

**SPECIAL
EDITION**

CP Air **NEWS**

FAMILY DAY '74



A Message from the President

To Our Guests—

Welcome to the CP Air Operations Centre. During your visit, I am sure you will be impressed with the variety of skills, the multiplicity of specialized equipment and processes, and the meticulous attention to detail comprising the ground support of a modern airline's flying operation.

The dependability with which our aircraft traverse the 55,000-mile pattern of the airline's domestic and international routes derives from the carefully programmed servicing and overhaul of every component during periodic visits to the Operations Centre. Thus the airliner and all of its intricate components are totally rejuvenated at frequent intervals, emerging from the mainte-

CP Air is a growing concern. In fact, the company's total personnel is now approaching the 6,500 mark. Heavy growth during 1973 is reflected in a total figure of 6,469 employees at the end of the year and a payroll in excess of \$65 million.

Breakdown of employees and wages show British Columbia as the largest area with 4,088 employees and a payroll of \$43,661,000 followed by Ontario where 735 employees drew an annual wage of \$8,255,000. Other Canadian locations are: Alberta, 144 (\$1,313,000); Manitoba, 76 (\$730,000); Quebec 457 (\$3,971,000); Nova Scotia 2 (\$21,000); Yukon 46 (\$384,000).

Employees outside Canada now number 921 with an annual payroll close to seven million dollars.

Further increase within the airline is reflected in a record number of passengers carried during the year. In 1973 1,755,749 boarded our aircraft compared to

WELCOME TO CP AIR'S WORLD!

From a start early in the 1940's, servicing routes originally pioneered by adventurous bush pilots, CP Air soon became an international airline. In July 1949, it inaugurated a route between Vancouver and Hawaii, Fiji and Australia, and later the same year, Canada's much-wanted air-bridge to the Orient, with service to Tokyo and Hong Kong.

Today, in addition to Executive

Israel in the Middle East, to Mexico City, Guadalajara, Puerto Vallarta and Acapulco in Mexico, and to San Francisco on the United States' West coast. In 1973 it was authorized to operate a regular service between North America and the People's Republic of China.

In addition to its passenger service, CP Air offers a full air cargo service wherever it flies, and maintains cargo representa-

I hope you enjoy your Family Day visit.

John C. Gilmer
President
CP Air



year. Revenue passenger miles also increased to 3,061,091,836 from a previous total of 2,890,606,271.

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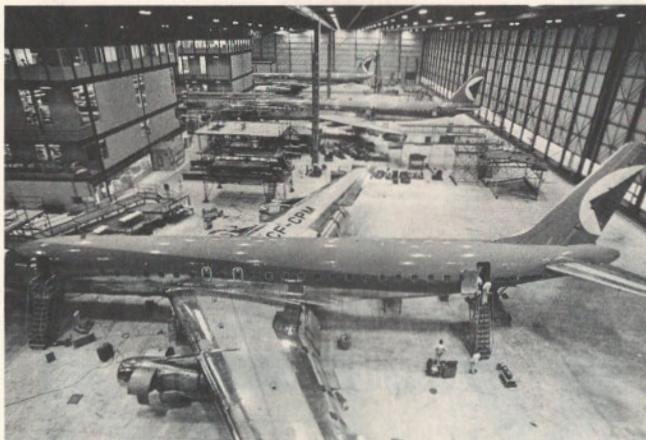
service between Montreal and Vancouver, CP Air has extended Canada's aerial trade and travel routes to Peru, Chile and the Argentine in Latin America, to the Netherlands, Portugal, Spain, Italy and Greece in Europe, to

lives in many cities around the world. CP Air's sophisticated jet fleet covers a domestic and international network of some 55,000 miles, serving five continents through 400 offices and scores of cargo and operations bases.



SuperOrange 747 Souvenir Inside

Operations Centre Highlights



Hangar including Upholstery and Survival Shops

The main hangar is divided into three bays 200 feet by 300 feet and is 68 feet high. It can accommodate any aircraft presently flying or announced including supersonic and jumbo jets.

Upholstery . . . In this department, all aircraft furnishings including seat covers, drapes, window curtains, cargo nets and carpets are manufactured and maintained.

Survival . . . Here all liferafts, escape chutes, life jackets and safety equipment carried on aircraft are tested and repaired.



Purchasing and Stores Department

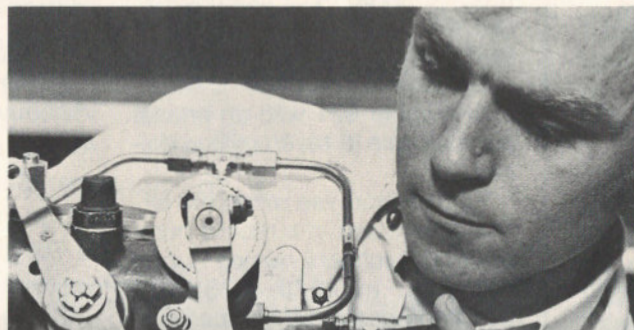
Approximately 93,000 square feet on the second floor are devoted to the purchasing and stores department where parts totalling more than \$12 million in value are kept in order to maintain and service aircraft flying for CP Air. In addition, general stores for the upkeep of the administrative and operational sections are purchased by this department. The department, which has a staff of 100, also includes a large printing and stationery area where travel brochures, schedules, menus, forms and publications allied with airline administration are printed for CP Air locations around the globe. A large shipping and receiving area on the first floor is part of this department.

Instrument Shop

Air data instruments, flight data recorders and engine and sub-system instruments, and control surface position indicators required for safe and efficient operation of the aircraft are maintained in the instrument shop. All precision parts are cleaned ultrasonically before being assembled in the instruments. The fuel flow room is where instruments are calibrated to indicate the amount of fuel being consumed by each engine.

Navigation Instruments

This department is responsible for the overhaul and calibration of all gyros, compasses and sextants used on the aircraft. It has a special room that is rigidly controlled for constant temperature and a dust-free condition. Specially-trained personnel working here wear dust and lint-free clothing.

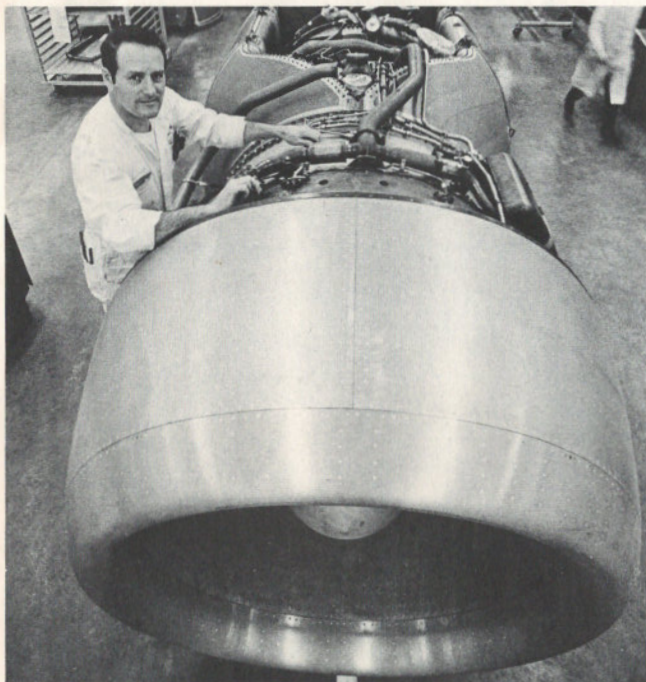


Tire and Brake Shop

Wheels received from component overhaul are disassembled and checked in this area. If the hubs warrant an overhaul they are cleaned, ultrasonically tested then reassembled with replacement of any worn parts. Brakes are examined and new linings installed and rotors changed and fitted when necessary. A complete brake overhaul is carried out after four pad changes. Replacement tires for aircraft both new and retreaded are held in this shop. A DC-8 has two nosewheels and eight main wheels. Cost of a complete wheel and tire unit for a nosewheel is \$887. Price of a main wheel is \$1,733. In addition to two nose wheels, a 747 has 16 main wheels which cost \$1,950 each. CP Air spends approximately a quarter of a million dollars annually on aircraft tires.

Computer Room

Two multi-million-dollar computers, an IBM 370/145 and an IBM 370/158, are used to process employees' pay records, provide figures for revenue accounting, billings to other airlines, passenger sales information, aircraft check times, and rotatable spares control data. The department, formed in 1960 with three staff members, now numbers more than 130.



Jet Engine Overhaul

A department which has the capability of handling every phase of jet engine overhaul from very detailed inspection using microscopes and X-ray through to final test. The major components of each engine, valued at half a million dollars and weighing 5,000 pounds must at final assembly be in perfect balance to one tenth of an ounce per inch of engine radius. This is equivalent to the weight unbalance of a feather. All engine accessories, fuel controls, fuel pumps, regulators, etc. are given specialized treatment in a section of this shop equipped for highly-sophisticated test treatment. Pratt and Whitney JT3D engines for DC-8 aircraft, JT8D for Boeing 727 and 737 jets, and JT9D-7A engines for the 747 are overhauled and repaired here.

Accessory Department

Overhaul and service of components which are removed from the aircraft as self-contained functional units are maintained here. These units include pneumatic, hydraulic, fuel, electrical, fire protection, oxygen, engine controls, aircraft waste and water units, starting, heating, refrigeration and braking equipment. Special aircraft accessories such as automatic rain controls for windshields, wing de-icing and cabin pressure controls are overhauled by specialists in this shop. More than 750 components supplied by many individual manufacturers are serviced in this department.

Goods receiving

This area, measuring 20,000 square feet, is used for the receiving of materials. It is part of the stores department and is equipped with eight large automatic doors opening for delivery vehicles. As stores are received they are checked and placed on a large freight elevator capable of lifting five tons which moves them direct to the stores department for distribution or holding until required. As well as incoming stores, all equipment and material leaving the centre is handled through this department.

Plastic and Woodwork

As in most industries, woodwork is gradually being replaced by plastics and the major fabrication in this department is by fibreglass or reinforced plastics. Various parts of the aircraft such as cargo doors, cabin floors, structural angles and radomes are repaired here. Another important phase of aircraft maintenance, the repair and overhaul of windows is the responsibility of this department.

Sheet Metal Department

All modifications requiring sheet metal work and riveting are carried out here. This includes the repair of aircraft galleys, food tray carriers, bar trolleys and ovens. Other aircraft component parts repaired in the sheet metal department include ejector reversers, trim tabs, engine nose cowls, flaps, cabin seats, wing tips and numerous individual engine parts. Some aircraft components now use titanium which is much stronger and more heat-resistant than aluminum.

Airframe Cleaning

This shop is part of the component overhaul department and the main operation is the cleaning and removing of grease and paint from parts directed to the overhaul area. This is the most modern shop for cleaning aircraft parts in Western Canada. Steam, detergents and hot degreasers are used rather than solvents for the cleaning. This department operates on an eight hour daily shift.

Component Overhaul

All aircraft landing equipment is overhauled and repaired in this department. A complete landing gear overhaul takes a minimum of two weeks as all bushings, fittings and bolts must be fitted to a close tolerance. Crew seats are repaired as well as control cables, hydraulic fittings and plumbing lines, both steel and aluminum. Wheels are removed and sent to the tire and brake shop where they are overhauled.



Radio Shop

The radio-electronic shop is responsible for the repair and overhaul of all HF (high frequency), VHF (very high frequency) and UHF (ultra high frequency) communication and navigation equipment carried on the aircraft. This includes ADF (automatic direction finder), LORAN (long range navigation), weather radar, Doppler radar, transponders, DME (distance measuring equipment), VOR (VHF omni range), ILS (instrument landing system) and low range radio altimeter, in addition to IFS (integrated flight system), INS (navigation) equipment, automatic pilot, flight data recorder and cockpit voice recorder. To maintain this equipment the shop is equipped with more than \$500,000 worth of the latest test equipment.

Engine Cleaning Shop

This shop is geared to provide the type of cleaning demanded by the exotic metals used in today's jet engine. Chemicals are constantly analysed here to ensure that each part is properly cleaned to the high standard required. Because of the different metals encountered this analytical process is extremely important to each cleaning operation.

Plating Shop

Equipment and skills necessary to provide a very specialized type of plating are found here. The type of plating ranges from cadmium to special coatings required to withstand the exceptionally high temperatures of jet engine operation. Associated with this shop is a laboratory that constantly monitors the plating baths to ensure that no contamination will mar the final process.

Machine Shop

A general machine shop operation excepting that all work is to a much finer tolerance than required in many older industries. Some equipment requires work of two-tenths thousandths of an inch, which is less than the diameter of a human hair.

Welding Shop

This section is responsible for the welding of all aircraft parts such as engine cowls, engine parts and accessories. It also services all equipment used in the hangar for aircraft maintenance. The latest electric arc and oxy-acetylene welding equipment is used here. Twenty-four different types of welding rods are used on jet engines. Engine parts are placed in an oven prior to welding and heated to appropriate temperatures. They are then held at this heat for two hours, then reduced one hundred degrees every 15 minutes. The welding shop is now equipped with a plasma and wire flame spray shop for building up metal on worn parts.

Paint Shop

In this modern, dust-free, well-ventilated shop all aircraft parts requiring paint are processed. It is equipped with two waterfall-type spray booths. The purpose of the water is to absorb overspray and with chemical additives reduce fumes to a minimum. There is also a drying room heated to 200 degrees to accelerate drying of certain component parts. On aircraft, equipment called "Air-

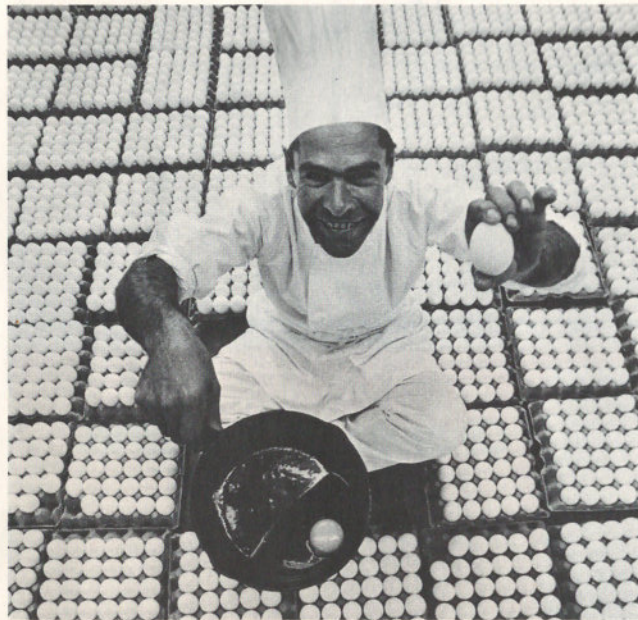
Did You Know

- The Operations Centre cost \$24 million, has 870,000 square feet of floor area and covers 52 acres of land.
- Over 2,000 foundation pilings were installed on the site to support the weight of the building and aircraft under repair.
- The main columns weigh 72 tons each, provide a clear height of 68 feet inside the hangar and are each 95 feet in length.
- The main carrying truss is 200 feet long and weighs 142 tons. It is the largest one-piece truss ever erected in Western Canada for a commercial building.
- The largest hangar doors in Canada enclose the north side of the building. The three doors each measure 200 feet wide by 70 feet high and weigh 160 tons.
- The hangar has the first concrete floor in Canada with a white metallic finish. To give the floor a bright, light-reflecting finish, 135 tons of pigmented iron compound were incorporated in the flooring.
- The site was pre-loaded with over 200,000 cubic yards of sand pumped from the nearby Fraser River prior to construction.
- The third floor of the structure is really five floors high and is solely office space. This one floor alone has an area of available office space equivalent to that found in an average 14-storey building.
- The hangar area is fitted with a foam deluge system for fire-fighting which will flood the entire area, equal to three football fields, in 10 minutes.
- The in-flight kitchen measures 32,000 square feet making it one of the largest kitchen areas in Western Canada.
- The multimark on each side of the building is 20 feet high and has letters nine feet high. The whole display is 63 feet long and weighs 3,800 pounds.
- Over 60,000 feet of cable were used in the installation of the communications system in the building. The custom-designed equipment used 180 column speakers, 500 ceiling speakers, 30 high power horns and 40 amplifiers.

CP Air's aircraft identification system

Serial No.	Model	Fuselage No.	MOT Reg'n	CP Air No.	Selcal Code	Empress
Douglas DC-3 19276			CRX	177		
Boeing 727 20327	100	E3681	CPN	721	BE-HJ	

less spray is used. This again reduces overspray and permits other work to proceed in the area. When an aircraft is repainted it must be completely stripped of old paint in the hangar, masked and sprayed. The large DC-8 "Spacemaster" jet requires 24 gallons of special paint while a 747 requires six times that amount. This operation is carried out when the aircraft is undergoing a major overhaul and takes about one week.



Flight Kitchen

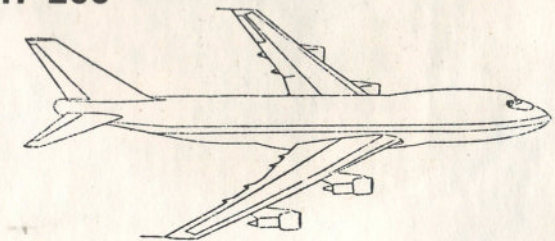
The flight kitchen measures 32,000 square feet and is one of the largest kitchen areas in Western Canada. In this section, more than 1,000,000 meals are prepared annually to supply gourmet food for CP Air flights. A large staff directed by 14 European chefs operates the flight kitchen on a 24-hours-a-day, seven-days-a-week schedule. To supply requirements of passengers flying out of Vancouver, the airline prepares annually 67,000 lbs of chicken, 25,000 lbs of turkey, 80,000 lbs of beef, 15,000 lbs of fresh salmon, 10,000 lbs of Alaska crab and lobster and 6,000 dozen grade "A" large eggs. This is supplemented by 112,000 quarts of milk. Such provisions supply the flights out of Vancouver only. At other flight provisioning points in Canada and abroad, food preparation is contracted out to commercial caterers. But these firms work to rigid standards maintained by CP Air. The freshly prepared food is placed into electric ovens in the aircraft galley just before take-off and served piping hot during the flight.

20528	100	E3682	CPK	722	BE-HK	
20512	100	E3683	CUR	723	BE-GK	
20513	100	E3684	CUS	724	HJ-AG	
Boeing 737						
19884	200	P2553	CPB	701	DK-HM	
19885	200	P2576	CPC	702	DL-HJ	
19886	200	P2577	CPD	703	DL-AH	
19887	200	P2586	CPE	704	DL-BC	
19888	200	P2588	CPU	705	DL-BF	
20196	200	P3503	CPV	706	DL-CG	
20197	200	P3504	CPZ	707	DL-HM	
Boeing 747						
20801	200	R1055	CRA	741	HJ-AL	Asia
20802	200	R1056	CRB	742	HJ-BC	Canada
Douglas DC-8						
45620	43	124	CPF	601	DL-FG	Rome
45623	43	130	CPG	602	DL-FJ	Buenos Aires
45621	43	132	CPH	603	DL-GH	Lima
45622	43	137	CPI	604	DL-GJ	Amsterdam
45661	43	183	CPJ	605	DL-GK	Mexico City
45809	53	264	CPM	607	DL-HK	Lisbon
45858	55F	274	CPT	608	DL-AB	Santiago
45926	63	323	CPO	801	DL-AE	Tokyo
45927	63	327	CPP	802	DL-CM	Honolulu
45928	63	334	CPQ	803	DL-EF	Hong Kong
45929	63	367	CPS	804	DL-JK	Madrid
46095	63	497	CPL	805	HJ-AK	Athens

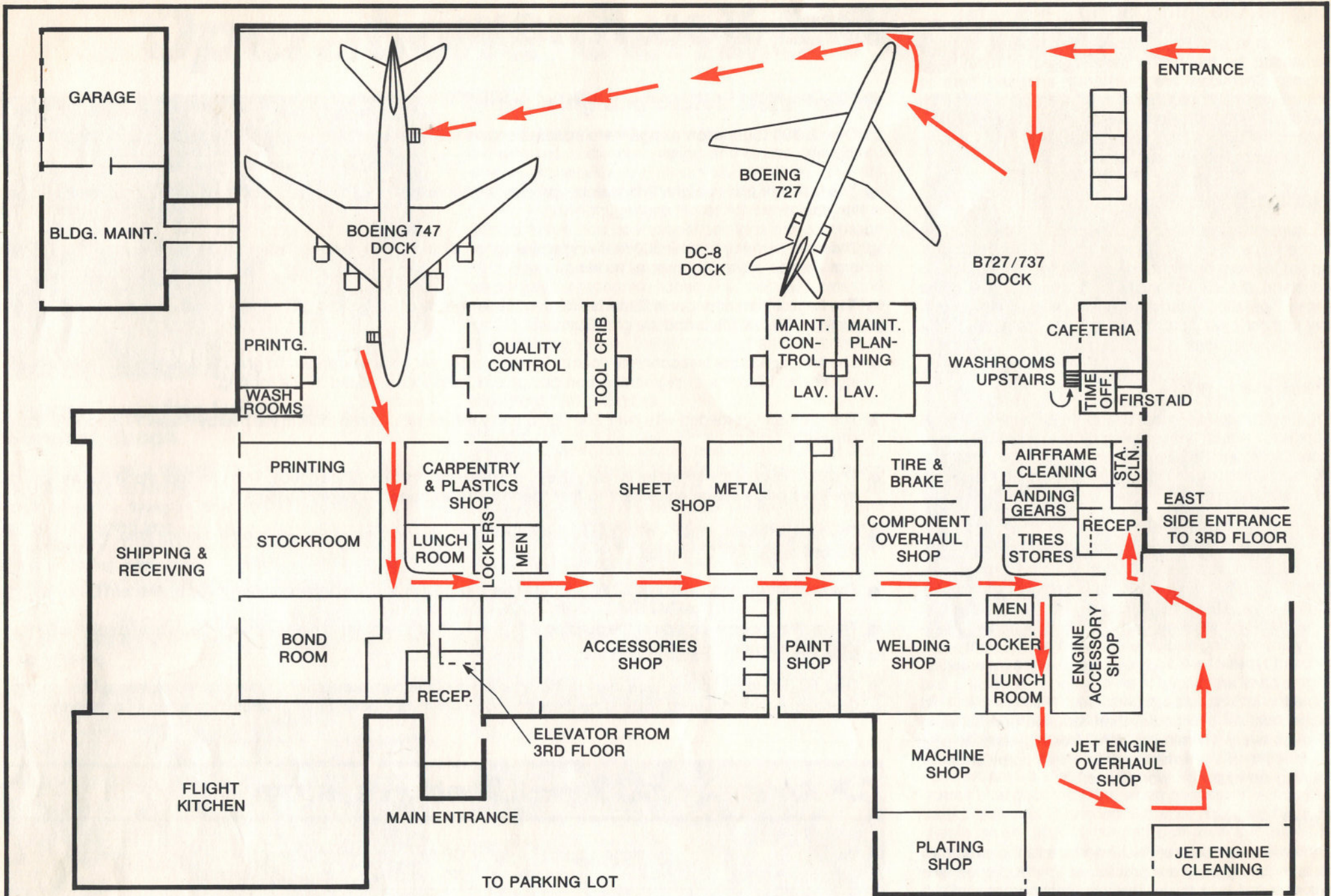
Under order by CP Air at the present time are two additional Boeing 747s for delivery late this year and two Boeing 727 aircraft for delivery in 1975. This will bring the total number of Boeing aircraft in CP Air's fleet to 17 which includes 727, 737 and 747 equipment.

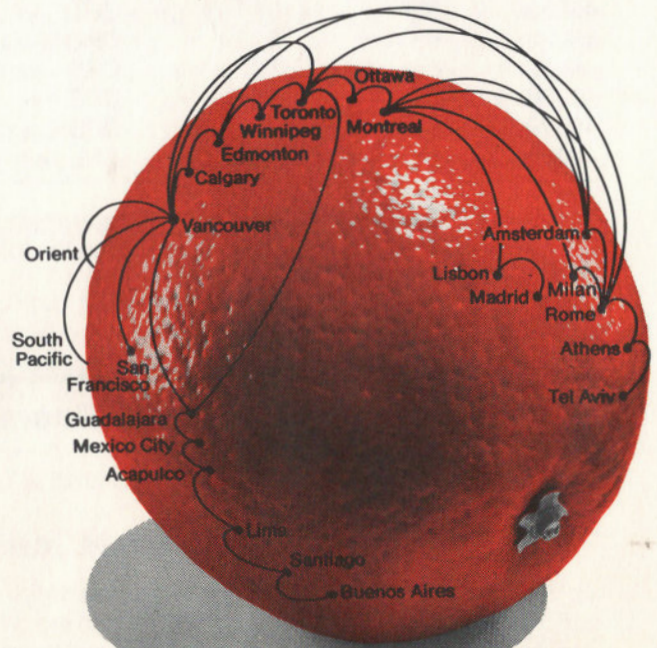
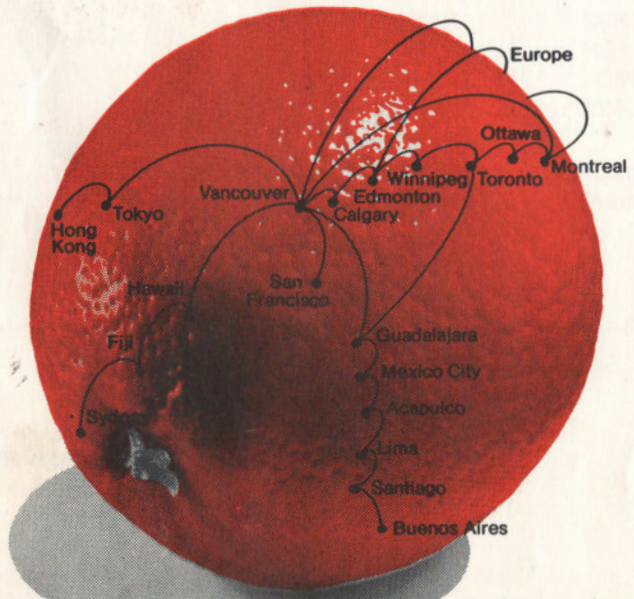
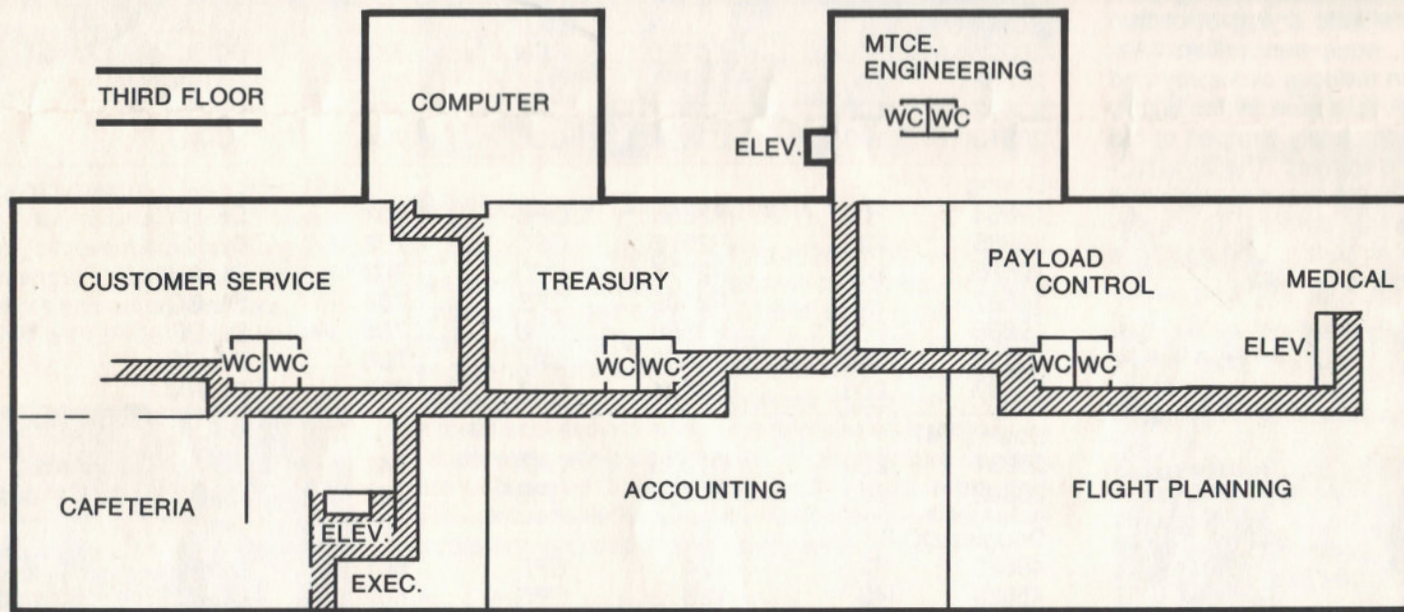
Specifications of CP Air's Boeing 747-200

Wing span — 195 feet 8 inches
 Length — 231 feet 4 inches
 Fuselage width — 21 feet 5 inches
 Fuel capacity — 42,500 gallons
 Tail height — 63 feet 6 inches
 Engines — Pratt & Whitney JT9D-7A
 Engine thrust rating — 47,670 pounds
 Maximum range — 6,300 statute miles
 Maximum take-off weight — 775,000 lbs.
 Maximum landing weight — 564,000
 Operating empty weight — 370,000
 Purchase price — \$26,000,000



Take-off speed — 135-180 kts.
 Approach speed — 130-160 kts.
 Cruise speed — 490 kts., 565 m.p.h.





Orange is Beautiful.

