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SPECIAL ISSUES

Innovative Rail Forum



A high level talk was held on June 15, 2009 between the Ministry of Science and Technology and the Ministry of Railways to discuss proprietary innovation part of high-speed trains in China. Senior officials of the two ministries reached consensus on forging a strategic cooperative tie in the area. Participants had the hearing of the joint action plan for the development of proprietary high-speed trains in the country. WAN Gang, Chinese Minister of Science and Technology, thought highly of the progresses so far achieved, and expressed his appreciations to all the S&T personnel, technical personnel, and enterprises that are part of the efforts. He hoped that resources be mobilized and tight collaborations be forged among different participating institutions so as to cope with the

tight time schedule and heavy tasks, providing S&T support for building the Beijing-Shanghai high-speed rail line. He added that the Ministry of Science and Technology and the Ministry of Railways will work together to organize and implement the project, ensuring the realization of the overall goals of the action plan, and making due contributions to developing proprietary and innovative high-speed trains and to the formation and associated development of a high-speed train industry.

MOST Collaborates with BOC



LI Xueyong and LIU Yanhua, Vice-Ministers of Science and Technology, held a talk on June 29, 2009 with XIAO Gang, Chairman of the Bank of China, and CHEN Siqing, Vice-President of the Bank of China at the premises of BOC. Both sides reached consensus for collaborations in raising fund for S&T activities, and agreed to integrate both S&T and banking resources, strengthen the combination of S&T innovation and banking innovation, deal with financial crisis in an effective manner, and support the development of high tech and S&T businesses. Both sides will work together to facilitate the nation's S&T development, under the principle of supplementing each other with their respective strength and jointly promoting the development. Both sides will support:

- 1) S&T projects designed to deal with financial crisis.
- 2) Key and strategic industrial areas of national importance.
- 3) Small and medium tech businesses.
- 4) Infrastructure construction of national high tech industrial parks and university S&T

parks.

- 5) Support S&T enterprises to “go abroad”. Bank of China will provide a comprehensive banking service to the Chinese S&T enterprises that will “go abroad”, through diverse means.
- 6) S&T related banking service. Bank of China will select qualified branches and local S&T authorities (national high tech parks) to initiate fund raising activities. S&T authorities (national high tech parks) shall formulate policies for discount government loans, risk compensation, and IPO of S&T enterprises. Bank of China will provide special services for fund raising activities at high-tech industrial parks and associated enterprises.

Second National R&D Resources Survey

With the approval of the State Council, six government agencies, including State Statistics Bureau, Ministry of Science and Technology, State Development and Reform Commission, Ministry of Education, Ministry of Finance, and State Commission of Science, Technology and Industry for National Defense, decided to launch the 2nd joint national R&D resources survey, in a move to update the information of R&D activities in the country, including overall scale and distribution. The survey is also designed to collect the following data and information: scale and quality of R&D forces; R&D expenditures and associated results/benefits; and the implementation of government R&D policies. The effort will further regulate the way to collect S&T statistics, improve S&T statistic indicator system, and raise the quality of data collected, so as to provide evidences for formulating the national economic and social development plan and S&T development plan for the 12th five-year period, and monitor/assess China’s proprietary innovations capability and the progresses achieved in building an innovative country.

The targets of the survey will be the legal entities having relatively intensive R&D activities in the area of agriculture, forestry, animal raising, fishery, mining industry, manufacturing, electric power, gas, water, building construction, traffic and transportation, storage, post office, information dissemination, computer, software, banking, leasing, commercial service, scientific research, technical services, geological survey, water resources, environment, public facilities management, education, health, social security, social welfare, culture, physical exercise, and recreation.

The following items will be surveyed: number, quality, and workload of R&D personnel; R&D expenditure and sources; fixed assets employed in R&D activities, including instruments and equipment; basic data of R&D institutes in different forms; R&D topics by type, organizational form, and socioeconomic goal; possession of intellectual property and associated application; technology importation, digestion, absorption, and transformation; and government tax holidays for R&D activities.

The survey will start from December 31. The data to be collected shall be the one occurred in 2009. The survey will be wound up before the end of 2011, where the development of

database and data shall be completed.

INTERNATIONAL COOPERATION

Dragon Phase-II Planned

A seminar, co-sponsored by the Chinese Ministry of Science and Technology and the European Space Agency, was held June 22-26, 2009 in Barcelona, to discuss Dragon Phase II project. During the 5-day meeting, scientists from both China and Europe made 50 verbal presentations, with 58 papers being posted, introducing the latest developments of the Dragon Program.

Dragon Program is China's largest international cooperation project staged in the area of terrestrial observation, aiming at establishing a joint research team capable of terrestrial observation data application and research, and raising the remote-sensing capability of both sides. Dragon Phase-I was officially launched in 2004, and ended in April 2008. The followed Dragon Phase II is scheduled to be completed in 2012. During the 4-year period, scientists from China and Europe will jointly work on a range of scientific research, training, and data sharing activities, concerning atmospheric environment, landform mapping, disasters watch, hydrological simulation, sea ice investigation, coastline survey, resources survey, and satellite data calibration. Dragon Program has become an important platform for cooperative terrestrial observations between China and Europe.

RESEARCH AND DEVELOPMENT

Largest Ball Mill

A largest and most advanced proprietary overflow ball mill, developed by CITIC Heavy Industry, enjoyed a successful test run at a workshop belonging to the developer. According to a briefing, the ball mill, with a specification of $7.93 \times 13.6\text{m}$, was designed, made, and test in line with international standards, with a range of breakthroughs in structures and technologies. The mill has an axle that is supported by adjustable multi-slippers, and driven by two super larger power mechanisms under a full automatic hydraulic pressure driving system. The technical improvements have made the mill the largest and most advanced ball mill with best performance in the world.

Better and Economic Feed Additives

YIN Yulong and coworkers at CAS Institute of Subtropical Agriculture have recently developed a safe and highly effective feed additive named AAA, in an attempt to provide safe, fine, and effective feeds for animal raising activities. Thanks to more than several years' efforts, YIN and coworkers have extracted an agent able to produce arginine from monosodium glutamate, with a cost that is only one tenth the former. Multi-year experiments on several hundred thousand pigs show that the new additive is able to increase the number of piglets by 10% ~ 30%, with a raised piglets birth weight. The new additive is also able to promote the development of piglets' intestines and blood vessels, with a daily weight gain by 30%-40%, without residues of antibiotics and incitants.

NEWS BRIEFS

Private Mapping Satellite to Launch in 2011

It is reported from a summit meeting on geographic information industry held recently, a high resolution 3D mapping satellite, developed by the private sector, will be launched in the first half of 2011. The resource satellite will have 4 cameras on board: one full-color camera with a resolution up to 2.5m and two full-color camera with a resolution up to 4m, aligned in the upper, front, and rear directions to form up a 3 -D image. A spectrum camera with a resolution up to 10m will also be an on-board payload to pick up the data within four bandwidth, including 0.45-0.52 μ m, 0.52-0.59 μ m, 0.63-0.69 μ m, and 0.77-0.89 μ m. Having a designed work life for 4 years, the satellite will have a seamless coverage of the area running 84 degrees from north to south. It takes 59 days for the satellite to make a regression, though an area can be re-visited at an interval of 5 days.

Resources III satellite will be mainly employed to map or produce digital images at a scale of 1: 50,000, or update the landform maps with a scale of 1: 25,000, providing the needed geographic information for agriculture, disaster relief, resources and environment, and public security. The satellite application system is designed to handle satellite images having a resolution ranging from 2.5m, 4m and 10m, producing 3-D images and landform maps at a scale of 1: 50,000, and updating old landform maps with a scale of 1: 25,000, in an attempt to establish a production and updating application system based on the basic geographic information collected by the satellite. The developer plans to build the system into a platform that provides high resolution 3-D geographic information products on a long term, stable, and efficient basis.

China's Petaflop Computer

According to LI Jun, President of DAWNING, DAWNING has been working smoothly with

Institute of Computing Technology, a part of the Chinese Academy of Sciences, to produce China's first high performance computer able to perform petaflop operations a second. The new supercomputer, named DAWNING-6000, will be put into operation in 2010. The Chinese made high performance computer will see two breakthroughs: application of Chinese made CPU, and realization of petaflop operations in the existing computer clusters. LI also told reporters that during the 11th Five-year Plan period (2006-2010), CAS Institute of Computing Technology have developed high performance CPU featured with multiple cores and threadings that would not only be employed by DAWNING-6000, but would also be applied to build a high performance server with low power consumption, accelerating the proprietary innovation process of high performance computers.

Module based Nuclear Power Construction

It is reported that Sanmen Nuclear Power has recently installed a CA20 module to build its No. 1 generator, indicating that China has become the first country in the world that has build a nuclear power station using modules. Equipped with the world's advanced 3-G pressurized water reactor (AP1000), the nuclear power generator is made up of 119 structural modules and 65 equipment modules, allowing different modules being built at the same time, and being assembled like 'building blocks' in a time wise manner.

With a length of 20.5m, width 14.2m, and height of a seven storied building at 20.7m, CA20 module makes the largest building block in the generator. Having a structure weight of 749 tons, it claims a total weight 968 tons, including lifting components, or a weight of more than 700 sedan cars.

Proprietary Pipeline Laying Barge

A 1200-ton proprietary pipeline laying barge, built by Shanghai Zhenhua Heavy Industry, was delivered to COOEC. The barge, named Haiyangshiyou 202, was designed to lay 3km of pipelines a day over shallow water seafloors. It is able to work on its own for 60 days, though it cannot navigate by itself. It is designed to lay pipelines at a depth up to 300m, anchored to 12 berths. There is a fixed crane at the end of the barge with a 1200-ton lift, and a wrenching capability for 800 tons. The barge deck can hold pipes up to 5000 tons.

Electric Locomotive with Largest Power

A six-axle electric locomotive with a power output up to 9600kW, the largest of its kind in the world built by Zhuzhou Electric Locomotive, was delivered to its user at the end of June. The new locomotive was rail tested by the Ministry of Railways with a fine result in the late May. Comparing with conventional locomotives, the new model is able to carry 1,000 or even 2,000 more tons of cargo. According to a briefing, the improved model can save

running cost by RMB 500,000 a year, compared with internal combustion vehicles, with a reduced emission equivalent to 4000 sedan cars, desirable for protecting the environment along the rail lines.

3G Nuclear Power Station in Haiyang

China Power Investment and State Nuclear Power Technology jointly inked a contract on July 3, 2009 to build a nuclear power station in Haiyang, Shandong. According to the plan, the new nuclear power station will house six AP1000 nuclear power generators, while leaving room for two more generators to be built in the future. Phase I project will build two nuclear power generators with an installed capacity of 1.25 million kW each. The first generator will be put into operation in 2014.

Comments or inquiries on editorial matters or Newsletter content should be directed to:

Department of International Cooperation, MOST 15B, Fuxing Road , Beijing 100862, PR China Tel: (8610)58881360 Fax: (8610) 58881364

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