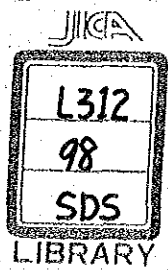


THE NATIONAL CANCER CENTER
ESTABLISHMENT PROJECT IN THE KINGDOM OF SAUDI ARABIA

BASIC DESIGN REPORT
[VOLUME I; PART-1, 2 & APPENDICES]

OCTOBER 1983



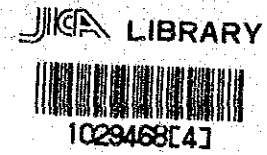
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国際協力事業団	
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PREFACE

It is with great pleasure that I present this report entitled "Basic Design Study of the National Cancer Center Establishment Project" to the Government of the Kingdom of Saudi Arabia.

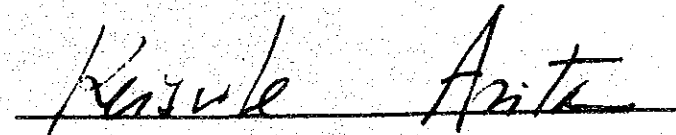
This report embodies the result of a basic design study which was carried out from October 1982 to October 1983 by the Japanese survey team commissioned by the Japan International Cooperation Agency following the request of the Government of the Kingdom of Saudi Arabia to the Government of Japan.

The survey team, headed by Mr. Masamichi Kataoka of Azusa Sekkei Co., Ltd., had a series of discussions on the Project with the officials concerned of the Government of the Kingdom of Saudi Arabia, conducted a wide scope of survey and prepared the present report.

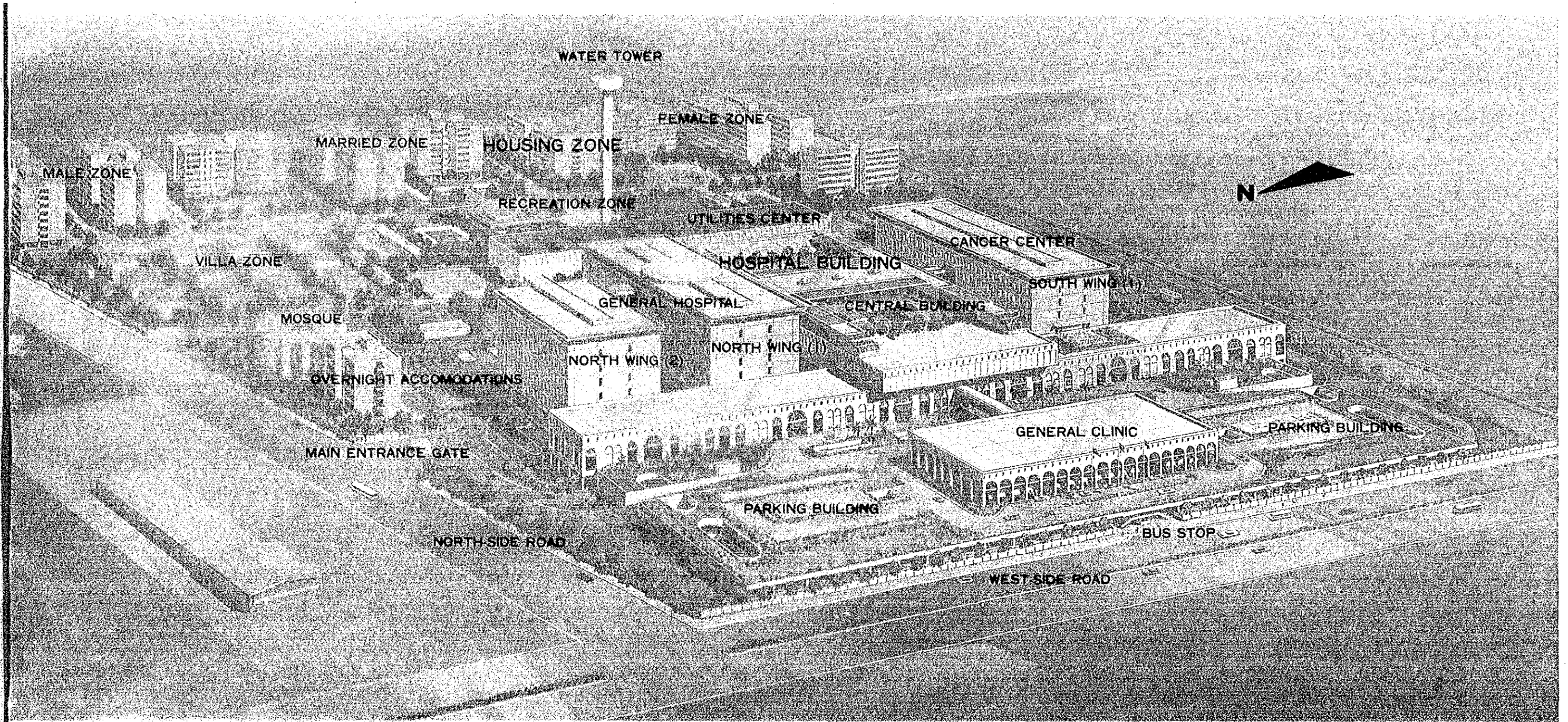
I sincerely hope that this report will be useful as a basic reference for development of the Project.

I wish to express my deep appreciation to the officials concerned of the Government of the Kingdom of Saudi Arabia for their close cooperation extended to the Japanese team.

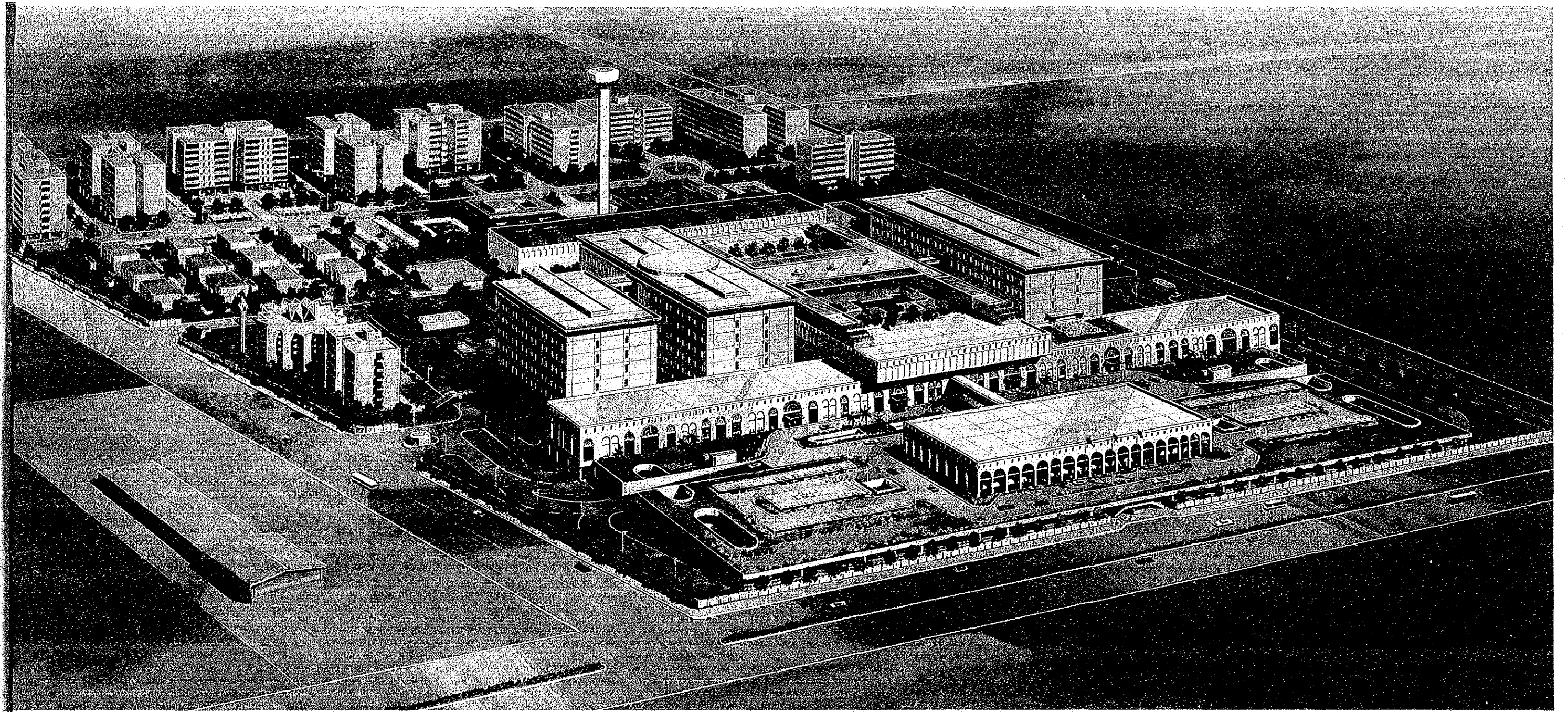
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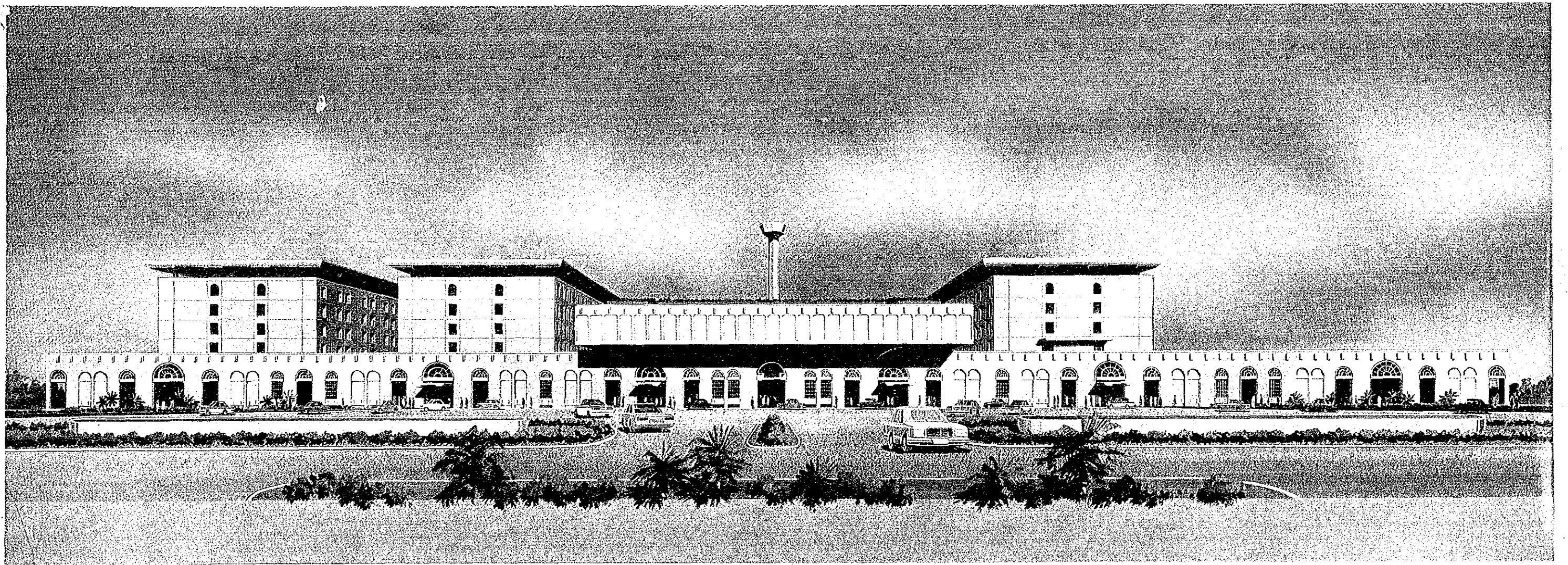
Keisuke Arita
President
Japan International Cooperation Agency



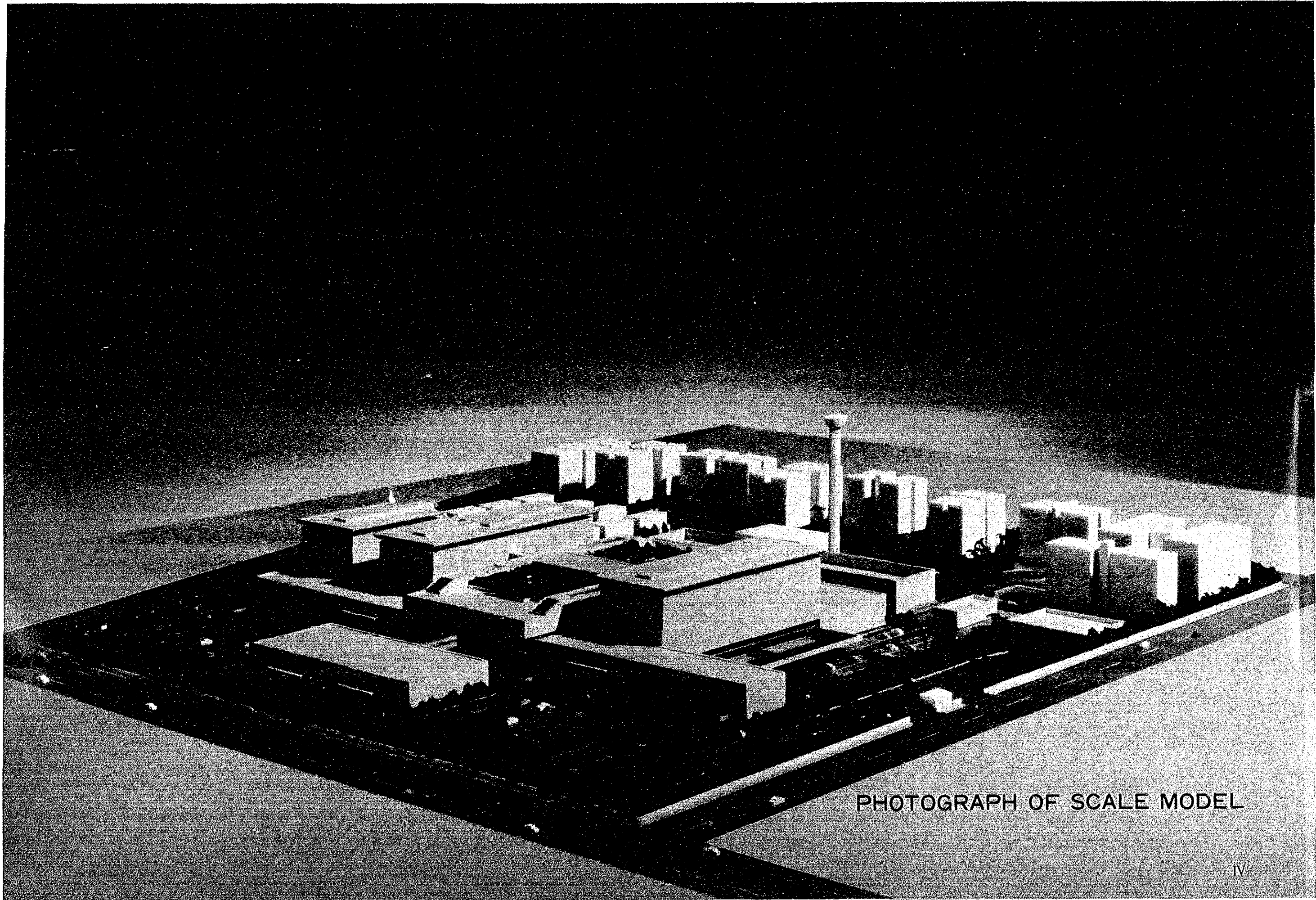
BIRD'S EYE VIEW



BIRD'S EYE VIEW



PERSPECTIVE



PHOTOGRAPH OF SCALE MODEL

S U M M A R Y

1. OVERALL DESIGN REQUIREMENTS

To meet the growing problem of cancer and other circulatory organ diseases, the Government of Saudi Arabia requested the technical cooperation of the Japanese Government to establish a National Cancer Center in the Red Sea port city of Jeddah. In response, the Japanese Government sent missions to Saudi Arabia for discussions and exchange of views (a basic mode of operations for the joint venture), resulting in an agreement by both governments in August 1982 on the purposes, the Basic Concepts, and the Scope of Work of the Cancer Center. Work began immediately on the design of the Cancer Center.

The Cancer Center will provide specialized diagnostic, therapeutic, and clinical research and staff training services, and establish diagnostic and therapeutic systems and an information dissemination system on these diseases.

In addition, in compliance with the Saudi Arabian Government's wishes, the Cancer Center is to be built alongside a General Hospital, with Joint-Use Facilities being provided to enable savings through centralization and sharing of administrative services, maintenance and operations, personnel, construction, and facilities and equipment costs.

In November 1982, at the beginning of the conceptual design for the Cancer Center, the Saudi Government strongly requested the building of a General Hospital alongside the Cancer Center and changing a part of the design to provide overall diagnostic and therapeutic services, efficient management and savings in construction costs. The scope of work for this conceptual design was to be limited to the Cancer Center, the Joint-Use Facilities, and all facilities, medical equipment and management equipment necessary for the joint operation of the hospital complex.

The Joint-Use Facilities will provide services of common usage, such as diagnostic, therapeutic, management, maintenance and service departments. The Mosque, the overnight accommodations, the staff housing, the welfare facilities, and the shops and parking are also planned for joint use.

The basic conditions arising from the construction of a joint Cancer Center and General Hospital - such as function, size, scope of joint use, arrangement of facilities, site plan, structure, and equipment - were clarified at the conceptual design stage.

The basic design of the Cancer Center and the Joint-Use Facilities and services were completed at the basic design stage.

The basic design was planned to provide an efficient operation of the complex, a comfortable environment, sturdy disaster-resistant structures, and easy maintenance. The facilities were designed with due respect for the religion and customs of the people of Saudi Arabia. The mechanical and electrical systems and the arrangement and the construction of the structures were designed to allow for the future extension of the wards, the research center, and the therapeutic department.

2. CONDITIONS AND GENERAL REQUIREMENTS

The Cancer Center is located east of the old international airport in Jeddah, and the area of the site is 138,703 m².

The Cancer Center, the General Hospital and the Joint-Use Facilities are planned to perform their respective functions and avoid overlapping services.

The entire hospital complex is planned to accommodate approximately 550 in-patients, 3,000 out-patients, 250 emergency patients and 2,000 visitors daily. It will be operated by 1,000 medical, 300 administrative, 130 energy and maintenance, and 640 service personnel for a total staff of 2,070.

The Cancer Center will have 200 beds and special diagnosis and therapy departments, such as radioisotope diagnosis, radiotherapy, chemotherapy and radioisotope therapy. It will also have a clinical research department and a cancer information center.

The General Hospital will have 350 beds, with general diagnosis and therapy departments such as casualty, hemodialysis, obstetrics, baby nursery, burns departments.

The Joint-Use Facilities will have a general clinic, radiodiagnosis, endoscopy diagnosis, physiology diagnosis, clinical laboratory, autopsy, surgery, C.C.R.U., rehabilitation and blood bank sections in addition to common service, maintenance, recreation and administrative units.

Future extension plans include 100 beds for the Cancer Center, 150 beds for the General Hospital, and provisions for extension in mass screening activities, a radiodiagnosis clinical laboratory, and a research center.

3. SITE PLANNING AND LANDSCAPING

The landscaping of the Hospital Complex will be designed to ameliorate the harsh desert environment by providing greenery such as trees, shrubs, flowers, lawns and climbing creepers on the walls of residential buildings.

Cleanliness, visual effect, easy irrigation and economical maintenance, as far as possible, will be considered by providing simpler planting designs and extensive use of planter boxes.

The basic axis of buildings will be east-west to minimize the heat absorption by the buildings. Shade trees will be planted and precast concrete blocks with lawn patches will be provided to minimize solar heat reflection.

The area will be surrounded with concrete walls with a green belt on the inside periphery to minimize sand infiltration. The buildings will be provided with wind screens, air-tight fittings and sand trap filters to prevent sand infiltration. Sprinklers will also be provided to control sand and dust.

The ground level of the periphery will be raised higher than that of the surrounding roads to prevent storm waters from flowing into the area. The drainage of storm waters will be controlled by seepage pits and forced drainage to the public roads.

The hospital buildings will be located on the western side of the site, and the residential zone will be located on the eastern side of the site.

The main entrance to the hospital will be located on the north side road, with separate accesses to the General Clinic and to the Cancer Center. A pedestrian entrance will be located on the west side road in front of the General Clinic. The entrance to the residential zone will be located on the east side road.

The parking area for the hospital will be under the General Clinic and the hospital building with sufficient space to park approximately 2,500 cars.

The roads within the complex will be on a one-way traffic pattern, and exit gates will be located on the south side road. Also, separate service entrance and exit gates will be located east of the main hospital entrance to prevent service vehicles from obstructing the hospital traffic.

4. DESIGN OF THE CANCER CENTER COMPLEX

The hospital structures will consist of a four-story central building, two seven-story north-wings, a seven-story south-wing, and underground parking areas under all the buildings. The entire complex will consist of the Cancer Center, the General Hospital, the Joint-Use Facilities, the Utilities Center the service facilities, the mosque, the housing, the parking, the recreational and other facilities necessary for a hospital community.

The hospital buildings will house the Cancer Center and the General Hospital, with the Joint-Use Facilities (the main diagnosis and therapy departments) in the central building, along with both Out-patient Departments. The wards and the clinical research of the Cancer Center will be in the south wing; and the O.P.D., the casualty, and the wards of the General Hospital in the north wings. The general clinic, a two-story building connected to the hospital buildings by one underground tunnel and an overhead passage, will be in front of the main building. The utilities center will be housed in a two-story structure behind the main building and connected by two trenches.

These departments and buildings will be arranged to provide a simple horizontal and vertical circulation of personnel and materials. A central north-south corridor will connect the Cancer Center, the central building, and the wards of the General Hospital. The vertical circulation (elevators, stairways, etc.) will be arranged along this main corridor to simplify the overall circulation.

Utilities spaces will be arranged in each of the diagnosis and therapy departments to assure adequate space flexibility, easy operational control and maintenance and lower space readjustment costs.

There will be a water tower to supply water to the entire Complex. The mosque and the overnight accommodations, a six-story building, will be to the north of the hospital building.

Housing for married and unmarried doctors, nurses, and single male and female professional staff will be provided in two-story villas and multi-level structures.

Ordinary waste water and radioactive waste water generated by the Complex will be treated in separate facilities to assure safety. There will also be a recreation center with facilities for outdoor recreation and a building to house a restaurant, a bank, a library, a supermarket, and a number of shops.

5. MANAGEMENT OF HOSPITAL COMPLEX

A dual-structured administrative organization -- the Hospital Administration and the Medical Administration -- is being proposed to assume the hospital complex management on the one hand, and the medical administration on the other to maintain the integrity of the medical profession and still provide for an efficient overall management of the combined Cancer Center and the General Hospital.

The Hospital Administration consists of the General Business, the Services, the Maintenance, and the Computer Center. They will serve the Cancer Center and the General Hospital in these areas. The Medical Administration will oversee eight departments -- the Cancer Center's Medical Staff, Nursing, Medical Service Staff, and the Sub-General Business Departments; and four other identical departments for the General Hospital. These will provide professional and technical medical services to the combined institutions.

The General Business Department of the Hospital Administration will supervise the manpower control for the Cancer Center and the General Hospital, handling such functions as the employment of personnel and the dispatching of service personnel requested by both institutions. The Hospital Audit will oversee medical expenditures, and the Public Relations Department will keep the public informed about health and medical services available. With future growth, the Research Unit, housed within the Medical Administration, may become an independent department.

A management team consisting of the Executive Director and the top administrators of the Cancer Center and the General Hospital will be responsible for the overall budget-making and management control of the Cancer Center Complex. In the day-to-day operations, administration and medical conferences and meetings will need to be held within the two administration structures and between them for necessary communication and for smooth and efficient operation, good morale, problem-solving, planning, and decision-making.

A computer system, servicing the Cancer Center, the General Hospital, and the Joint-Use Facilities, (and serving in the future as a medical information center for the entire nation), will be installed to provide an efficient general and medical administration and medical services. This computer system will manage the following four systems: (1) patient diagnosis/therapy; (2) central diagnosis/therapy; (3) Hospital Administration; and (4) Research and Training.

In addition, to provide such services as taking orders, making reservations and charges, and keeping and giving back administrative and medical data, etc., the Computer Center will maintain subsystems for the following: (1) Out-patients/in-patients; (2) Medical histories; (3) Clinical records; (4) Clinical laboratory; (5) X-ray department; and (6) Special diagnosis/therapy.

To develop this computer center program, the efforts of approximately 50 programmers will be required over a two-year period. It is critically important, therefore, that work on this phase begin at least two years before the opening of the National Cancer Center Complex. When completed, this computer system will need approximately 30 operators and another 90 individuals to support the system.

6. SPECIAL CONSIDERATIONS

In respect to the circumstances of the locality and the religion and customs of the people of Saudi Arabia, the following are being provided for the hospital community:

- 1) A Mosque and a praying room for in-patients on every ward floor
- 2) Overnight accommodations for visitors from outlying districts
- 3) Separate waiting rooms, lobbies, and swimming pools for males and females
- 4) Separate housing facilities for married and unmarried, males and females, professionals and non-professionals
- 5) Earthquake and fire-resistant structures
- 6) An emergency electric power system
- 7) A special radioactive waste disposal facility
- 8) A water recycling system
- 9) Stand-by equipment for the operation of the system and adequate spare parts and supplies.
- 10) Special landscaping, solar, and sand control arrangements.

7. THE PROJECT SCHEDULE AND THE FUTURE

The tentative project schedule contains a Phase 1 Basic Design period of 12 months to end in October 1983; a Phase 2 Detailed Design period of 10 months following that; and a Phase 3 Construction period of approximately 36 months.

It should be pointed out that this tentative project schedule does not include (1) the preparation time for the Detailed Design between Phases 1 and 2 when a consultant need to be hired, and (2) the preparation time for the construction bidding process between Phases 2 and 3. Both preparation times will involve the Saudi Arabian Government in negotiations and the bidding process.

In accordance with the Saudi Arabian Government's request in August 1983, the Detailed Design period and the Construction period were shortened from 12 months to 10 months and from 42 months to 36 months, respectively. This schedule, it should be pointed out, is very tight.

The Detailed Design period of 10 months will be an especially tight schedule if tender documents are to be prepared for international bidding. Therefore, in order to complete the design within the scheduled period, the consultant and the Saudi Arabian Government must fully discuss and clarify such items as those listed below before proceeding with the Detailed Design. It would be desirable if the Saudi Arabian Government would assume flexible measures.

- 1) Clarifying the scope of work, for example, whether documents in Arabic are required.
- 2) Designating a responsible Saudi Arabian party with authority to discuss and decide on design matters.
- 3) Clarifying the authority to grant the final approval of the Design.
- 4) Facilitating coordinating services and assistance such as the issuing of visas.

Whether the construction period of 36 months can be met, will depend greatly on the capability of the selected general contractor. Therefore, the general contractor should be carefully selected, bearing in mind that a cancer center is a specialized institution.

It is also necessary to call special attention to the necessity of beginning work on the Computer Center program development as soon as possible in order that this critical management element will be ready to function with the opening of the National Cancer Center Complex.