中国民用航空局

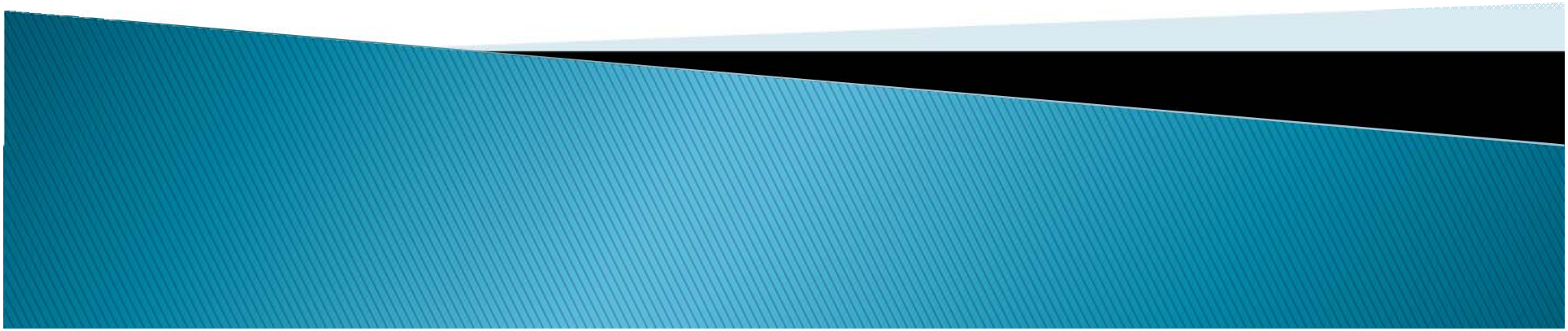
空中交通管理局

Air Traffic Management Bureau.CAAC

Civil Aviation Air traffic control Technology Equipment Dev. Co. Ltd

民航空管技术装备发展有限公司

# A Briefing of TEDC's ADS-B Equipment



# Summary

## Civil Aviation Air traffic control Technology Equipment Dev. Co. Ltd （TEDC）

- Found in 1998.
- High-tech enterprise invested by CAAC/ATMB & other regional ATMBs
- Focus on modern air traffic control technology
- ATM system produce, integrate and highest-level maintenance

# Summary


企业法人营业执照
荣誉证书
国家重点科技攻关计划（重大技术装备）
优秀科技成果。
使用许可证
安全生产许可证
对外贸易经营者备案登记表
IQNet
CERTIFICATE
科技攻关
“九五”国家重点科技攻关计划
优秀科技成果
ATC2000空中交通管理自动化处理显示系统研制
科学技术部 财政部
国家计委 国家经贸委
对外贸易
CAAC
民用航空空中交通通信导航监视设备
使用许可证
证书编号：L-S-(ADS-B)-(ADSB-2000A)-TEDC
CERTIFICATE
Quality Management Systems Certificate
GB/T 19001-2008/ISO 9001:2008

# ADSB-2000A ADS-B Receiver

- Modular , high performance ground station
- CAAC approved
- High accuracy and Refresh rate
- Efficient gap-filling surveillance
- Highly flexible solution
- Low life cycle costs
- Cost-effective surveillance solution in non-radar airspace

# ADSB-2000A ADS-B Receiver

CAAC

民用航空空中交通通信导航监视设备

使用许可证

证书编号：L-S-(ADS-B)-(ADSB-2000A)-TEDC

设备生产厂家：民航空管技术装备发展有限公司

设备名称、型号、产地：1090兆赫扩展电文广播式自动相关监视地面站（接收）设备 ADSB-2000A 中国

设备适用范围：适用于民用航空机场、终端区和航路的监视。

根据《民用航空空中交通通信导航监视设备使用许可管理办法》(CCAR-87)及有关规定要求，经审查，该设备符合取得民用航空空中交通通信导航监视设备临时使用许可证条件。

特发此证，以兹证明。

证书有效期：两年

颁发日期：2012年01月31日

有效期至：2014年01月29日

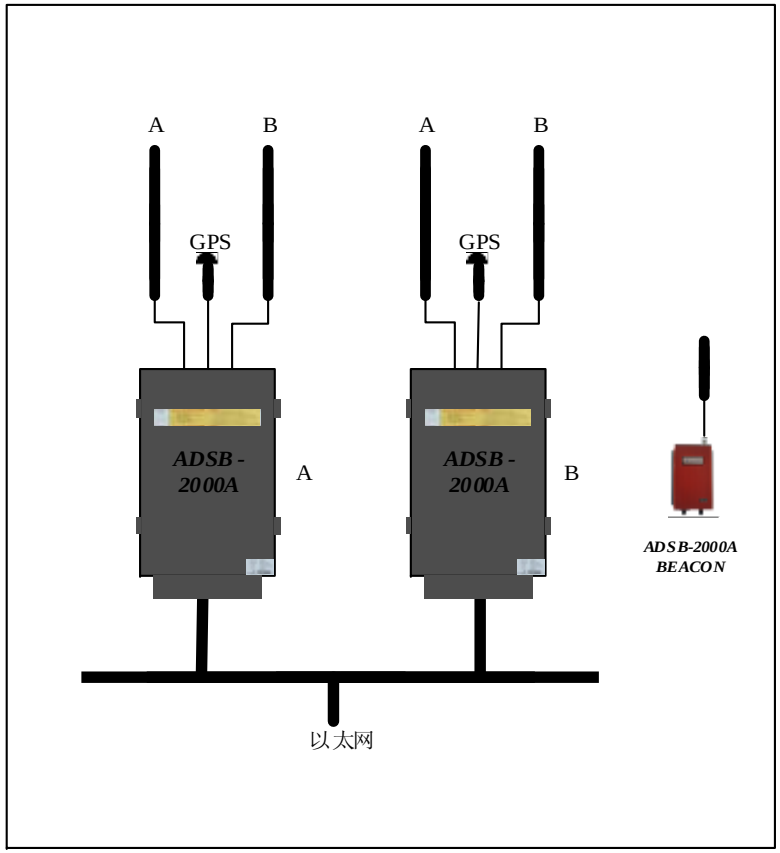
发证机关：

- In February 2012, CAAC issued license for the ADSB-2000A ground station (made by TEDC). It's the first license of ADS-B ground station equipment issued for national vender in China.
- CAAC issued a license, indicating that the ADSB-2000A technology has matured and is ready for deployment.

# ADSB-2000A ADS-B Receiver

- 1090ES datalink
- Airport vehicle tracking and multilateration functions avaliable
- Modular digital receiver with full degarbling,retriggering and error correction
- Single and dual configurations available
- Security features and full multilateration feature support
- Compilant to ICAO Annex 10 and EUROCAE ED-12 RTCA DO-260/DO-260b

# ADSB-2000A ADS-B Receiver




- Modular Digital Receiver
- Dual-Station Redundant Configuration
- Beacon installed for Ground Station Integrity Monitoring
- Dual-channel Redundant Per Receiver
- Built-in GPS Module in Receiver
- Ethernet Interface Output
- External Antenna

# ADSB-2000A Beacon

- Used for integrity monitoring Ground Station
- Frequency：1090MHz
- Power： 2W
- Message formats：DF18
- Message type：Airborne object
- Configuration： by network
- Advanced Type：Built-in GPS module
- Universal Type： w/o GPS module, position is set by network
- Conformity： EUROCAE ED-12, RTCA DO-260/DO-260B, SRTA LICENSE

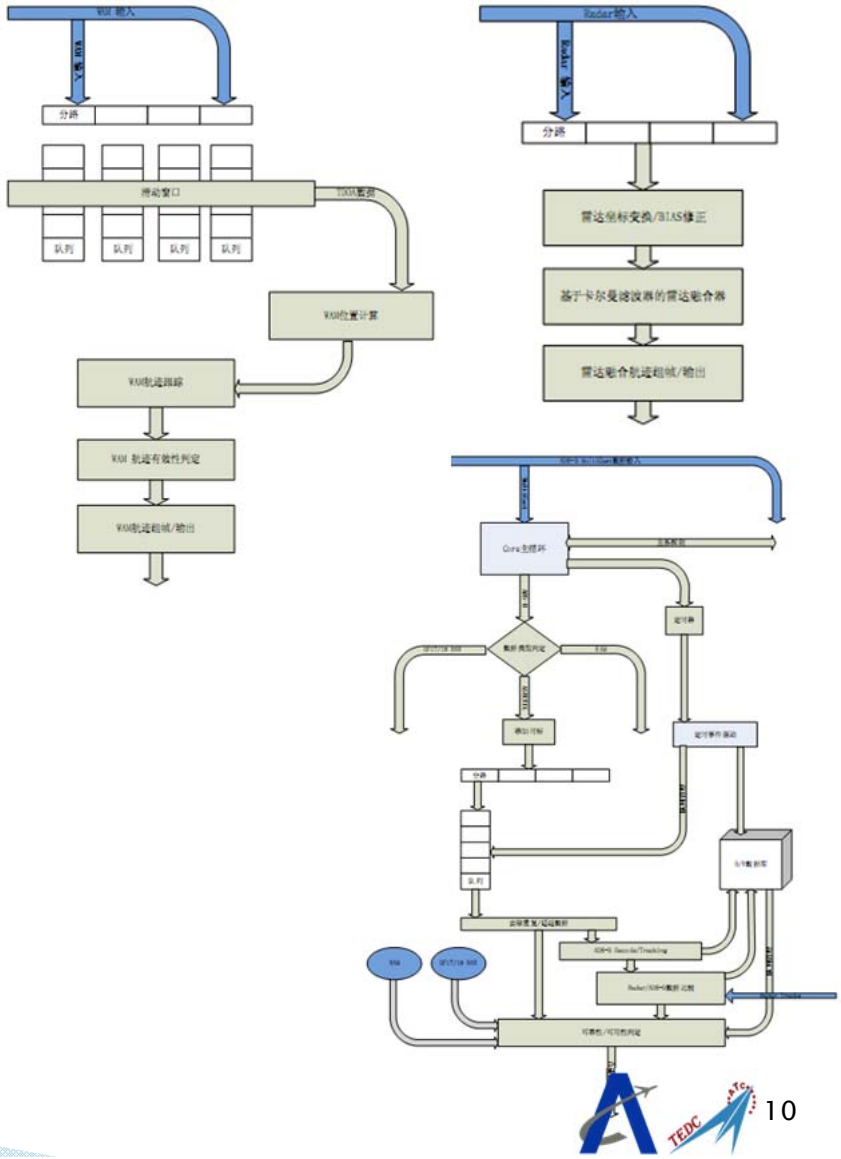
# ADSB-2000A Vehicle Transmitter

- Frequency：1090MHz
- Power： 20W
- Message formats：DF18
- Message type：Surface object
- Configuration： by network
- Built-in GPS module： Real-time position
- Conformity： EUROCAE ED-12, RTCA DO-260/DO-260B

# CDP-2000 system

CDP-2000 is a ADS-B Centre Data Process system, it's developed by TEDC from 2010.

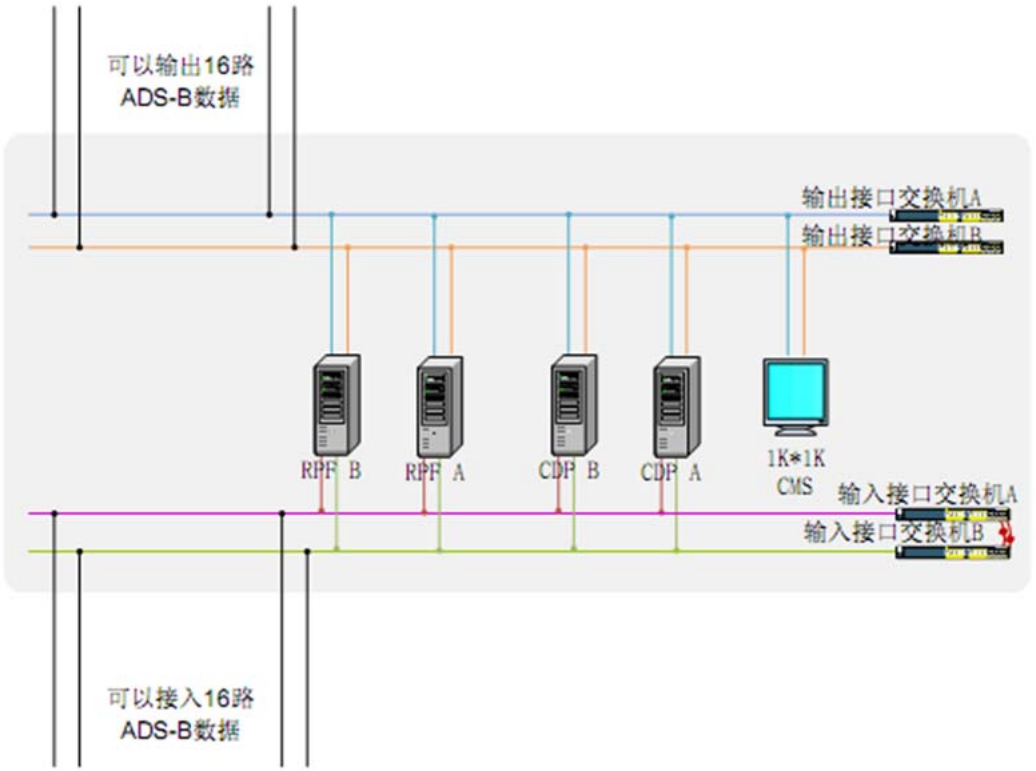
CDP-2000 is designed for multichannel ADS-B data integation and data distribution .



# CDP-2000 system

CDP-2000 is used Dual-Node redundance design.

CDP-2000 can process Radar/ADS-B/WAM data,and could find the false ADS-B target.




- CDP（Central Data Processor，数据处理中心）；

# CDP-2000A system

CDP-2000 system is a data process system, Including provincial, regional and national three layers process system. The system integrates nation-wide ADS-B track information, and includes functions such as WAM, target validation, black and white lists and other extend functions.

This system can provide the ADS-B data services to ATC system, and can also provide the customized data services to airports, airlines, military or other departments for different business needs.

# LiJiang Airport project

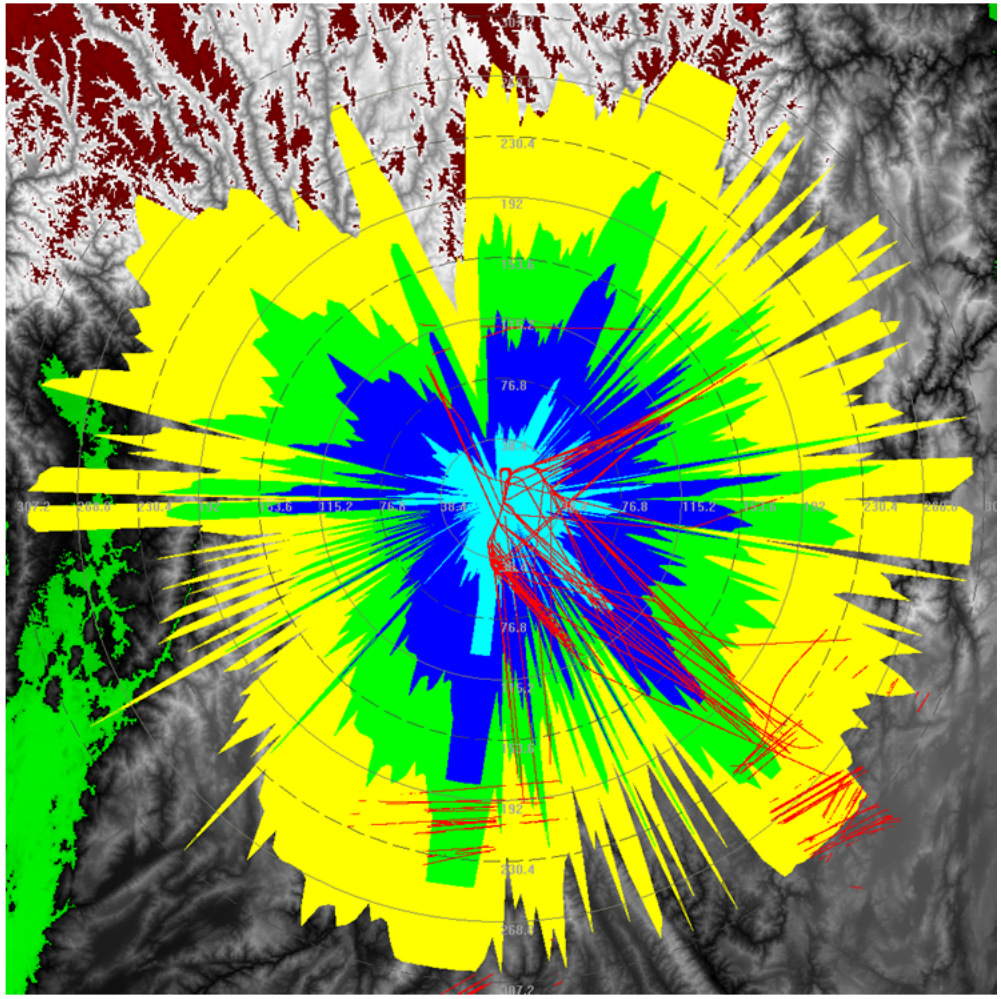
In order to keep Lijiang Airport normal operation during the ILS maintenance period,the CAAC Southwest Region al Administration and the Yunnan Airport Group launched the the Lijiang airport ADS-B trial project.

The Ground Receiver installed at Moyanshan VHF station at elevation of 2800 meter。


# LiJiang Airport project

Lijiang airport 24 hours of real time ADS-B data overlay ( red line for the ADS-B track appearing area ).

In the southern margin of the Qinghai-Xizang Plateau 5000 meters above the mountains and 2000 meters of Canyon staggered under complex terrain, the farthest distance more than 300Km observation.



# H15 air route project

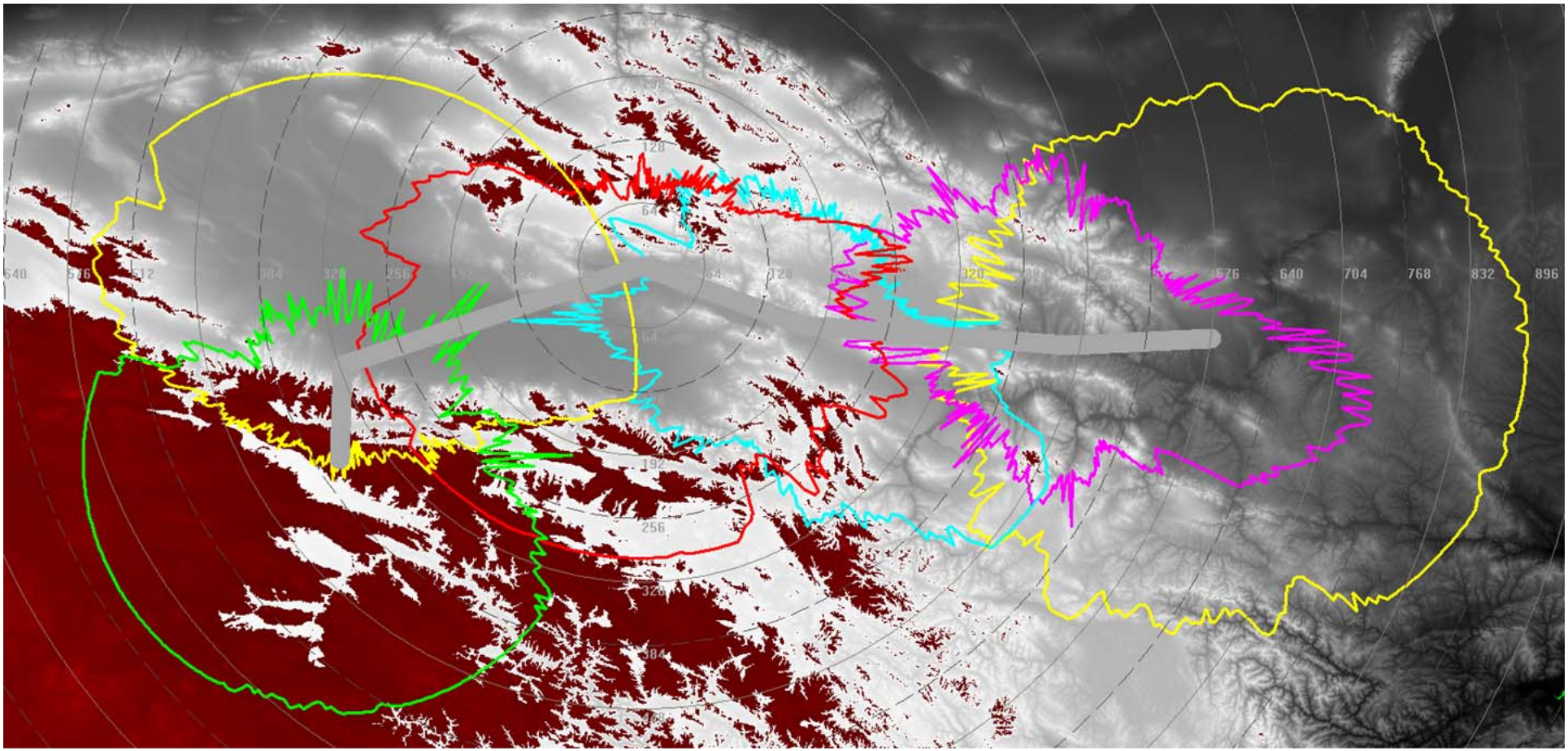
In order to solve the problem of northwest area to route monitoring, the northwest Air Traffic Management Bureau organized the implementation of the H15route ADS-B test project, a total construction of 6 stations, respectively, for the field of Lanzhou, Xining, Delingha, Golmud, Chaka, budongquan.

Coverage area of a total length of more than 990Km, the highest elevation of 4200 meters of base station.

Route H15 test using ADSB-2000A ground receiving station.

| 名称 | 坐标 | 距上点的距离 |
|---|---|---|
| 兰州 | N 36-30-48<br>E 103-37-24 | #N/A |
| 西宁 | N 36-31-42<br>E 102-01-54 | 142.7Km |
| 茶卡 | N 36-47-27<br>E 99-04-45 | 265.8Km |
| 德令哈 | N 37-21-00<br>E 97-15-00 | 174.3Km |
| 格尔木 | N 36-23-36<br>E 93-54-36 | 316.4Km |
| 不冻泉基地 | N 35-32-36<br>E 93-54-36 | 94.4Km |

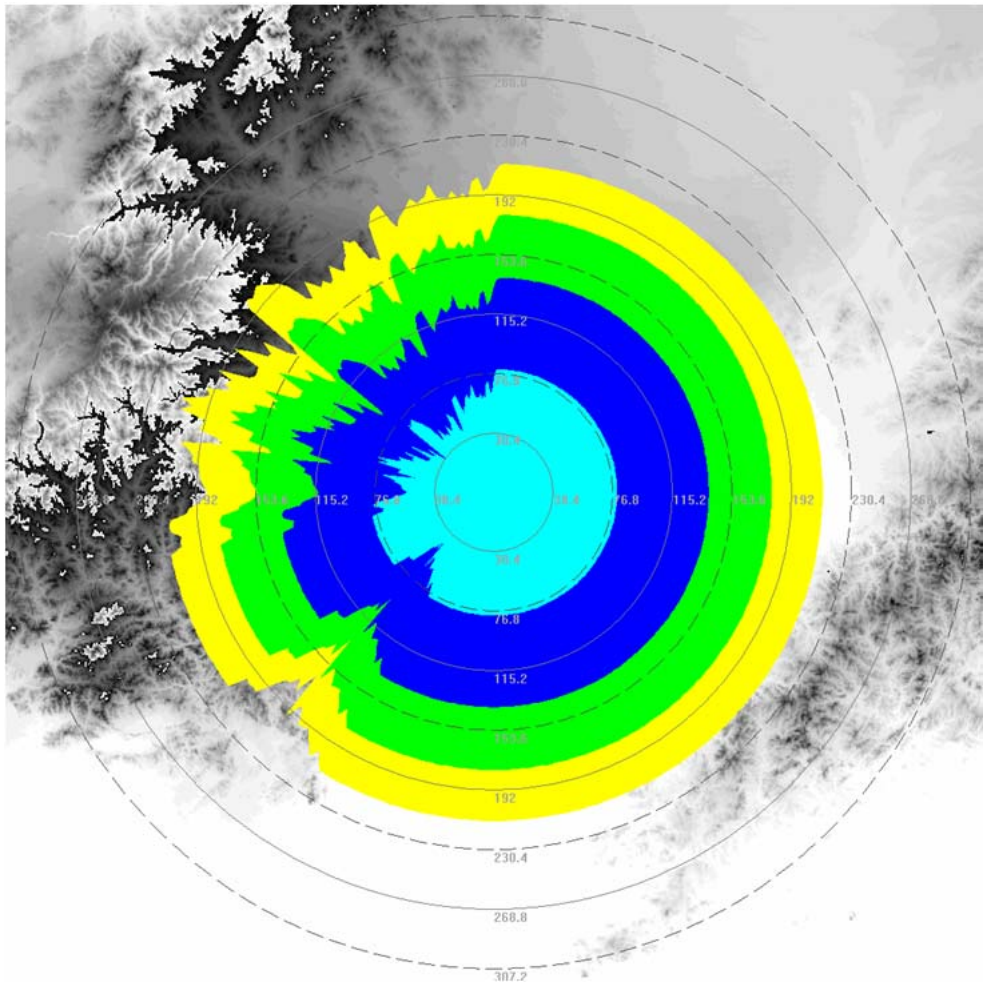
# H15 air route project



H15 route overlays, dark red background foraltitude over 4000 meters above the region(Qinghai-Tibet Plateau areas)

# ChaoYang Airport General Aviation ADS-B surveillance project

The CAAC Northeast Regional Administration launched ChaoYang Airport General Aviation ADS-B surveillance trial project in Oct 2011. The Ground Station installed in the Phoenix Mountains,Chaoyang. the project using ADSB-2000A receiver.

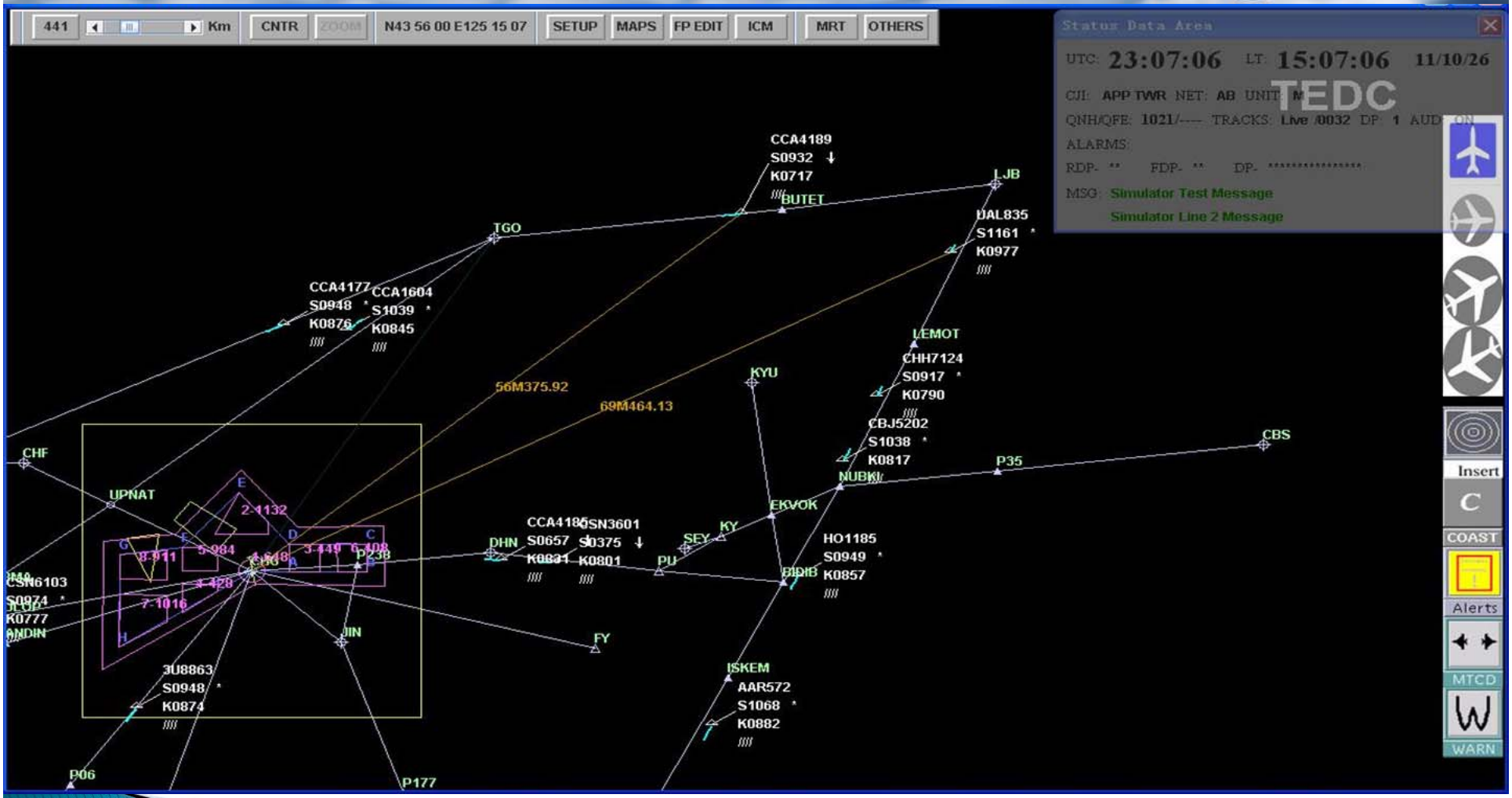

the Phoenix Mountain station 2000mcoverage

# ChaoYang Airport General Aviation ADS-B surveillance project

| 编号 | 项目说明 | 需要观察的内容 | 需要记录的内容 | 测试依据和标准 |
|---|---|---|---|---|
| 1 | 全跑道缓慢滑行 | 是否能够在机场地面的各方位看到飞机 | 系统发现目标时的高度、速度、位置等信息 | |
| 2 | 起 飞 | 是否能够及时显示目标 | 系统发现目标时的高度、速度、位置等信息 | |
| 3 | 空中飞行 | 飞机按指定航迹飞行，观察此时系统航迹的连续性和稳定性 | 记录飞行开始、结束的时间，具体的目标参数 | |
| 4 | 地图精度 | 飞机压航路中心线飞行 | 检查与实际显示情况是否相同 | |
| 5 | 系统处理能力 | 飞机如出现掉标牌和连续跟踪不上，丢失航迹等情况 | 检查是否由于系统未正确处理ADS-B地面站数据；检查链路情况 | |
| 6 | 精度测试 | 在指定位置由飞机打点记录. | 同时在系统上记录目标高度、速度、位置等信息 | |
| 7 | DAIW告警 | 飞机以不同的姿态、方向接近DAIW区域时的DAIW告警 | 出现告警时的时间、目标当时的有关信息 | DAIW区域及告警条件 |
| 8 | STCA告警 | STCA告警是否正常显示。 | 告警开始和结束的时间，告警的显示情况 | STCA区域及告警条件 |
| 9 | MSAW告警 | 飞机以不同的姿态、方向接近MSAW告警区域时的MSAW告警 | 出现MSAW告警的时间，目标当时的有关信息 | MSAW区域及告警条件 |
| 10 | 下滑道窗口 | 下滑道窗口显示 | 飞机在进近着陆时在下滑道中的位置 | 下滑道参数 |
| 11 | 机场18、36号跑道 | 观察飞机进近过程中的航迹,与中心线偏离距离 | 记录目标所在的位置等信息 | |

朝阳机场民航大学飞行学院通用航空实验具体项目

# ChaoYang Airport General Aviation ADS-B surveillance project




ATC display system image

# ChaoYang Airport General Aviation ADS-B surveillance project

- Chaoyang Airport is shared a transport aviation and general aviation share airport, this project will push forward the construction of airport's ADS-B system.

- General Aviation can also use 1090ES datalink. UAT is not the only option for General Aviation


朝阳机场飞行器初始出现位置

# Thanks !

2013.10.28

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