Operation & Maintenance Presentation

ALWAYS AROUND YOU...
Vision

Our Firms’ vision is “to be recognized as an advanced telecommunication service and solution provider and a preferred strategic partner for dominant players in international market.”

Company Policy

Our Firms’ main policy is to conduct its operations in accordance with the highest business ethics and environmental awareness and to comply with the laws and the regulations of the countries where it carries out activities.
Delta Telecom Energy Construction Industry and Trade Limited Co. is a prestigious company which has started to play big roles in international communication arena.

Aim of Delta Telecom is to assist GSM operators for integration with continually growing technological trends and work more efficiently by providing globally qualified services.

In addition, Delta Telecom serves the subject about application of new technologies to customers with its experienced and educated team.
Delta Telecom offers high quality services that can feed the responses and fulfill the prospects of companies in GSM sector.

Delta Telecom is able to provide turnkey solutions to customers by its experienced and professional stuff.

Delta Telecom carries out mobile network deployments and network support for vendors and operators by providing maintenance services and turnkey projects deployment in the field of both mobile and fixed line telecommunication market.

DELTA is an engineering and technology-based company, which provides customers with advanced telecommunications network products and services, which are highly reliable and value for money.
DELTA Telecom has given and is still giving Operation and Maintenance Services to its valuable customers with the privileged principles such as:

- 7/24 principle
- Experienced Management / Engineers / Technicians / Riggers and HR
- 4x4 cars or vehicles as per the Project Requirements
- Complete Tools
- Disciplined and Job Focused Personnel and so on...
<table>
<thead>
<tr>
<th>O&amp;M SOLUTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance of Newly Finished Base Stations</td>
</tr>
<tr>
<td>Faulty Remedy Activities</td>
</tr>
<tr>
<td>Modification Activities</td>
</tr>
<tr>
<td>Periodical Maintenance</td>
</tr>
<tr>
<td>Protective Maintenance</td>
</tr>
<tr>
<td>Reformative Maintenance</td>
</tr>
<tr>
<td>Electro-Mechanical Maintenance (AC / Genset / Power System etc..)</td>
</tr>
<tr>
<td>Out of Standards Works</td>
</tr>
<tr>
<td>Electricity Bill Payments and Follow Up Procedures</td>
</tr>
<tr>
<td>Material and Spare Part Assurance, Storage and Transportation</td>
</tr>
<tr>
<td>Help Desk &amp; Monitoring Facility with 7/24 Principle</td>
</tr>
<tr>
<td>Forwarding and Management</td>
</tr>
<tr>
<td>Extra works</td>
</tr>
<tr>
<td>Network Audit</td>
</tr>
<tr>
<td>Drive Test</td>
</tr>
<tr>
<td>Site Survey with RF perspective</td>
</tr>
<tr>
<td>Site Survey M.W Transmission (LOS)</td>
</tr>
</tbody>
</table>
1-Scheduling the Periodical Maintenance:
   The annually plan will be prepared according to the on-air date of the links/sites.

2-Taking approval of Periodical Maintenance Schedules:
   Submitting the plan to customer for approval of periodical maintenance.

3-Receiving work orders to carry out the preventive maintenance:
   Receiving the confirmation by the customer to proceed with periodical maintenance.

4-Carrying out the preventive maintenance as agreed check list
   Sending the teams to sites along with agreed check list to carry out the preventive maintenance.
5- Rectification of any abnormalities during preventive maintenance
   a) Rectification of the abnormalities if found will be made if not service effecting.
   b) Escalating the abnormalities may cause service outage to Help Desk

6-Maintaining Record
   Preventive maintenance team will maintain and submit the complete record of sites including screen shots, alarms, panoramic and event logs to the customer via Operation Manager.

7-Maintain cleanliness of all equipment in scope
   Preventive maintenance team will make sure the equipment cleanliness and dust/water proof measures.
PM SITE MAINTENANCE PROCESSES

Periodical Maintenance
Weekly Schedule

Weekly works allocated

Approval of the weekly schedule

Periodical maintenance operation

Control of the site which periodic maintenance is completed

Check Lists and Documents
PM SITE MAINTENANCE PROCESSES

A

Maintenance is sufficient or not?

YES

Re-make the periodical maintenance

NO

Completing the maintenance of the site

Customer

Maintenance Team

Customer
Fault Remedy Activity is the most critical service which should be done in a very professional manner.

Being aware of this, DELTA can offer the Operation and Maintenance Services for following network elements and might be more depending on the customer requirements and SoW:

- Microwave radio equipment
- Transmission Equipment (optical)
- BTS (2G / 3G / Wimax)
- BSC / RNC
- IPBB / VAS
- Core
The Work Order (trouble) received

Problem Scope?

Maintenance Team is informed and the trouble is solved by this team

Work order performed

Escalated to concerned

Help Desk (OMC 24/7 monitoring)
Help Desk, which operates with 7/24 principle, monitors and receives the alerts/alarms/work orders and gets the necessary action accordingly.

Help Desk informs the concerned region’s team leader in case of any fault/failure monitored, and make sure the rectification is done by the mentioned team in defined SLA & KPI’s.

Planned outage activities is also coordinated by Help Desk.

The activities like up-gradation, migration of E1s, modification of configuration or MDTs are provided by customer and the activities are performed accordingly by coordination of Help Desk Management and O&M Manager.
The Provisional Acceptance is carried out with attendance of related parties as:

- Customer
- Vendor
- Maintenance Contractor
- Construction and/or Implementation Contractor

Then the acceptance is done through the pre-determined check lists, and related documents with photos are submitted to the customer on time. The final acceptance is carried out after determined period and acceptance forms along with the documents are signed by all parties if everything is all right according to the specifications.
Site Acceptance Responsible

Work Order received

The determination of the site acceptance date

Travelling to the site

Making the site acceptance process

Detecting the acceptance problems

Preparing the report of the problems

Site Accept Resp./Customer

Acceptance forms and check lists

Site Acceptance Responsible

Work Order
The problems are Removed or not ?

Correcting operations for the fixed problems

Control

Completing the Site Acceptance

Construction Company

Site Acceptance Responsible
Network Audit can be performed as per customer request for e.g.:

- GSM Antenna electrical and mechanical tilt values and changes
- Antenna height
- M.W antenna size and height
- Link type / Capacity
- LoS Survey
Each team generally comprises of 2 people (1 Engineer, 1 Rigger & Driver).

Each team is generally responsible for their defined number of sites and region only.

Each team will carry out the preventive maintenance and corrective maintenance.

(Our customer is most welcome to make interviews of our engineers.)
- Portable Laptops
- BER Tester
- Site Master
- Multi Meter
- Optical power meter
- Portable tool kits.
- Camera (Digital)
- Safety belts.
- Required software (Vendor Specific).
- Dust cleaners
- Cable cutters
- Special tool to make IF connectors
- GPS
- All the other necessary equipments and tools necessary to perform the project.
All the records including (Alarms, Screen shots, panoramic, event logs) collected by Corrective and/or Preventive maintenance teams will be forwarded to O&M Manager. And O&M Manager will be responsible for forwarding these information/reporting to customer on weekly basis and the frequency of the reporting can even be arranged as per the customer requirements.

All the spare parts will be recorded by Warehouse Responsible and will report to O&M Manager by proper inventory reports.

Help desk will prepare their own daily reports and send to O & M Manager on daily basis. Therefore, O&M Manager also will be aware for any issue and will have the opportunity to be under service at any time for the customer and/or its representatives.
Routine reports to be sent to the customer in weekly basis

Routine reports to be sent to the customer in monthly basis

Separate record will be maintained for abnormalities exceeding the SLA if any.

**NOTE:** Reporting frequency can be arranged as per the customer needs.
The calibration period of the devices are followed by Logistic Manager and routinely reported to O&M Manager for taking the necessary actions.

Calibration of devices are done by the authorized companies according to the specified periods and time intervals as it is one of the main important to have a healthy results of measurement.
All electronic equipments used in the projects, are stored on the proper shelves and suitable air conditioned environment for protection from humidity, extremely hot weather etc...

All electronic equipments are transferred/transported to the sites with their original packs or antistatic bags.

Warehouse Stock Management and Inventory Control is regularly monitored. The delivery reports are arranged for any kind of material coming in or going out and the necessary track database is strictly followed by Warehouse / Logistic Manager.
GPS tracking system can be installed in FM team vehicles for tracking the location of FM Engineer. This can estimate the site reaching time like RT2=>RT3 and will give a clear observation to us and our customer about the time that the team leaves for troubleshooting minute by minute.

**Team control:** Teams will be more sensitive to catch the SLA requirements

**Time control:** Minimum time to recover the site will be provided
• This committee is assigned by high management in order to provide sustainability of application and inspection of HSE regulations.

• All members of this committee are certified as trainers on ISO9001:2008, ISO14001:2004 and OHSAS18001:2007.

• Authorizations of this committee can be described as follows;


  • Training all employees (from management to site staff) on HSE regulations and Quality Management System

This committee has an involved frame in order to provide comprehensive, corporate, systematic and standardized application and inspection.

This committee is assigned for following activities;

- Training all employees (from management to site staff) on HSE regulations and Quality Management System
- Providing following manuals in order to emphasize and sustain systematic regulations;
  - Delta Telecom Integrated Quality Management System Manual
  - Delta Telecom Environmental Management Manual
  - Delta Telecom Occupational Health and Safety Manual
  - Delta Telecom First Aid Manual
• Delta is one of the leading companies which gives importance to the most important 3 factors in CSR (Common Social Responsibility)

• Delta HQ is one of the companies which has several memberships for the HSE and CSR policies. With this in mind, it trains all its employees by cross trainings, internal seminars, manuals, handbooks etc. so that in its all subsidiaries the HSE and CSR should work functionally.

• Delta KSA is giving the priority for the health, safety and environment policy of the employees.

• Safety belts, helmets, safe tools, safe devices and responsibilities will be randomly check by Delta inspectors/supervisors to assure the requirement on this matter.
UKRAINE / Kiev Region / (Completed)

Approx. 800 sites / Ericsson Equipment
2G BTS-MW / EM and Telecom O&M
Corrective Maintenance for Turkcell-Astelit-Life GSM Network
Preventive Maintenance for Turkcell-Astelit-Life GSM Network
Spare part storage, administration and transportation activities
CQT jobs performance for Turkcell-Astelit-Life GSM Network
Site Acquisition Maintenance and Site Management Activities
KINGDOM OF SAUDI ARABIA / Southern Region / (On Going)
585 sites for 2G-3G
2G-3G-BSC-RNC-VDSL-OLT / O&M for Telecom Equipment
Corrective Maintenance for STC on behalf of Huawei
Preventive Maintenance for STC on behalf of Huawei
DT and CQT jobs for STC on behalf of Huawei
Spare part storage, administration and transportation activities

KINGDOM OF SAUDI ARABIA / Southern Region / (On Going)
1350 logical sites / Huawei and Motorola Equipment
2G-3G-Wimax-BSC-RNC / O&M for Telecom Equipment
Corrective Maintenance for Mobily on behalf of Huawei
Preventive Maintenance for Mobily on behalf of Huawei
DT and CQT jobs for Mobily on behalf of Huawei
Spare part storage, administration and transportation activities
KINGDOM OF SAUDI ARABIA / Eastern Region / (On Going)
1160 sites / ALU Equipment
2G BTS-MW / EM & Telecom O&M done
Now only O&M for Telecom Equipment
Corrective Maintenance for Mobily on behalf of Alcatel-Lucent
Preventive Maintenance for Mobily on behalf of Alcatel-Lucent
Spare part storage, administration and transportation activities

KINGDOM OF SAUDI ARABIA / North Region
800 sites / ALU Equipment
2G-3G-LTE Telecom O&M
Corrective Maintenance for STC on behalf of Alcatel-Lucent
Preventive Maintenance for STC on behalf of Alcatel-Lucent
Spare part storage, administration and transportation activities
KINGDOM OF SAUDI ARABIA/ Southern Region/ DRIVE TEST
(On Going)

DT and CQT jobs for Mobily on behalf of Huawei for Mobily 1902 sites
DT and CQT jobs for Mobily on behalf of Huawei for STC 501 sites
Total DT teams : 14
Post Processing Engineer : 2
Drive Test Coordinator : 1
Tools : Tems with various versions, Actix, Anritsu etc.

IRAN / R1Z1 Tehran Region / (On Going)
1605 sites / NSN-Ericsson Equipment
2G-Wimax-BSC-MW-IBS / EM and Telecom O&M
DT and CQT jobs performance for MTN Irancell Network on behalf of Huawei
Corrective Maintenance for MTN Irancell Network on behalf of Huawei
Preventive Maintenance for MTN Irancell Network on behalf of Huawei
Spare part storage, administration and transportation activities
IBS Sites Preventive and Corrective Maintenance for MTN Irancell Network on behalf of Huawei (84 Sites – Metro, Shopping Mall, etc.)
**O&M REFERENCES**

**AZERBAIJAN / Region 2 & 3 / (On Going)**

1120 Sites / NSN-Ericsson-ALU-Huawei Equipment

2G-3G BTS-MW / EM and Telecom O&M

Corrective Maintenance for Bakcell

Preventive Maintenance for Bakcell

Spare part storage, administration and transportation activities

Site Management (SAQ, Lease, Access etc.)

CQT jobs for Bakcell

---

**AZERBAIJAN / Region 2 & 3 / (On Going)**

453 Sites / NSN-Ericsson-ZTE-Huawei Equipment

2G-3G BTS-MW / EM and Telecom O&M

Corrective Maintenance for Azerfon

Preventive Maintenance for Azerfon

Spare part storage, administration and transportation activities

CQT jobs for Azerfon
**O&M REFERENCES**

**TURKEY / Adana Region (On Going)**
900 Sites 2G /3G O&M for Electro-Mechanic
Corrective Maintenance for AveA
Preventive Maintenance for AveA
Spare part storage, administration and transportation activities

**TURKEY / Diyarbakir Region (On Going)**
840 Sites 2G /3G O&M for Electro-Mechanic
Corrective Maintenance for AveA
Preventive Maintenance for AveA
Spare part storage, administration and transportation activities
Delta is an ISO 9001:2008 / OHSAS 18001:2007 / ISO 14001:2004 approved and certificated organization. It is one of the companies in Turkey to be certified under ISO 9001:2008 in the field of telecommunication system services. This has given Delta another advantage over its competitors.

Delta, together with the cooperation of all employees according to predetermined policy and strategies, with trainings in or out of the company and providing the most effective internal communication processes, provides necessary conditions for customer focused working environment which is accomplished by process control, quality control, process occurrence time, customer satisfaction, process cost and in due time delivery indicators.

Performances of our employees and processes are evaluated periodically, as well.
THANK YOU...

Gullubahce Avenue , Silahli Kuvvetler Street,
Daraoglu Business Center No:9
ANTAKYA HATAY / TURKEY
Phone : +90 326 216 77 47
Fax : +90 326 216 77 46

www.deltatelecom.co
info@deltatelecom.co