Rajasthan Rajya Vidyut Utpadan Nigam Limited Kente Extension Coal Block

DGPS Survey report of Kente Extension Coal Block Lease boundary demarcation with an area of 17.628 Sq km in Thesil Udaipur, District Surguja

DGPS SURVEY AND GIS MAPPING DONE BY:

Geotrax International Services
Raipur, Chhattisgarh.

Rajasthan Rajya Vidyut Utpadan Nigam Limited
Dy. Chief Engineer (Fuel)
Authorised Signatory
RVUN

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1. Introduction and Background

PROJECT KENTE EXTENSION

1.1 Background

The Kente Extension Coal Block, situated in Surguja District of Chhattisgarh, was allotted to Rajasthan Rajya Vidyut Utpadan Nigam Limited (RVUN) by the Govt. of India vide allotment letter no 13016/26/2004-CA-I/CA-III (Pt.) Vol. II dated 31.03.2015. RVUN has signed a CMDA with M/s Adani Enterprises Ltd (AEL) for development and production from the coal block.

1.2 Location and Communication

The Kente Extension Block, bounded by Latitude 22° 49′ 56.25″& 22° 48′36.03″ N and Longitude 82° 50′ 50.32″ & 82° 52′ 55.9″ E, is located in the Central part of Hasdo - Arand Coalfield covering an area of 17.6sq km. It is lies adjacent to and east of earlier explored Parsa (East) – Kente Basan Coal Block in Surguja District of Chhattisgarh state. The block is covered under Survey of India Toposheet No. 64J/13 (OSM: F44K13) on RF 1:50000. The area can be approached from Bilaspur-Ambikapur state highway (SH 2A) near village Basan at a distance of about 175km from Bilaspur through a fair weather forest road. The distance of the block is about 75km from Ambikapur, the district headquarters.

1.3 Objective

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

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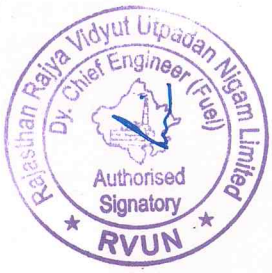
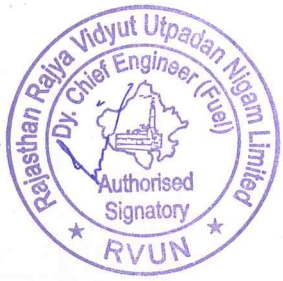
(DGPS) and the same should be uploaded to MoEF website along with the online application.

To meet this requirement of MoEF, AEL, on behalf of RVUN entrusted the DGPS survey work of Kente Extension Coal Block to M/s Geotrax International Services, Raipur, which is an empanelled agency of Directorate of Geology and Mines, Chhattisgarh (***Ref. Circular No. F-7-14/2013/12, dated. 10.11.2014***).





1.4 Geotrax Empanelment Certificate in Chhattisgarh

By Speed post

366

छत्तीसगढ़ शासन
खनिज साधन विभाग
मंत्रालय
महानदी भवन, नया रायपुर–492002

09 NOV 2014

//अधिसूचना//

रायपुर, दिनांक नवम्बर, 2014

कमांक एफ 7–14/2013/42:: राज्य शासन एतद् द्वारा चीफ कन्ट्रोलर ऑफ माइन्स, भारतीय खान ब्यूरो नागपुर के परिपत्र कमांक 2/2010, दिनांक 06.4.2010 के पैरा–2 के बिन्दु–2 के तारतम्य में समस्त खनिजों के खनिज रियायतों के सीमा स्तम्भ का Differential Globle Positioning System(डीजीपीएस) का उपयोग करते हुए सर्वेक्षण करने के लिए तालिका में दर्शित संस्थानों को अधिमान्यता प्रदान करता है:–

क्र.	एजेंसी का नाम एवं पता
1	2
1	M/S SHREERAM GEMICON (PVT.) LIMITED GEOLOGICAL AND MINING CONSULTANTS L-09, Songanga Colony Seepat Road, Bilaspur (Chhattisgarh)
2	M/S SINHA MINING CONSULTANCY, GOA Office No. 9, D.Costa Commercial Apartment, Near Old Railway Station Gate, Malbhat, Margo - 403601, Goa-India
3	M/S SPATIAL PLANNING AND ANALYSIS RESEARCH CENTRE PVT. LTD. E/11, Infocity, Chandaka Industrial Estate, Bhubaneshwar, Orissa, India, Pin - 751024
4	M/S SIDDHARTH GEO CONSULTANTS, 21/3, First Floor Ramkund, Samta Colony, Behind Lifeworth Hospital, Raipur (Chhattisgarh) 492001
5	M/S SOHAM FERRO MANGANESE PVT. LTD. Block No. 16,17 Ground Floor N.K.Y. Tower, Anjani Sq. Wardha Road, Nagpur (Maharashtra)
6	M/S SAN SURVEY ENGINEERING , HOOGHLY(WB) Regd. Off. - 465, Jiban Pal Bagan, Karbala (West), P.O. & Dist. - Hooghly, West Bengal, Pin - 712103 Contact Office - Anjali Complex, Bankim Kanan, Chinsurah Station Road. Chinsurah, Hoogly, West Bengal -712102
(7)	M/S GEOTRAX INTERNATION SERVICES, HYDERABAD (TELANGANA) Plate No 156 & 157, Lokayuta Colony, Badangpet Nadergul, Hyderabad 500058, Telangana
8	M/S RAFT CONTRACTORS AND DESIGNERS, Plot No. D-36, Ground Floor, Koelnagar, Raurkela, Dist. Sundargarh, Orissa, Pin No. - 769014
9	M/S MICRONET SOLUTION, Bisesar House, Opp. HSSC Board Office, (P.B. 85 G.P.O.) Civil Line, Nagpur, Maharashtra - 440001
10	M/S BHARAT ALUMINIUM COMPANY LIMITED (BALCO) P.O. Balco Nagar Korba(C.G.), India, Pin 495684

2/ अधिमान्यता प्राप्त संस्थानो के लिए शर्तें:–

2.1. The Survey Agency Shall Be responsible for the accuracy of the data collected and Survey.

2.2. Coordinates of boundry pillars shall be established in the World Geodetic System 1984 (WGS-84) Datum.

2.3 Each boundry pillar shall be surved using DGPS, at least 2 Hours observation for its ground position.

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2.4 The maximum distance between any two successive pillars should not be more than 100 meter.

2.5 All corner pillar should be of pyramid shaped whith base of 1 meter and height of 2 meter and should be placed 1 mater above the ground and 1 meter below the ground.

2.6 Distance and bearing to the forward and backward pillars and latitudes and longitudes should be market on all the corner pillars.

2.7 डीजीपीएस सर्वे कार्य हेतु पारिश्रमिक का निर्धारण अधिमान्य प्राप्त संस्थान एवं खनिज रियायतधारी के मध्य आपसी समन्वय से किया जाएगा। किसी भी प्रकार का आपसी विवाद होने पर राज्य शासन उत्तरदायी नही होगा।

2.8 डीजीपीएस सर्वे कार्य के गुणवत्ता में कमी पाये जाने पर या किसी भी प्रकार की कार्य संबंधी शिकायत पाये जाने पर जांच उपरांत राज्य शासन को यह अधिकार होगा कि उक्त अधिकृत एंजेसी की मान्यता किसी भी समय समाप्त की जा सकती है।

2.9 डीजीपीएस सर्वे के संबंध में भारतीय खान ब्यूरो/राज्य शासन द्वारा समय–समय पर जारी निर्देशों का पालन अधिमान्यता प्राप्त संस्थान को करना होगा।

2.10 राज्य शासन द्वारा जारी यह अधिमान्यता 03 वर्ष के लिए होगी। समयावधि समाप्ति से 03 माह पूर्व अधिकृत एंजेसी नवीनीकरण हेतु आवेदन कर सकेगा।

2.11 भारत सरकार एवं राज्य शासन द्वारा डीजीपीएस सर्वे के संबंध में समय–समय पर जारी निर्देशों का पालन किया जाना होगा।

3/ यह अधिमान्यता अधिसूचना के जारी होने की तिथि से 03 वर्ष के लिए होगी।

छत्तीसगढ़ के राज्यपाल के नाम से
तथा आदेशानुसार,

(सुबोध कुमार सिंह)
सचिव
छत्तीसगढ़ शासन
खनिज साधन विभाग

पृ. कमांक एफ 7–14/2013/12 रायपुर, दिनांक नवम्बर, 2014

10 NOV 2014

प्रतिलिपि:–

1. सचिव, भारत सरकार, खान मंत्रालय, शास्त्री भवन, नई दिल्ली,
2. कंट्रोलर जनरल, भारतीय खान ब्यूरो, सेकण्ड फ्लोर, ए–ब्लॉक, इन्दरा भवन, सिविल लाईन, नागपुर (महाराष्ट)
3. चीफ कन्ट्रोलर ऑफ माईन्स, भारतीय खान ब्यूरो, सेकण्ड फ्लोर, ए–ब्लॉक, इन्दरा भवन, सिविल लाईन, नागपुर (महाराष्ट)
4. क्षेत्रीय खान नियंत्रक, भारतीय खान ब्यूरो, छटवां तल, बी एवं सी –ब्लॉक, इन्दरा भवन, सिविल लाईन, नागपुर (महाराष्ट)
5. संचालक, भौमिकी तथा खनिकर्म, छत्तीसगढ़ ब्लॉक–4, द्वितीय तल, इन्द्रावती भवन, नया रायपुर,
6. समस्त कलेक्टर, जिला ———— छत्तीसगढ़

3

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7. समस्त संबंधित ----------

की ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु

8. संचालक, शासकीय मुद्रणालय, गोन्दवारा, भनपुरी, रायपुर(छत्तीसगढ़) की ओर राजपत्र में प्रकाशनार्थ।

9. श्री श्रीकांत राव, सहायक भौमिकी विद्, संचालनालय भौमिकी तथा खनिकर्म, द्वितीय फ्लौर, इन्द्रावती भवन, नया रायपुर। कृपया उक्त आदेश/अधिसूचना को संचानलालय की वेबसाईट में अपलोड करने का कष्ट करें।

10. गार्ड फाईल रजिस्टर

सचिव
छत्तीसगढ़ शासन
खनिज साधन विभाग

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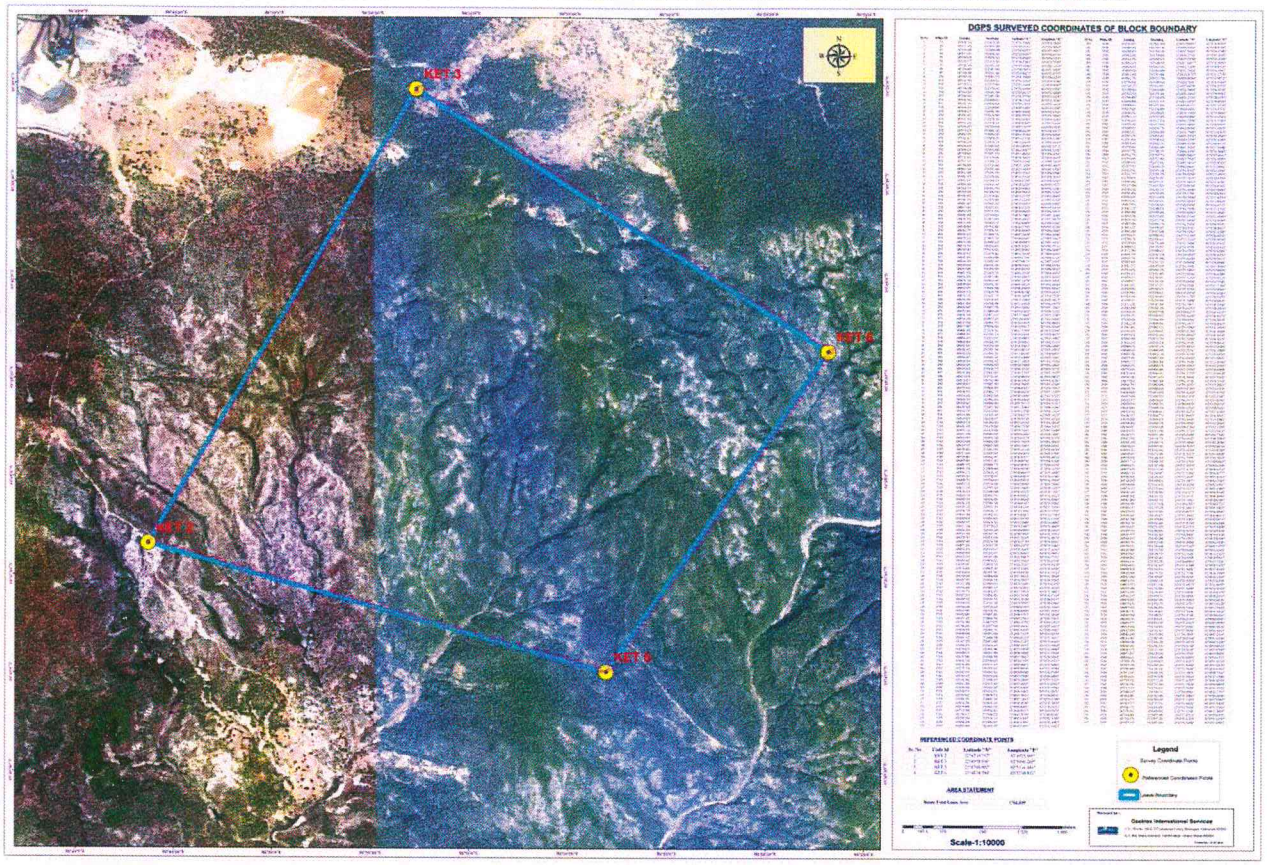
KENTE EXTENSION COAL BLOCK LEASE BOUNDARY MAP-AREA 17.628 Sq Km; TEHSIL-UDAIPUR, DISTRICT- SURGUJA



Not to Scale

Fig-1: Kente Extension Coal Block Boundary on Satellite Imagery

2. Scope of Work

1. Establishment of one base station with 72 Hours observationand four secondary control points at the corners of the lease boundary.
2. DGPS Survey for collection of ground coordinates along the lease boundary (Intermediate point fixed at every 50m interval and/or at every turn/bend along the lease boundary)
3. Data processing and Interpretation
    a. Geo-referencing of SOI Toposheet (1:50000), Forest Stock map (1:15000) and satellite imagery
    b. Creation of lease boundary vector map using the DGPS Surveyed data
    c. Superimposition of lease boundary layer on Georeferencedforest maps, SOI Toposheet and Satellite imagery.
    d. Computation of lease boundary area and validation of referenced point coordinates given by CMPDI
    e. Preparation of Geo-referenced forest map at 1:15000 scale, SOI Toposheet at 1:50000 scale and Satellite imagery map at 1:10000 scale.

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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 (5 sets) 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 Secondary Control Points.
3. Geo-referenced SOI maps & forest block mapsbased on DGPS observations – Hard and Soft Copy (SHP and KML formats).
4. Lease Boundary area statement as per DGPS Survey
5. DGPS Survey and mapping report

4. Brief description of the Technical approach

4.1 Input Data

The land plan and forest & SOI maps required for geo-referencing were provided by Rajasthan Rajya Vidyut Utpadan Nigam Limited Kente extension Coal Block. We also received the block boundary plan prepared by Central Mine Planning and Design Institute Limited (cmpdi) for reference point, and the map & coordinates which are in Kalyanpur datum had been converted to WGS 84 datum by CMPDI.

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GEOTRAX

4.1.1 CMPDI Certified Block Boundary Coordinates

cmpdi

A Mini Ratna Company

सेन्ट्रल माईन प्लानिंग एण्ड डिजाइन इन्स्टीट्यूट लिमिटेड
(कोल इण्डिया लिमिटेड की अनुषंगी कम्पनी / भारत सरकार का एक लोक उपक्रम)
गोण्डवाना प्लेस, काँके रोड, राँची - 834 031, झारखण्ड (भारत)

Central Mine Planning & Design Institute Limited
(A Subsidiary of Coal India Limited / Govt. of India Public Sector Undertaking)
Gondwana Place, Kanke Road, Ranchi 834 031, Jharkhand (INDIA)
CORPORATE IDENTITY NUMBER – U14292JH1975GOI001223

पत्रांक: सीएमपीडीआई/जी/कैप्टीव/140/ 258 दिनांक: 16.12.2015

0141-2744920/2740706
Speed post

सेवा में,
श्री प्रकाश ईसरानी,
अधीक्षण अभियंता (ईंधन),
राजस्थान राज्य विद्युत उत्पादन निगम
कमरा न.120, विद्युत भवन, जनपथ, ज्योति नगर,
जयपुर - 302 005.

विषय: Block Boundary coordinates & certified boundary plan of Kente Extension coal block.

महाशय,

With reference to our earlier letter No.CMPDI/GG/Captive/140/ 512 dated 15.12.2015, in which the block boundary of Kente Extension coal block has been provided to you considering the WGS84 datum.

On subsequent perusal during certification of Geological co-ordinates of Parsa East and Kanta Basan Coal Block, an error was noticed in the co-ordinate(s) of Kente Extension coal block, which might have occurred while converting the datum from Modified Everest to WGS84, resulting in overlapping of the block boundary. Hence, the block boundary of Kente Extension coal block, after necessary correction, is being provided to you as per the following detail:

Point	Co-ordinate (in old toposheet)	Longitude	Latitude
		WGS84 coordinates	
2	82°49'29.09"E, 22°47'37.5"N	82°49'21.961"E	22°47'39.737"N
3	82°50'50.32"E, 22°49'56.25"N	82°50'43.280"E	22°49'58.536"N
5	82°51'48.5"E, 22°46'58.5"N	82°51'41.443"E	22°47'0.802"N
6	82°52'55.5"E, 22°48'36.3"N	82°52'48.033"E	22°48'38.594"N

The block boundary and coordinates provided by CMPDI vide our optcit letter dated 16.12.2015 may be treated as cancelled.

सधन्यवाद,

भवदीय

17.03.2015

(अमिताभ दास)
महाप्रबन्धक (गवेषण)

संलग्नक: उपरोक्त

1. श्री एन. राजकुमार, निदेशक, भारत सरकार, कोयला मंत्रालय, Nominated Authority का कार्यालय, वर्ल्ड ट्रेड टावर, बाराखम्बा लेन, नई दिल्ली-को सादर सूचनार्थ।

No. RVUN/ACE (Fuel)/Dy. CE(Fuel)/D. 561 Dated: 22-3-16

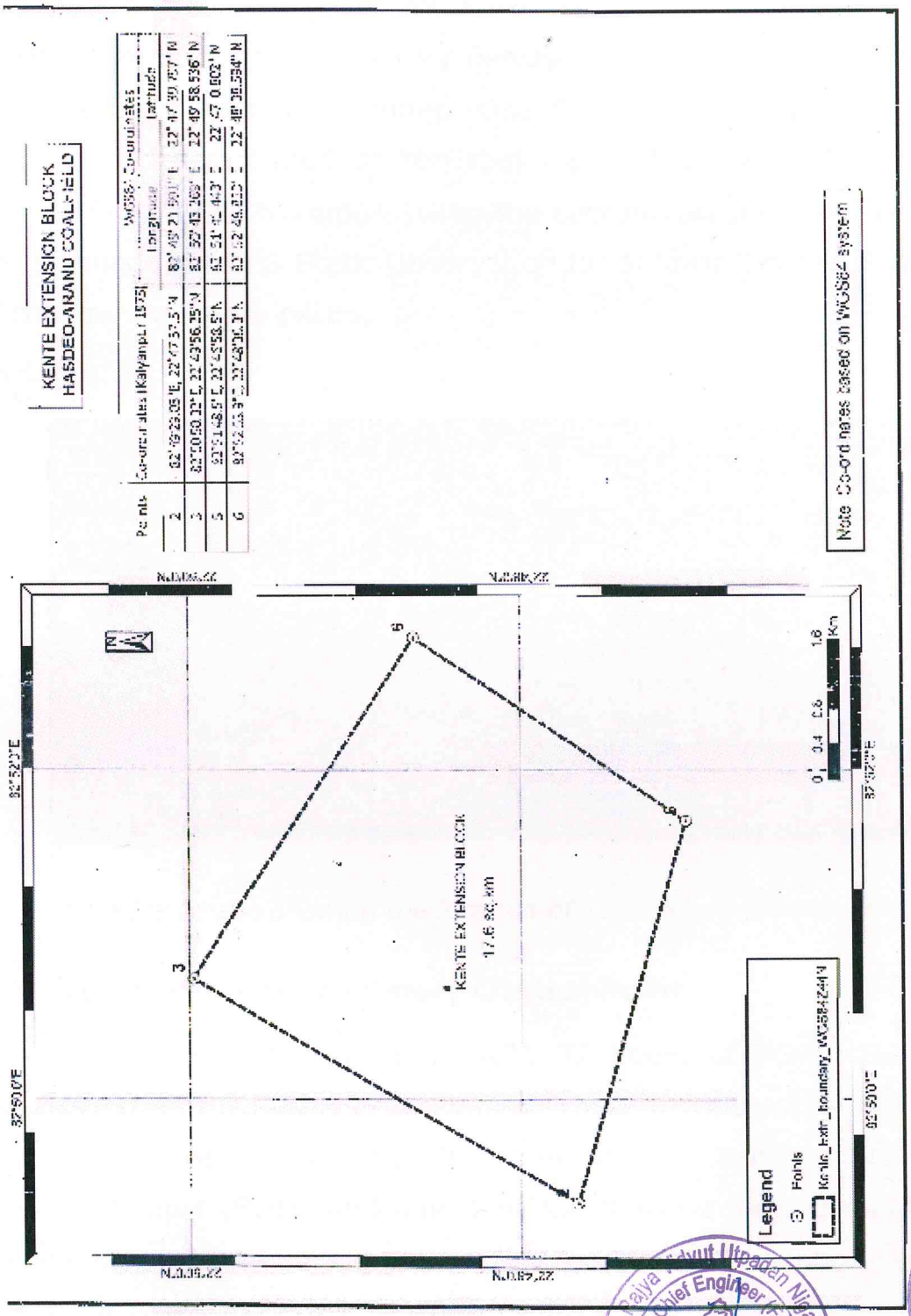
Copy to M/s Rajasthan Collieries Limited, 31-A, 6th Floor, Mahima Trinity, Plot no.5, Swej farm, New Sanganer Road, Sodala, Jaipur- 302019 for information & necessary action please.

(Prakash Israni)
Dy. Chief Engineer (Fuel)

Rajasthan Rajya Vidyut Utpadan Nigam Limited
Dy. Chief Engineer (Fuel)
Authorised Signatory
RVUN

Rajasthan Rajya Vidyut Utpadan Nigam Limited
Dy. Chief Engineer (Fuel)
Authorised Signatory
RVUN

4.1.2 CMPDI Block Boundary Map



4.2 GIS Data Preparation

Based on the input data (maps, boundary coordinates from CMPDI) and information provided by *Revenue Department of Surguja*, 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 the coordinates provided by CMPDI, TBM are planned for DGPS Static Observation for at least 2 hours duration at each of the four boundary pillars.

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 9thMay 2016 to 12thMay2016. 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:

Point ID	Latitude (d:m:s)	Longitude (d:m:s)	Ellipsoidal Height(m)
SurajpurBase	23°12'52.39820"N	082°52'59.05530"E	486.559000

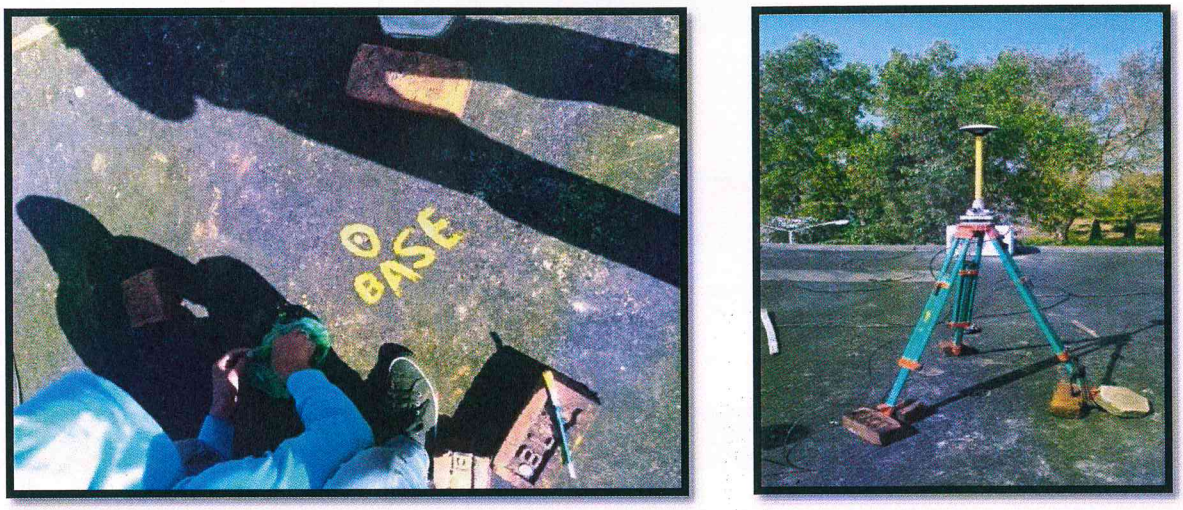


Fig-3: Images showing Primary Control Point (PCP)

4.4 Establishment of Temporary Benchmarks (TBM)

The Temporary Control Point with 12 hours of static observation was established at Tara Forest Guest House (Point ID: TARA Base).Two tentative boundary pillars (Point ID: ADP1 & ADP3) of the Kente Extension lease boundary are also observed in static mode and processed with reference to the Primary control Point (Surajpur Base).

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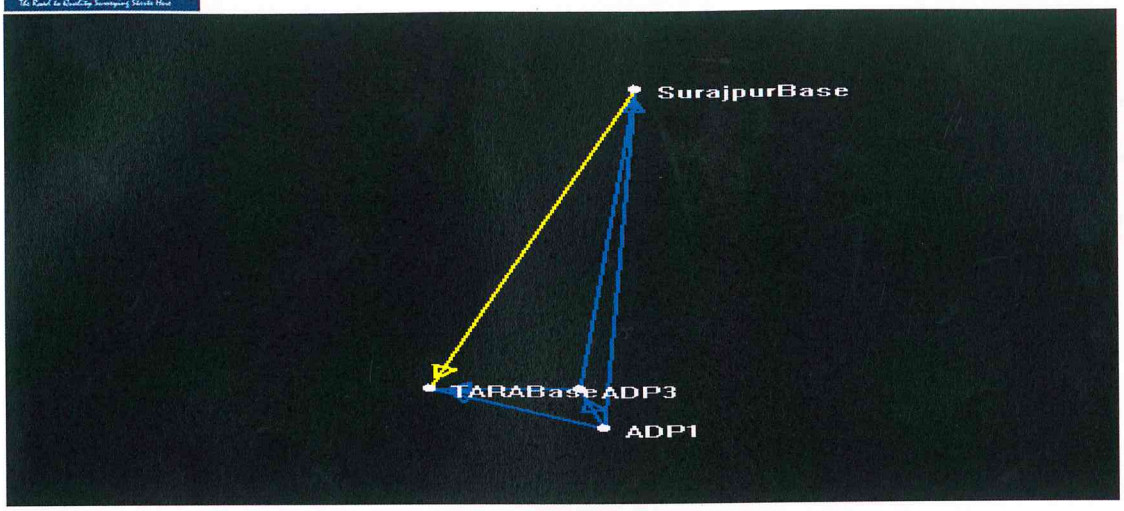
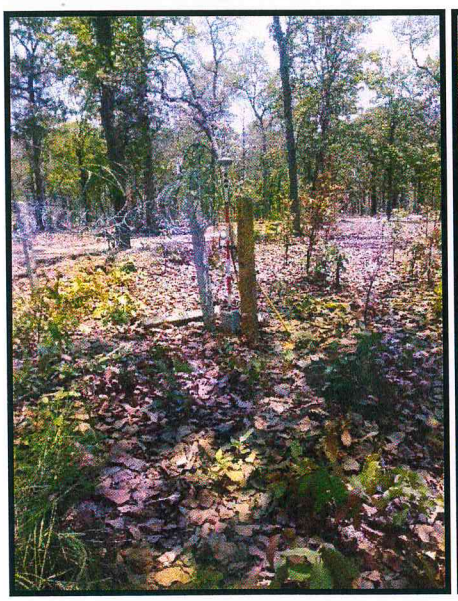


Number Of Points: 4
Number Of Control Points: 1

Control Point ID	Type	Latitude	Longitude	Ellipsoidal Height(m)
SurajpurBase	Lat. Lon. H	23°12'52.39820"N	082°52'59.05530"E	486.559000

Below table lists the coordinates of TBMs:

Point ID	Latitude	Longitude	North(m)	East(m)	Ellipsoidal Height (m)
ADP1	22°47'00.88537"N	082°51'37.72916"E	2520763.488	690991.133	418.390577
ADP3	22°49'58.54274"N	082°50'39.48811"E	2526207.495	689261.7222	494.522118
TARA_Base	22°50'01.39550"N	082°44'18.77644"E	2526163.501	678405.9089	509.562031



Pic: ADP1

Pic: ADP3

4.5 DGPS Survey Procedure

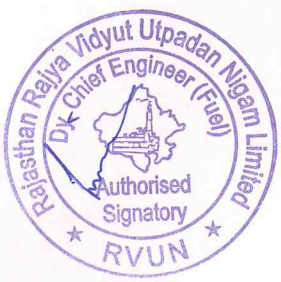
DGPS survey was carried out using a pair of DGPS instrument. One DGPS Instrument was used as Base Station. The Base station for the survey was established at the nearest TBM (ADP1, ADP3). The distance between the Base Station TBM and rover was always less than 5km.

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 boundary points by walking along the lease boundary. DGPS readings were collected at every 50m distance along block boundary and at every turn or bend. For Geo-referencing village maps around 5 GCPs were collected for the Kente village.

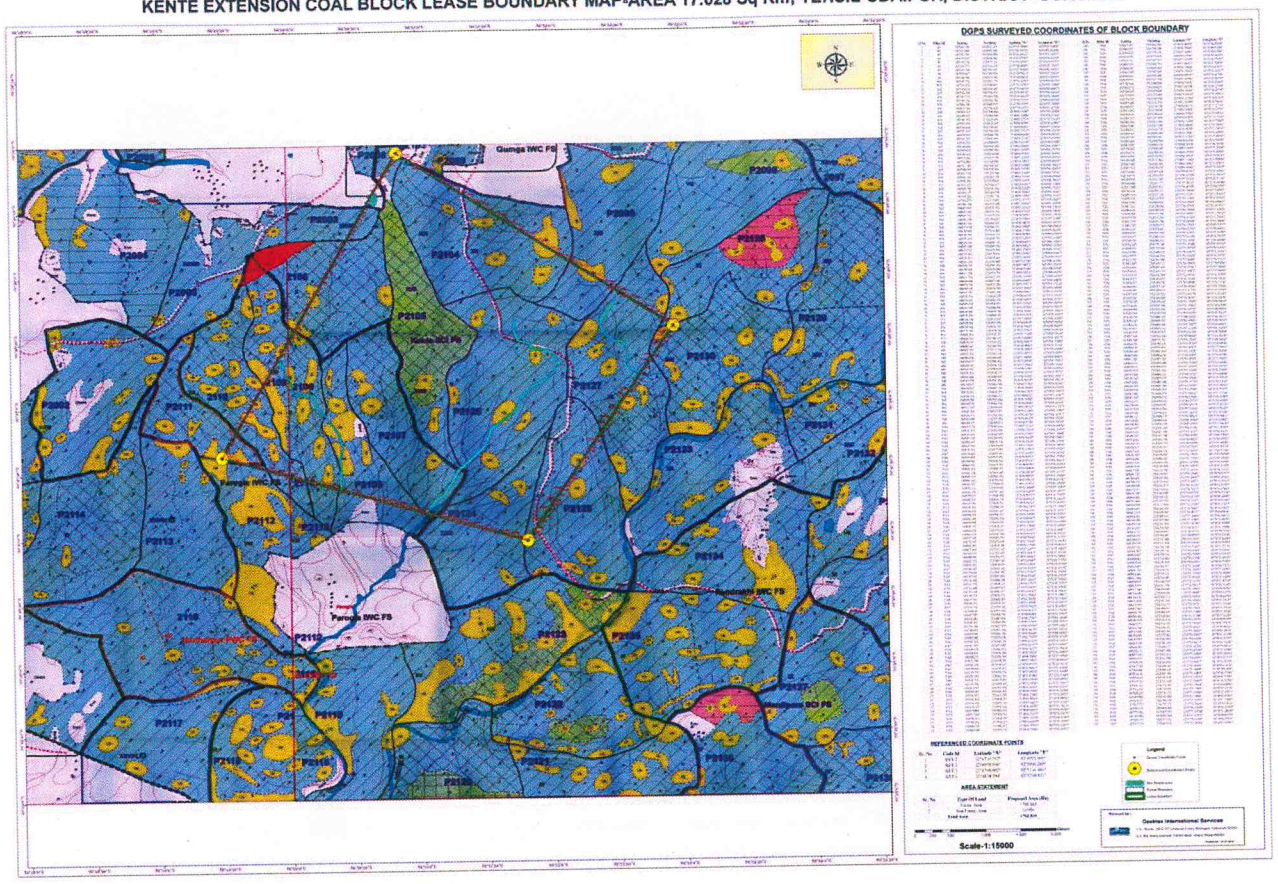
The static data is Post Processed using Trimble Business Centre software for obtaining the TBM coordinates.

4.6 Creation of Vector Layers of the Block Boundary

The surveyed points captured through DGPS were plotted in the GIS Software and the boundary line was created by joining the points. The boundary polygon was created using the boundary lines. The boundary coordinates given by CMPDI was verified and the final block boundary polygon was created and a map layout is printed. After Geo-referencing the Forest map and Cadastral map the non-forest area is digitized and new vector layers are prepared. The Forest and the non-forest area is then computed from the digitized layers. Finally the block boundary map was superimposed on the forest stock map, & the cadastral map.



KENTE EXTENSION COAL BLOCK LEASE BOUNDARY MAP-AREA 17.628 Sq Km; TEHSIL-UDAIPUR, DISTRICT- SURGUJA



Not to scale

Fig-2: Forest Map showing DGPS Survey block boundary.

4.7 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.

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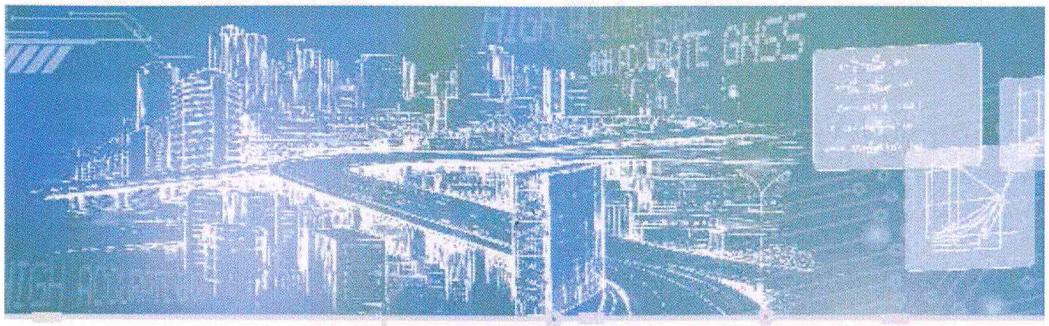
ComNav T300 GNSS Receiver



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*

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.

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Technical Specifications T300

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[1] (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 [2]
  -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® and Differential Data)
- Bluetooth® : 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(W×H): 15.8 cm × 7.5 cm
- Weight: 0.95 kg (include 2 batteries)

Environmental

- Operating temperature: -40 °C to + 65 °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)[3]
- Li-ion battery capacity: 2 × 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)

1 E-RTK, BeiDou B3 signal used in RTK calculate engine; concern the current situation, this mode can be used in APAC.

2 410-470 MHz, 3 frequency range, 410-430, 430-460, 460-470, need to clarify when place the order.

3 Power consumption will increase if using internal radio modem transmitter.

Specifications subject to change without notice.

ComNav Technology Ltd.
Building E, No.50 Alley 2080 Lianhua Road
201103 Shanghai - China

Tel : +86 21 64056796
Fax: +86 21 54309582

Email: sales@comnavtech.com
www.comnavtech.com

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5. Results

The final block boundary area demarcated is approximately 1762.839 Ha. The total forest area is 1745.883 Ha and the non-forest area is 16.956 Ha. The final boundary coordinates of the four pillars – KET2, KET3, KET5, & KET6 is given below. DGPS Survey processing report and co-ordinates of the PCP are in Annexure-1, and DGPS coordinates of TBM and block boundary coordinates is in Annexure-2. The geo-referenced maps are in Annexure -3.

FINAL CORNER BOUNDARY PILLAR COORDINATES

Sr. No	Pillar ID	Latitude "N"	Longitude "E"	Easting (m, UTM Zone 44N)	Northing (m,UTM Zone 44N)
1	KET 2	22°47'39.797"	82°49'21.991"	687104.738	2521912.199
2	KET 3	22°49'58.536"	82°50'43.269"	689369.475	2526208.671
3	KET 5	22°47'00.802"	82°51'41.443"	691097.101	2520762.244
4	KET 6	22°48'38.594"	82°52'48.833"	692980.955	2523794.780

The Block boundary area statement is given below

AREA STATEMENT

Sr. No	Type Of Land	Proposed Area (Ha)
1	Forest Area	1745.883
2	Non Forest Area	16.956
Total Area		**1762.839**

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