95000"
124	72A	682819.111	2528638.027	22°51'20.12000"	82°46'54.59000"
125	AP-73	683333.007	2528368.904	22°51'11.17000"	82°47'12.50000"
126	73A	683831.114	2528250.967	22°51'07.14000"	82°47'29.92000"
127	AP-74	683959.030	2528282.978	22°51'08.13000"	82°47'34.42000"
128	74A	684248.044	2528173.896	22°51'04.47000"	82°47'44.51000"
129	AP-75	684798.945	2528076.936	22°51'01.10000"	82°48'03.79000"
130	75A	685026.867	2527904.978	22°50'55.42000"	82°48'11.71000"
131	AP-76	685152.096	2527690.542	22°50'48.40000"	82°48'16.01000"
132	76A	685329.722	2527458.596	22°50'40.79000"	82°48'22.14000"



Sl.No	Tower Id	Easting	Northing	Latitude "N"	Longitude "E"
133	AP-77	685452.954	2527337.969	22°50'36.82000"	82°48'26.41000"
134	77A	685572.901	2527276.064	22°50'34.76000"	82°48'30.59000"
135	AP-78	685859.033	2527265.114	22°50'34.29000"	82°48'40.62000"
136	AP-79	685941.896	2527227.984	22°50'33.05000"	82°48'43.51000"
137	AP-80	685950.113	2527116.101	22°50'29.41000"	82°48'43.75000"
138	80A	686023.020	2527077.002	22°50'28.11000"	82°48'46.29000"
139	80B	686238.930	2527119.035	22°50'29.39000"	82°48'53.88000"
140	80C	686300.111	2527082.870	22°50'28.19000"	82°48'56.01000"
141	AP-81(DE)	686312.143	2527031.949	22°50'26.53000"	82°48'56.41000"
142	GEN	686317.212	2526990.786	22°50'25.19000"	82°48'56.57000"

### 7.3 Annexure – 3: DGPS Surveyed co-ordinates of Forest Patches

SI No.	Pillar ID	Patch No	Easting	Northing	Latitude "N"	Longitude "E"
1	1	Patch No-1	709097.426	2557428.945	23°06'44.75675"	83°02'30.25222"
2	2		709078.384	2557432.428	23°06'44.87862"	83°02'29.58489"
3	3		709060.194	2557433.751	23°06'44.92988"	83°02'28.94643"
4	4		709054.903	2557432.759	23°06'44.90004"	83°02'28.76002"
5	5		709050.264	2557427.124	23°06'44.71901"	83°02'28.59428"
6	6		709143.777	2557367.131	23°06'42.72678"	83°02'31.85036"
7	7		709166.189	2557384.832	23°06'43.29182"	83°02'32.64652"
8	8	Patch No-2	712888.211	2557185.467	23°06'35.10448"	83°04'43.31794"
9	9		712894.669	2557184.222	23°06'35.06102"	83°04'43.54421"
10	10		712937.679	2557124.383	23°06'33.09643"	83°04'45.02534"
11	11		712926.047	2557115.088	23°06'32.79974"	83°04'44.61201"
12	12		712919.642	2557103.217	23°06'32.41691"	83°04'44.38104"
13	13		712875.680	2557164.381	23°06'34.42499"	83°04'42.86711"
14	14		712876.305	2557168.799	23°06'34.56828"	83°04'42.89129"
15	15	Patch No-3	714112.658	2555495.417	23°05'39.61230"	83°05'25.48649"
16	16		714117.965	2555495.266	23°05'39.60492"	83°05'25.67285"
17	17		714146.529	2555455.606	23°05'38.30274"	83°05'26.65632"
18	18		714138.580	2555458.582	23°05'38.40315"	83°05'26.37860"
19	19		714131.133	2555462.371	23°05'38.52977"	83°05'26.11888"
20	20		714129.548	2555464.516	23°05'38.60022"	83°05'26.06427"
21	21		714117.696	2555486.630	23°05'39.32438"	83°05'25.65907"
22	22	Patch No-4	714228.186	2555318.434	23°05'33.80689"	83°05'29.45586"
23	23		714232.879	2555335.639	23°05'34.36384"	83°05'29.62936"
24	24		714303.891	2555236.984	23°05'31.12465"	83°05'32.07427"
25	25		714289.616	2555247.230	23°05'31.46429"	83°05'31.57797"
26	26		714261.682	2555249.406	23°05'31.54802"	83°05'30.59779"
27	27		714245.403	2555272.022	23°05'32.29057"	83°05'30.03732"
28	28		714244.877	2555277.988	23°05'32.48469"	83°05'30.02183"
29	29		714241.023	2555278.108	23°05'32.49038"	83°05'29.88651"
30	30		714238.952	2555280.985	23°05'32.58485"	83°05'29.81521"
31	31		714238.373	2555291.050	23°05'32.91220"	83°05'29.79991"
32	32		714243.135	2555291.976	23°05'32.94008"	83°05'29.96768"
33	33		714243.400	2555297.003	23°05'33.10333"	83°05'29.97950"
34	34		Patch No-5	714295.621	2554477.323	23°05'06.44084"
35	35	714301.150		2554477.574	23°05'06.44644"	83°05'31.59583"
36	36	714303.465		2554426.311	23°05'04.77940"	83°05'31.65136"
37	37	714301.974		2554410.730	23°05'04.27372"	83°05'31.59113"
38	38	714284.425		2554357.834	23°05'02.56288"	83°05'30.94808"
39	39	714265.038		2554316.279	23°05'01.22144"	83°05'30.24618"
40	40	714277.720		2554341.288	23°05'02.02826"	83°05'30.70425"
41	41	714246.589		2554283.264	23°05'00.15709"	83°05'29.58155"
42	42	714232.594		2554288.105	23°05'00.32092"	83°05'29.09237"
43	43	714252.473		2554347.451	23°05'02.24032"	83°05'29.82049"
44	44	714271.311		2554404.050	23°05'04.07093"	83°05'30.51068"
45	45	Patch No-6	712478.752	2551861.640	23°03'42.27670"	83°04'26.27621"

SI No.	Pillar ID	Patch No	Easting	Northing	Latitude "N"	Longitude "E"
46	46		712501.117	2551858.304	23°03'42.15798"	83°04'27.06001"
47	47		712510.098	2551858.354	23°03'42.15546"	83°04'27.37545"
48	48		712469.668	2551804.784	23°03'40.43312"	83°04'25.92882"
49	49		712467.359	2551846.545	23°03'41.79137"	83°04'25.86852"
50	50	Patch No-7	712035.143	2551390.638	23°03'27.17396"	83°04'10.46197"
51	51		712040.802	2551389.962	23°03'27.14940"	83°04'10.66038"
52	52		712061.157	2551383.018	23°03'26.91435"	83°04'11.37178"
53	53		712029.054	2551301.135	23°03'24.26802"	83°04'10.20362"
54	54		712010.375	2551306.949	23°03'24.46556"	83°04'09.55052"
55	55		712005.877	2551303.245	23°03'24.34724"	83°04'09.39071"
56	56		712002.437	2551285.518	23°03'23.77271"	83°04'09.26110"
57	57		711995.351	2551289.142	23°03'23.89377"	83°04'09.01402"
58	58		712023.771	2551361.630	23°03'26.23649"	83°04'10.04815"
59	59		Patch No-8	711773.727	2550710.654	23°03'05.19540"
60	60	711802.870		2550711.326	23°03'05.20386"	83°04'01.96727"
61	61	711785.060		2550666.111	23°03'03.74257"	83°04'01.31937"
62	62	711667.840		2550585.972	23°03'01.19197"	83°03'57.16301"
63	63	711631.709		2550594.127	23°03'01.47358"	83°03'55.89820"
64	64	711763.250		2550683.119	23°03'04.30533"	83°04'00.56187"
65	65	Patch No-9	706976.466	2547113.602	23°01'10.46962"	83°01'10.72411"
66	66		706979.668	2547108.762	23°01'10.31089"	83°01'10.83421"
67	67		706984.537	2547106.857	23°01'10.24679"	83°01'11.00422"
68	68		706986.536	2547105.675	23°01'10.20750"	83°01'11.07385"
69	69		706988.193	2547105.015	23°01'10.18531"	83°01'11.13172"
70	70		706991.101	2547102.544	23°01'10.10368"	83°01'11.23262"
71	71		706995.027	2547097.164	23°01'09.92708"	83°01'11.36785"
72	72		706996.664	2547095.397	23°01'09.86892"	83°01'11.42447"
73	73		706979.739	2547080.592	23°01'09.39534"	83°01'10.82306"
74	74		706974.962	2547085.678	23°01'09.56278"	83°01'10.65781"
75	75		706971.450	2547087.843	23°01'09.63473"	83°01'10.53553"
76	76		706958.798	2547098.137	23°01'09.97493"	83°01'10.09628"
77	77	Patch No-10	682548.228	2530075.186	22°52'06.94148"	82°46'45.69743"
78	78		682576.455	2530067.618	22°52'06.68440"	82°46'46.68437"
79	79		682542.713	2530023.656	22°52'05.26862"	82°46'45.48218"
80	80		682484.379	2529967.818	22°52'03.47651"	82°46'43.41232"
81	81		682445.363	2529967.926	22°52'03.49532"	82°46'42.04381"
82	82		682521.931	2530040.924	22°52'05.83810"	82°46'44.76051"
83	83	Patch No-11	682408.275	2529628.931	22°51'52.49074"	82°46'40.59943"
84	84		682439.949	2529632.603	22°51'52.59768"	82°46'41.71199"
85	85		682447.020	2529623.793	22°51'52.30855"	82°46'41.95630"
86	86		682428.106	2529604.223	22°51'51.67984"	82°46'41.28459"
87	87	Patch No-12	682434.187	2529596.646	22°51'51.43116"	82°46'41.49469"
88	88		682498.140	2529560.103	22°51'50.21825"	82°46'43.72243"
89	89		682481.145	2529552.573	22°51'49.98013"	82°46'43.12313"
90	90		682491.589	2529545.135	22°51'49.73428"	82°46'43.48633"
91	91		682491.691	2529541.777	22°51'49.62507"	82°46'43.48847"
92	92		682487.025	2529530.817	22°51'49.27065"	82°46'43.32017"

SI No.	Pillar ID	Patch No	Easting	Northing	Latitude "N"	Longitude "E"
93	93		682452.565	2529616.885	22°51'52.08181"	82°46'42.14786"
94	94	Patch No-13	682502.987	2529510.930	22°51'48.61796"	82°46'43.87164"
95	95		682553.511	2529491.118	22°51'47.95415"	82°46'45.63543"
96	96		682575.005	2529464.340	22°51'47.07527"	82°46'46.37802"
97	97		682612.773	2529343.487	22°51'43.13213"	82°46'47.65161"
98	98		682599.601	2529295.124	22°51'41.56522"	82°46'47.16911"
99	99		682550.756	2529451.417	22°51'46.66473"	82°46'45.52198"
100	100	Patch No-14	682729.399	2528879.811	22°51'28.01444"	82°46'51.54587"
101	101		682738.139	2528883.560	22°51'28.13288"	82°46'51.85403"
102	102		682753.616	2528892.834	22°51'28.42825"	82°46'52.40081"
103	103		682756.573	2528883.375	22°51'28.11963"	82°46'52.50050"
104	104		682750.523	2528876.034	22°51'27.88339"	82°46'52.28520"
105	105		682757.758	2528867.478	22°51'27.60243"	82°46'52.53533"
106	106		682756.857	2528857.189	22°51'27.26835"	82°46'52.49935"
107	107		682752.170	2528848.858	22°51'26.99937"	82°46'52.33146"
108	108		682744.982	2528845.451	22°51'26.89144"	82°46'52.07791"
109	109		682741.691	2528840.482	22°51'26.73122"	82°46'51.96034"
110	110	Patch No-15	682760.786	2528779.387	22°51'24.73782"	82°46'52.60422"
111	111		682789.925	2528776.663	22°51'24.63785"	82°46'53.62508"
112	112		682810.315	2528711.424	22°51'22.50921"	82°46'54.31261"
113	113		682790.444	2528722.006	22°51'22.86099"	82°46'53.62012"
114	114		682781.770	2528712.244	22°51'22.54709"	82°46'53.31178"
115	115	Patch No-16	682813.698	2528700.598	22°51'22.15600"	82°46'54.42669"
116	116		682810.686	2528688.903	22°51'21.77701"	82°46'54.31606"
117	117		682804.081	2528668.601	22°51'21.11970"	82°46'54.07580"
118	118		682825.263	2528663.595	22°51'20.94867"	82°46'54.81664"
119	119	Patch No-17	682835.805	2528644.524	22°51'20.32460"	82°46'55.17831"
120	120		682825.429	2528629.992	22°51'19.85634"	82°46'54.80819"
121	121		682843.908	2528619.108	22°51'19.49528"	82°46'55.45172"
122	122		682849.045	2528624.710	22°51'19.67536"	82°46'55.63426"
123	123		682851.903	2528627.828	22°51'19.77558"	82°46'55.73586"
124	124		682855.790	2528634.057	22°51'19.97654"	82°46'55.87481"

# 7.4 Annexure – 4: DGPS Surveyed Map of 132KV Transmission Line showing proposed forest diversion area

132 KV TRANSMISSION LINE FROM VISHRAMPUR TO PARSA DGPS SURVEY MAP SHOWING PROPOSED FOREST DIVERSION AREA COMING IN SURGUJA DISTRICT.

