UNITED
NATIONS

E

Economic and Social Council

Distr.
LIMITED

E/CONF. 92/L.5
11 April 2000

ORIGINAL: ENGLISH

FIFTEENTH UNITED NATIONS REGIONAL
CARTOGRAPHIC CONFERENCE FOR
ASIA AND THE PACIFIC
Kuala Lumpur, 11- 14 April 2000
Item 6 of the provisional agenda*

National Fundamental Geographic Information Production base of Sichuan

(Technical Paper Submitted by China)

* E/CONF. 92/INF. 1

National Fundamental Geographic Information Production Base of Sichuan

Presented by

State Bureau of Surveying and Mapping

The People's Republic of China

National Fundamental Geographic Information Production Base of Sichuan

Presented by
State Bureau of Surveying and Mapping
The People's Republic of China

One of the key national fundamental geographical information production bases is located in Sichuan. This production base has large-scale production capacity with digital surveying and mapping technology system incorporated with data collection, process, analysis, management and application. Following is a brief introduction of the production base.

I. HARDWARE AND SOFTWARE

The production base is equipped with advanced analytical and digital mapping technology, computer technology, and network technology, which facilitate data collection, editing and process of fundamental geographic information.

Data Collection

Twenty Trimble4000SST and Trimble4000SSE GPS receivers and laptop and desktop computers are used for satellite spatial positioning.

Field digitization equipment includes 2" -10" tatol station, A1-A4 plotters, PC and Calcomp digitizers.

Equipment for analytical photogrammetry data collection includes JX3, B8-AAB, BC1, A10 analytical plotters, and Roland plotters.

Equipment for digital photogrammetry data collection includes Vx3000HT and Vx4000Ht black/white image scanners, Vx5000 color image scanners, SG1, O_2 work stations.

Equipment for map graphic data collection includes Sun10 and Sun20 workstations, 200 PC of 486 and 586, TGDS-21 and HP scanners, and A0 and A1 digitizers.

Full Digital Photogrammetry

VirtuoZo system developed by Wuhan Technical University of Surveying and Mapping and JX-4A system developed by Chinese Academy of Surveying and Mapping are used for full digital photogrammetry.

Prepared by NIU Jing, State Bureau of Surveying and Mapping, 9 Sanlihe Road, Beijing 100830

Data Editing and Process
Hardware and software for map data editing includes PC of 486 and 586, CAD, Arc/info and Maped.

High-end PC and ENVI software are used for remote sensing image processing.

Digital Production and Graphic Output
HP715, Sun170 and Sun20 workstations, HPLF586 and DEC566 servers, Arc/info are used for production and data management.

Output equipment includes Cannon laser plotter, HP650Chapter, HP-SON, HP3500 stylus plotters and MAPSETTER-6000 laser printer.

Management of fundamental Geographic Information
PC of 586 and IBM133, color scanners, stylus color plotters and Arc/info are used for the management of fundamental geographic information.

II. DIGITAL MAPPING PRODUCTION

The production of fundamental geographic information products are produced with the following methods in accordance with different information sources and different customer requirements:

Aerial Photographic Remote Sensing
Generating DEM, DOM and DLG with full digital photogrammetry system; generating vector DLG of DWG format by collecting geographic information with analytical plotter and editing them with Maped; collecting DEM directly; generating DOM through the calibration with digital differentiator; conducting remote sensing investigation and satellite image process with ENV1 system.

Map Digitization
Tracking and recording vector maps with digitizer and setting up databases; collecting data by vector scanning and editing to generate DLG. Collect morphological data by vector scanning to generate DEM with Arc/info Tin. Generating DRG by scanning.

Data collection and Process in the Field
Conducting satellite spatial positioning and aerial photograph control survey with GPS receivers; Conducting digitization of topographic maps at various scales with total stations; collecting topographic data from aerial photography with analytical plotters and editing into maps with computers.

III. NETWORK CONSTRUCTION

As vast amount data will be produced during the process of digital surveying and mapping, a NovcLL Intranet has been set up at the initial stage of the construction of the production base to allow data sharing. With 3COM card and 50 user interfaces, the network's transmission speed is 10 MB. The server used is HPIF586 with an outside memory of 4GB.

The established computer network at the production base is interactive Ethernet divided into 4 sub networks in accordance with production mode and digital production flow. Each of the four sub networks is connected by 100MB exchangers. Fast exchange at 100MB (server, total station and high-end PC) is adopted for the main nodes of the network, and 10Mb exchange for the subordinate nodes (low-end PC). The configuration of the Intranet is as follows:

Hardware

There are 100 PC nodes, 10 workstation (SGI, Sun, HP) nodes, 3 network server nodes (COMPAQ,HP), 3Com Switch3000 12Port 10/100Base-T, 3Com Switch3300 24Port 10/100Base-T, 3Com Switch3300 24Port 10/100Base-T, Cisco 2509 routers and 3Com Link Switch1000 (1port 100Base-T, 24Port 10Base-T).

Software

Software for network operation system include WindowsNT,UNIX, Windows 95/98,Server/workstation (V4.0),Nc+Ware4.10 and PC-NFS. Software for network management is 3Com Transend Manager. Application software are Arc/info both for workstation and for PC, VirtuoZo for workstation, VirtuoZo for PC (including Windows95/NT), JX-3 and JX-4 for PC, and Vx3000 and Vs4000 scanning software.

Connection between the Production Base and Internet and Information Release

The production base has registered a Chinese multimedia information service network account named Tianfu Hotline, which is a public computer network on the basis of Chinanet covering Sichuan Province. With advanced Internet technology and equipment, it provides rich information resources to the whole nation and the world. The E-mail address is scrs@mail.sc.cninfo.net.

IV. MAJOR TASKS OF THE PRODUCTION BASE

The production base has a capacity of producing 40 DOM daily and over 8,000 annually. The average total amount of the data contained including original, medium and final data in one DOM is 800MB, and the average total final data of one DOM is 150MB, among which are 80MB of DOM data, 20MB of DEM data and 50 MB of original image data (TIF). The daily production of is 10 DEM and over 2,000 annually. The average total data amount contained in one DEM is

30MB including original, medium and final data, while the average total amount of final data is 10MB, which includes DLG, DRG and DEM data.

The estimated data amount processed daily for other digitization processes are: 10MB data for encryption, 500MB-1GB data for GIS, 4GB data for scanning system, and 300-500MB data for output system. The mandate of the Sichuan production base is national topographic database construction, the surveying and mapping for projects of national economic construction, the development and application of spatial geographic information data, the compilation and publication of all kinds of special maps. Meanwhile the production base also provides geographic information products for users from both home and overseas and conducts cooperative business with partners from the United States, Canada and Japan.