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PROJECT COMPLETION REPORT

CHINA

**HEILONGJIANG LAND RECLAMATION PROJECT
(LOAN 2261-CHA/CREDIT 1347-CHA)**

MARCH 6, 1990

**Agriculture Operations Division
China Department, Asia Region**

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WEIGHTS AND MEASURES

1	Meter (m)	=	3.28 Feet (ft)
1	Kilometer (km)	=	0.62 Mile
1	Hectare (ha)	=	2.47 acree
		=	15 mu
1	Kilogram (kg)	=	2.2 pounds (lb)
		=	2 Chinese jin
1	Ton (t)	=	1,000 kg
		=	2,205 lb

GLOSSARY OF ABBREVIATIONS

CGB	Central General Bureau of State Farms
CIDA	Canadian International Development Agency
ERR	Economic Rate of Return
FIMO	Foreign Investment Management Office
FRR	Financial Rate of Return
HGB	Heilongjiang General Bureau of State Farms
ICB	International Competitive Bidding
IRR	Internal Rate of Return
MOA	Ministry of Agriculture
MOFERT	Ministry of Foreign Economic Relations and Trade
PCR	Project Completion Report
SAR	Staff Appraisal Report
SDR	Special Drawing Rights

THE WORLD BANK
Washington, D.C. 20433
U.S.A.

Office of Director-General
Operations Evaluation

March 6, 1990

MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT

SUBJECT: Project Completion Report - China Heilongjiang Land
Reclamation Project (Loan 2261-CHA/Credit 1347-CHA)

Attached, for information, is a copy of a report entitled "Project Completion Report - China Heilongjiang Land Reclamation Project (Loan 2261-CHA/Credit 1347-CHA)", prepared by the Asia Regional Office. No audit of this project has been made by the Operations Evaluation Department at this time.

Attachment

A handwritten signature in black ink, appearing to be 'P. P. P.' or similar, written in a cursive style.

PROJECT COMPLETION REPORT

CHINA
HEILONGJIANG LAND RECLAMATION PROJECT
(LOAN 2261-GHA/CREDIT 1347-GHA)

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PROJECT COMPLETION REPORT

CHINA
HEILONGJIANG LAND RECLAMATION PROJECT
(LOAN 2261-CHA/CREDIT 1347-CHA)

PREFACE

1. This is the Project Completion Report (PCR) for the Heilongjiang Land Reclamation Project in China, for which Loan No.2261-CHA in the amount of US\$35.3 million and Credit No.1347-CHA in the amount of SDR41.3 million were approved on April 19, 1983. The Loan/Credit was closed on March 31, 1989, two years and three months behind the original schedule. The Loan was 99.3% disbursed (including cancellation of US\$10 million on November 26, 1984) and the Credit 99.3%. The last disbursement was on August 30, 1989.

2. The PCR was jointly prepared by the Agriculture Operations Division, China Department, Asia Region (Preface, Evaluation Summary, Parts I & III), and the Borrower (Part II). Part II was prepared in Chinese and translated by the Project Office, Heilongjiang General Bureau of State Farms and vetted by the Central Bureau of State Farms, Ministry of Agriculture, China.

3. Preparation of this PCR was started during the Bank's final supervision mission of the project in April 1989, and is based, inter alia, on the Staff Appraisal Report, the Loan/Credit, and Project Agreements; supervision reports; correspondence between the Bank and the Borrower; internal Bank memoranda and the Borrower's internal project reports.

CHINA

HEILONGJIANG LAND RECLAMATION PROJECT

(LOAN 2261/CREDIT 1347-CHA)

PROJECT COMPLETION REPORT

EVALUATION SUMMARY

Project Objectives

1. The main objective of the project was to develop 200,000 ha of unused wasteland for production of food grains and industrial crops (soybean and corn); thereby helping to reduce food grain deficits in China. It would also upgrade farm mechanization and crop technology for existing state farms and serve as a model for future development of large tracts of unused land in Heilongjiang Province. (Part I, Para.3.1)

Implementation Experience

2. The project was formulated according to Government's plan to increase marketable crop surplus and it formed part of the national land development program planned by the Central General Bureau of State Farms for 1981-86. As a first Bank-financed project, considerable effort was made by the State Farm authorities, both at Central and Province, in project planning, implementation and management. (Part I, Para.4.1)

3. The project, covering 31 farms and 75 project sites, has been successfully implemented within the basic framework designed at appraisal. A review in 1984 replaced seven farms with three new ones with better site conditions, reduced the area of two large farms and added a cadre college farm, whilst maintaining the total project area of 200,000 ha. (Part I, Para.4.2, 5.2) The investment program was somewhat curtailed due to shortage of local funds (Y260 million approved against SAR estimate of Y300 million). Priority was given to construction of drainage works and facilities required for crop production. Some of the lateral and sub-lateral drains, field roads, bridges and culverts, housing and communication networks were deferred to be completed in stages later when respective farms have accumulated enough funds. Bank funds (Credit SDR41 million and Loan US\$25.1 million) were efficiently used mainly for procurement of farm and construction machinery and equipment. Due to keen competition and a depressed world market for machinery in 1984, the saving made available led to cancellation of US\$10 million of loan funds requested by the Borrower and purchase of additional and new items of machinery, equipment and vehicles. (Part I, Paras.5.1, 5.3, 5.4) Funds allocated for the technical assistance component were virtually unused. Local expertise was largely used instead and required training was carried out internally within the project entity or provided by suppliers through contracts for machinery and equipment. The unused funds were subsequently re-allocated for purchase of additional spare parts for machinery and equipment. (Part I, Paras.5.6, 12.1, 12.2)

4. The project was implemented and managed by the full-time Foreign Investment Management Office (FIMO) with guidance and technical support from the Heilongjiang General Bureau of State Farms and assisted by project offices established under the six project sub-Bureaus. Project management and coordination were effective, much facilitated by the set of procedures established for work supervision, financial management, procurement and inspection of machinery and equipment. Project performance was monitored through task contracts drawn up between the General Bureau, the project sub-bureaus and farms based on annual targets and investment. (Part I, Paras.10.1-10.3)

Results

5. The project has achieved its main objective of producing 220,000 tons of grain of which about 70% is marketable (80% projected at full development in 1990). Although land reclamation and cultivated area lagged slightly behind the SAR schedule due to initial project delay and changes, the average yields for wheat, soybean and corn have equalled or exceeded SAR targets. The cropping pattern in the SAR has been generally followed, but the project authority plans to plant more soybean and less corn in response to changing market demand and government procurement prices. (Part I, Para.6.1)

6. Economic performance of the project is consistent with the SAR projection. The recalculated economic rate of return (ERR) is 22%, compared to 23% in SAR. The financial rate of return (FRR) is 7.7% which is much lower than the cash flow projection indicated in the SAR (no FRR was calculated in the SAR), due mainly to the low parity prices for grain and the substantial devaluation of local currency during 1984, 1985 and 1986. FRR indicates that, unless procurement prices for grain are substantially increased, it is less attractive to invest in a repeater project involving reclamation of new marginal land requiring expensive basic infrastructure than in rehabilitation and intensification of existing low- and medium-yield cultivated land and value-added activities. (Part I, Para.6.2, 6.3)

Project Sustainability

7. Undoubtedly the project will be sustainable during its economic life span. As part of China's major commercial grain base the project has the full commitment and support of the Government to succeed. This is evidenced by the recent Government decision to invest Y450 million during 1989-90 to expand and upgrade state farm operations in Heilongjiang Province. (Part I, Para.7.1)

8. Each project farm is operating as an economic entity, with most of them showing profits during the last three years. This healthy trend is expected to continue barring any circumstances beyond their control (drop in export prices and inflationary rise in prices of agricultural inputs). However, the project farms are supported during emergency by the Heilongjiang General Bureau of State Farms which has adequate resources and maintained a good track record of performance. (Part I, Para.7.2)

9. Arrangements have also been made to obtain an additional 5,000 tons export quota for soybean and to retain 80% of the foreign exchange earnings exclusively for purchase of spare parts to maintain the large fleet

of imported farm and construction machinery and equipment. This would ensure that the machinery and equipment would be operational until their replacement for which the farms would also steadily build up a reserve of foreign exchange. (Part I, Para.7.3)

Findings and Lessons Learned

10. Implementation of the project has provided the following valuable findings and lessons to the Borrower and the Bank: (Part I, Para. 11.1)

* Adequate time should be given for project planning, investigation and design; and provision should be included to review and adjust project components at an early stage of project implementation;

* A full-time management system, staffed by qualified personnel and supported by other units, is essential for successful project management and coordination. Work procedures and job specification should be established;

* Imported high-powered farm machinery and construction equipment have been proven to be very efficient and highly productive in Heilongjiang for large-scale land reclamation and cultivation under constraints of limited time for growing crops and weather conditions;

* ICB procurement of a large fleet of farm and construction machinery and equipment based on the World Bank Guidelines for Procurement proved to be very efficient - competitive in price and assured quality. This requires careful preparation of bidding documents, procedures for bid evaluation, inspection and testing of equipment; and

* Imported machinery and equipment should be adequately supported by logistics which would include supplies of spare parts, tools, special oils and lubricants, servicing and repair facilities, trained operators and maintenance technicians.

11. The PCR mission recommends the following actions to be followed-up by the Borrower to enhance further the success of the project: (Part I, Para. 14.4)

* Adequate domestic funds should be provided annually to complete the remaining drainage works at tertiary level to reduce 10-15% of total project area still affected by waterlogging. A survey of the affected areas should be carried out and a program prepared for upgrading or extending the drainage works by project drainage equipment;

* A task force should be established immediately to study in depth the problems affecting the existing system of spare part purchase, management, storage and distribution, and to recommend measures for improvement; and

* There is potential to increase soybean production through better seed varieties, adequate agricultural inputs, better cultural practices, minimizing waterlogging and drought during critical stage of growth, and reduction of harvest and post-harvest losses with better

(v)

machinery. Funds should be provided to resume the study, experiments, demonstration and extension discontinued in 1987.

CHINA

HEILONGJIANG LAND RECLAMATION PROJECT

PROJECT COMPLETION REPORT /¹

PART I

1. Project Identity

Project Name: Heilongjiang Land Reclamation Project
Loan/Credit No.: Loan 2261/ Credit 1347-CHA
RVP Unit: Asia
Country: China
Sector: Agriculture
Subsector: Land Reclamation, Drainage and Flood Control.

2. Background

2.1 Agriculture has been a high priority sector of the Chinese economy for more than 30 years, with special attention given to grain production in efforts to attain self-sufficiency. This sector is a major source of income for some 190 million farm families and accounts for about 30% of the country's GDP. Food grains occupy about 70% of the crop land and account for about 1/3 of the total agricultural output. China has been able to provide basic food requirements of her population through intensive farming systems carried out on her limited arable land.

2.2 The Government's long-term objectives for the agricultural sector are: (a) to increase production of food, feed, industrial crops and animal products to meet increasing demands created by population and income growth, and (b) to raise income and living standards in rural areas. Measures taken to achieve these objectives included restructuring and liberalizing its rural economy under the economic reforms introduced in 1979. Dramatic results have been achieved: annual production has increased over 10% between 1980-84 (before declining to less than 10% from 1985 onwards) compared with the historical 3% growth over the last two decades, and grain production increased steadily to a record high of 407 million tons in 1984. Further reforms introduced by the Government (replacing compulsory procurement quotas with voluntary contracts, adjusting procurement prices and enlarging the role of the market) have prompted farmers to shift production into high-valued

¹/ This report is based on the findings of a PCR mission in April 1989. Members of the mission were L. S. Tay and Bi Mingjian from AS3AG.

industrial crops and livestock resulting in a drop in grain production (379 million tons in 1985, 391 million in 1986, 402 million in 1987 and 393 million tons in 1988 with very poor weather). Government intervention to check declines in grain production included subsidies for production inputs and investment incentives for establishment of grain bases.

2.3 At project inception, the major task in the agriculture sector was to reduce import of grains and cotton.² The gap between domestic supply and demand for food and fibre was widening. Net import of grains (including soybean) in 1981 was 13.2 million tons and cotton about 570,000 tons. The much needed increase in food grain production and marketed surpluses would require incentives and assistance to areas best suited to grain production. The Government, therefore, designated some areas, particularly the Northeast Region, as grain base regions and initiated programs to increase rapidly their grain production and marketable surplus capacities.

2.4 The Government selected Heilongjiang Province in Northeast China, with about 1.7 million ha of unused land suitable for crop cultivation, as a high priority agricultural development region, with mechanization and new land development as the major program elements. This region was historically sparsely settled and undeveloped agriculturally due to the extremely severe climate (winter minima of about -50 degree C and frost-free period of only 110 days) and the great difficulty in developing and draining bog soils without modern heavy machinery. Given the natural conditions, the Government had little alternative but to develop such areas through the highly organized, large-scale system of land settlement and development exemplified by state farms. Development commenced in the area in 1950. The Central General Bureau of State Farms (CGB) within the Ministry of Agriculture (MOA) had about 0.7 million ha of unused land under its control in Heilongjiang Province, in sizeable blocks fringing existing state farms. CGB selected 200,000 ha as a first phase of the total plan for development of the 0.7 million ha under its responsibility in the province. The first phase project was approved by the Government and included in the Bank's lending program in April 1981.

3. Project Objectives and Description

3.1 The main objective of the project was to develop 200,000 ha of unused wasteland for production of food grains and industrial crops (soybean and corn); thereby helping to reduce growing food grain deficits in China. As a commercial grain base, expected to market over 80% of production at full development, the project would make an important contribution to Government's efforts to increase grain supplies. It would also upgrade farm mechanization and crop technology for existing state farms and serve as a model for future development of large tracts of unused land in Heilongjiang Province.

²/ China became self-sufficient in cotton starting from 1985.

3.2 The project, covering 31 state farms in the Sanjiang Plain and Lesser Xinganling regions, was pre-appraised in February 1982 and appraised in May/June 1982. The main components of the project, as appraised, were:

- * Construction of drainage networks, flood embankments, drainage pumping stations and ancillary structures;
- * Construction of housing, offices, stores and workshops, power and telephone lines, roads, bridges, culverts and concrete drying floors;
- * Provision of agricultural and construction machinery and special tools and equipment for machinery maintenance; and
- * Provision of technical assistance and training for upgrading seed production and distribution systems and for improvement of construction and agricultural technology and of management.

4. Project Design and Organization

4.1 The project was formulated in accordance with Government's plan to increase marketable crop surplus. It was part of the major national land development program planned by the CGB for the period 1981-86. The national plan called for development of 1.1 million ha of unused land for field crops, 60,000 ha for tree crops and 2.2 million ha for improved pasture at a total estimated cost of about US\$4.0 billion.

4.2 Under the guidance of the Planning Division of CGB, proposals from each of the participating state farms were consolidated into a project plan which was reviewed by a Bank reconnaissance mission in July/August 1981. The project plan was further refined and consolidated (37 farms with 118 development sites reduced to 31 farms with 75 sites) for the 200,000-ha project area. The revised plan - incorporating a modified cropping pattern and machinery complement, and more details on engineering management and training aspects of the project - was used as a basis for the project appraisal completed in May/June 1982.

4.3 Primary responsibility for project implementation and management was given to the Foreign Investment Management Office (FIMO) established under the Heilongjiang General Bureau of State Farms (HGB). The FIMO was assisted by the various departments under the HGB (finance, design, water conservancy, procurement etc.). Project management offices were established in the project's six sub-bureaus. A Project Coordinator at the Deputy Director-General level in CGB in Beijing was responsible for overall direction of the project. The project implementation and management machinery as set up has worked well as good coordination was maintained between the various levels within the same state farm hierarchy. Moreover, project staff were drawn from experienced staff within the state farm system in Heilongjiang which had successfully carried out similar development work in the area for the last three decades.

4.4 One of the innovative features of the project was the introduction of large and modern imported farm machinery (tractors and combines) and construction equipment (hydraulic backhoes). This machinery and equipment proved to be more efficient than the domestic equipment in operating under adverse weather and poor soil conditions prevailing in the project area. The provision of seed processing equipment also proved to be efficient in insuring quality seeds for planting.

4.5 Project features apparently not given adequate attention were design standards of the drainage works and access roads. Design standards for lateral and sub-lateral drains based on storms of 1 in 5 years return period seem inadequate judging from the annual area affected by waterlogging and flooding. The standard of access roads was low for the heavy traffic of farm machinery, farm produce and inputs. The problem was further aggravated by inadequate maintenance and frigid weather that damaged the road surface readily. A higher design standard could have reduced the annual crop losses due to waterlogging and improved transportation efficiency. Research and extension (para. 4.14 of SAR) have not been given enough emphasis in the project design as no specific investment program and allocation had been prepared. Dissemination of research results to production through extension also seems weak.

4.6 The provision of grain drying floors was a misjudgment in the project design. Although less capital intensive it uses more labor and is totally useless during wet weather which is very prevalent at harvest. The two grain dryers introduced later at Erdaohe Farm and Yaluhe Farm were eye-openers for the project farms. These large capacity imported dryers were not only able to dry grains harvested during wet weather at comparable cost, but also ensured higher quality output. Using the model of the imported equipment similar dryers of smaller capacity have been manufactured locally and installed at 10 other farms. There is now a big demand by project farms for these grain dryers.

5. Project Implementation

5.1 The project has been implemented within the basic framework designed at appraisal. Due to funding constraints, the total budget approved for local counterpart funds was revised to Y260 million (excluding Y67 million deferred investment) as compared to SAR estimate of Y300 million. As a result, the investment program was somewhat curtailed (see para. 5.3). The first budget allocation was only received in November 1983, resulting in late start-up of project construction by about a year.

5.2 Apparently, some of the project sites included were not adequately investigated in terms of technical and economic viability. A review in 1984 resulted in 7 farms being replaced by 3 new ones, 2 large farms reduced in area and a cadre college farm added, whilst maintaining the total project reclamation area of 200,000 ha (see Part III Table 4 on Project Land Development). These changes, though necessary and justified, contributed to the slow progress of land reclamation at the initial stage of project implementation.

5.3 Due to shortage of local funds, priority was given to construction of drainage works and facilities required for crop production. Investment in some of the lateral and sub-lateral drains, field roads, bridges and culverts, housing and communication networks was deferred until the respective project farms have accumulated funds to complete them in stages. Details of physical works completed are given in Part III Table 5.

5.4 The main bulk of the Bank funds (Loan US\$35.3 million, Credit SDR 41.3 million) were primarily for procurement of machinery and equipment, which was done promptly. Due to keen competition in a very depressed international market for machinery and equipment, the bid prices received for the first batch of agricultural machinery and construction equipment were substantially lower than the SAR estimates. Consequently, US\$10 million of loan funds was cancelled in 1985 at the request of HGB. Some of the machinery and equipment items procured exceeded the SAR estimated quantities, especially the hydraulic backhoe excavators which proved to be very efficient in drain construction in low-lying waterlogged areas. New items included were two sets of grain drying equipment and 60 grain trucks.

5.5 Although spare parts, special oil and lubricants were included in the supply contracts for the imported machinery and equipment, the quantity and types covered were inadequate. There was no proper organized system for ordering, stocking and distribution. Bank supervision missions alerted the project authority to this problem at an early date and repeatedly raised the issue in subsequent missions. Apparently, no concerted effort was made to improve the situation which has now reached an acute stage. Lack of foreign exchange to purchase the spare parts was partially relieved by reallocating Bank loan and credit proceeds under-utilized from the technical assistance component. Urgent measures need to be taken to remedy the situation (see para. 14.4(ii) for recommendation by PCR mission).

5.6 The technical assistance component was virtually unused. Aside from the high cost of expatriate consultants and the need to economize use of foreign exchange, the project authority felt that consulting services prescribed for training support, equipment maintenance, management and planning, and construction operations were unnecessary. Local expertise was readily available within the HGB and any training required could be carried out internally. As for training of machine operators and maintenance, technicians this was included in each of the major supply contracts for machinery and equipment. In all, foreign manufacturers from seven different countries have conducted 76 training courses in connection with their equipment supplied to the project. For seed system development HGB managed to obtain technical assistance from CIDA (Canada). The unused loan/credit proceeds under the training and technical assistance component were subsequently re-allocated to purchase of spare parts.

6. Project Results

6.1 The project has achieved its primary objective of producing about 222,000 tons of grain (137,000 tons wheat, 86,000 tons soybean and 9,000 tons

maize) /³ of which about 70% is marketable surplus (80% projected at full development in 1990). There was no change in the objective goal during project implementation. Land reclamation and cultivation area lagged slightly behind the SAR schedule, but average yields for wheat, soybean and maize have equalled or exceeded SAR targets (see Part III Table 10 and Figure 2).

6.2 Economic performance of the project is largely consistent with the SAR projection. The economic rate of return (ERR) recalculated by the PCR mission for the project is 22%, only one percent lower than the SAR projection (See Part III Table 8). Production of the project area has been delayed by one year, but this is compensated by the more than one year delay of investment in terms of the IRR calculation. The cropping pattern and area have been generally in line with the SAR projection. However, HCB plans to plant more soybean and less maize in response to changing market demand and government procurement prices. This small change has been reflected in the cropping pattern used in the calculation of the ERR.

6.3 The financial rate of return of 7.7% calculated by the PCR mission is less favorable, much lower than what is indicated in the cashflow projection of the SAR (no FRR was calculated in the SAR). /⁴ This less favorable FRR is caused jointly by the low parity prices for grain and the substantial devaluation of the local currency against hard currencies. The official exchange rates between RMB yuan and US dollar changed from 1.75 at appraisal in 1983, to 2.0 in 1984, 2.90 in 1985 and 3.71 from 1986 till now. Since imported equipment and materials constitute about 60% of the total investment costs, the devaluation of the local currency has a negative impact on the FRR. Although financially the project is still considered viable, a repeater project in future may not be financially attractive enough to HGB due to high capital investment cost in new lands which are relatively marginal and lacking basic infrastructure, unless procurement prices for grain are substantially increased. Projects in Heilongjiang which focus on rehabilitation and intensification of low- and medium-yield cultivated land and value-added activities would probably generate higher financial returns, at least under current price ratios.

7. Project Sustainability

7.1 There is no doubt about the sustainability of the project during its economic life span. First, as part of China's major commercial grain base, the Government has a full commitment to the success of the project area. This is evidenced by the Government's recent decision to invest Y450 million during 1988-90 to expand and upgrade the state farm operations in Heilongjiang. The

³/ Production figures used were that of 1987 as the 1988 crops were affected by very bad weather.

⁴/ It is a measure of change in China's economic system over the life of this project, that a FRR calculation at appraisal would have been essentially irrelevant, whereas today it is a matter of great interest to the individual state farms, responsible for their own profits and losses, and to their individual members.

project state farms are fully supported by the HGB which has a good track record of management, especially during the last few years.

7.2 The project target of 200,000 ha land reclamation has been achieved. Cultivation, though lagging at 135,000 ha at the moment, is expected to reach 197,000 ha by 1990. Average yields for wheat, soybeans and maize have already equalled or slightly exceeded the SAR's estimates. As the newly reclaimed areas stabilize full development production is expected to be reached in 1991 as projected. There is also good potential for production increase through seed variety improvement and measures to be taken to reduce harvest and post-harvest losses through more harvesting machinery and grain drying equipment.

7.3 Each project farm is operating as an economic entity, responsible for its own profit and loss. The overall financial performance for most of the farms has shown profits during the last three years. This trend is expected to continue barring any circumstances beyond their control (drop in export prices and high price increases of agricultural inputs).

7.4 A possible risk that may affect sustainability is the lack of spare parts for the imported machinery and equipment. Also these machinery and equipment will need to be replaced after 10-12 years of use. Foreign exchange will be needed and this is not readily made available. However, the Central Bureau has just negotiated with the Ministry of Foreign Economic Relations and Trade (MOFERT) for an additional 5,000 tons export quota of soybeans and the right to retain 80% of the foreign exchange earnings to purchase spare parts for the project area. As for the replacement machinery and equipment, the project farms will have to build up a reserve of foreign exchange. Another possible risk is the continued depreciation of US\$ against the SDR to the extent that it would affect the debt servicing capability of the project farms.

8. Project Impact

8.1 The project has created considerable impact within and outside the project area in terms of technology, institution building and enhancement of local socio-economic environments. Some of the more significant impacts are discussed below:

- i) The successful implementation of the project and its results have changed the pessimistic attitude towards the viability of large-scale land reclamation for cultivation of grains with foreign financing, especially with lands that are marginal and low-lying.
- ii) The imported high-powered agricultural machinery and construction equipment have proved to be efficient and productive. Most of them were able to operate under adverse conditions in which domestic equipment has failed before. Notably, the John Deere 4450 tractors and the 1075 model harvesting machines, and the Hitachi hydraulic backhoes (for drainage works) are rated top performers by most of the project farms. The imported machinery and equipment has generated much enthusiasm within and outside the project areas. It

also promoted an interest among the local machinery and equipment manufacturers to consider building larger capacity machines and to build attachments and parts for the imported equipment.

- iii) The high productivity of imported machinery and equipment has resulted in using less labor and many farm workers were able to be re-deployed to other economic activities such as livestock raising, vegetable growing, housing construction, farm produce processing etc. This in turn has generated further economic returns for the farms.
- iv) The use of imported machinery and equipment has trained a large number of operators in machine operation, maintenance and repair and a large number of state farm personnel in machinery and equipment performance evaluation, their procurement and management. These operators and personnel would be very valuable for future expansion of large-scale mechanized cultivation into other areas.
- v) The project housing, schools, clinics, roads, water supply and electricity have improved considerably the working and social environment of the farm workers compared to the workers in non-project farms. The basic infrastructure also indirectly benefits neighboring non-project farms.
- vi) Some of the project's successful features (project preparation, implementation and management techniques, use of imported modern agricultural machinery and construction equipment, seed processing and grain drying equipment) have been adopted in the Government's recent investment program of Y450 million for 1988-90 to reclaim 40,000 ha of wasteland, and improve and upgrade 267,000 ha of existing low- and medium-yield cropland. Some of the FIMO staff have been deployed to help in the planning and design of the project.

9. Bank Performance

9.1 As the first operation with the State Farm authority the project required a fairly long Bank preparation effort. Moreover, the project covers many project sites scattered over a large part of Heilongjiang Province. To a large extent the Bank had to depend on the HGB for project supervision, monitoring data, and reporting as Bank missions could visit only about 50% of the proposed project sites.

9.2 The Bank carried out a total of seven supervision missions over the period 1984-88. Earlier missions focussed mainly on procurement of machinery and equipment and changes of project sites. Later missions stressed quality of drainage works, strengthening of management, technical assistance and the need for a system to manage a spare part inventory for the imported machinery and equipment. Frequency of Bank missions was satisfactory but HGB felt that timing of most of the missions was, by coincidence, outside the period of active agricultural activities - cultivation and harvesting. As a

result. Bank missions were frequently not able to witness the operations of the imported agricultural machinery. Composition of the Bank supervision missions also lacked agriculturist input on crop production aspects of the project. Except during appraisal, no Bank mission ever visited the Mudanjiang Sub-Bureau, the third largest sub-bureau under the project with five farms covering about 40,000 ha.

9.3 The technical assistance component of the project was virtually not implemented, though largely for valid reasons. Bank non-insistence on execution of this component was probably too lax at least in respect of consultant services to advise on the management system for spare parts. Also, instead of re-allocating unused funds to purchase of spare parts (which were, however, also critical), the Bank could have advised the Borrower to use the funds to strengthen research and extension which were apparently not adequately addressed in the project design and not reviewed by any of the supervision missions.

10. Borrower Performance

10.1 Considering the size of the project (area and investment amount), lack of prior experience with Bank projects, and the use for the first time of a large fleet of modern agricultural machinery and construction equipment in Heilongjiang, the project authorities have performed well. The strengths underpinning their success were commitment and enthusiasm shown at all levels of the project and staff expertise and experience built up over the last three decades in reclaiming land for agriculture.

10.2 On project management, the vertical management structure set up within the HGB hierarchy has facilitated coordination of all levels involved in project implementation. The FIMO, staffed by only ten persons, was able to draw upon the support of various departments within the HGB. Full time staff set up at the sub-bureau project management offices and project farms have ensured successful project works construction and inspection.

10.3 To strengthen management, HGB conducted a series of management workshops to train the project staff, compiled and issued procedures on works supervision, financial management, procurement and inspection of machinery and equipment. Some of these procedures have been subsequently adopted by project authorities in other Bank-financed projects. A task contract system was adopted between HGB, the sub-bureaus and the project farms based on agreed annual targets and investment.

10.4 There were some institutional problems. The major one was the lack of local counterpart funds. Annual budget allocations were inadequate and not timely, resulting in works uncompleted or started late for the year. Annual limits set for capital investment for each project farm also hindered progress. Works completed in excess of the annual limits were not reimbursed and have to be either absorbed by the farms or held in account for

reimbursement in subsequent years. /⁵ The domestic funding constraint has also affected the annual operating funds required by farms for production.

10.5 Some of the project sites were included without adequate investigations being carried out on topographical conditions, drainage outfall, size of area for economic operation by modern agricultural machinery, and the resources of participating farms to implement the project. Abandoning of major river improvement by a Central Government agency (Qixin River in Yuyi Farm) also rendered some of the proposed project sites technically unviable due to lack of proper drainage outfall. Although a review of the project sites in 1984 eliminated some of the earlier unsuitable sites, reduced the size for some areas, and included some new areas to maintain the overall target of 200,000 ha, delay in land reclamation was inevitable. The two new large farms (Erdaohe and Yaluhe Farms) included were started one to two years late. The changes in project sites have contributed to the general lag of progress of land reclamation and cultivation behind the SAR estimate.

10.6 Procurement of agricultural machinery and construction equipment was carried out promptly with final total quantity exceeding the SAR estimate. However, the timing of delivery was not well coordinated with project farms' needs. Agricultural machinery was delivered before hydraulic backhoes which were required first to construct drainage works to enable agricultural machinery to operate. As a result, some of the agricultural machinery could not be used in new reclamation areas where drainage works have not been done and have had to be diverted to other existing farms to avoid machine idling. It is estimated that machinery for about 10% of the reclamation area was affected. Although there was no economic loss it is felt that allocation of machinery could have been better planned and coordinated.

10.7 The FIMO has done well in managing and coordinating the construction of new facilities of the project, but has not given similar emphasis to crop production aspects -- research, extension, agricultural inputs -- to ensure that the targeted yields would be achieved. These aspects seemed to be left mainly to the sub-bureaus and project farms. Lack of funds, fertilizer and agrochemicals were some of the problems cited by sub-bureaus and project farms. Coordination by FIMO (though not its main function) in these aspects would undoubtedly help to achieve higher crop yields and production.

11. Experience and Lessons Learned

11.1 Implementation of the project has provided the following valuable experience and lessons to the project authorities as well the Bank in planning of similar future projects.

- i) More time should be given to project preparation; project sites and components should be thoroughly investigated as to their technical and economic viability. Hastily prepared project

⁵/ The PCR mission learned that some Y16.7 million of construction cost was not reflected in the account and was absorbed by project farms involved.

components are not only costly but difficult to adjust after work starts. Projects should also have flexibility to review and adjust at an early stage those project components which prove unviable.

- ii) Project management is complex, wide in scope and work intensive. A full-time management system is required to coordinate project issues and problems at all levels. The system should be staffed with appropriately qualified personnel.
- iii) Imported high-powered modern agricultural machinery and attachments are suitable for use in large-scale cultivation in Heilongjiang. They are efficient and highly productive, especially when agricultural operations have to be completed within a short time due to weather conditions.
- iv) The hydraulic backhoes are excellent machines to construct drainage works in low-lying water-logged areas, highly productive and cost effective. The capital cost of the machine can be recovered within three years of working in the project area.
- v) Logistics to support imported machinery and equipment are very important. These would include adequate supplies of spare parts, special oil and lubricants, servicing and repair facilities, trained operators and technicians.
- vi) Procurement of a large volume of machinery and equipment by ICB in accordance with World Bank guidelines for procurement proved to be very efficient - competitive in price and assured quality. This required careful and well prepared technical specifications, procedures for bid evaluation, inspection and testing of equipment before acceptance. The ICB bidding process also promoted local manufacturers' interest in competitive bidding and in upgrading their products.
- vii) A reclamation technique has been evolved from the project reclamation work with imported machinery. The sequence of work is very important. Drainage works must proceed first, followed by access roads and then land reclamation and cultivation in that order. In the past reclamation was not done in a systematic manner with much of the reclaimed land still subject to frequent waterlogging. This new approach will be adopted in future reclamation work.

12. Training and Technical Assistance

12.1 The US\$2.0 million provided for training in equipment operation and maintenance and in construction techniques, and for technical assistance in the fields of planning, training and seed production was virtually not used by the Borrower except for US\$103,500 expended on overseas technical visits. For seed production the Borrower obtained bilateral aid from CIDA of Canada. Seventy six training sessions on equipment operation and maintenance were provided by the suppliers under the equipment supply contracts. Staff training

in planning, management and construction techniques was conducted in-house through 39 training courses involving 2,243 participants.

12.2 The Borrower's reluctance to use consultants was mainly due to high cost and the need to save foreign exchange. In-house training facilities were used as far as possible and training in equipment operation and maintenance was satisfactorily provided by suppliers of equipment. It would seem that the training and technical assistance package was over-designed during appraisal without taking into consideration the in-house training facilities and local expertise available.

13. Project Documentation and Data

13.1 No specific problems had been encountered with the provision of the Loan/Credit Agreements during project implementation. To facilitate disbursements, a provision of special account in the amount US\$1.0 million was later added to the Agreements. Most of the covenants specified were generally complied with by the Borrower (see Table 11 in Part III for status of compliance), except for the Section 3.02 on engagement of consultants as no consultant had been employed due to reasons stated in para. 12.2.

13.2 The SAR was translated into Chinese and closely used by the project staff in project implementation. Detailed project data, costs and physical work quantities were kept at all levels; however, there was very little analysis and evaluation carried out to provide important information for project management. Data required for the PCR preparation was derived mainly from the basic raw data kept at project sub-bureaus and farms. They were consolidated and compiled into appropriate formats-designed by the PCR mission.

14. Conclusions and Recommendations

14.1 The main bulk of the physical works as revised in 1984 has been completed except for some lateral and sub-lateral drains, field roads, housing, bridges and culverts and telephone lines which are 65%-80% complete, due to shortage of domestic counterpart funds. These outstanding works do not affect crop production and they are expected to be completed progressively over the next three years. Procurement of agricultural machinery, construction and seed processing equipment, mainly funded by the Bank loan/credit, has been completed with the quantity of some items exceeding the SAR estimate. The Bank loan/credit was almost 100% expended (excluding US\$10 million loan cancelled in 1985). Domestic expenditures totaled about Y250 out of the revised estimate of Y260 million (SAR original estimate was Y300 million). The shortfall in local expenditures was due primarily to budget constraints.

14.2 The use of imported high-powered agricultural machinery and hydraulic backhoes for large-scale land reclamation and crop cultivation in Heilongjiang has been proven to be viable. This machinery and equipment was well received by project farms and created a major impact on modernization of agricultural machinery among the state farms in Heilongjiang. However, logistics to support such modern machinery and equipment are very essential and need to be strengthened urgently (para. 14.4 (ii) below).

14.3 The project as implemented has been a success, meeting the Government's objectives by producing about 70% of marketable surplus in grains and generating the socio-economic benefits expected. Land reclamation has been fully completed at 200,000 ha and full cultivation (135,000 ha in 1988) is expected to be reached in 1990. Average yields for wheat, soybeans and maize have already equalled or exceeded the SAR estimates. With further completion of drainage works and stabilization of the newly reclaimed lands there is good potential for further increases in yield and production provided agricultural inputs can be assured.

14.4 The PCR mission recommends the following actions, which have significant implications for ensuring or enhancing success of the project, for follow-up by the project authorities.

- i) Adequate domestic funds should be provided to complete the remaining drainage works at tertiary level as soon as possible to reduce the risk of waterlogging for 10%-15% of total project area caused by inadequate drainage. This can be rapidly achieved through deployment of the project drainage equipment. A review of the project sites with inadequate drainage should be carried out to plan the necessary upgrading or expansion works.
- ii) The situation of spare parts and hydraulic oil for imported machinery and equipment has reached an acute stage. Much machinery and equipment has been affected by lack of spare parts, for as long as two years. Poor management and lack of foreign exchange has been largely responsible for this appalling situation. The foreign exchange constraint has now been partly resolved this year with an increased export quota of 5,000 tons soybeans approved exclusively for the project area. A task force should be established immediately, comprising representatives from Central General Bureau, HGB and the major sub-bureaus, to study the problems in depth and to strengthen the existing system to manage the purchase, inventory, storing and distribution of spare parts more effectively. It is further recommended that the HGB Material Supplies Center at Jiamusi play the full-time role as a main center. One sub-center each should be established at Jiansanjiang, Hongxinglong and Mudanjiang Sub-Bureaus to serve the project farms within each sub-bureau. Other farms, with lesser amounts of machinery, can deal directly with the main center at Jiamusi.
- iii) There is potential to increase soybean production in the project area. Seed varieties capable of higher yields than the projected average yield of 1.5 tons/ha are available. Factors limiting the present yield delineated by the PCR mission include waterlogging, drought during critical stage of growth, excessive rainfall during harvest, low fertilizer application rate, poor weed control and eradication due to lack of weedicide (mostly imported), deficient cultivation techniques, and harvest and post-harvest losses. It is recommended that the results of research, extension and production techniques be evaluated in a combined effort through pilot areas

and demonstration farms. The PCR mission understands that a proposal for the above combined effort was actually started in 1986 but later discontinued in 1987 due to change of Government investment priority.

Dated: June 28, 1989
China Agriculture Operations Division
Asia Region, World Bank

PART II

1. Standard to the Engineering Design

According to the China Flood- Preventing Design Standard and the hydrological law and feature in the Land Reclamation Area (LRA), the design standard to prevent from flood and waterlogging for the project was adopted as every-five-year's one-day storm rainwater would be drained out from the field in two days, while the controlling capacity of the general dikes as every ten year's; the bridges and culverts as every ten year's as well. The above design standard had been confirmed by several dozens of years' flood-preventing experience in the LRA.

2. The Necessity of the Engineering Construction

- 2.1 The nearly 90% of the undevelopped area of 200 thousand hectares would be opened in the low and liable waterogging area. So it was necessary to construct the drainage facility, and to build the roads as the priority, as well as the systematic bridges and cutverts construction.
- 2.2 According to the meteorological feature and the special conditions of more land with less work labor in the LRA, and the state requirement on constructing the commodity grain base, it was necessary to realize the high level mechanization in land reclamation and farming, to make the LRA a model in the agro-modernization.
- 2.3 The original LRA agro-machinery had two weak points: the first was that more than half of machinery was overused with the technologically-worsened condition and high maintainance cost, the second was that the machinery

couldn't match the need of the cultivation and harvest in the large area of wheat and soybean, because of its low capacity, performance and efficiency and high loss. So, it was necessary for the project to introduced the worldwide advanced agro-machinery.

2.4 When they were digged, the draining ditches would pass through some small lakes in the low project areas, so sometimes the water couldn't flow in these canals. It was necessary to introduce a batch of construction machinery which are suitable to operating in the marsh land.

2.5 To lower the grain loss, raise the grain quality and to ensure the high grain yield and bumper harvest, building the cement grain-drying ground, steel-sheet granery, grain-handling facilities must be the as important part of the project. Furthermore, to ensure the machinery power requirement and to satisfy the basic life condition of the staff, the project mustn't lack the power, communication and house construction.

3. The Main Results

3.1 The water conservation engineering that had been built released the flood trouble and increased the efficiency to fight disaster. Before the project began, most of the area of the unopened land suffered from the disastrous flood due to its location along the rivers and stretchment in the marsh land. When the project was completed, the field basic construction created the good construction to the claimed land, the disaster-resistance has been raised year by year. For instance, the project area of the Gongqing farm,

which was located in the disasterously flooded area along the Dulu River, had large stretch of wasted land confront with the flood. Only with the dikes built, the wasteland in the project area was opened in a safe way. Also in the Yalube Farm, the 153 mm rainfall in the 1985 wheat harvest time made 30% of wheat and soybean drowned due to lacking of water conservation engineering, while the 360 mm rainfall in the 1987 wheat harvest time didn't hold off the normal operation of the machinery and the wheat yield reached 3 tons per hectare thanks to field ditches being as a complete system.

3.2 The grain handling centres which had been built improved the grain handling conditions and decreased the grain loss. Since a long time, drying grain in the LRA had adopted the solar drying method, by which more labor was employed and the production efficiency was low. Especially under the continuous wet weather in the wheat harvest period, wheat drying was in very rough condition with wheat becoming deteriorated. In 1987 and 1988, as a part of the project, 12 grain handling centres were built to handle grain 100,000 tons totally, with which 8,000 tons of grain loss was decreased and 2,600 labor saved and 520,000 Chinese RMB Yuan saved.

3.3 Two hundred thousand hectares of waste land which had been opened expanded the cultivated land of the LRA and increased the grain yield in the LRA. The 200 thousand of cultivated land opened by the project accounts for 10%

of the total LRA cultivated land. During the project implementation period, the grain yield in the project area kept stable increasing, although the waterlogging frequently appeared and the opened land were in uncompletely cultivated condition. From 1983 to 1988, the project totally yielded 753 thousand tons of grain, of which 530 thousand tons were sold to the state. The grain commodity rate were 70.4%. The total profit was 35.26 million RMB Yuan. The Jiansanjiang Sub-bureau in five years totally gained the profit of 12.96 million RMB Yuan, while the project area in this bureau gained 17.96 million RMB Yuan. If there were not the project, the sub-bureau would have totally lost 5 million RMB Yuan. From above, the project have played the very important role and is in the outstanding position in the LRA agricultural production.

3.4 The advanced technology and equipment the project introduced promoted the technical progress and the machinery's renewal and escalation, realizing the intensive farming. These machinery and equipment equipped and modernized state farms and 95 production teams and 38 construction units, so as to improve the renewal of the LRA's machinery and equipment and the agro-technical reform. To fully tap the advantage of the imported agro-machinery and to make the traditional agricultural ideal changed, and to realize the reasonable combination of labors, technology and equipment, and to reach the intensive farming in a reasonable size, the project centralized step by step the land to the skilled farming workers and the separated the workers

from the land to engage in the other trades. By this way, most of workers have got rid of producing grain, and the adjustment of the productive structure has been promoted.

3.5 By the implementation of the project, a large number of the technical bone-backs and project managerial talented staff were raised and practised to master modernize machinery and equipment. In five years, 2243 people in the project area participated in the domestically technical training, and 61 technicians were sent abroad to learn machinery operation, maintenance and managerial skill. By equipment procurement and project supervision, a large number of experts were practised in negotiation, trade profession and management. At present, there exists a rank of staff who can handle using the world bank loan with well-skilled profession.

3.6 The implementation of the project raised the production rate and arranged the workers who had been waiting for work. At present, the productive rate in the project area has exceeded average LRA level. The 1988 final account shows that:

per capita for whole farming workers	project area	LRA
sowing area (hectare)	13	4.5
producing grain and soybean (ton)	19.3	7.2
commodity grain (ton)	13.4	3.5
productive value (yuan)	9856	4326

During the project complementation, 4200 workers were employed in the project area and several thousand workers family members, graduated students and other people had the work chance. So the productive capacity for the project has been increased and the social burden released.

3.7 The project improved the productive and life condition. For instance, the whole main road in the Jiansanjiang sub-bureau are sand-stone-laid, except in two newly-built farms. In the project area, 130 thousand square metres of residence was built and large number of staff and workers moved into the new houses. The project ensured daily-used central heating, power and drinking-water supply, public health, education, telecommunication etc. A stretch of primitive marsh land that was on the Fuyuan Delta four years before now has become two big modernized state farms.

4. Results and Lessons

4.1 The complete fore-work for the project. The project's basic task was to reclaim land. Before the project approved, investigation and budget were made on the LRA's virginal land lay-out, style, technical developing measures, economical profit, and loan repayment, etc. In the feasibility study, the comparatively reliable, technical demonstration was given to the solid basis of smoothly impleting the project and gaining the profit. But some part of project area was not timely kicked out, which had unsuitable land-reclaiming conditions, due to the extra-distributed virginal land and so many restrictions for the project.

- 4.2 The appraisal for the project lacked the estimation on the natural disasters confront of the land reclamation. The serious disasters which appeared during the project implementation infect the the project construction progress and and delayed the appraised finishing date of the project.
- 4.3 The final report on the project implementation proves that some project works, such as housings, couldn't reach the data in the appraisal report. The main reason was lacking estimation on the commodity price increase during the project implementation. For instance, the price of the main materials for the project construction increased 67%-130% respectively, so that the investment was behind the actually need.
- 4.4 The construction procedure of " water-draining first, road-building second, land-reclaiming third" was effective to the project. According to the LRA's long-term experience to opening land and the characteristics of the project area being along the rivers, draining water and building the roads should be finished before land reclaiming. Annually planning arrangement and the fund distribution must ensure the water conservation and road-building as its priority. The project followed the procedure and was ensured to gain the profit. In the past, when the original procedure adopted, all the opened land would be flooded, which had been reclaimed in the no-flood disaster year.
- 4.5 Economic responsibility system was favor to the investment management. The fund for the project was distributed to follow the principle of systematic responsibility and of keeping promise in a way that investment would be in line with the commodity grain, no more fund for extra-cost, the fund saved would be the project area's property. In accordance with the system explained

above, the GBSF signed the agreement on the economic responsibility system. By this way, the investment distribution could follow the progress of the engineering.

4.6 Setting up and amplifying the managerial regulations. For well-managing and well-using the world bank loan in the project implementation, the GBSF separately formulated a dozen of managerial regulations and methods for inner-GBSF inspection, by which the project area should strictly carry out the loan usage and construction schedule. The various level departments had been inspecting the project area's account and help the accountants to amplify the account books. Implementing the various managerial regulations help increasing the efficiency of intactness and operation, and increasing the engineering quality and profit, and raising the managerial level for using the world bank loan.

4.7 Timely adjusting the project area. In the first three years when the project began, it was very rainy. Under the circumstance of incomplete construction, the part of unopened virgin land was flooded, while the complete set of engineering that had been arranged couldn't start timely, and the imported agro-machinery was forced to be idle. For getting rid of the passive position, the GBSF had to adjust the lay-out arrangement of the project areas which were opened in difficulty, under the approval of the world bank, and transfer the imported agro-machinery to the project area suitable to the imported agro-machinery. By the adjustment, these machinery could be

well-operated, and the fund well-distributed, and gain the profit for the project. The practice proved that following the profit-gaining to transfer the imported equipment effected a good result.

4.8 The leading group to the project management must be stable and skilled. The GBSF project office are responsible for the project management. Ten technically-skilled staff work in the office, of whom five staff possess the title of senior engineer. Except one who employed by the Ministry of Agriculture, all the staff have heartedly been working to complete the project. The GBSF staff working for the introduced equipment procurement had comparatively high skill and intensive and decisive level. These foreign affair staff, not only had the talented skill and were familiar to the laws and trades, but also handle the various documents in English. The complete procurement for the project was successful.

5. Cost for the technical aids

5.1 The cost for the technical aids was \$ 103,557 (excluding the same kind of aids to perform the contracts), accounting for 0.5% of the total loan, much lower than data (14%) of the appraisal report. The GBSF regarded it as necessary inviting the foreign engineers and sending technicians abroad to participate training. But the training should be in accordance with the actual need of the project, other-wise the foreign exchange would be used in an unchecked way.

5.2 The main reasons of less-used technical aids were in line with two principles:

(A) All the work with which the Chinese engineers were capable to do would not be consulted by the foreign advisers. All the trainings which could reach the standard from the world bank, no technicians would be sent abroad to study. By this way, the consultive work and the technical aids cost decreased.

(B) All the expenses for the project would costed in Ren Min Bi to save foreign exchange.

6. The World Bank performance

6.1 The World Bank played an important role in establishing the project. What the world bank invested in the project was that the Heilongjiang LRA is at the important position in the China land reclamation production. Furthermore, the LRA has the long-term experience in opening land and setting up the production teams and possesses the agro-technical methods which had been proved effective by the practice. The necessary investment by the world bank played an important role in speeding up the LRA's agricultural modernization and improving the LRA's economic development. The world bank expressed the confidence to GBSF's ability in completing the project. The cooperation between the world bank and the GBSF has been satisfactory in the investigation, discussion and appraisal on the project.

6.2 The world bank has been giving the project fully supervision and support, which can be proved by the smooth process. The world bank sent 5 supervision missions to the project area in 5 year-implementation, effectively instruct-

ing the project in loan use, project management, equipment procurement, technology application, technical training, etc. The world bank always timely replied the GBSF regarding the project concerns and helped solve the difficult problems appeared in the project implementation.

6.3 The world bank performed the technical support to the project by the various methods, to make the project staff learn a number of advanced experience in technology and management and master a set of engineering management procedure that the world bank performs. The results were perfect.

6.4 There is a big difference between the appraisal data and the actual completion, especially the price index. This was uneasy to predict when the project started. The index change was caused by the policy of the China economic reform. Later, the GBSF revised and supplemented the primary project design to change the original data. The world bank took consideration to the GBSF's requirement and took it as reference of analysing the project profit.

7. Project offices performance

7.1 The project implementation was basically in accordance with the world bank appraisal report. The GBSF project office was responsible to the project organization and management. Under the GBSF project office, the professional project offices in the sub-bureaus and farms also were set up. The experienced staff were employed. The staff in the GBSF project office specialized in planning, agronomy, water conservation, machinery, accounting, etc. of whom some staff participated in trainings sponsored by the central government's departments and some went abroad to study to serve the project.

- 7.2 The primary project lay-out and design were finished through the cooperation between the project offices and the other departments on the farms. The primary design was compiled in accordance with the outlines regulated by the GBSF, and inspected and approved by the GBSF. The land-reclaiming was performed by the separate project area. Earth-engineering, bridges and culverts, road building were carried out by the professional farm teams. The construction was in high efficiency, low cost and high speed, thanks to all the construction units adopted the responsibility system. The power lines were erected by the farm power-transforming departments. For the grain handling centers, all the small ones were built by the farms themselves, while the big ones were constructed by the city-level equipment assembly companies.
- 7.3 The project offices of sub-bureaus performed the organization, conduction, coordination and supervision in the project implementation, also were responsible to the completion of the project components and to coordinate the relative technical farm departments and to guide signing contracts between the farms and construction units, and to the engineering supervision, acceptance and the fund distribution.
- 7.4 The project audit was performed by the Heilongjiang Audit Bureau on behalf of the state. The Heilongjiang Audit Bureau went to the project area 12 times

to fully inspect the fund usage, project progress and production profit. The audit was accordance with the established audit principles and the loan/ credit agreement between the Chinese government and the World Bank and the China current accounting system , finance regulations and accounting principles. The just appraisal has been made through inspecting accounting, materials, managerial systems of the project farms. The strict supervision from the audit department promoted strenthening the project management structure, account control, and raising the accountants' accounting level.

7.5 The project units compiled the annual budget according to the annual investment. The budget would be inspected, adjusted and commanded to perform by the GBSF. During the project implementation, the engineering acceptance would be carried out one to two times annually, which was sponsored by an inspection group staffed by the sub-bureaus' projec offices, water conservation divisions, basic construction divisions, account divisions, local construction banks and the construction units. All the engineering works under the standard would not be accepted and reworked at a limited time.

7.6 The project management still has some weak points. For instance, the relative regulations for the imported machinery and equipaent has not completely set up , although they have been managed by the certain departments. The spare parts for the imported equipaent are kept in insufficient stock with sometime-blocked supply. The maintainance and service system has not been efficiently formed. Maintaining the damaged machinery lacks the convenient conditions. The GBSF has mapped out the corresponding measures to solve these problems at a short time.

7.7 After the project finishes, when the project offices which were the temporary structure will non-exist, the GBSF's various departments will be responsible to the normal management of the project area's production and business. To ensure timely repay the world bank loan, the account department will map out the annual repayment budget and the foreign trade department will therefore map out and organize exporting products.

7.8 Using the world bank loan/credit to develop the China agricultural production has been very fruitful. This should be as a long-term policy to carry out, especially the Heilongjiang LRA needs using the world bank loan/credit due to locating the remote territory and the managerial level still being in backwardness.

(Written by the Foreign Investment Management Office
of Heilongjiang General Bureau of State Farms.
Office chief: Li Hegang.)

PART III

TABLES

Table 1

FILE:RELPROJ

CHINA
HEILONGJIANG LAND RECLAMATION PROJECT

Project Completion Report

Related Bank Loans and/or Credits

Loan/Credit Title	Purpose	Year of Approval	Status	Comments
North China Plain Agri. Project (Ln.107/Cr.1281-CHC)	Drainage improvement and salinity control on 200,000 ha for crop production.	FY82	Project Completed	PCR completed.
Pishihang Area Development Project (In.2679-CHA) (Cr.1606-CHA)	Improve and expand irrigation, drainage and flood control facilities to 490,000 ha	FY85	Under Implementation	Some design and procurement delay.
Gansu Provincial Development Project (Ln.2812-CHA) (Cr.1798-CHA)	Irrigation component serves 87,000 ha for settlement by 18,000 families.	FY87	Under Implementation	Satisfactory Progress
Xinjiang Agric. Development Project (Cr.1764-CHA)	Irrigation component serves 82,000 ha for food and fiber production.	FY87	Under Implementation	Satisfactory Progress
Northern Irrigation Project (Cr.1886-CHA)	Irrigation and drainage for 200,000 ha in Inner Mongolia and 38,200 ha in Ningxia.	FY88	Implementation just started	Credit only effective on 1/9/89

PART III
 China
 Project Completion Report
 Hailongjiang Land Reclamation Project
 (LN 2201/CR 1347-CNA)

Table 2

Project Time Table

Item -----	Date Planned -----	Date Revised -----	Date Actual -----
Identification (EPS) 1/	NA NA	NA NA	07/22/81 02/26/82
Preparation	NA	NA	02/07/82
Appraisal Mission	NA	NA	07/07/82
Loan/Credit Negotiations	NA	NA	08/07/83
Board Approval	NA	NA	04/19/83
Loan/Credit Signature	NA	NA	05/20/83
Loan/Credit Effectiveness	08/23/83	-	08/23/83
Loan/Credit Closing	12/31/87	09/31/89	09/31/89
Loan/Credit Completion	09/30/87	12/31/88	12/31/88 Work completed except for small quantities of farm roads and culverts, and for two contracts signed in 08/88 for spare parts.

1/ The date indicated is from the earlier Project Brief, on file
 in Asia Information Center, following the "Reconnaissance"
 mission of July 1981.

PART III

Table 3

Loan/Credit Disbursements

Cumulative Estimated and Actual Disbursements ^{1/}
(US\$ '000)

Semester Ending	Appraisal Estimate	Actual	Actual as % Estimate	Actual as % of Total
June 30, 1983	-	-	-	-
December 31, 1983	29.00	0.26	1.0	0.4
June 30, 1984	41.30	21.79	52.8	32.6
December 31, 1984	56.90	27.97	49.2	41.9
June 30, 1985	63.70	43.74	68.7	65.5
December 31, 1985	73.80	49.08	66.5	73.5
June 30, 1986	78.10	49.56	63.5	74.3
December 31, 1986	79.60	51.04	64.1	76.5
June 30, 1987	80.30	58.87	73.3	88.2
December 31, 1987	80.30	65.75	81.9	98.5
June 30, 1988	80.30	66.10	82.3	99.0
December 31, 1988	80.30	66.74	83.1	98.7
June 30, 1989	80.30	67.60 ^{2/}	84.2	100.0

^{1/} LOA data as of 12/30/88 (end 1st semester FY89)

Note: Loan Closing date has been extended (2nd extension) to March 31, 1989. During the implementation, US\$10.0 million was cancelled, retroactively to November 26, 1984.

^{2/} LOA data as of 06/12/89.

KJKim: AS3AG

CHINA
HEILONGJIANG LAND RECLAMATION PROJECT
PROJECT COMPLETION REPORT

Table 4

Project Land Development ('000 ha)

Sub-bureau/Farm	Cultivated Area	Waste Land	Project Development Planned	Project Development Revised	Land Reclaimed by Year							Cultivation by Year					
					1983	1984	1985	1986	1987	1988	Total Actual	1983	1984	1985	1986	1987	1988
Senjiang Plain Region																	
Beiqianlin SB:																	
Puyang	22	11	4	10.67	2.00	2.00	1.28	5.28	0.00	0.00	10.66	0	0.00	0.85	2.68	5.53	3.80
Xiangyong	30	10	7	6.00	1.38	2.00	1.28	0.00	1.34	0.00	6.00	0	0.00	2.48	3.71	5.02	5.20
Subtotal	52	21	11	16.67	3.38	4.00	2.66	5.28	1.34	0.00	16.66	0.00	0.00	3.28	6.39	10.55	9.00
Hongxinglong SB:																	
Yuyi	106	22	13	9.44	4.24	0.40	0.78	2.07	2.00	0.00	9.44	0	2.93	2.11	7.40	6.08	5.93
852	74	9	7	8.78	1.33	0.66	1.28	3.48	1.28	0.67	8.78	0.6	2.00	1.27	4.54	4.59	5.83
853	54	19	6	6.00	2.00	0.13	0.67	2.20	0.60	0.00	6.00	0	0.00	3.69	1.73	5.19	5.21
597	46	15	10	10.00	2.00	0.17	2.00	3.20	1.88	0.78	10.00	0	1.28	0.17	3.82	6.82	7.22
291	42	7	4	7.67	4.00	1.60	1.88	0.00	0.00	0.00	7.66	0	1.80	3.98	7.66	5.82	5.11
Beiqing \1	25	9	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00
Hongqing \1	18	8	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00
Raohe	21	14	3	4.81	0.00	0.67	0.47	2.00	0.67	0.00	4.81	0	0.00	0.88	0.74	1.53	1.56
Subtotal	386	101	48	46.50	13.57	3.83	7.26	12.93	6.78	2.12	46.49	0.6	8.06	11.63	25.99	30.13	30.86
Jiangnanjiang SB:																	
859	32	22	10	2.00	0.85	0.00	0.00	0.00	1.15	0.00	2.00	0	0.20	0.00	0.61	1.84	1.71
Shengli	33	22	3	3.33	1.87	0.00	1.20	0.48	0.00	0.00	3.33	0.46	1.89	0.72	0.91	3.00	2.60
Qianshao	16	104	7	3.25	0.00	0.00	0.00	1.68	0.80	0.57	3.25	0	0.00	0.00	0.00	3.00	2.63
Qing	57	20	4	4.00	3.20	0.00	0.80	0.00	0.00	0.00	4.00	1	3.18	2.09	3.00	3.80	3.28
Qindai	89	113	33	6.00	4.53	0.00	0.60	1.47	0.00	0.00	6.00	0	1.18	2.14	1.71	3.95	2.99
Qinglongshan	25	7	5	6.84	4.67	0.67	0.00	0.00	0.00	0.00	6.84	4.6	5.00	3.42	3.33	3.91	3.45
Chuangge	25	24	3	2.00	2.00	0.00	0.00	0.00	0.00	0.00	2.00	0.78	1.78	1.63	1.68	2.00	2.00
Qianfeng	15	45	7	3.82	0.00	0.00	0.00	2.68	0.67	0.49	3.82	0	0.00	0.00	0.00	2.68	1.47
Qianjin	30	34	8	5.33	4.67	0.00	0.00	0.88	0.00	0.00	5.33	1.21	4.00	2.45	3.18	3.97	2.84
Hongpei	24	20	3	3.87	2.94	0.00	0.00	0.00	0.93	0.00	3.87	1	1.45	1.45	2.55	3.69	3.88
Daxing \2	0	0	0	2.70	1.33	0.66	0.00	0.00	0.06	0.55	2.70	0	1.82	1.61	1.71	1.84	1.86
Honghe \2	0	0	0	4.37	2.67	0.00	0.78	0.00	0.40	0.87	4.37	0	1.78	4.17	2.07	3.91	3.95
Ershe \2	0	0	0	19.75	0.00	0.00	4.85	8.67	3.00	5.48	19.75	0	0.00	1.42	5.23	11.23	10.75
Yaluhe \2	0	0	0	16.67	0.00	0.00	6.67	6.67	3.00	6.34	16.67	0	0.00	5.12	6.00	9.98	9.98
Subtotal			83	82.51	28.83	1.23	6.04	20.25	10.01	14.25	82.51	9.05	21.72	21.31	81.34	57.46	52.45
Mudanjiang SB:																	
854	40	41	13	13.33	1.00	1.23	4.67	2.23	4.00	0.00	13.33	0	1.53	2.34	7.74	10.10	12.55
856	33	34	7	6.67	1.60	0.00	1.86	1.64	1.58	0.00	6.66	1.6	1.60	1.95	4.28	5.70	6.23
858	22	15	7	6.67	0.00	0.00	2.00	2.13	2.23	0.00	6.66	0	2.50	0.00	2.08	4.25	4.28
Qingfeng	26	12	8	6.40	2.53	0.00	2.00	1.88	0.00	0.00	6.41	2.52	2.52	3.45	4.67	6.40	5.68
Xingkeihu	18	41	5	4.67	0.00	0.00	0.78	0.67	2.47	0.00	4.67	0.6	0.42	0.85	2.00	2.60	3.48
Subtotal	139	143	40	37.74	5.93	1.23	11.26	6.68	10.56	0.00	37.73	4.92	6.57	6.29	20.92	29.22	32.25
Cadre College \2																	
			0	0.84	0.3	0.07	0.44	0.00	0.00	0.00	0.84	0	0.33	0.33	0.33	0.61	0.61
Total Senjiang Plain																	
			182	184.26	51.69	10.56	29.66	47.18	26.69	16.47	184.28	14.57	29.46	44.64	94.97	128.10	125.18
Lesser Xinganling Region																	
Beian SB:																	
Xunke	33	12	2	3.93	1.80	1.30	0.60	0.00	0.40	0.00	4.80	0	1.73	2.41	1.63	1.97	1.88
Jinke \1	16	21	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00
Longmen \1	12	14	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00
Jianshe	17	4	2	1.40	0.00	0.40	0.00	0.80	0.30	0.00	1.00	0.84	0.50	0.48	0.90	1.10	0.98
Subtotal	78	51	7	5.33	1.80	1.70	0.60	0.80	0.70	0.00	5.80	0.84	2.23	2.87	2.53	3.07	2.86
Jiuzhen SB:																	
Jiengbian	11	20	11	6.00	5.30	0.70	0.00	0.00	0.00	0.00	6.00	0	5.33	4.69	3.53	5.50	5.52
Subtotal	11	20	11	6.00	5.30	0.70	0.00	0.00	0.00	0.00	6.00	0.00	5.33	4.69	3.53	5.50	5.52
Nenjiang SB:																	
Chahayang	0	0	0	3.37	2.67	0.70	0.00	0.00	0.00	0.00	3.37	1.28	1.09	0.90	1.34	1.90	0.81
Chongjietan	0	0	0	1.10	0.00	0.00	0.00	1.00	0.10	0.00	1.10	0	0.00	0.00	0.00	1.10	0.40
Subtotal	0	0	0	4.47	2.67	0.70	0.00	1.00	0.10	0.00	4.47	1.28	1.09	0.90	1.34	3.00	1.21
Total Lesser Xinganling																	
			18	15.80	9.77	3.10	0.60	1.30	0.80	0.00	15.77	1.92	6.65	6.66	7.40	11.57	9.59
TOTAL PROJECT \3																	
			200	200.06	61.46	13.66	30.46	48.46	29.49	16.47	200.00	16.49	47.13	53.50	92.37	139.67	134.77

\1 : Deleted under revised plan.

\2 : Added under revised plan.

\3 : Total may not tally due to rounding of numbers.

Table 5

FILE:PCRPY

CHINA
HEILONGJIANG LAND RECLAMATION PROJECT
PROJECT COMPLETION REPORT

PHYSICAL QUANTITIES

	Unit	SAR Estimate	Revised Estimate %	Actual Quantity Completed						Total	As % of Revised Qty.
				1983	1984	1985	1986	1987	1988		
Land Development											
Earthworks:											
Dikes	min m3	6.25	4.15	1.56	1.55	1.83	0.92	0.15	0.14	6.15	149
Main Drains	min m3	5.15	13.94	6.39	1.29	3.31	3.82	2.21	0.69	17.63	126
Branch Drains	min m3	9.45	24.09	2.92	0.29	3.53	5.35	7.17	5.91	25.17	104
Sublat. Drs.	min m3	21.80	25.84	1.43	0.28	4.53	6.21	7.79	2.50	22.54	89
Subtotal	min m3	42.65	67.52	12.29	3.35	18.20	16.30	17.32	9.03	71.49	106
Pumping stations	no.	24	19	3	2.0	7.0	4.0	0.0	3.0	19.00	106
Land Clearing	'000 ha	200	200	81.5	13.7	30.5	47.5	29.5	17.4	200.10	100
Roads											
Rural roads	km	1500	823.0	272.0	272.7	184.9	69.7	31.0	22.4	851.7	103
Field roads	km	2200	2047.0	52.7	373.7	320.8	460.0	94.0	23.0	1324.0	85
Bridges	no.	305	197.0	32.0	57.0	64.0	65.0	34.0	14.0	266.0	135
Culverts	no.	2655	2251.0	308.0	329.0	515.0	227.0	451.0	182.0	2007.0	89
Buildings & Facilities											
Housing & others	'000m2	669	438	1.2	71.7	72.8	75.6	34	22.5	277.8	63
Drying floors	'000m2	599	466	56.7	116.6	49.5	97.7	162.4	13.2	485.1	104
Fuel depot	tons	0	2980	0	0	0.0	0	0	0	0.0	0
Seed silos	'000 tons	0	52.4	0	0	9.2	9.6	0	0	18.8	36
Utilities											
Transformer substations	no.	7	2	0	0	0.0	0	0	0	0.0	0
Diesel Generating stn.	no.	6	3	0	1	1.0	1	1	0	4.0	133
Power lines	km	408	537	199.0	89.0	112.0	43.0	4.0	0.0	446.0	83
Telephone lines	km	561	677	150.8	166.5	41.0	34.5	11.0	38.5	442.3	65
Machinery & Equipment											
Agricultural machinery:											
Imported	no.	2108	2110	0	1482	1238	0	203	0	2923.0	139
Domestic	no.	3406	2011	0	557	685	466	457	208	2373.0	118
Construction machinery \b	no.	97	102	0	110	74	0	40	0	224.0	220
Seed Processing eqpt.	set	16	31	0	0	0	2	3	0	5.0	16
Others \c	no.		95	0	46	82	0	12	0	140.0	147

\a: Revised in 1984.

\b: Include vehicles used for construction.

\c: Include office, engineering and training equipment.

CHINA
HEILONGJIANG LAND RECLAMATION PROJECT
PROJECT COMPLETION REPORT
ESTIMATED COST AND EXPENDITURES

Table 6

Items	SAR Estimate			Rev Estimate (1986)			Expenditures for Local and Foreign Components													
	Local Cost		Foreign Total	Local Cost		Foreign Total	1983		1984		1985		1986		1987		1988		Total 1983-88	
	(Y' min)	(\$ min)	(\$ m'n)	(Y' min)	(\$ min)	(\$ m'n)	L.C.	F.C.	L.C.	F.C.	L.C.	F.C.	L.C.	F.C.	L.C.	F.C.	L.C.	F.C.	(Y'000)	(\$'000)
Drainage & Clearing																				
Dikes	6.9	1.0	4.9	6.6	0.0	3.3	1947	0	1065	0	1131	0	680	0	255	0	5521	0		
Main Drains	9.6	1.2	8.1	12.4	0.0	6.2	3367	0	1270	0	1577	0	3650	0	2210	0	13161	0		
Branch Drains	7.3	1.0	5.2	21.2	0.0	10.6	2615	0	9450	0	1550	0	376	0	4769	0	22282	0		
Lst/Sub-lst Drains	10.4	1.5	7.4	12.4	0.0	6.2	808	0	517	0	5868	0	213	0	4418	0	1888	0	18005	0
Pumping Stations	1.8	0.7	1.7	4.7	0.0	2.4	193	0	190	0	940	0	790	0	206	0	2319	0		
Bridges/Culverts	6.4	2.5	6.2	12.0	0.0	6.0	1802	0	2578	0	2865	0	4853	0	2362	0	840	0	14368	0
Land Clearing	16.3	2.1	11.4	22.3	0.0	11.2	3427	0	788	0	2889	0	5827	0	5029	0	80	0	17788	0
Other	0.0	0.0	0.0	0.0	0.0	0.0	206	0	281	0	61	0	0	0	0	0	0	0	547	0
Subtotal	57.7	10.0	43.0	91.6	0.0	45.8	14464	0	16106	0	16291	0	16151	0	18959	0	7041	0	69011	0
Roads																				
Rural Roads	22.5	2.7	15.6	20.7	0.0	10.4	4679	0	3968	0	3319	0	1975	0	516	0	509	0	14966	0
Field Roads	3.5	0.5	2.5	5.8	0.0	2.8	590	0	1563	0	1292	0	3749	0	511	0	244	0	7779	0
Bridges/Culverts	2.7	0.7	2.2	8.0	0.0	3.0	388	0	1239	0	1489	0	259	0	588	0	60	0	4023	0
Subtotal	28.7	3.9	20.3	32.2	0.0	16.1	5657	0	6800	0	6100	0	5963	0	1615	0	613	0	26768	0
Buildings																				
Housing	41.8	0.0	23.9	41.5	0.0	20.8	388	0	6172	0	7507	0	6314	0	8394	0	489	0	26244	0
Office, Schools etc	12.6	0.0	7.3	17.5	0.0	8.8	0	0	518	0	5884	0	8415	0	5244	0	2781	0	22942	0
Grain Storage	9.4	0.0	5.4	2.7	0.0	1.4	0	0	116	0	505	0	626	0	2496	0	653	0	4606	0
Workshops	18.8	0.0	9.6	14.2	0.0	7.1	0	0	2535	0	2316	0	3570	0	2106	0	1286	0	11912	0
Electrification	5.5	0.0	3.1	6.2	0.0	3.1	0	0	934	0	1459	0	972	0	78	0	0	0	3493	0
Telephone	1.8	0.0	1.0	2.1	0.0	1.1	0	0	685	0	142	0	184	0	71	0	156	0	1218	0
Subtotal	88.1	0.0	50.3	84.2	0.0	42.1	388	0	18110	0	17813	0	20261	0	18889	0	5555	0	70516	0
Drying Floors	4.7	0.9	3.6	6.1	0.0	3.1	612	0	1869	0	598	0	2618	0	2938	0	325	0	6860	0
Machinery & Equipment																				
Agricultural Machinery	57.1	56.5	80.1	30.4	52.2	67.4	0	0	11491	19713	9717	17774	2045	930	10828	4513	2339	0	35920	47930
Construction Machinery	1.1	11.0	11.6	0.0	6.2	6.2	0	0	0	4188	0	3182	0	116	0	1613	0	0	0	9099
Seed Processing Exp.	0.8	1.7	1.2	0.0	9.8	9.6	0	0	0	0	0	0	0	1020	0	1338	0	0	0	2418
Others	0	0.0	0.0	7.2	1.5	5.1	0	0	1891	1120	0	665	8488	483	1782	6469	274	1564	9675	10501
Subtotal	59.0	69.2	102.9	37.6	71.5	90.3	0	0	12822	25021	9717	21621	6533	2609	12110	13933	2613	1564	45795	64948
Other																				
Training & T.A.	0.2	1.6	1.7	0.0	2.0	2.0	0	0	0	50	0	50	0	0	0	0	0	0	0	100
Administration	3.9	0.0	2.2	3.0	0.0	1.5	200	0	1816	0	294	0	200	0	269	0	176	0	2445	0
Miscellaneous	0	0.0	0.0	5.5	0.0	2.8	2679	0	0	0	0	0	4245	0	386	0	0	0	7310	0
Subtotal	4.1	1.6	3.9	8.5	2.0	6.3	2679	0	1816	50	294	50	4445	0	655	0	176	0	9755	100
Total Base Cost	242.3	65.6	224.1	260.2	78.5	208.6	24000	0	51222	25071	50803	21671	57991	2609	49666	13933	16523	1564	250205	65048
Physical Contingencies	22.2	2.2	14.9	0.0	2.0	2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Price Contingencies	38.4	11.1	31.9	0.0	4.5	4.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Front-end Fee	0.0	0.3	0.3	0.0	0.3	0.3	0	0	262	0	0	0	0	0	0	0	0	0	0	262
Total Project Cost	300.9	99.2	371.1	260.2	80.3	210.4	24000	262	51222	25071	50803	21671	57991	2609	49666	13933	16523	1564	250205	65310
Expenditures																				
Exchange Rate							(Yuan) (US\$'000)	(Yuan) (US\$'000)	(Yuan) (US\$'000)	(Yuan) (US\$'000)	(Yuan) (US\$'000)	(Yuan) (US\$'000)	(Yuan) (US\$'000)	(Yuan) (US\$'000)	(Yuan) (US\$'000)	(Yuan) (US\$'000)	(Yuan) (US\$'000)	(Yuan) (US\$'000)	(Yuan) (US\$'000)	(Yuan) (US\$'000)
Local Expenditure in US\$							1.75	2.00	2.00	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71
Total Expenditure in US\$							13714	25611	17518	15681	18367	4454	90815	18476	50682	39389	16240	27320	6018	155625

1a. Convert Yuan into US\$ using US\$1.0 = 1.75.

1b. Convert Yuan into US\$ using US\$1.0 = 1.75 in 1983, Y2.00 in 1984, Y2.90 for 1985 and Y3.71 for 1986-88.

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FILE:PCRFINC2

CHINA
HEILONGJIANG LAND RECLAMATION PROJECT
PROJECT COMPLETION REPORT

Table 7

PROJECT FINANCING

Source of Funds	Planned Loan/Credit Agreement	Revised (1988)		Final (6/15/89)		Comments
		Amount	%	Amount	%	
IBRD/IDA						
Credit No.1847	(SDR'000)	(SDR'000)		(SDR'000)		
Cat. 1: Equipment	40000	41200	99.8	40907	99.8	
Cat. 2: Consulting Services and training	1800	100	0.2	75	0.2	
Subtotal	41800	41300	100.0	40982	100.0	
US\$ equivalent	48000 \a1	46000 \a2		50756 \a3		
Loan No.2261	(US\$'000)	(US\$'000)		(US\$'000)		
Cat. 1: Equipment	31100	24700	97.8	24812	99.0	\$10 million loan was cancelled in 1986 at Borrower's request.
Cat. 2: Consulting Services and training	600	0	0.0	0	0.0	
Cat. 3: Fee	268	268	1.0	268	1.0	
Cat. 4: Unallocated	3387	337	1.3	0	0.0	
Subtotal	35300	25300	100.0	25075	100.0	
DOMESTIC	(Y'000)	(Y'000)		(Y'000)		
Central Government	180001	170000	65.4	170180	68.0	
Heilongjiang G. Bureau	68000	45000	17.3	45000	18.0	
Sub-bureaus/Farms	118001	45000	17.3	35026	14.0	
Subtotal	366002	260000	100.0	250206	100.0	
US\$'000 equivalent	190869 \b1	130000 \b2		90815 \b3		
TOTAL (US\$'000)	271158	200300		186146		

\a1 : SRD 1.0 = US\$1.089 equivalent

\a2 : SDR 1.0 = US\$1.089 equivalent

\a3 : SRD 1.0 = US\$1.2385 on 6/15/89

\b1 : using exchange rate of US\$1.0 = Y1.75

\b2 : using exchange rate of US\$1.0 = Y2.00

\b3 : using exch. rate of US\$1.0 = Y1.75 in 1983, Y2.00 in 1984, Y2.90 in 1985 and Y3.71 for 1986-88

Table 8

HEILONGJIANG LAND RECLAMATION PROJECT
PROJECT COMPLETION REPORT
Economic and Financial Impact

	SAR Estimate	PCR Re- calculation
Economic rate of return	23%	22%
NVP(1983) discounted at 12% (million yuan)	276	302
Financial rate of return	NA	7.7%
Underlying Assumptions		
1990 wheat/soy/corn border prices (yuan/ton)\a/	893/1570/706	672/965/488
1990 urea/TSP/diesel border prices (yuan/ton)\a/	982/911/1425	815/751/478
Trade status for soybeans	Imported	Exported
Exchange rate (US\$/RMBY)	1.75	3.27
Standard conversion factor	NA	0.7
Constant price values	1982 values	1987 values\b/

- a. SAR at 1982 constant dollar value, PCR at 1987 constant dollar value, both are converted to RMB at exchange rate of 3.72
- b. 1987 constant values are used in the analysis, since a complete data set, in 1987 prices, was available when the PCR mission visited Heilongjiang in April, 1989.

Comments: FRR of the project is low. However, substantial reduction of the FRR is unlikely. This is because stagnation of grain production caused by low government purchase prices has become a national problem. It is very unlikely that the government will let grain parity prices drop further. As to foreign exchange risk, the government has recently allocated an annual soybean export quota of 40,000 tons to HGB. All the foreign exchange income from soybean export under the quota can be retained to repay the Bank's credit/loan. As a result, foreign exchange risk to the project authority has been greatly reduced. Considering the low borrowing costs (64% IDA, 36% IBRD), the project is still financially viable.

Table 9

PROJECT COMPLETION REPORT
Sensitivity Analysis
(Constant 1987 values)

	PCR value	Crossover value\c/	Change (%)	Elasti-sity\d/
Financial analysis				
Crop prices (yuan/ha.)\a/	428/784/304	479/787/340	12.0	8.3
Crop production costs (yuan/ha.) \b/	714	581.9	-18.5	-5.4
Total investment(million yuan)	523	382.8	-26.8	-3.7
Economic analysis				
Crop prices (yuan/ha.)\a/	731/776/546 (428/747/341)	586/622/437 (325/568/259)	-19.9 (-24)	5.0 (4.2)
Crop production costs(yuan/ha.) (yuan/ha.) \b/	679 (485)	954 (713)	+40.6 (+47)	-2.5 (-2.0)
Total investment(million yuan)	592 (543)	969 (1,038)	+63.7 (+91)	-1.6 (-1.1)

- a. Farm gate prices for wheat, soybean and corn at full development.
b. Weighted average of costs for wheat, soybeans and corn at full development.
c. Value of variable tested at which net present value of project costs and benefits (discounted at 12%) is reduced/increase to zero.
d. Percent change in net present value (discounted at 12%) due to a 1% change in the variable.

Numbers in parenthesis refer to SAR values.

Table 10

FILE:PCRTOTS

CHINA
HEILONGJIANG LAND RECLAMATION PROJECT

PROJECT COMPLETION REPORT

COMPARISON OF CROPPED AREA, YIELDS AND PRODUCTION \1

	1983	1984	1985	1986	1987	1988	1989	1990	1991- 2018
Culti. Area ('000 ha)									
SAR Estimates:									
Wheat	18	25	51	80	117	112	107	102	98
Soybeans	10	19	45	64	74	74	74	74	74
Maize	0	0	0	4	9	14	19	24	28
Total	28	44	96	148	200	200	200	200	200
Actual/Projected:									
Wheat	7	19	26	45	65	47	80	85	100
Soybeans	9	27	25	37	66	78	80	80	80
Maize	0	1	1	5	3	2	10	15	20
Total	16	47	52	87	134	127	170	180	200
Difference:									
Wheat	-6	-6	-25	-35	-52	-65	-27	-17	2
Soybeans	-1	8	-20	-27	-8	4	6	6	6
Maize	0	1	1	1	-6	-12	-9	-9	-8
Total	-7	3	-44	-61	-66	-73	-30	-20	0
Yield (tons/ha)									
SAR Estimates:									
Wheat	1.5	1.6	1.6	1.7	1.8	1.9	2.0	2.0	2.1
Soybeans	1.2	1.2	1.2	1.3	1.3	1.4	1.5	1.5	1.6
Maize	0.0	0.0	0.0	2.5	2.7	3.0	3.2	3.6	3.9
Actual/Projected:									
Wheat	1.6	1.3	2.0	2.1	2.1	2.1	2.2	2.2	2.3
Soybeans	1.0	1.0	1.2	1.5	1.3	1.2	1.5	1.5	1.6
Maize	0.9	0.9	3.3	2.4	3.1	2.0	3.0	3.6	3.9
Difference:									
Wheat	0.1	-0.2	0.4	0.4	0.3	0.2	0.2	0.2	0.2
Soybeans	-0.2	-0.2	0.0	0.2	0.0	-0.2	0.0	0.0	0.0
Maize	0.9	0.9	3.3	-0.1	0.4	-1.0	-0.2	0.0	0.0
Productions ('000 tons)									
SAR Estimates:									
Wheat	20	38	82	136	211	213	214	204	208
Soybeans	12	23	54	83	96	104	111	111	118
Maize	0	0	0	10	24	42	61	86	109
Actual/Projected:									
Wheat	11	25	52	95	137	99	176	187	230
Soybeans	9	27	30	56	86	94	120	120	128
Maize	0	1	3	12	9	4	30	54	78
Difference:									
Wheat	-9	-13	-30	-42	-74	-114	-38	-17	24
Soybeans	-3	4	-24	-28	-10	-10	9	9	10
Maize	0	1	3	2	-15	-38	-31	-32	-31

Note \1: Annual cropped area of other cereals, potatoes, sugar beet have not been included in above.

Table 11

FILE: COVENANT

CHINA
HEILONGJIANG LAND RECLAMATION PROJECT

Status of Covenants

Covenant	Subject	Deadline for Compliance	Status
Development Credit Agreement May 20, 1988			
3.01	Provision of adequate and timely annual budgetary allocations.	Annual	Total local budget fixed, no revision to reflect rising project costs.
3.02	Employment of consultants for technical assistance in planning, equipment maintenance, construction and seed processing.	--	No consultant was employed. Provision for technical assistance reallocated.
3.04(d)	Submission of Project Completion Report	9/30/88	Borrower is preparing Part II of PCR under new procedure.
3.05	Submission of annual program of works and financial plan for IDA review.	October 31	Irregular submission.
3.06	Maintenance of FIMD with adequate and experienced staff	--	Fully complied.
4.01(b)	Annual audited reports of project account.	June 30	Complied, but submission usually late.

PART III
Use of Bank Resources

Table 12

Staff Input

<u>Stage of Project Cycle</u>	<u>Planned HQ Field</u>	<u>Revised HQ Field</u>	<u>Final HQ Field</u>	<u>Comments</u>
Through Appraisal			80.8	SWs = HQ + Field
Appraisal through Board Approval			80.5	Ditto
Board Approval through Effectiveness			1/	Ditto
Supervision			90.9	Ditto
TOTAL			252.2 2/ -----	

1/ The time Recording System does not capture the stage category "Board approval through effectiveness". Currently, any inputs made after the board presentation is captured as "Supervision."

2/ The total excludes a 7.2 SW of LOP and 1.8 SW of PAD inputs.

KJKim:AS8AG

Table 13

Use of Bank Resources

Mission

Stage of Project Cycle	Month/Year	Persons	Days in Field	Specialization Represented	Performance Rating Status	Types of Problem
Reconnaissance	8/81	4	19	DC, Ag. Egr, Ag. Ecn, Egr.	-	-
Follow-up (management assessment)	11/81	1	21	Ag. Ecn.	-	-
Preappraisal	2/82	6	16	Ag. Egr, Egr, Ag. Mach, Ecn	-	-
Appraisal	5/82	6	26	Ag. Egr, Ag. Mach, Eng, Seed Spec.	-	-
Supervision 1	11/83	2	16	Ag. Egr, DC	1	T
Supervision 2	6/84	2	14	Ag. Mach, DC	-	-
Supervision 3	11/84	1	19	Seed Spec.	-	-
Supervision 4	6/85	3	17	Ag. Ecn, Ag. Mach, Egr.	2	T
Supervision 5	9/86	4	12	Agri., Ecn., Ag. Mach, Egr	2	T
Supervision 6	10/87	2	8	Egr, Ag. Ecn	2	M
Supervision 7	10/88	1	6	Egr	2	M
PCR	4/89	2	14	Egr, Fna	-	-

Table 14

Use of Bank Resources

Costs

Stage of Project Cycle	Total \$ Cost of Staff Inputs	Average \$ Cost of HQ Activities per Mission Member	Average & Cost of Field Activity per Mission Member
Through Appraisal)		
Appraisal through Board Approval)		
Board Approval through Effectiveness)		
Supervision)		

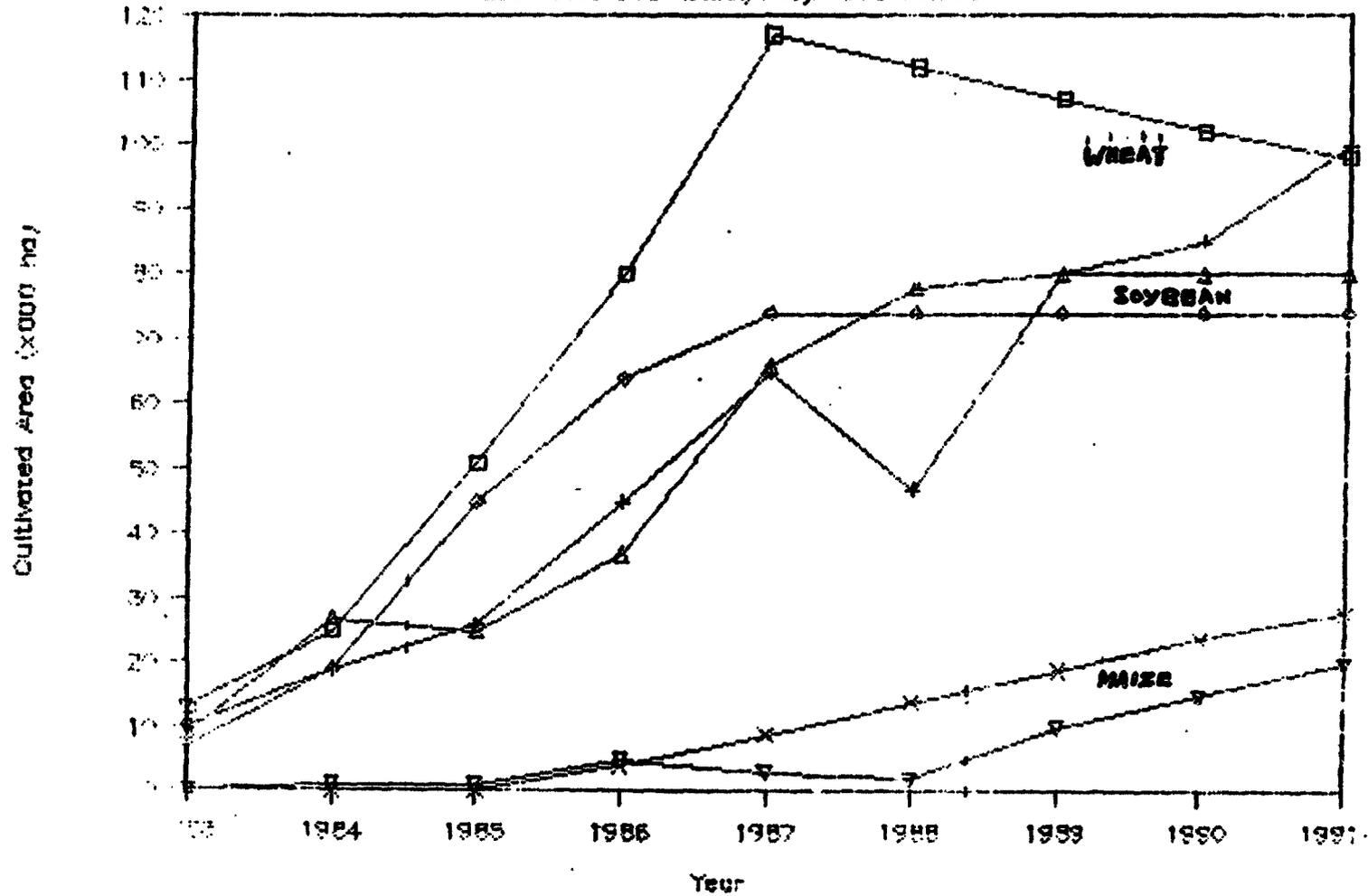
Cost data not available from MIS.

K.Kim:ASBAG

Heilongjiang Land Reclamation Project

Figure 1

Estimated and Actual/Proj. Area Cult'ed



- Wheat SAR Est.
- ◆ Soybean SAR Est.
- × Maize SAR Est.
- ♣ Wheat Actual/Projected
- ♠ Soybean Actual/Projected
- ♣ Maize Actual/Projected

Figure 2

Heilongjiang Land Reclamation Project

Estimated and Actual Production

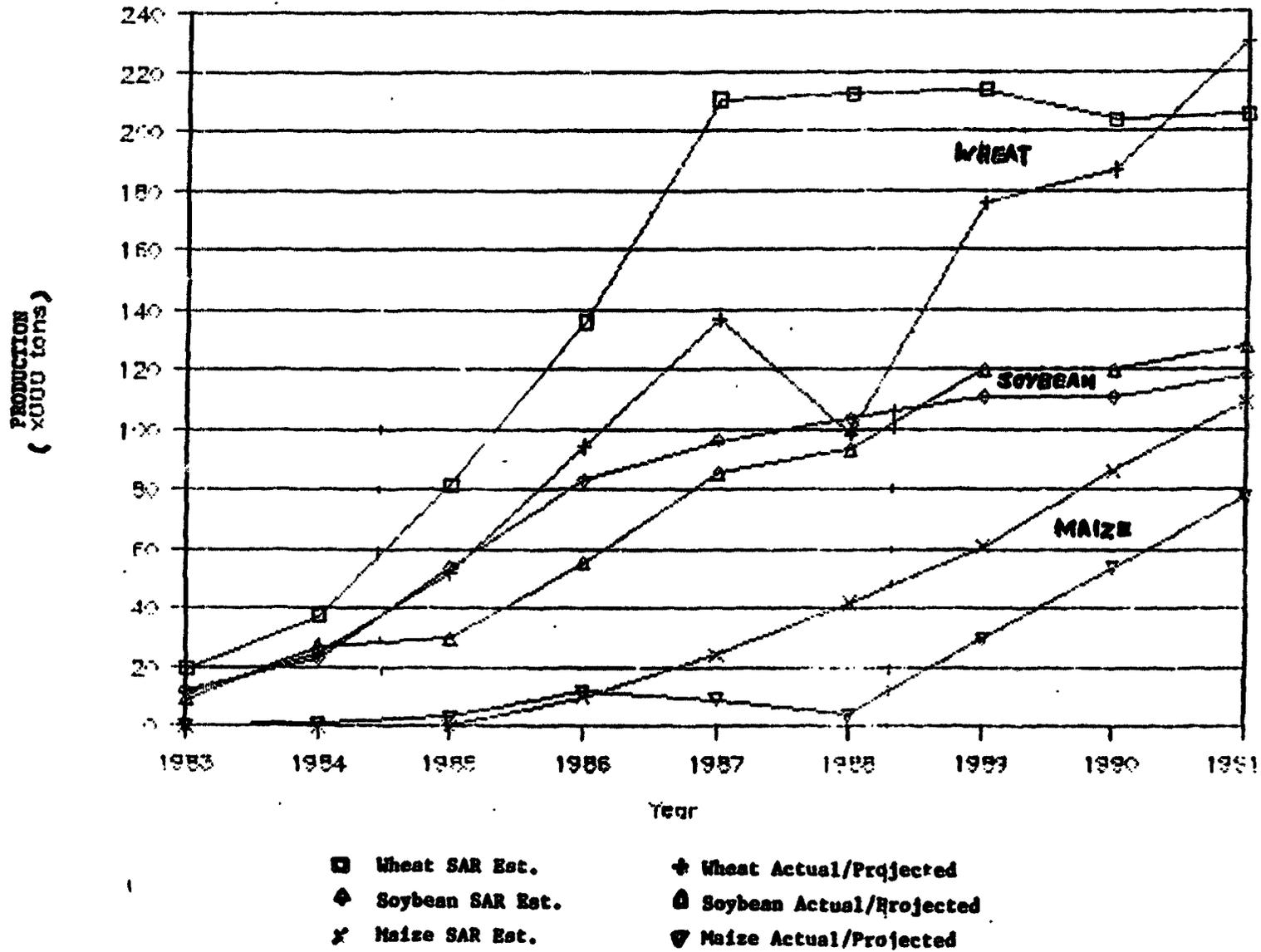
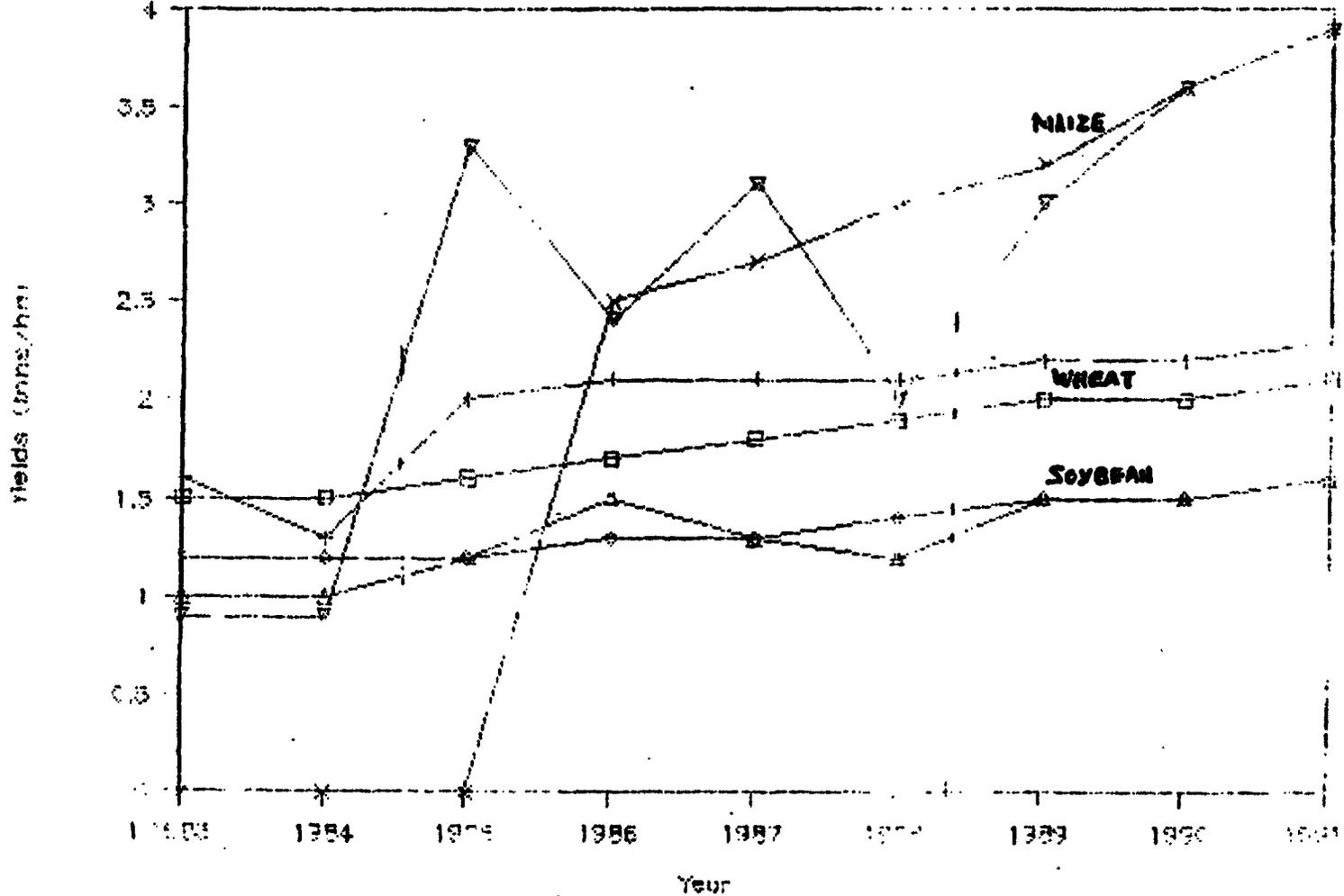


Figure 3

Heilongjiang Land Reclamation Project

Estimated and Actual/Proj. Yields



- Wheat SAR Est.
- ◆ Soybean SAR Est.
- × Maize SAR Est.
- ♣ Wheat Actual/Projected
- ◊ Soybean Actual/Projected
- ▽ Maize Actual/Projected

