

## COAL EXPLORATION

The exploration for coal is by nature an investigation and developmental activity, undertaken in anticipation of future demand of coal, to enable mine projection and mine development.

Coal plays a major role in world energy scenario and it will continue to do so. It contributes about 27% of the total global primary energy demand and is also a key input for the steel and other industries.

The coal industry has the capability to continue to supply a major share of the world's energy needs. It also has the technology available now, to make major improvements in the critical areas of efficiency and environmental impacts.

As per the draft report of the Working Group on Coal & Lignite set up for formulation of 12th Five Year Plan, All India coal demand in the terminal year of XII Plan i.e. 2016-17 is projected as 980 million tonnes. The country's estimated demand of coal is about 770 million tonnes for 2013-14. In view of the same, the exploration agencies are expected to utilise their existing resources/ capabilities to fulfill such projections.

The Godavari Valley Coalfield (GVCF), which is under the command area of Singareni Collieries Co. Ltd., has its share of coal production and exploration in the projection.

### XI PLAN PERIOD (2007- 2012)

During XI Plan period, a total of 4.59 lakh meters of drilling has achieved by SCCL with average deployment of 25 drills and proved 909.19 m.t. of coal reserves in Godavari Valley Coalfield.

### PROGRAMME FOR XII PLAN PERIOD (2012- 2017)

During XII plan period (2012-17), it is proposed to drill about 7.5 lakh meters of drilling by deploying 31 drills (4.91 lakh metre in Exploration & 1.59 lakh metre for additional drilling in virgin explored blocks & Developmental drilling purposes) in an area of 150 sq.km covering about 22 exploration blocks. The likely reserves to be proved are about 1950mt.

### WORKS CARRIED OUT BY EXPLORATION DIVISION DURING 2012-13

Exploration Division has achieved the 1,20,105 m of drilling against the target of 1,50,000 metre by deploying 31 drills. vis-à-vis the achievement of 1,00,325m during 2011-12.

The region wise targets and achievements are as follows:

Region	Target(m)	Achievement(m)	Percentage	Productivity/drill/month
Kothagudem	37740	33265	88.14	308.00 (108)
Ramagundam	58130	51088	87.89	387.03 (132)
Belampalli	54130	35752	66.05	295.47 (121)
<b>TOTAL</b>	<b>150000</b>	<b>120105</b>	<b>80.07</b>	<b>332.70 (361)</b>

1. A cumulative total of 45.63 mt of proved reserves have been established during 2012-13 in Shanthikhani Longwall dipside extension property.
2. The total proved GVCF reserves as on 1.4.2013 stands at 9923.31 million tonnes
3. A total area of 28.00 sq. km. was covered under detailed geological mapping in the following exploration blocks during 2012-13.
  - Tadicherla block-I (20.00 Sq.km))
  - Mandamarri Shaft BlockSec-B - (0.50 Sq.km)
  - Shantikhani LW dipside block - (6.00 Sq.km)
  - Shantikhani LW Mine - (1.00 Sq.km)
  - Sravanapalli dipside block - (0.50 Sq.km )
4. Detailed exploration work is taken up/ continued in the following 8 blocks.

Region	Block
KGM	1. Koyagudem Dipside block (Shaft block)
	2. Voddugudem block
RGM	3. Adriyala Dipside block
	4. RK New Tech Dipside block
	5. Mallayapalli block
BPA	6. Sravanapalli Dipside block
	7. Shanthikhani Longwall dipside extension
	8. Mandamarri shaft block (Sec-B)-Dipside

5. Additional drilling carried out in the following ten virgin explored blocks to meet the project planning requirements.
  - Rampur shaft block
  - Koyagudem UG block I&II
  - Koyagudem OC Pit-II Extension
  - Koyagudem OC Pit-III
  - Koyagudem Pit-I
  - Adriyala Longwall block
  - Tadicherla block-I (under BD works for APGENCO)
  - Mandamarri Shaft block (Sector – 'B', 'C' and 'D')
  - Shanthikhani Longwall block(Mine)
  - RKP Shaft block-I

6. Three coal bearing areas have been identified in (1) Kelli (K) block,(2) Ara area and (3) South of Khaingura areas of Adilabad district and Promotional Exploration is being taken up by M/s MECL.
7. Two Minex Geomodel reports were prepared.
8. SIDEx (Singareni Integrated Data on Exploration) package is designed with various web based data entry formats and output reports on SCCL intranet in collaboration with IT department. Current year data being entered regularly. Finalised data of Ramgundam Region, covering 1200 Bhs and 1,80,000 records approximately and 8 blocks of Belampalli Region were uploaded at ICRIS.
9. The overall coring and non coring ratio works out to 18:82 respectively against the overall ratio of 20:80 during 2012-13
10. Highest metreage achieved in a year by a single unit is 6260.50m in RGM region (Unit-in-charge: Sk. Yakub Pasha,Sr.R/M./ G.Saraiah, Driller, Gr. B Unit No.SERM-70) as against 6838.80m in Ramagundem Region during last year.
11. Deepest borehole drilled is 1001 m (BHNo.KYG-401) by SERK-73 in Koyagudem shaft Block.

12. **Geophysical logging:**

- A total of **275** boreholes were geophysically logged involving **1,08,827m** to supplement exploration data as against a total of **209** boreholes involving **86,752m** during 2011-12, which is the **highest ever logged metreage by any organisation in India in coal basin.**
- Out of 307 Bhs drilled by SCCL, geophysical logging was covered in 258 bhs, which works out to 84 %.

13. **Hydrogeological Works:**

- Four Mine water related problems were attended.
- 149 locations were recommended for drilling borewells to augment water supply in SCCL colonies and surrounding hutments.
- Two yield tests were conducted to assess groundwater potentiality in Manuguru area. Four Hydrogeological reports were submitted.
- Seven Hydrogeological environ reports for EIA/EMP reports, two Environmental inventory chapters for Geological reports and two Hydrogeological brief notes were submitted.
- Hydrogeological data was submitted for 19 projects to incorporate in mine closure plan presentations.

14. **Geo-Engineering works:**

- RMR studies were conducted in 5 mines and 7 RMR reports were submitted.
- Underground mapping was conducted in 10 mines.
- Roof and floor rocks of 21 boreholes were sent for physico-mechanical properties tests and results of 20 boreholes were received.
- Continuous mapping of Gateroadways of longwall panels in Adriyala LW block.
- Generating all needy Geotechnical data for OC mines for the CSIRO, Australia, consultancy projects.

#### 15. ICRIS (Integrated Coal Resources Information System)

- Geo-modelling of 7 Geo-mining zone viz. Kaghaznagar, Dorli Sector-II, Goleti, Kunavaram, Sattupalli, Sattupalli-IV, and Venkatapuram. Completed.
- Collar and Salient features of 157 blocks, along with coalbelt wise ArcGIS shape files and drawing files of Coalbelt with formation-wise polygons and othr surface line features are completed for hosting on the ICRIS server.
- Geo-mining zone data as grid dump files for the completed 7 Geomodels are generated for all the seam on 50x50mesh for 12 parameters viz. From, To, Floor, Roof, Thickness, Inband Moisture, Ash, Volatile Matter, UHV, GCV, Relative density etc., with X and Y coordinates of grid nodes.

#### 16. Training & Seminars:

A total of 36 executives, 19 drilling technicians and 2 office staff have attended 21 trainings /seminars at various places.

#### 17. BUSINESS DEVELOPMENT WORKS

- After conducting drilling, core logging and GP logging, submitted a Geological report and geomodel of Tadicherla block-I for APGENCO for an order value of 4.48 crores.
- Carried out supervision of Exploration activities and vetting of Final GR of Gomia coal block, Bokaro District, Jharkhand state for M/s MMTCL Limited. The contract value is 35.19lakhs.

#### GEOLOGICAL RESERVES

The studies of Geological Survey of India attribute as much as 22206.96 million tonnes of coal reserves to the Godavari Valley Coalfield. The inventory covers up to a depth of 1200 meters and it includes reserves Proved (confirmed), indicated as well as inferred.

<b>INVENTORY OF THE COAL RESERVES</b> <b>GODAVARI VALLEY COALFIELD – ANDHRA PRADESH</b> <b>(As on 01.04.2013) (After GSI)</b>
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<b>a. Non coking</b>					
Andhra Pradesh –	<b>Depth(m)</b>	<b>Proved*</b>	<b>Indicated</b>	<b>Inferred</b>	<b>Total</b>
Godavari Valley Coalfield	<b>0-300</b>	6097.96	3403.97	152.24	9654.17
	<b>300-600</b>	3460.05	4708.23	618.62	8786.90
	<b>600-1200</b>	46.45	1441.71	2277.73	3765.89
Total for AP	<b>0-1200</b>	<b>9604.46</b>	<b>9553.91</b>	<b>3048.59</b>	<b>22206.96</b>

\* Thickness 0.90m and above

Since the inception of the company, 1085.40 million tonnes of coal has been extracted, by adopting different mining techniques.

#### **AGENCY-WISE EXPLORATION PROGRAMME (2013-14)**

During 2013-14, regional drilling by GSI, Promotional drilling by MECL and detailed drilling by SCCL will be continued in the identified blocks in tune with the long-term projected workload. A total of 38 drills (31 SCCL+4 MECL+3 GSI) are likely to be deployed to achieve the assigned target and to delineate the new blocks.

#### **GEOLOGICAL SURVEY OF INDIA (GSI)**

Regional Exploration by GSI in Pagaderu (West of Manuguru coal belt) and Bugga-Khammamtoogu area (South western continuity of Manuguru Coal belt) by deploying 2 rigs.

#### **MINERAL EXPLORATION CORPORATION LIMITED (MECL)**

The MECL has been carrying out Promotional drilling, to facilitate the generation of needy regional data, in addition to GSI. The target fixed for the year 2013-14 is 12000m. The drilling operations are likely to continue in Repallivada block (South eastern part of Goleti) and in the Renganghat block Dorli Belampalli coal belt.

#### **SINGARENI COLLIERIES CO.LTD. (SCCL)**

The management of SCCL has fixed a target of 1,50,000 m. of drilling for Exploration Division by deploying 31 drills in two/three shift operation for the year 2013-14.

<b>REGION</b>	<b>EXPLORATION (m)</b>	<b>LONGWALL+ PROD. SUPP.(m)</b>	<b>TOTAL (m)</b>
KOTHAGUDEM	22050	21500	43550
RAMAGUNDAM	42225	11000	53225
BELAMPALLI	19350	33875	53225
<b>TOTAL</b>	<b>83625.00</b>	<b>66375.00</b>	<b>150000</b>

Three Geological reports viz. Mallayapalli Block-I (Mulug coalbelt), RK New Tech Dipside Block and Mandamarri shaft block-Sector-B,C&D Dipside extn (Somagudem-Indaram coalbelt) with a total of about 300 m.t. are proposed to be submitted during the Year 2013-14.

Exploration and additional drilling works will be continued in the priority blocks identified by project planning.

To achieve the above objectives, the Exploration Division of SCCL is adopting a multi-disciplinary approach to generate all required geological and relevant data with more reliability conforming to the national and international standards.

The confident level of data is being increased by various concurrent studies like geophysical logging and investigations, necessary Hydro geological investigations, collection of Geo-engineering data through sample tests and underground mapping, dependable topographical surveys both for borehole locations and for geological mapping etc. The generated data is synthesized with computer software packages like CEMPGEODOC, Auto CAD and the interpreted coal deposit geometry is modeled in 3D with Minex–Horizon software. Thus documented Geological reports are submitted to Project Planning for further projectization into a mining project.

Issues related to Coal Bed Methane, Underground Coal gasification and Surface Coal Gasification, Captive Coal Mining and Captive Coal Exploration etc., have attained national importance and deserving priority is assigned at SCCL also. Corporate Planning and Business Development dept. are exclusively attending these issues for timely actions and needful follow ups with concerned agencies and Ministries.

Geotechnical investigation for the slope stabilities in OC dumps stability studies (In collaboration with CSIRO, Australia) are being attended at Exploration Division.

### **SIDEX**

SCCL has indigenously developed a web enabled programme named as **SIDEx** (Singareni Integrated Data on Exploration) which aims to help the Exploration Division and Management to query about various aspects of exploration data with a provision to automatically update / upload with the data of Drilling, Chemical, Geophysical, Hydrogeological, Geotechnical & in obtaining required graphic output etc.

### **COAL BED METHANE (CBM)**

Emerging importance for clean coal technology has focussed much attention on Coal Bed Methane resources. Though steps were initiated in IX plan period, the progress was not substantial.

The methane gas naturally occurring in coal beds has been largely a hazard to the mining industry. However, of late, this methane gas has been recognized as economically viable source of energy in certain optimum conditions.

In the underground mines of the Godavari valley Coalfield, there has been no record of emission of gas and the seams mined so far contain coal of low to moderate rank. Accordingly, no effort was made earlier to ascertain the gassiness of coal seams of GVCF. In recent years some data have been generated which show that the seams at depth store some amount of desorbable gas. Accordingly following two blocks were identified.

CBM block viz. KG (East)-CBM-2005/III covering an area of 750sq.km in the south eastern part of the Godavari valley basin. The CBM resource of the block is estimated at 57.2 BCM (2.02 TCF).

CBM block viz. GV (North)-CBM-2005/III covering an area of 386 sq.km. in the north western part of the Godavari Gondwana basin. The resource of this CBM block is estimated at 29.65 BCM (1.05 TCF) within a depth range of 600 to 1500m.

The above CBM blocks of SCCL have been allotted to the following bidders:

	<b>Bidder</b>		<b>Name of the blocks allotted</b>
i.	Consortium of RNRL, Reliance Energy Ltd., and Geopetrol Resources of France	:	KG (East) – CBM-GVCF/ AP
ii.	Coal Gas Mart / US Adinath Exim Resources Ltd., Deep Industries Ltd.	:	GV (North) – CBM-GVCF/AP

### **Underground Coal Gasification (UCG)**

Underground Coal Gasification (UCG) is an emerging technology in which coal can be burnt in a controlled manner and gassified under insitu conditions to harness its energy.

Surface coal gasification is a process which converts coal into combustible and non combustible gases at high temperature and pressure at surface. The product known as syngas can be used for power generation and/or as chemical feedstock.

The Singareni Collieries Company Ltd have entered into MoU with ONGC on 15.04.2006 to work jointly for the development of Underground Coal Gasification (UCG), Surface Coal Gasification (SCG) and Coal Bed Methane (CBM). SCCL is actively pursuing a SCG project integrated with IGCC Power Plant with ONGC. Further, it is also planned to take up UCG and CBM projects with ONGC.

### **Captive Mines of SCCL**

Following seven coal blocks of Godavari Valley Coalfield were identified for Captive mining.

NAME OF BLOCK	AREA (sq.km)	GEOLOGICAL RESERVES (M.T.)	REMARKS
1. Anisettipalli	5.000	27	De-allocated from APGENCO.
2. Cherla-OC	0.663	13	Not allotted
3. Cherla-UG (South Block)	1.990	16	Not allotted
4. Penagadapa	2.700	111	De-allocated from APGENCO.
5. Punukulachilka	2.420	20	De-allocated from APGENCO.
6. Tadicherla Block-I	4.500	76.69 (Revised)	Allocated to APGENCO
7. Tadicherla Block-II	18.750	277 (Indicated)	Actions are being initiated with MoC for delisting from captive block.

### OUTSOURCING EXPLORATION ACTIVITIES

Considering the increasing demand for coal, SCCL decided to quicken the exploration works through outsourcing the drilling activities for early geological report preparation and further projectisation.

SCCL is actively practicing the outsourcing of all non-core activities i.e., security, way making, sump digging, drilling of large dia boreholes required for Hydro-geological investigations in the proposed blocks and for other purposes like sand stowing, dewatering etc. These steps would facilitate the drilling crew to exclusively concentrate on exploration of priority blocks for timely completion of investigation to prove additional coal reserves. The outsourcing of peripheral jobs has also helped us in reducing the manpower from 777 in 2001-02 (for 29 Drills) to 478 as on 1-4-2013 (for 31 drills), and achieving higher drilling productivity.

### ISO Certification

ISO Certificate (ISO9001:2008) issued by M/s Bureau Veritas Certification (India) Limited expired in October 2012. Recertification with new firm is under process.

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### THE TRACK RECORD

- SIR WILLIAM KING FIRST DISCOVERED COAL IN THE YEAR 1871, NEAR SINGARENI VILLAGE, LOCATED CLOSE TO YELLANDU TOWN.
- THE FIRST MINE WAS STARTED AT YELLANDU IN THE YEAR 1886 BY THE HYDERABAD DECCAN COMPANY, PREDECESSORS OF THE SINGARENI COLLIERIES COMPANY LIMITED.



- IN THE INAUGURAL YEAR (1889), A TOTAL OF 56671 TONNES OF COAL WAS PRODUCED AND DURING 2012-13, THE PRODUCTION TOUCHED A HIGH OF 53.19 MILLION TONNES.
- A TOTAL AREA OF 614.47 SQ.KM (EXCLUDING OLD ABANDONED MINES) HAS BEEN COVERED BY DETAILED EXPLORATION IN GODAVARI VALLEY COALFIELD, BY THE COMPANY, INCLUDING 235 sq.km. AREA COVERED BY MINES.
- 49 MINES ARE IN OPERATION IN THE COMPANY. OF THESE, 34 ARE UNDERGROUND MINES AND 15 ARE OPENCAST MINES.
- SINCE THE INCEPTION OF THE COMPANY, 1085.40 MILLION TONNES OF COAL HAS BEEN EXTRACTED, BY ADOPTING DIFFERENT MINING TECHNIQUES.
- A TOTAL OF 9923.31 MILLION TONNES OF COAL RESERVES HAS BEEN PROVED SO FAR, THROUGH DETAILED EXPLORATION BY THE COMPANY.
- THE COMPANY HAS COMPLETED A TOTAL OF 2715679m, OF DRILLING IN 13235 BOREHOLES.
- ABOUT 1948706m OF DRILLING HAS BEEN COMPLETED BY THE COMPANY IN THE LAST TWENTY SEVEN YEARS ALONE (i.e. FROM 1-4-1986 TO 31-3-2013), ENABLING THE COMPANY TO ESTABLISH A PROVED RESERVE OF 5918.87 MILLION TONNES, WHICH VOUCHES FOR THE QUANTUM INCREASE IN EXPLORATION ACTIVITIES OF THE COMPANY.
- PRODUCTIVITY OF 332.70 m./DRILL/MONTH WAS ACHIEVED DURING THE YEAR 2012-13.
- A TOTAL OF 5125 BOREHOLES INVOLVING A METREAGE OF 1294663M WERE GEOPHYSICALLY LOGGED BY SCCL SINCE COMMISSIONING OF LOGGERS IN 1985 IN GODAVARI VALLEY COALFIELD.
- A TOTAL OF 207.72 LINE kms WERE COVERED WITH RESISTIVITY PROFILING AND 1052 VERTICAL ELECTRICAL RESISTIVITY SOUNDINGS WERE CARRIED OUT BY SCCL IN GODAVARI VALLEY COALFIELD.
- A CUMULATIVE TOTAL OF 696 BOREHOLES WERE STUDIED FOR GEO-ENGINEERING PROPERTIES FROM VARIOUS MINES / BLOCKS OF GODAVARI VALLEY COALFIELD.
- A CUMULATIVE TOTAL OF 458 RMR REPORTS (448 BY SCCL & 10 BY NIRM) WERE PREPARED FOR VARIOUS WORKING SECTIONS OF SEAMS FROM DIFFERENT MINES IN GODAVARI VALLEY COALFIELD.

**STATUS OF EXPLORATION  
GODAVARI VALLEY COAL FIELD  
(As on-01.04.2013)**

|     |                                                                |              |
|-----|----------------------------------------------------------------|--------------|
| 1.  | CUMULATIVE BASIN AREA.....                                     | 17400 sq.km  |
| 2.  | PROGNOSTICATED COAL BEARING AREA.....                          | 11000 sq.km. |
| 3.  | AREA CONSIDERED NON-POTENTIAL FOR<br>DETAILED EXPLORATION..... | 9,300 sq.km  |
| 4.  | TOTAL POTENTIAL AREA FOR<br>REGIONAL EXPLORATION.....          | 1,700 sq.km  |
| 5.  | AREA COVERED BY REGIONAL EXPLORATION.....                      | 1315 sq.km   |
| 6.  | AREA TO BE COVERED BY REGIONAL<br>EXPLORATION.....             | 385 sq.km    |
| 7.  | AREA COVERED BY DETAILED EXPLORATION<br>AND MINES.....         | 614 sq.km    |
| 8.  | PROVED GEOLOGICAL RESERVES<br>AS ON 31-3-2013.....             | 9923.31 m.t. |
| 9.  | AREA COVERED UNDER DETAILED EXPLORATION<br>DURING XI PLAN..... | 41 sq.km     |
| 11. | RESERVES PROVED DURING XI PLAN (2007-12)<br>.....              | 909.19 m.t.  |

|     |                                                                  |            |
|-----|------------------------------------------------------------------|------------|
| 12. | RESERVES PROVED DURING 2012-13.....                              | 45.63 m.t. |
| 12. | AREA IDENTIFIED FOR DETAILED EXPLORATION<br>DURING XII PLAN..... | 150 sq.km  |
| 13. | RESERVES TO BE PROVED DURING XII PLAN.....                       | 1950m.t.   |

**DISTRICT WISE RESERVES OF GODAVARI VALLEY COALFIELD**

As on 01.04.2013

| DISTRICT           | DEPTH (m)    | GRADES       |               |                |                |                |                |               | TOTAL<br>(million tonnes) |
|--------------------|--------------|--------------|---------------|----------------|----------------|----------------|----------------|---------------|---------------------------|
|                    |              | A            | B             | C              | D              | E              | F              | G             |                           |
| ADILABAD           | 0-300        | 1.32         | 28.78         | 285.71         | 715.35         | 446.99         | 554.43         | 77.51         | 2110.09                   |
|                    | 300-600      | 0.16         | 21.64         | 259.76         | 516.65         | 395.67         | 386.87         | 12.04         | 1592.77                   |
|                    | >600         | 0.00         | 1.00          | 4.55           | 22.55          | 11.85          | 13.25          | 0.05          | 53.24                     |
|                    | <b>TOTAL</b> | <b>1.47</b>  | <b>51.42</b>  | <b>550.01</b>  | <b>1254.55</b> | <b>854.50</b>  | <b>954.55</b>  | <b>89.60</b>  | <b>3756.10</b>            |
| KARIMNAGAR         | 0-300        |              | 45.43         | 417.09         | 306.71         | 292.88         | 52.03          | 0.66          | 1114.80                   |
|                    | 300-600      | 0.15         | 67.70         | 133.86         | 390.01         | 299.73         | 34.84          | 0.10          | 926.39                    |
|                    | >600         |              |               |                |                |                |                |               |                           |
|                    | <b>TOTAL</b> | <b>0.15</b>  | <b>113.13</b> | <b>550.95</b>  | <b>696.72</b>  | <b>592.61</b>  | <b>86.87</b>   | <b>0.76</b>   | <b>2041.19</b>            |
| WARANGAL           | 0-300        | 32.27        | 90.19         | 144.96         | 98.47          | 198.27         | 232.25         | 24.28         | 820.69                    |
|                    | 300-600      | 18.98        | 45.78         | 69.95          | 48.00          | 63.78          | 97.34          | 3.01          | 346.84                    |
|                    | >600         | 1.21         | 0.37          | 1.15           | 1.12           | 0.54           | 0.00           | 0.00          | 4.39                      |
|                    | <b>TOTAL</b> | <b>52.46</b> | <b>136.34</b> | <b>216.06</b>  | <b>147.59</b>  | <b>262.59</b>  | <b>329.59</b>  | <b>27.29</b>  | <b>1171.92</b>            |
| KHAMMAM            | 0-300        | 17.83        | 73.47         | 400.22         | 180.50         | 343.37         | 804.23         | 464.17        | 2283.79                   |
|                    | 300-600      | 6.84         | 41.72         | 233.24         | 127.25         | 108.21         | 113.65         | 39.40         | 670.31                    |
|                    | >600         |              |               |                |                |                |                |               |                           |
|                    | <b>TOTAL</b> | <b>24.67</b> | <b>115.19</b> | <b>633.46</b>  | <b>307.75</b>  | <b>451.58</b>  | <b>917.88</b>  | <b>503.57</b> | <b>2954.10</b>            |
| TOTAL              | 0-300        | 51.42        | 237.87        | 1247.98        | 1301.03        | 1281.51        | 1642.94        | 566.62        | 6329.37                   |
|                    | 300-600      | 26.13        | 176.84        | 696.81         | 1081.91        | 867.39         | 632.70         | 54.55         | 3536.31                   |
|                    | >600         | 1.21         | 1.37          | 5.70           | 23.67          | 12.39          | 13.25          | 0.05          | 57.63                     |
| <b>GRAND TOTAL</b> |              | <b>78.75</b> | <b>416.08</b> | <b>1950.48</b> | <b>2406.61</b> | <b>2161.28</b> | <b>2288.89</b> | <b>621.22</b> | <b>9923.31</b>            |