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HONG KONG OBSERVATORY

Environmental Radiation Monitoring in Hong Kong

Technical Report No. 19

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Chapter 1

Environmental Radiation Monitoring in Hong Kong

1.1 Early Activities of Environmental Radiation Monitoring in Hong Kong

Environmental radiation monitoring in Hong Kong began in 1961 when the Hong Kong Observatory started to measure the beta radioactivity of air particulate, total deposition and rainwater at King's Park. At around the same time, the Observatory began to participate in international programmes on environmental radiation monitoring, and the practice continues after more than three decades. One of the earliest programmes is the World Survey of Isotope Concentration in Precipitation programme organised by the International Atomic Energy Agency (IAEA) and the World Meteorological Organisation (WMO). Since 1961, the Observatory despatches rainwater samples from King's Park every three months to the IAEA in Vienna, Austria. The concentrations of tritium, deuterium and oxygen-18 in precipitation in Hong Kong are published in a series of IAEA Technical Reports entitled "Environmental Isotope Data : World Survey of Isotope Concentration in Precipitation".

The Observatory also participates in another global radiation monitoring programme organised by the Atomic Energy Authority (AEA) at Harwell in the U.K. Since 1962, rainwater samples collected at King's Park are despatched to the AEA for radioactivity measurements once every three months or whenever two full 5-litre bottles of rainwater samples have been obtained. Airborne particulate samples are collected and sent twice a week since 1964. The results of radioactivity measurements and the detailed analyses of radionuclides in these samples are published in a report series entitled "Radioactive fallout in air and rain: results" by the AEA.

In 1965, the scope of measurement was expanded to include the total gamma activity and the activity concentration of caesium-137. The results of the total beta activity measurements in Hong Kong for the period from 1965 to 1980 were published by the Observatory in the monthly "Radioactivity Bulletin (monthly)", and a publication entitled "Radioactivity Bulletin (Beta activity) (1973 - 80)" (Hong Kong Observatory, 1983a) also summarised the results from 1973 to 1980. The results of gamma activity measurements from 1965 to 1980 were reported in a publication entitled "Radioactivity Bulletin (Gamma Activity) (1965 - 80)" (Hong Kong Observatory, 1983b). From 1981 to 1983, both the beta and gamma activity measurements were published together in the annual "Radioactivity Bulletin (yearly)". In 1983, the Observatory embarked on a comprehensive environmental radiation monitoring programme (ERMP) in response to the construction of the Guangdong Nuclear Power Station (GNPS) at Daya Bay in Guangdong.

1.2 Environmental Radiation Monitoring Programme

The first phase of the ERMP, known as the Background Radiation Monitoring Programme (BRMP), was carried out before the GNPS began to operate. The objective of the BRMP was to establish the baseline radiation level in Hong Kong against which changes arising from the operation of the GNPS would be determined. The programme comprised territory-wide monitoring of the ambient gamma radiation level, and measurement of the activity concentrations of alpha, beta and gamma emitting radionuclides in various types of environmental samples.

The BRMP lasted five years from 1987 to 1991. An interim report of the BRMP covering the results of the first two years of measurements was published in 1989. A final report covering all five years of measurements was published in December 1992.

The second phase of the ERMP contains all the essential features of the BRMP. It is an on-going programme so that any long term changes in environmental radioactivity, particularly those arising from the operation of the GNPS, can be determined. The results of measurements have been published in annual reports since 1992.

The GNPS began operational testing in July 1993. Unit 1 began commercial operation on 1 February 1994 and Unit 2 on 6 May 1994. Major operational events are listed below in chronological order*:

17 December 1994 - 18 July 1995 :	1st refuelling outage of Unit 1
4 April - 26 May 1995 :	1st refuelling outage of Unit 2
31 March - 31 May 1996 :	Overhaul and 2nd refuelling outage of Unit 1
21 December 1995 - 14 April 1996 :	2nd refuelling outage of Unit 2
22 December 1996 - 2 March 1997 :	3rd refuelling outage of Unit 2
11 March - 14 May 1997 :	3rd refuelling outage of Unit 1
22 November 1997 - 20 January 1998 :	4th refuelling outage of Unit 2
24 January - 25 March 1998 :	4th refuelling outage of Unit 1
21 November 1998 - 11 January 1999 :	5th refuelling outage of Unit 2
26 January - 18 March 1999 :	5th refuelling outage of Unit 1
16 November 1999 - 4 January 2000 :	6th refuelling outage of Unit 2

* The dates when the power was back to full capacity were used as the end dates for the refuelling operation (Source of information: Web Site http://www.hknuclear.com maintained by the Hong Kong Nuclear Investment Co. Ltd.).

The Hong Kong Observatory started its Year 2000 (Y2K) compliance project in the summer of 1997 and by May 1999, all systems achieved Y2K compliance either by replacement, upgrade, or work-around solutions. Contingency measures were also tested and verified under simulated scenarios. During the three high-risk rollover periods, i.e. 22 August 1999, 9 September 1999 and 1 January 2000, all systems functioned normally and without problems leading up to, during and following the rollover periods.

Chapter 2

The Sampling Programme and the Direct Radiation Measurement Programme

The ERMP consists of two major components. The first component is to detect artificial radioactive materials in the environment of Hong Kong arising from the operation of the GNPS. Three major exposure pathways are monitored, namely the atmospheric pathway, the terrestrial pathway and the aquatic pathway. The second component is the measurement of the ambient gamma radiation level in Hong Kong. The sampling locations and the locations where the ambient gamma radiation measurements were carried out are shown in Figure 1. A summary of the sampling programme of the ERMP is tabulated in Table 1.

2.1 Atmospheric pathway

Ambient gamma radiation levels are continuously monitored by a radiation monitoring network (RMN) consisting of ten fixed monitoring stations at locations shown in Figure 2. The ambient gamma dose rate at each station is measured continuously by a high-pressure ionisation chamber (HPIC) and the data are transmitted to the Observatory Headquarters once every minute.

The ambient gamma dose accumulated over a longer period is also measured throughout the territory by a thermoluminescent dosimeter (TLD) network with twenty seven fixed monitoring points at the locations shown in Figure 3. The TLDs were read and replaced once every quarter.

Upper-air radioactivity soundings to measure gamma radiation and high-energy beta particles (> 0.25 MeV) in the atmosphere are carried out at least four times a year. At each launching, efforts are made to select different combinations of wind direction, wind speed and atmospheric stability class in order to obtain radioactivity sounding profiles for various meteorological conditions. In 1999, four radioactivity soundings were launched.

Airborne radionuclides can originate either directly from the source, or from re-suspension following deposition. Atmospheric samples which are collected continuously in the ERMP include airborne particulate, wet deposition (precipitation), total deposition (wet plus dry deposition) and gaseous iodine. Water vapour and carbon dioxide samples are collected intermittently for a total time of about 36-hours within any week in a month.

Airborne particulate and wet deposition samples are collected at King's Park, Sha Tau Kok and Yuen Ng Fan. Airborne particulates are sampled with high volume air samplers (General Metal Works Model UV-2H-1). The flow rate through the sampler is typically 0.5 $m^3\ min^{-1}$. One to three carboys with a top funnel collect the wet deposition. Total deposition is collected at King's Park only. The sampler is a stainless-steel pan of 260 mm diameter filled with distilled water.

Gaseous iodine, water vapour and carbon dioxide samples are collected only at King's Park. Gaseous iodine is sampled using a radioiodine sampler (Hi-Q Environmental Products Model CMP-14CV) with a silver impregnated zeolite cartridge. The typical flow rate through the sampler is 0.04 $m^3\ min^{-1}$. Water vapour and carbon dioxide are collected using a gaseous effluent sampler (Science Applications International Corporation Model ACT-100) with a drierite cartridge and an ascarite cartridge respectively. The typical flow rate through the sampler is 8 $\times 10^{-5}\ m^3\ min^{-1}$.

The automatic gamma spectrometry system at Ping Chau continuously measures the ambient gamma dose rate and transmits the measurement to a central station at the Observatory Headquarters every hour. The system also continuously collects the airborne particulate on a rotating circular air filter drum and the gaseous iodine on a carbon cartridge, with the nominal flow rates for the samplers being 25 m^3 min^{-1} and 2.5 m^3 min^{-1} respectively. Nuclide-specific gamma spectrometry measurements as well as gross alpha and beta measurements are performed on the air filter samples. Iodine-131 concentration is determined for the carbon cartridge samples. All measurements are performed continuously. The gross alpha and beta measurements as well as the iodine concentration are transmitted to the central station at hourly intervals, while the gamma spectrometry data are sent back at a fixed interval of every two hours. The gamma spectrum is available upon polling from the central station.

In October 1997, the Hong Kong Observatory commissioned an aerial monitoring system (AMS) to enhance its capability in environmental radiation monitoring in the Hong Kong Special Administrative Region. The AMS enables the measurement of the radiation levels over areas inaccessible to land transportation and at various altitudes in the lower atmosphere. In 1999, the AMS successfully conducted a fourteen flight aerial survey of Hong Kong, the data from which will be used as reference levels in emergency operations.

In June 1999, Hong Kong Observatory began operating a Mobile Radiation Monitoring Station (MRMS), which replaced an existing mobile station that had been operational since 1988. The MRMS is a self-sufficient mobile unit converted from a commercially available van (Figure 4). It is equipped with an arsenal of portable or specially designed instruments for use in routine and emergency radiological surveys at ground level.

A Portable Gamma Spectrometric Analysis Module (PGSAM) was also developed in 1999 to extend the capability of the MRMS. The PGSAM provides a means to rapidly estimate the environmental radioactivity inventories without the need to take samples. Using a high purity germanium (HPGe) detector and an in-situ object calibration system (ISOCS), the PGSAM can characterise dispersed radionuclides in soil as well as on exposed surfaces by acquiring and accurately analysing gamma spectra in-situ. The PGSAM will be commissioned in 2000 and will form part of the inventory of the MRMS.

2.2 Terrestrial pathway

Radioactive particles enter the terrestrial pathway by direct deposition on the ground. Some of these particles, after uptake by plants and animals, eventually enter the human body via ingestion.

In monitoring the terrestrial pathway, samples of various types of foodstuff typical to the diet of the local population and consumed in large quantities are collected at main distribution points and wholesales markets. Particular attention has been given to food produced locally and in Shenzhen. Foodstuffs collected include rice, milk, beef, pork, pig's liver, chicken, duck, pak choi, choi sum, banana, lychee, sugar cane and mandarin orange. For foodstuff available year-round, the sampling frequency is once every quarter. Seasonal fruits are collected when in season, usually once or twice a year.

In 1988, a land soil-sampling plan was drawn up to monitor the long term variation in the concentration of artificial radionuclides in soil. Land soil samples were to be collected every six years from thirty nine designated sampling sites throughout the territory. At each site, samples were collected from two layers, the upper layer from the surface to 15 cm deep and the lower layer from 15 cm to 30 cm deep. The first round of the land soil sampling began in 1988 and was completed the same year as part of the BRMP. The second round of land soil sampling began in May 1994 and was completed in 1996. However, in the second round of sampling, four of the sampling sites had to be relocated due to changes in land use and/or development. The staff of the Geotechnical Engineering Office of the Civil Engineering Department carried out these two rounds of the land soil sampling. Due to limited manpower and resources, the land soil sampling plan was revised in 1999 so that the sampling from the thirty nine sites would be spreaded over six years and that HKO would undertake the sampling process from 2000 onwards.

2.3 Aquatic pathway

Exposure to radioactive materials in the aquatic pathway is primarily through ingestion of the water-borne radionuclides in water and irrigated crops, as well as the radionuclides taken up by the aquatic plants and animals. Of secondary importance is the external irradiation from surface water, or from deposits in the sediment along the shoreline. Samples collected in the aquatic pathway included drinking water, underground water, seawater, aquatic food, seaweed and sediments.

Treated drinking water samples were collected from the distribution taps at Kowloon and Tuen Mun as well as the treatment works at Shatin, Tuen Mun and Yau Kom Tau. Raw drinking water samples were collected from the High Island Reservoir, the Plover Cove Reservoir, the Muk Wu B Pumping Station and the treatment works at Shatin, Tuen Mun and Yau Kom Tau. The samples were collected once every three months by the staff of the Water Supplies Department.

Underground water sampling resumed in 1996, after a suspension of four years, as the measurement of underground water provided a means for long-term monitoring of potential contamination of the underground pathway by the GNPS. With the assistance of the staff of the Housing Department, collection of water samples in 1999 was made at six locations, namely Siu Hong Court (Tuen Mun), Cheung Hong Estate (Tsing Yi), Yuen Long Estate (Yuen Long), Wan Tsui Estate (East Hong Kong Island), Wah Fu Estate (West Hong Kong Island), and Fu Shan Estate (East Kowloon). Fu Shan Estate was a replacement site selected in 1997 after Shun Lee Estate (East Kowloon) was removed from the programme in 1996. Sampling from the Fu Shan Estate commenced in 1999.

Samples of seawater were taken at three depths - the upper level (a few metres underneath the surface), the middle level and the lower level (several metres above the seabed). There are four sampling locations in the eastern part of the coastal waters of Hong Kong, namely waters off Waglan Island, Basalt Island, Tai Long Wan and Port Island. Sampling was carried out annually with the assistance of the Water Policy and Planning Group of the Environmental Protection Department. Suspended particulates in the seawater at the three levels were obtained by filtering the sea water samples through a membrane filter.

Aquatic foodstuff samples included freshwater fish, marine fish, shellfish, shrimp, crab, squid and cuttlefish. These samples were collected either at the wholesale fish markets or from enlisted fishermen with the assistance of the Agriculture, Fisheries and Conservation Department. Only one species of the freshwater fish was selected, namely aristichthys nobilis, which was sampled quarterly from Shenzhen and Yuen Long. Marine fish, squid, shrimp and crab samples were collected quarterly from the Hong Kong waters and half-yearly from the waters west of Hong Kong. However, restricted fishing imposed by the authorities in Guangdong over the past two years have led to dwindling catches in the Daya Bay region to the extent that no samples were obtained from these regions in 1998 and 1999. This compares with three samples of marine fish and squid obtained in 1997. Despite this, close contact with local fishermen is maintained so that samples can be collected when catches from these regions are made. Furthermore, during June and July of 1999, the mainland authorities imposed a fishing ban within the Chinese waters of the South China Sea. Consequently, marine samples were not available from the waters west of Hong Kong during this period. Three types of shellfish samples were collected quarterly at the Hong Kong coastal waters near Cheung Chau, Tolo Harbour, and Castle Peak Bay. The sampling of cuttlefish was first introduced in 1997 and was collected quarterly in 1999.

Four species of seaweed were sampled. Ulva lactuca and enteromorpha prolifera are species of the green algae. Porphyra dentata is a red algae and sargassum hemiphyllum is a brown algae. Enteromorpha prolifera was collected fresh by Observatory staff at the Tolo Harbour area. All others were purchased as dried seaweed from local fishermen at Po Toi O and Po Toi Island. Since seaweed proliferates in the cool seasons, sampling was performed only in winter and spring.

Intertidal sediments were sampled at three areas along the coast of Hong Kong, namely Pak Sha Wan, Tsim Bei Tsui and Sha Tau Kok. Two layers were taken at each sampling point, the upper layer from the surface to 15 cm deep and the lower layer from 15 cm to 30 cm in depth. From year 2000 onwards, HKO will take over from the Geotechnical Engineering Office of the Civil Engineering Department the collection of samples on a quarterly basis. Seabed sediments were sampled at four areas in the coastal waters of Hong Kong - Tai Tan Hoi Hap, Lung Ha Wan, Picnic Bay and Western Anchorage. Sampling was carried out annually with the assistance and facilities of the Technical Services Division of the Civil Engineering Department.

In addition to the routine ERMP measurement for shellfish samples, such as tapes philippinarum and perna viridis, local oyster samples were collected in October 1999 for an exploratory investigation following Su *et al*. (1999) who indicated that silver-110m was measurable in shellfish samples including oyster and abalone collected from the Daya Bay sea areas. The source of which could probably be the control rods of the GNPS. However, only oysters were sampled as abalones from the territorial waters were not available from local markets.

Chapter 3

Methods of Measurement

A summary of the methods of measurement in the ERMP is listed in Table 2 and the details are given below.

3.1 Monitoring of the ambient gamma radiation level

3.1.1 High Pressure Ionisation Chamber (HPIC) Network

Ambient gamma dose rate at each of the ten fixed monitoring stations was measured continuously using a Reuter-Stokes Model RSS-1013 HPIC Environmental Radiation Monitoring Station. The detector consisted of a 4.2-litres capacity spherical ionisation chamber that is pressurised to around 25-atmospheres with pure argon gas and an electrometer mounted in a weatherproof aluminium case. The chamber and the associated electronics were placed inside a wooden housing. The one minute mean gamma dose rate readings were telemetered every minute to a central processing unit located at the Observatory Headquarters. The technical specification of the high pressure ionisation chamber is given in Table 3.

3.1.2 Thermoluminescent Dosimeter (TLD) Network

A set of TLDs at each of the twenty seven fixed monitoring points measured the cumulative gamma dose over an exposure period. The TLD network complemented the HPIC network by achieving a wide coverage at a much lower operation cost.

Lithium fluoride (LiF:Mg,Ti) TLDs (Harshaw Type 8807) were used since 1995 to replace the dysprosium-doped calcium sulphate ($CaSO_4$:Dy) TLDs previously used in the network. A batch of five TLDs was used at each site to improve the statistical accuracy. The TLDs were replaced and read once every three months.

The algorithm for transit correction was revised in 1998 to consider the incoming and outgoing states of transportation separately and independently. This was to take into account the considerable differences in the typical cumulative gamma dose between the different mode of transport used, routes taken, transit period, weather situations and underlying surface.

3.1.3 Aerial Monitoring System

The AMS, manufactured by Scintrex Ltd. of Canada, is mounted on board a Sikorsky S76A+ helicopter of the Government Flying Service during operation.

Nuclide specific gamma spectrometry measurements of the environment are continuously performed by the system during flight. The gamma spectra, spectroscopic analysis results and spatial locations of the measurement derived from the helicopter global positioning system (GPS) are displayed on-board in real-time and archived. The data can be retrieved for more rigorous analysis after flight.

The AMS can operate in two modes, namely, the plume tracking mode and the ground contamination measurement mode. In the plume tracking mode, the radiation levels at different altitudes in the lower atmosphere are measured. In the ground contamination measurement mode, the composition of radionuclides on the ground is measured. The AMS consists of a centralised system control unit, a data display unit, and two detector assemblies, which are configured with different sets of NaI gamma ray detectors to suit the mode of operation. The detector assembly configured for plume tracking contains two 4.2L NaI crystals, whereas the detector assembly for ground contamination measurement has five 1.6L NaI crystals. Only one detector assembly is used for each aerial survey.

In collecting environmental radiation levels at different altitudes in the plume tracking mode of operation, the helicopter installed with the AMS flies at a speed of about 100 km h^{-1} in accordance with pre-determined flight plans at various altitudes. The design of the flight plans is based on 5 km length grid boxes which are specifically positioned such that the flight paths would not encounter grounds at heights at and above the planned altitude. Radiation levels detected by the system operating in this mode are represented in counts per second to maximise system sensitivity. However, analysis of the count rate from selected artificial radionuclides could also be performed in real time if required. To measure the variation of radiation levels with height, spiral climbs from about 150 m up to around 1000 m above sea level were carried out at various locations and in different seasons of the year.

In collecting environmental radiation levels at the ground surface in the ground contamination measurement mode of operation, a pre-determined flight plan optimised for survey efficiency is adopted. The helicopter installed with the AMS flies at 100 m above ground following the terrain at a cruising speed of 100 km h^{-1}. Neighbouring flight paths are typically separated by 200 m. Activity concentrations of selected radionuclides can be displayed in both counts per second and Bq m^{-2}.

In nuclear emergency situations, the AMS will first be used in the plume tracking mode for detecting the presence of a radioactive plume, if any, in the atmosphere and map out its extent of coverage over the territory. After passage of the radioactive plume, the system will be used for rapid determination of the composition of radionuclides deposited on ground. The environmental radiation levels collected during routine operations will be used as reference levels in emergency operations.

In 1999, the operation of the AMS was enhanced with the replacement of the GPS receiver system. A separate antenna was also installed onto the helicopter as well as some minor modifications made to the AMS software to accommodate data from the new receiver. With the new GPS system, the positional information is updated more frequently, once every tenth of a second as opposed to once every two seconds previously.

3.2 Automatic Gamma Spectrometry System

The automatic gamma spectrometry system was manufactured by EG&G Berthold. The system was housed inside an air-conditioned housing with an internal dimension of 2.8 m x 2.6 m x 2.3 m at Ping Chau.

Ambient gamma dose rates were measured by a proportional counter (EG&G Berthold LB6360) mounted on the roof of the housing.

A rotating circular filter drum collects the airborne particulate. The air from the outside was sucked in through an air inlet tubing to the filter drum depositing the air particulate onto the filter tape. After passing through the filter drum, a portion of the air would be directed to the outside, while the rest would go via a secondary tubing to reach the carbon cartridge for iodine collection before being discharged.

Outside the circular filter drum, a fixed ZnS coated plastic scintillation (EG&G BAI Model BAI 9300AB) facing the filter tape measured the gross alpha and the gross beta activity of the airborne particulate. Since natural radon contributed significantly to these gross counts, the system would subtract this radon component to obtain the artificial alpha and artificial beta activity of the samples.

At the centre of the circular filter drum, an electro-mechanically cooled high purity germanium detector (EG&G Ortec GEM-25185-S p-type) using the EG&G Ortec Omnigam software performed nuclide specific gamma spectrometry analysis on the airborne particulate. The activities of up to sixty two nuclides were routinely monitored. During September 1998 to March 1999 and June 1999 to March 2000, the electro-mechanical cooling system used to cool down the germanium detector underwent repair. Consequently, nuclide specific gamma spectrometry analysis was unavailable during these periods.

A NaI detector (EG&G BAI Model BAI 9311) with a single channel analyser measured the iodine-131 concentration in the carbon cartridge samples.

All measurements were performed automatically and continuously. During normal operation, the 5-minute averaged ambient gamma dose rate, the 15-minute averaged gross alpha and gross beta activity concentrations, as well as the 10-minute averaged iodine-131 activity concentration are transmitted to the central station at the Observatory Headquarters every hour. The spectrometry measurement data are transmitted to the central station at fixed two hourly intervals, while the graphical spectrum is available upon manual polling.

The system also monitored the level of the ambient gamma dose rate, the artificial alpha activity, the artificial beta activity and the iodine concentration. User editable alarm levels are pre-set for these measurements. Once the measured data exceed the alarm level, the latest available readings will be sent back to the Observatory immediately. This will also trigger an alarm at the central station to alert the user and activate a new "measurement interval" at the field station to produce reports at shorter time intervals (except for the iodine channel, which has a fixed measurement interval of 10-minutes). The user can edit the polling frequency at the central station to request the measurement reports to be sent back to the central station as frequently as possible. However, this alarm function does not apply to the spectrometry data or spectrum.

3.3 Mobile Radiation Monitoring Station

The mobile radiation monitoring station (MRMS) is designed to carry out routine surveys and sample collection. During emergency situations it will be employed to conduct emergency radiological surveys as required under the Daya Bay Contingency Plan.

The instruments carried by the MRMS include a portable high pressure ionisation chamber (Reuter-Stokes model RSS-1013), a surface contamination survey meter (EG&G Berthold Model LB-122), and a survey meter (Seibersdorf Model SSM-1). The portable instruments are stored in built-in metal boxes inside the MRMS (Figure 5).

A high volume air sampler and a radio-iodine sampler were also custom-fitted inside the vehicle. Air is drawn into both samplers through an inlet on the vehicle roof (Figure 6). The flow of air through each sampler is continuously monitored and can be independently controlled.

An external gamma probe (Seibersdorf Model SSM1-07) that can be coupled to the SSM-1 survey meter is installed on the vehicle roof (Figure 7) to measure the gamma dose rates from above. Furthermore, a NaI detector based system is also installed for rapid spectroscopic measurement of samples collected at site.

The MRMS's ability to acquire and analyse gamma spectra in-situ will be enhanced in year 2000 with the introduction of the Portable Gamma Spectroscopic Analysis Module (PGSAM) that was developed in 1999. The PGSAM includes a coaxial p-type HPGe detector of 35% relative efficiency and 1.99 keV resolution at 1.33 MeV cooled by liquid nitrogen held in a portable Multi-Attitude Cryostat, the Canberra InSpector Portable Spectroscopy Workstation, a heavy duty detector tripod, and a notebook computer running Genie 2000 software for data acquisition and analysis. In addition to the above, the PGSAM utilises an in-situ object calibration system (ISOCS) that uses proven and widely used mathematical modelling techniques to calibrate the PGSAM for a variety of source-detector geometry with variations in the ground cover and soil type. Operation of the PGSAM was streamlined through a graphical user interface that was developed in-house.

3.4 Radioactivity sounding

Radioactivity soundings were carried out using sondes that incorporate a radioactivity sensor (Vaisala Model NSS14A) with a radiosonde (Vaisala Model RS80). The radioactivity sensor comprise of two special low-temperature type Geiger-Mueller tubes, one of which only measures gamma radiation and the other measures both gamma and high energy beta radiation (>0.25 MeV). The gamma only tube, being larger and therefore more sensitive, registers higher count rates than the gamma-beta tube. The mean ascent rate was about 6 ms^{-1}, and readings were taken at 0.3-second intervals.

Both types of tubes had an intrinsic background. The maximum intrinsic background count rate was 0.17-counts per second for the gamma only tube and 0.2-counts per second for the gamma-beta tube, corresponding to minimum measurable dose rates of 0.03 and 0.21 $\mu Gy\ h^{-1}$ respectively. The maximum count rate for both tubes was 870-counts per second, corresponding to 550 $\mu Gy\ h^{-1}$ for the gamma tube and 1100 $\mu Gy\ h^{-1}$ for the gamma-beta tube. The conversion from count rate to dose rate described above was based on calibration of the tubes using a caesium-137 source, as given by the following equations according to the manufacturer:

Gamma only tube: dose rate ($\mu Gy\ h^{-1}$) = 0.23 x (count rate)$^{1.15}$

Gamma-Beta tube: dose rate ($\mu Gy\ h^{-1}$) = 1.1 x (count rate)$^{1.02}$

The ground station was a Vaisala DigiCORA MW11 upper air sounding system for the reception and analysis of the data from the radioactivity sonde.

3.5 Analysis of environmental samples

With the exception of carbon-14 measurements, all radioactivity measurements of environmental samples collected were carried out at the Radiation Laboratory at King's Park. Samples received at the Radiation Laboratory were first examined and recorded by the laboratory staff. Radiochemical methods were used to determine the activity concentrations of selected radionuclides, mainly artificial ones, in the samples. The radionuclides monitored included plutonium-239 (alpha emitter), tritium, strontium-90 and carbon-14 (beta emitter) as well as iodine-131, caesium-137 and potassium-40 (gamma emitters). A list of the major artificial radionuclides routinely monitored in the ERMP is given in Table 4. After the samples were collected and delivered to the Radiation Laboratory at King's Park, they were subjected to sample treatment processes using various physical and chemical methods, followed by radioactivity measurement. Each sample, depending on the sample type, would go through one or more of the following analysis processes:

(a) gamma spectrometry for detecting and measuring the activity concentration of gamma-emitting radionuclides;

(b) liquid scintillation counting to determine the activity concentration of tritium;

(c) low level gross beta counting to determine the activity concentration of strontium-90;

(d) alpha spectrometry to determine the activity concentration of plutonium-239; and

(e) accelerator mass spectrometry for analysis of carbon-14.

For alpha and beta emitting radionuclides, measurement is only made for those potentially significant in contributing to population dose and environmental impact as a result of the operation of a nuclear power plant. This includes radionuclides having a long half-life and capable to come into equilibrium with the environment. Tritium activity concentration is measured for all samples containing water. Strontium-90 and plutonium-239 activity concentrations are measured for selected samples only because of the laborious chemical treatment required. Carbon-14 activity concentration is measured for thirteen selected types of samples. Several samples of the same type collected at the same location within the year are bulked to make a larger sample for one measurement. Of the thirteen sample types, two are atmospheric and the remaining eleven are foodstuff collected in Hong Kong. Same sample types will be collected in the future as far as possible for trend studies.

In 1999, the radioactivity measurements of carbon-14 in the ERMP samples were carried out by Rafter Radiocarbon Laboratory, New Zealand, under a service contract. Carbon-14 measurements were done using the accelerator mass spectrometry technique. When compared with the liquid scintillation counting technique used previously, the mass spectromrtry technique has the advantage of higher sensitivity, smaller sample size, and wider range of sample types. The 1999 measurement results were comparable with those of the previous years (Table 5).

3.5.1 Gamma spectrometric analysis

Apart from tritiated water vapour and carbon dioxide in the air, all samples were analysed for gamma emitting radionuclides.

Due to inherent differences in the sample types, sample treatment procedures for gamma measurement varied from basically none for the radio-iodine cartridge to laborious physical treatments such as those required for the food samples. Various combinations of the following procedures had been used :

(a) Examination to see whether the correct species were collected. Other characteristics such as their freshness, sample sizes, etc., were also noted.

(b) Cleaning if dirt was found to adhere to the sample.

(c) Removal of foreign matters such as soil and sand in vegetables, attached seaweed and mollusc in fish, empty shells in shellfish, species other than the sample itself, etc., so as to obtain a representative raw sample.

(d) Drying of sample. For vegetables, sediment, fresh seaweed, etc., excess water in the sample was drained off prior to other treatment. Filter papers for air particulate were dried to constant weight inside a desiccator.

(e) Weighing of the raw sample to facilitate calculation of activity concentration and other related quantities.

(f) Extraction of the portion to be measured, e.g., the edible portion of food samples, by removing shells, bones, seeds, scales, offal, etc.

(g) Weighing of the portion to be measured.

(h) Homogenisation of the portion to be measured to ensure uniform distribution.

(i) Containing the sample for measurement. The homogenised portion of the sample was put into a designated sample container (e.g. Marinelli beaker) and weighed to determine the amount of the sample being measured. Filter papers were pressed or folded together to a more uniform geometry and placed inside a plastic disk for measurement.

Gamma spectroscopic analysis was carried out using a gamma spectrometry system with four liquid-nitrogen-cooled high purity germanium detectors (Nuclear Data Model IGC-3520 p-type, EG & G Ortec Model GEM-35200 p-type, Tennelec Model CPVDS30-35200 p-type and Tennelec Model CNVDS30-35200 n-type). The Canberra Genie-2000 software was used for data acquisition and spectral analysis.

3.5.2 Liquid scintillation counting

As tritium (H-3) is a pure beta emitter of low energy, its activity in a sample has to be measured using a liquid scintillation counter. Tritium measurement was performed for water samples and the water extracted from foodstuff samples. Chemical procedures were carried out to extract the water from the samples by azeotropic distillation and the extracted water was mixed with a liquid scintillant in a 20 ml plastic vial before radioactivity measurement.

Since October 1997, tritium measurements were made using a Wallac 1414 liquid scintillation counter system with Hisafe-3 as the liquid scintillant. The detector consists of two high performance photo-multiplier tubes coupled on opposite sides of an optical chamber. Photons emitted by the Hisafe 3 scintillant after excitation by beta particles are captured and amplified by the photo-multiplier tubes to form electrical pulses, which are stored as beta energy spectrum. Prior to 1997, a Packard Model Tri-carb 2000 CA/LL liquid scintillation counter system was used with liquid scintillant Instagel XF.

The Wallac protocol "Easy GLP" is used to achieve good laboratory practice. The protocol performs tests on eight performance parameters and reports their latest results along with a full history of each parameter as a means to monitor the stability and reliability of the instrument. The system is maintained at optimal performance by regularly fine-tuning of the system using a series of known activity standards with varying quench.

3.5.3 Low level gross beta counting

The activity of another pure beta-emitting radionuclide, strontium-90, was measured using a low level alpha-beta counting system.

For all ERMP samples, except those that were mineral based, strontium was selectively segregated by chemical means from other elements in the sample before radiation measurement. This involved ashing of the sample, fusing of the ashed sample in alkaline, separation of strontium by ion exchange and purification of strontium by a nitrate process. The strontium was finally precipitated as strontium carbonate on a 60 mm diameter stainless steel planchet for radiation measurement.

Strontium-90 measurement was carried out using a Berthold LB770-2 low level alpha-beta counter. The system consists of eleven gas flow proportional counters (ten measuring counters and one large guard counter mounted above the measuring counters). The counting gas was aged P-10 gas (90% argon, 10% methane). Oxygen and moisture were removed from the P-10 gas before delivery into the counting chamber through the use of a filtering and regulatory system.

The chemical process to extract the strontium-90 in mineral samples was being reviewed in 1999, in an effort to improve the efficiency of the process following less than satisfactory results obtained with soil and sediment samples. The review also customises the chemical process to be more in-line with the gas flow counting technique, which replaced the liquid scintillation counting technique for measuring strontium-90 in 1995. The method being assessed involves extracting the strontium-90 from the soil using strontium carriers and precipitation as oxalates. The strontium is then separated by successive precipitation as nitrates.

The experience gained with the inter-laboratory comparison exercise IAEA-381 Irish Seawater (see also Chapter 5 for a more detailed discussion) revealed that strontium present at elevated levels violates the assumptions used in the estimation of the chemical yield. In an effort to better determine the chemical yield, strontium-85 is being looked at for use as a tracer. The year 1999 ERMP samples however are not affected as their strontium concentrations are at background level.

These chemical processes are elaborated further in Chapter 5. Results of the reviews will be reported in the year 2000 Annual Report.

3.5.4 Alpha spectrometric analysis

Only one alpha-emitting radionuclide, plutonium-239, was monitored in the ERMP.

Plutonium was first selectively extracted from other elements in the sample. An isotope of plutonium, plutonium-242, was used as a tracer to determine the overall efficiency in the chemical treatment process and the counting procedure. The whole process involved ashing of the sample, addition of a known amount of plutonium-242 as tracer, acid digestion and hydroxide precipitation of the mixture, separation of plutonium by ion exchange and finally electroplating the plutonium on stainless steel disks before radiation measurement. The thickness of the sample was minimised so as to avoid self absorption within the sample.

The analysis of plutonium-239 was done on an alpha spectrometry system (EG & G Ortec OCTETE PC) which consisted of eight passivated ion-implanted planar silicon (PIPS) detectors (Ortec BU-017-450-100-ULTRA), each housed inside a vacuum chamber. All eight vacuum chambers were connected to an external vacuum pump. The digitised signals of the detectors were stored as energy spectra in a multi-channel analyser system. The specific activity of plutonium-239 in the sample was analysed using the Ortec Alphamat alpha spectrum analysis software.

Chapter 4

Reporting Rationale

4.1 Ambient gamma dose rates

The radiation monitoring network measures and records the average dose rate every minute. From these 1-minute data, the daily, monthly and annual mean ambient gamma dose rates and the corresponding monthly standard deviations were calculated. These results are presented in this report together with the minimum and maximum 1-minute readings for each day and each month. Also reported are the annual mean dose rates and the corresponding two sigma levels calculated from the dose culminated over the period of exposure as measured by the TLD network.

4.2 Automatic gamma spectrometry system measurements

Similar to the ambient gamma dose rates measured by the radiation monitoring network, the gamma dose rates obtained by the automatic gamma spectrometry system are tabulated in a similar format in this report for easy comparison. The daily and monthly mean ambient gamma dose rates are presented. The minimum and maximum 15-minute readings for each day and each month are also given.

The artificial alpha activity and the artificial beta activity in the airborne particulate are reported. The gaseous iodine-131 concentrations in the air are also presented. The measurement data are presented only if they are greater than the typical detection limit of the system.

Nuclide specific gamma spectrometric analyses of the airborne particulate are given in the report. The radionuclides reported are iodine-131 and caesium-137 together with any other artificial radionuclides detected.

4.3 Vertical profiles of gamma and gamma plus beta radiation

The objective of the radioactivity soundings is to monitor the radiation levels at different altitudes of the atmosphere. Since the conversion from count rates to dose rates is subject to a large uncertainty depending on the actual energy spectrum, count rates as measured are reported here. The ratio between the count rates of the gamma and beta tubes may be used as an indicator of the presence of contaminants. This ratio is expected to be fairly constant for the natural background radiation, but would be different if an artificial radioactivity is present. Increased count rates accompanied by a marked increase in the gamma plus beta to gamma ratio would give a strong indication of an abnormal radioactivity than that suggested by the increased count rates alone. The ratio between the count rate of the beta and gamma tubes is therefore also reported.

The mean gamma and mean gamma plus beta count rates and their ratio at 100 m intervals from station level up to 3 000 m are reported for each ascent. Above 3 000 m, they are reported at intervals of 300 m

4.4 Laboratory analytical measurements

4.4.1 Radionuclides reported

With the exception of potassium-40, which has a natural origin, only artificial radionuclides are reported in this bulletin. While airborne particulate virtually contains no potassium-40, foodstuff usually contains a substantial amount of potassium-40. With a single gamma ray energy peak well separated from the peaks of other natural gamma emitters, the determination of potassium-40 helps to assure the quality of the gamma spectrometry measurement.

Caesium-137 and iodine-131 are two of the major artificial gamma emitting radionuclides representative of the releases from a nuclear power station. As these two nuclides were detectable in the BRMP, their activity concentrations in all ERMP samples are specifically tabulated in the report. Other artificial gamma emitting radionuclides in all samples will also be reported only when they are detected.

For alpha and beta emitting radionuclides, tritium activity concentration is measured and reported for all samples containing water. Strontium-90 and plutonium-239 activity concentrations are measured and reported for selected samples only because of the laborious chemical treatment required. Carbon-14 activity concentration was measured and reported for thirteen selected types of samples, as listed in Table 5.

4.4.2 Treatment of spectrometric data

All radioactivity data are decay-corrected to the date of sampling except for iodine-131. In case sampling is done over an extended period, decay correction is made to the middle of the sampling period. Iodine-131 has a rather short half-life of around eight days, which would usually lead to an artificially large activity after decay correction because of the time lapse between the measurement date and the sampling date. Thus as a practice no decay correction was made for iodine-131. All specific radionuclide analyses are reported with a counting uncertainty at the 95% confidence level.

SI units are used throughout the report. Units of activity concentration are referred to the unit weight or unit volume of the raw sample, whichever is more appropriate.

In this report, if the radiation level for a counting measurement, except the liquid scintillation counting, is too low to distinguish the signal from the background noise with statistical confidence, the estimated minimum detectable activity (MDA) for detection, based on the background noise detected, is reported. Radioactivity below the MDA is denoted by the "<" sign.

In liquid scintillation counting, if the output signal from the detector with the sample in place is weaker than the signal output using a blank sample (i.e. the control measurement), "## Less than detection limit" is reported.

A list of typical "Detection limits" for the various activity measurements under "typical" measurement conditions for the samples used in the ERMP is given in Table 6. These detection limits serve to provide a quick reference for easy interpretation of the measurement results in this report.

Except for the measurement of tritiated water vapour in the atmosphere, the Curie MDA formulation was used to calculate the detection limits. The MDA is calculated at the 95% confidence level. For the tritiated water vapour sample, the sampling equipment is efficient only when the tritium concentration in the water vapour exceeds a minimum level, which is specified by the equipment manufacturer. This minimum sampling level is higher than the value one would obtain by applying the Currie MDA formulation under typical measurement conditions. The limit specified by the sampling equipment is therefore used for the tritium detection limit for water vapour in Table 6.

All activity concentration measurements and uncertainties are reported in accordance with one or more of the following conditions:

(a) Uncertainties will be reported to one significant figure.

(b) Activity concentration measurements will be reported to no more than three significant figures.

(c) For any measurement result pair, i.e. measured activity concentration with uncertainty, the smaller of the two results will be reported to one significant figure. The position of the first significant figure of the smaller will be the position of the last significant figure of the larger.

(d) Within any given tabulation, measured activity concentrations and uncertainties will be reported to the decimal position of the first significant figure of the smallest uncertainty figure within that tabulation.

Chapter 5

Quality Assurance

A comprehensive quality assurance programme is of utmost importance to maintain and improve the reliability of the analysis in environmental monitoring. The quality of the radiation measurements in the Environmental Radiation Monitoring Programme is assured through an internal quality assurance programme and the inter-laboratory comparison exercises. The Observatory began participating in the IAEA inter-comparison exercises since 1989. Samples with similar composition and radionuclide concentrations were prepared and despatched by the IAEA to the participating laboratories for measurement and the results were published by the IAEA. The Observatory also participated in the inter-laboratory comparison exercises organised by various laboratories in the mainland. The measurement results made by the King's Park Radiation Laboratory of the Observatory were found mostly within the acceptable ranges, and were presented in the annual reports.

In November 1998, the HKO participated in the inter-laboratory comparison exercise on field measurement of ambient gamma absorbed dose rate organised by the China Institute for Radiation Protection (CIRP). Another participant of the exercise was the Guangdong Research and Monitoring Centre of Environmental Radiation. Field measurements of ambient gamma absorbed dose rates were conducted on the 3 and 25 of November 1998 at the lawn of the Sun Yat-sen Memorial Hall at Guangzhou and the King's Park Meteorological Station at Hong Kong respectively. At each of the two sites, three survey points were selected for measurement of the ambient gamma absorbed dose rates for a period of about 30-minutes. All participants in the exercise, including the CIRP, conducted field measurements using their respective equipment at the two sites. Measurement results of the CIRP were used as the reference values for the exercise. The HKO operated the Reuter-Stokes Model RSS-112 portable HPIC system to conduct all the measurements. Average ambient gamma absorbed dose rates at each of the survey points of the two sites were reported to the CIRP. Summary of the measurement results of the HKO and the respective reference values of the CIRP are shown in Table 7. The results show that the measurements made by the HKO are in accordance with the reference values given by the CIRP.

The results of the inter-laboratory comparison on a Fangataufa sediment sample (IAEA-384) conducted in 1998 were published in January 2000 by the IAEA. A summary of the measurement results made by the Observatory is given in Table 8. The values reported by the Observatory were within the range of the accepted values.

The strontium-90 measurement and analysis of the land soil samples collected in the second round of sampling between 1994 and 1996 were completed in 1999. However, the results of the measurements could not meet the requirements of the quality control. A subsequent investigation revealed that there were inconsistencies in the chemical yield and that a significant number of alpha emissions were also detected in the prepared samples. A review of the chemical preparation and processing methods found that there may exist the possibility of interference from other alkaline earths such as calcium and barium that would lead to an erroneous chemical yield figure.

In a further step to understand the problems encountered with the land soil measurements, the Observatory participated in a proficiency exercise organised by the IAEA in 1999 to survey the methods used to determine strontium-90 in a mineral matrix. IAEA offered extensive comments into possible problematic areas, which the Government Laboratory is basing their investigation into this matter. Furthermore, based on information supplied by IAEA, Government Laboratory conducted a survey on preparation techniques and experimented with a method that may be more suitable with the gas flow counting instrument.

This method involves the extraction of strontium-90 from soil using strontium carriers and precipitated as an oxalate before refinement by way of successive precipitation as nitrates. Prior to adding the carriers, samples are homogenised and ashed by a two-stage dry ashing process. The ashed samples, with added carriers, are then fused in alkaline media before concentrating the strontium by its precipitation as an oxalate. The oxalate precipitates are ignited and the residues dissolved in nitric acid. Interfering metals, such as iron and aluminium, are then removed from the solutions by filtration following their precipitation as hydroxides. The strontium is then precipitated out of the filtrate as a carbonate before undergoing successive precipitation as nitrate with fuming nitric acid to further isolate the strontium. Scavenging using barium chromate and iron hydroxide then purifies the strontium in the nitrate precipitates before its final precipitation as a carbonate. Results of the experimentation will be reported in the year 2000 Annual Report.

Government Laboratory also looked into refining the process of determining the chemical yield for strontium-90 in samples of elevated level. This follows from the result of the IAEA-381 Irish Seawater inter-laboratory comparison exercise which was published by IAEA in 1999. The results of the Observatory are shown in Table 9. The value reported for strontium-90 was below the acceptable range. Although IAEA could not supply further samples of the Irish seawater for investigation, a careful review of the laboratory procedures suggested that the presence of strontium at elevated levels in the sea-water samples may be interfering with the determination of the chemical yield. To better understand the problems observed, the Government Laboratory is experimenting with strontium-85, a gamma emitting isotope, as a tracer to improve the determination of the yield. Results of the experimentation will be reported in the year 2000 Annual Report. The refinement of the process to determine the chemical yield for strontium-90 does not affect the year 1999 ERMP samples, which strontium concentrations are at background level.

In order to better monitor the quality of the ERMP sample preparation and measurements, the Observatory and Government Laboratory began a new series of quality assurance procedures using IAEA reference materials on a half-yearly basis. Reference material IAEA-375 (Soil Matrix) was used in the first round of experiments, which began in November 1999, but would not be concluded until early 2000. IAEA-134 (Flesh Matrix, Cockle Fish) was purchased from IAEA for the second round of quality assurance experiment, which is scheduled to take place in June 2000.

In order to assure the performance of the HPIC used in the RMN, each sensor used in the network was sent to the manufacturer, Reuter-Stokes, Inc. USA, for calibration on an average of about once every two years. Calibration was carried out using the shadow output technique with a reference source traceable to the National Institute of Standards and Technology, USA.

Chapter 6

Summary of Measurement Results

The results of measurement given in this report reflect the environmental radiation levels in Hong Kong in 1999. The results shows that there has been no observable increase in the amount of artificial radionuclides in the environment of Hong Kong. Continuous monitoring of the ambient gamma radiation level in 1999 has shown that it was within normal background fluctuation. Results of measurement of the artificial radionuclides in the three hundred and eighty seven samples collected in 1999 for atmospheric, terrestrial, and aquatic pathways are all within the BRMP ranges.

6.1 Ambient gamma radiation level

The ambient gamma radiation near ground level originates primarily from natural radioactive materials in the earth and building materials. Gamma radiation resulting from the interaction of cosmic rays with air molecules is another major constituent. The remainder comes from airborne radioactive material in the atmosphere originating either from the earth's crust or from the interaction of cosmic rays with air molecules. The annual mean ambient gamma dose rates recorded by the RMN and the TLD network are given in Figure 2 and Figure 3 respectively. The daily mean ambient gamma dose rates recorded by the RMN in January to June and July to December 1999 are shown in Figure 8 and Figure 9 respectively. The daily and monthly ambient gamma dose rate values of each station of the RMN are tabulated in Table 10 to Table 22.

The ambient gamma radiation level in Hong Kong in 1999 was within normal background fluctuation. The annual levels recorded in 1999 ranged from 0.087 to 0.137 μGy h^{-1}. The levels recorded at all stations were about the same as those recorded in 1998.

The spatial variation in readings among the stations reflected the differences in the geological composition of the soil and rocks, and the building materials used for the foundation of the stations. Stations built on granite were exposed to higher gamma dose rates in comparison with stations on sedimentary rocks. The temporal variation at each station was mainly due to variations in the meteorological conditions and the physical environment adjacent to the station.

There was a small seasonal change in the ambient gamma radiation level, with the summer months generally having lower values and winter months higher ones. In summer, the prevailing wind was from the sea, which was relatively deficit in radon and thoron daughters. On the contrary, a continental airstream dominated in winter months, bringing natural radioactive materials from the continent to Hong Kong. The more stable atmosphere in winter also helped to trap the natural radioactive materials in a shallow layer near the ground.

Besides the seasonal variations, the ambient gamma radiation level also varied in a shorter time frame. The latter could be related to the changes in the concentration of radon and thoron daughters over the site. Rain would wash down natural radioactive materials, such as radon and thoron daughters, from the atmosphere and in general, cause the ambient gamma dose rate to rise. The change in the ambient gamma radiation level due to this effect returns to the normal level rather quickly when rain ceased because of the relatively short half-lives of less than an hour for most of the gamma emitting nuclides of the radon and thoron daughters. Such effects of rainfall on the ambient gamma radiation level are well documented in the earlier Annual Reports. Typical change in the radiation level ranges from a few percent to fourty percent.

However, the correlation between rainfall amount and rise in radiation level is very complex, especially during the occurrence of a tropical cyclone. In 1999, it was observed that the maximum ambient gamma dose rate was the highest since the beginning of the ERMP in 1987. This is due to the unusually high number of tropical cyclones affecting Hong Kong in the year. Table 23 tabulates the six occasions with the most significant rises in ambient gamma dose rates in 1999, four of which are associated with tropical cyclones. The effect of tropical cyclones and their associated rainfall is clearly demonstrated by the changes of the ambient gamma dose rates at all stations during the passage of Typhoon York on 16 September 1999 (Figure 10).

Typhoon York developed into a tropical cyclone on 12 September 1999 over the western North Pacific to the east of Luzon. As York tracked westwards across Luzon that day and entered into the northern part of the South China Sea on the 13 September 1999, its rain-bands slowly moved over Hong Kong and the local weather began to deteriorate with a few squally showers by 15 September 1999. That night, York became almost stationary south-west of Hong Kong, where it soon intensified into a typhoon and later continued in a north-westward direction towards Hong Kong. York made landfall over Hong Kong on the 16 September 1999 and winds of hurricane force, firstly north-easterly and then south-westerly, buffeted the region as it moved westwards across the territory. Local winds experienced a temporary lull during the passage of York's eye, which was closest to the Observatory headquarters at around 10 a.m. when it was about 20 km to the south-south-west. The ambient gamma dose rates recorded by the RMN and the rainfall amount recorded by their respective nearby rain gauges from 15 to 17 September 1999 are shown in Figure 10. Daily rainfall map on 16 September 1999 is shown in Figure 11. During the passage of York, the maximum rise in ambient gamma dose rates recorded by the RMN ranged from 57% (at Tsim Bei Tsui) to 130% (recorded at Tap Mun) above their normal background levels. The ambient gamma dose rates at the ten stations started to rise at the outbreak of rain. However, except the stations at Tap Mun, Kat O and Sha Tau Kok, the maximum ambient gamma dose rates at other stations did not occur at the time of heaviest rainfall. For all the ten stations, there were more than one ambient gamma dose rate peaks during that period with some of the peaks even occurred at times when there was no significant rainfall. Although reasons for the phenomena were not exactly known, it might be due to the change in both the surface wind direction as well as the vertical wind direction during the passage of York that helped in trapping and concentrating the radon and thoron daughters at the ground level.

Routine operations of the AMS for gathering environmental radiation data at various altitudes were carried out over the territory in 1999. So far, no artificial radionuclides was detected.

Figure 12 shows the environmental gamma radiation levels (in counts per second) at an altitude of about 600 m in Hong Kong measured by the AMS based on the plume tracking flight plan. Terrain above 600 m is shaded in black. High count rates of several times of those at sea surface are observed near the hills. Variation of gamma radiation levels along two check lines (Figure 13) at flying altitudes 500 m and 600 m were plotted in Figures 14 and 15 respectively. It can be seen that count rates over the sea are relatively constant at around 200-counts per second, while those over land rise sharply to above 400-counts per second when the helicopter approached the hills.

To measure the variation of radiation level with height, spiral climbs from about 150 m up to about 1000 m above sea level were carried out at various locations and in different seasons of the year. Figures 16 and 17 show four typical spiral climbs carried out on 15 June 1999 and 21 September 1999 at check sites 1 and 2 (Figure 13) respectively. Figure 16 shows that there is little variation in the count rate with altitude over the sea. But over land, Figure 17, the count rate decreases rapidly with altitude between 200 to 600 m as the terrestrial contribution at the lower altitudes diminishes with height before reaching a count rate similar to those measured over the sea.

The results from the spiral climbs also hints of a seasonal trend as the count rates measured over the sea on 21 September 1999 are about 20 % higher than those measured on 15 June 1999 for any given height. This is also the case when the measurements were made over land, but the differences in the count rates can only be observed at the higher altitudes (above 500 m). This is due to the dominant terrestrial radioactivity masking these subtle seasonal variations at lower altitudes. In year 2000, more flights will be carried out to collect data for establishing the emergency response reference levels in different seasons.

6.2 Automatic Gamma Spectrometry System

The automatic gamma spectrometry system commenced routine operation at Ping Chau since September 1996. The ambient gamma dose rates, the artificial alpha concentration, the artificial beta concentration, the iodine-131 and caesium-137 concentration in airborne particulate and the gaseous iodine-131 concentration obtained by the system in 1999 are tabulated in Table 24 to Table 35. So far, no man-made radionuclides had been detected.

The ambient gamma dose rates recorded by the automatic gamma spectrometry system were found to be highly correlated with the readings obtained by the RMN station at Ping Chau (Figure 18). The differences between the two were largely due to the two sensors being installed at two different locations even though nearby.

In the first six months of 1999, the gross alpha and beta concentrations measured by the automatic gamma spectrometry system on many occasions exceeded the 1 Bq m^{-3} detection limit. The occurrences of higher gross alpha and beta concentrations were found to coincide with periods when winds were blowing off the mainland. This correlation between the alpha and beta concentrations with wind direction is most striking during March 1999, which also saw the highest alpha and beta concentrations measured by the system, topping 5 and 10 Bq m^{-3} respectively on the 14 March. A timecross sequence of the events in March is illustrated in Figure 19. Furthermore, the rainfall recorded in first six months of 1999 was well below those recorded the previous years, which would permit the build up of the radioactive nuclides before being washed out by rain. Table 36 summarises the frequency of days when the alpha and beta concentrations exceeded the MDA with the relevant meteorological data for 1998 and 1999.

6.3 Radioactivity sounding

Four radioactivity soundings were made in 1999. The weather conditions during these soundings were: a fine day on 3 February, a cloudy day on 5 June, light northeasterly winds on 24 July and fresh northerly winds on 22 September respectively. The gamma-beta sensor failed at altitude of 13 000 m in the sounding on 3 February. The mean gamma only and mean gamma-beta count rates for these soundings are shown in Tables 37 to 40. The vertical profiles of the readings taken at 2-second intervals and the mean gamma-beta to gamma only ratio are also plotted in Figure 20 to 23.

Cosmic rays produce secondary, low energy neutrons by nuclear reactions with atmospheric gases, which in turn produce most of the natural radionuclides in the atmosphere. The rate of production of these radionuclides is a function of two opposing factors: the increase of secondary low energy neutron flux with altitude and the decrease of the air density with height. A maximum concentration of these radionuclides was found in the upper atmosphere near the tropopause. This maximum manifested itself in all four soundings in which both the gamma only and the gamma-beta count rates increased with height steadily from the surface, reaching a maximum at around 15 to 17 kilometres.

The larger fluctuation observed in the mean gamma-beta to gamma only ratio at low levels was largely due to the higher measurement uncertainty at low count rates and to a certain extent the smaller number of data in each chosen vertical interval at these low levels.

6.4 Environmental samples

The measurement results of the environmental samples collected in 1999 are tabulated in Table 41 to Table 62. Table 41 to Table 47 summarise the gamma spectrometry measurement results of the samples. Beta measurement results of tritium and strontium-90 in samples are given in Table 48 to Table 51 and Table 52 to Table 56 respectively. The results of the plutonium-239 measurements are given in Table 57 to Table 61. The carbon-14 concentrations measured by the Rafter Radiocarbon Laboratory, New Zealand are tabulated in Table 62. A comparison of the specific activity of the artificial radionuclides in the environmental samples collected in 1999 against those collected in the Background Radiation Monitoring Programme (1987 - 1991) is given in Table 63.

6.4.1 Gamma emitters

No artificial gamma emitting radionuclide, apart from caesium-137, was detected in environmental samples. Caesium-137 was found in two pork samples, two marine fish samples and in all the intertidal and seabed sediment samples with the exception of the seabed sediment sample collected at Lung Ha Wan in October 1999. The specific activity of caesium-137 in these samples were within the range of the corresponding base values obtained in the BRMP.

The presence of caesium-137 in the samples of pork and marine fish was likely to be due to the transport of the radionuclide from soil and sea sediment to the pigs and marine fish through their respective ingestion pathways.

Because caesium-134, a radioisotope of caesium but with a much shorter half-life of 2.062-years, is produced together with cesium-137 (half-life about 30.17-years) during a fission reaction, its absence from all samples led to the conclusion that the source of caesium-137 in the samples was not from the GNPS. The origin for the caesium-137 detected in these samples is most probably from the fall-out of the nuclear weapons tests in the 1960s and to a lesser extent from the Chernobyl accident in 1986.

Depending on the sediment composition and the tidal current characteristics, different intertidal sediments have dissimilar nuclide retention capabilities. The radioactive caesium contents in the intertidal sediment collected at Tsim Bei Tsui and Sha Tau Kok were generally higher than that at Pak Sha Wan, while the radioactive potassium content of the sediment at Tsim Bei Tsui was relatively lower than that of the other two locations. This is again consistent with the findings of the BRMP.

Since 1997, the concentration of naturally occurring radioactive potassium-40 in milk, leafy vegetable and the seaweed sargassum hemiphyllum was found to be on an elevated level when compared with the BRMP. In 1999, elevated potassium-40 concentration was found for the first time in sugar cane. Meanwhile, the two seaweeds ulva lactuca and porphyra dentata samples were found to have lower than BRMP concentrations of potassium-40 since 1997. Trends plots of the potassium-40 content of these samples were given in Figures 24 to 33. Since potassium-40 is a naturally occurring radionuclide and a common ingredient in fertilisers used in farming, the variation in the measured potassium-40 content in the samples except those of seaweed reflects the evolving practice in the farming industry (see for example, EPA 1993). The variation of the potassium-40 concentration in the seaweed samples may be related to the salinity. In 1999, Government Laboratory implemented simultaneous measurement of salinity and pH in ERMP samples. From year 2000 onwards, salinity and pHmeasurements will be carried out for seaweed samples and their correlation with potassium-40 variations within these samples will be examined.

Locally produced oysters were obtained from local markets and measured for gamma emitting radionuclides in and exploratory investigation following Su *et al.* (1999) who indicated the presence of silver-110m in shellfish including oysters and abalone collected from the Daya Bay sea areas. Gamma measurement results indicated that activity concentration of silver-110m in the oyster samples collected in Hong Kong was below MDA (0.03 Bq kg^{-1}). The results of specific gamma activity of other radionuclides potassium-40, iodine-131 and ceasium-137 are tabulated in Table 46, together with the results of other shellfish. Abalone in the territorial waters was not available from local markets.

6.4.2 Beta emitters

The specific activity of tritium in the environmental samples was measured to be within the background fluctuations obtained in the BRMP. As the specific activity of tritium in the samples collected was very low, the uncertainties in the measurement were correspondingly large. The amounts of tritium in individual samples mainly depended on the water content of the samples, and could differ from one to two orders of magnitude for samples of the same type.

Unlike tritium, the absorption and retention capabilities for metallic elements were found to be rather dissimilar for different organisms. The specific activity of strontium-90 was found to be relatively higher in leafy vegetables and seaweed than in other food sample types. The specific activity of strontium-90 in the environmental samples collected in 1999 was measured to be within the background fluctuations obtained in the BRMP.

The strontium-90 measurement results of a pork sample (local) collected in October and a total deposition sample collected in November at King's Park could not meet the requirements of the quality assurance programme and were rejected. Unfortunately, no further samples were available for re-processing.

In 1999, the carbon-14 measurement of the ERMP samples were carried out by Rafter Radiocarbon Laboratory, New Zealand. The contents of carbon-14 measured in the thirteen samples were within or below the minimum of the corresponding ranges in the BRMP.

6.4.3 Alpha emitter

In 1999, plutonium-239 had been identified in seaweed and sediment samples. The specific activity of plutonium-239 in these samples were within the background ranges obtained in the BRMP.

6.4.4 Conclusions

The specific activity concentrations of all artificial radionuclides in the samples collected in 1999 were within the corresponding base-line values obtained in the BRMP.

Higher activity of the naturally occurring radionuclide potassium-40 was measured in several types of samples. As discussed in Section 6.4.1, this reflects the evolving practice in the farming industry. The variation of the potassium-40 concentration in the seaweed samples may be related to the salinity. More data will be collected to study the correlation between them and reported in the year 2000 Annual Report.

A summary of the more regularly consumed items in various pathways is tabulated below for easy reference (a more detailed presentation is given in Table 63). These figures are within the ranges observed in the BRMP which are shown in brackets.

		I-131	Cs-137	H-3	Sr-90	Pu-239
Pathway	Sample Type					
Atmospheric	Airborne Particulates	**	**	---	1.6-4.9 (<3.0 – 5.0) μBq m^{-3}	**
Terrestrial	Rice	**	**	0.2 (<1.0) Bq kg^{-1}	0.001-0.012 (0.005-0.056) Bq kg^{-1}	---
	Vegetables	**	**	0.4-5.8 (6.0-7.4) Bq kg^{-1}	0.04-0.19 (0.01-0.57) Bq kg^{-1}	---
Aquatic	Fish	**	0.1 (0.1-0.2) Bq kg^{-1}	0.2-1.0 (<2.0) Bq kg^{-1}	0.004-0.025 (<0.004-0.094) Bq kg^{-1}	**
	Treated Drinking Water	**	**	0.2-4.3 (<6.0) Bq L^{-1}	---	---

** Less than detection limit
--- Measurements not carried out

It is therefore concluded that there has been no observable increase in the amount of artificial radionuclides in the environment of Hong Kong before and after the operation of the GNPS.

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Table 1 Summary of the sampling programme

Sample type	Sampling location	Number of location	Type of analysis	Sampling frequency
Ambient Gamma Radiation				
Gamma dose-rate	Ping Chau, Tap Mun, Kat O, Sha Tau Kok, Yuen Ng Fan, Tai Mei Tuk, Tsim Bei Tsui, Kwun Tong, Sai Wan Ho, King's Park	10	continuous monitoring	1-minute interval
Cumulative gamma dose	Hong Kong Island, Kowloon and the New Territories	27	integrated over quarter	quarterly
Atmospheric Samples				
Airborne particulate	King's Park, Sha Tau Kok, Yuen Ng Fan	3	γ, C-14, Sr-90, Pu-239	weekly (bulked monthly)
Wet deposition (precipitation)	King's Park, Sha Tau Kok, Yuen Ng Fan	3	γ, H-3, Sr-90, Pu-239	weekly (bulked monthly)
Total deposition	King's Park	1	γ, H-3, Sr-90, Pu-239	weekly (bulked monthly)
Airborne radioiodine	King's Park	1	γ	weekly
Water vapour in air	King's Park	1	H-3	monthly
Carbon dioxide in air	King's Park	1	C-14	monthly
Terrestrial Samples				
Rice	Mainland	1	γ, H-3, Sr-90, C-14	quarterly
Pasteurized milk	Sha Tau Kok, Shenzhen	2	γ, H-3, Sr-90, C-14	quarterly
Choi sum	Mainland, Local	2	γ, H-3, Sr-90, C-14	quarterly
Pak choi	Mainland, Local	2	γ, H-3, Sr-90	quarterly
Banana	Mainland	1	γ, H-3, Sr-90, C-14	quarterly
Lychee	Mainland	1	γ, H-3, Sr-90	summer
Mandarin	Mainland	1	γ, H-3, Sr-90	autumn and winter
Sugar cane	Mainland	1	γ, H-3, Sr-90	spring
Chicken	Mainland, Local	2	γ, H-3, Sr-90, C-14	quarterly
Duck	Mainland, Local	2	γ, H-3, Sr-90	quarterly
Beef	Mainland	1	γ, H-3, Sr-90	quarterly
Pig's liver	Mainland, Local	2	γ, H-3, Sr-90	quarterly
Pork	Mainland, Local	2	γ, H-3, Sr-90, C-14	quarterly
Land soil (upper and lower level)	Hong Kong Island, Kowloon and the New Territories	39	γ, Sr-90, Pu-239	once every 6 years
Aquatic Samples				
Drinking water (treated)	Kowloon distribution tap, Tuen Mun distribution tap, Shatin Treatment Works, Yau Kom Tau Treatment Works, Tuen Mun Treatment Works	5	γ, H-3	quarterly

Table 1 cont'd

Drinking water (untreated)	Shatin Treatment Works, Yau Kom Tau Treatment Works, Muk Wu B Pumping Station, Tuen Mun Treatment Works, High Island Reservoir, Plover Cove Reservoir	6	γ, H-3	quarterly
Underground water	Yuen Long Estate, Siu Hong Court, Cheung Hong Estate, Wah Fu Estate, Wan Tsui Estate, Fu Shan Estate	6	γ, H-3	yearly
Sea water (upper, middle and lower level)	Port Island, Tai Long Wan, Basalt Island, Waglan Island	4	γ, H-3	yearly
Suspended particulate in sea water (upper, middle and lower level)	Port Island, Tai Long Wan, Basalt Island, Waglan Island	4	γ, Sr-90, Pu-239	yearly
Aristichthys nobilis	Shenzhen, Yuen Long	2	γ, H-3, Sr-90, Pu-239, C-14	quarterly
Nemipterus japonicus	*Daya Bay/*Daya Bay east west of Hong Kong Hong Kong waters	3	γ, H-3, Sr-90, Pu-239	quarterly
Platycephalus indicus	*Daya Bay/*Daya Bay east west of Hong Kong Hong Kong waters	3	γ, H-3, Sr-90, Pu-239	quarterly
Trichiurus haumela	*Daya Bay/*Daya Bay east west of Hong Kong Hong Kong waters	3	γ, H-3, Sr-90, Pu-239, C-14	quarterly
Portunus sanguinolentus (crab)	west of Hong Kong Hong Kong waters	2	γ, H-3, Sr-90, Pu-239	quarterly
Metapenaeopsis barbata (shrimp)	west of Hong Kong Hong Kong waters	2	γ, H-3, Sr-90, Pu-239, C-14	quarterly
Loligo edulis (squid)	*Daya Bay/*Daya Bay east west of Hong Kong Hong Kong waters	3	γ, H-3, Sr-90, Pu-239, C-14	quarterly
Sepia spp (cuttle fish)	Hong Kong waters	1	γ, H-3, Sr-90, Pu-239	quarterly
Tapes philippinarum	Cheung Chau, Tolo Harbour	2	γ, H-3, Sr-90, Pu-239, C-14	quarterly
Perna viridis	Cheung Chau, Tolo Harbour	2	γ, H-3, Sr-90, Pu-239	quarterly
Babylonia formosae	Hong Kong waters	1	γ, H-3, Sr-90, Pu-239	quarterly
Ulva lactuca	Po Toi O	1	γ, H-3, Sr-90, Pu-239	winter and spring
Enteromorpha prolifera	Tolo Harbour	1	γ, H-3, Sr-90, Pu-239	winter
Porphyra dentata	Po Toi Island	1	γ, H-3, Sr-90, Pu-239	winter
Sargassum hemiphyllum	Po Toi O	1	γ, H-3, Sr-90, Pu-239	winter and spring
Intertidal sediment (upper and lower level)	Pak Sha Wan, Tsim Bei Tsui, Sha Tau Kok	3	γ, Pu-239	quarterly
Seabed sediment	Tai Tan Hoi Hap, Lung Ha Wan, Picnic Bay, Western Anchorage	4	γ, Pu-239	yearly

* due to dwindling catches in the Daya Bay areas, no samples were obtained in 1999.

Table 2 Summary of methods of measurement

Measurement type		Sample treatment	Analytical method	Measuring equipment
Ambient gamma dose-rate		-	Continuous measurement	Reuter-Stokes Model 1013 PIC high pressure ionisation chamber
Cumulative gamma dose		-	-	Lithium fluoride (LiF:Mg,Ti) TLD
Gamma Emitting radionuclides	Airborne particulate	Compressed and bulked	High resolution gamma spectrometry	Canberra Genie-2000 Gamma Spectrometry System
	Deposition	Bulked		
	Airborne radioiodine	Direct measurement		
	Rice	Direct measurement		
	Milk	Direct measurement		
	Fruit/Vegetable	Edible part		
	Meat/Poultry	Edible part		
	Land soil	Direct measurement		
	Water samples	Direct measurement		
	Suspended particulate	Micro filtration		
	Seafood	Edible part		
	Seaweed	Drying		
	Sediment	Drying		
Tritium	Deposition	Cyclohexane-water azeotropic distillation (electrolytic enrichment for underground water samples)	Liquid scintillation counting	Wallac Model Guardian 1414 Liquid Scintillation Counter System
	Water vapour			
	Terrestrial foodstuff			
	Water samples			
	Seafood			
	Seaweed			
Strontium-90	Airborne particulate	Ashing, alkaline fusion, ion chromatography and precipitation	Gross beta counting	Berthold Low-Level Planchet Counter LB770-2
	Deposition			
	Terrestrial foodstuff			
	Land soil			
	Seafood			
	Seaweed			
Plutonium-239	Airborne particulate	Ashing, precipitation, ion chromatography and electroplating	Alpha spectrometry	EG & G Ortec OCTETE PC Alpha Spectrometry System
	Deposition			
	Land soil			
	Suspended particulate			
	Seafood			
	Seaweed			
	Sediment			
Carbon-14	Airborne particulate	Benzene synthesis	Accelerator mass spectrometry	Contracted out to Rafter Radiocarbon Laboratory, New Zealand for measurement
	Carbon dioxide			
	Terrestrial foodstuff			
	Seafood			

Table 3 Technical specification of RSS-1013 High Pressure Ionisation Chamber

Parameter	Specification
Measuring range	0 - 10 R h^{-1} (equivalent to around 0 - 0.1 Gy h^{-1})
Energy response	0.07 - 10 MeV
Accuracy	± 5% at background

Table 4 List of major artificial radionuclides routinely monitored in the Environmental Radiation Monitoring Programme

Radionuclide		Analysis Method
Tritium	H-3	Liquid scintillation counting
Carbon-14	C-14	Accelerator mass spectrometry
Strontium-90	Sr-90	Low level gross beta counting
Cobalt-58	Co-58	Gamma spectrometry
Cobalt-60	Co-60	Gamma spectrometry
Zirconium-95	Zr-95	Gamma spectrometry
Ruthenium-106	Ru-106	Gamma spectrometry
Silver-110m	Ag-110m	Gamma spectrometry
Antimony-124	Sb-124	Gamma spectrometry
Antimony-125	Sb-125	Gamma spectrometry
Iodine-131	I-131	Gamma spectrometry
Caesium-134	Cs-134	Gamma spectrometry
Caesium-137	Cs-137	Gamma spectrometry
Cerium-144	Ce-144	Gamma spectrometry
Plutonium-239	Pu-239	Alpha spectrometry

Note : all other artificial gamma emitting radionuclides not in the above table will also be monitored and reported if detected

Table 5 Comparison of specific activity of carbon-14 in 1999 samples with those in previous years and the Background Radiation Monitoring Programme (1987-1991)

Sample Name	Location	1999 ($Bq\ kg^{-1}$ C)	1998 ($Bq\ kg^{-1}$ C)	1997 ($Bq\ kg^{-1}$ C)	1996 ($Bq\ kg^{-1}$ C)	1995 ($Bq\ kg^{-1}$ C)	1994 ($Bq\ kg^{-1}$ C)	1993 ($Bq\ kg^{-1}$ C)	1992 ($Bq\ kg^{-1}$ C)	Range in BRMP
Airborne particulate	King's Park	269 ± 4	269 ± 3	277 ± 2	267 ± 3	271 ± 2	273 ± 4	-	-	275 to 298
Carbon Dioxide in air	King's Park	243 ± 3	255 ± 3	238 ± 2	252 ± 3	259 ± 3	250 ± 3	249 ± 6	-	184 to 297
	China	-	-	-	-	-	-	262 ± 4	-	256 to 288
Pork	China	-	-	-	-	-	254 ± 2	-	-	261 to 275
	Local	257 ± 4	257 ± 3	254 ± 2	-	-	-	263 ± 4	-	255 to 273
Pig's liver	China	-	-	-	252 ± 3	-	-	-	-	259 to 381
Chicken	China	-	-	-	-	-	-	262 ± 4	-	255 to 278
	Local	253 ± 4	257 ± 3	255 ± 2	-	-	255 ± 2	-	-	261 to 272
Duck	China	-	-	-	-	267 ± 2	-	-	-	269 to 281
Rice	China	249 ± 4	254 ± 3	256 ± 2	254 ± 3	255 ± 2	254 ± 2	259 ± 5	-	259 to 264
Pasteurized milk	Shenzhen	254 ± 4	253 ± 3	250 ± 2	-	-	260 ± 2	-	-	278
	Sha Tau Kok	-	-	-	-	256 ± 2	-	-	-	274 to 291
	Fanling	-	-	-	258 ± 3	-	-	259 ± 4	-	-
Flowering cabbage	Shenzhen	243 ± 4	257 ± 3	247 ± 2	-	253 ± 2	-	254 ± 4	-	223 to 270
White cabbage	Shenzhen	-	-	-	-	-	257 ± 2	-	-	238 to 267
	Local	-	-	-	245 ± 3	-	-	-	-	223 to 259
Banana	China	241 ± 3	250 ± 3	256 ± 2	-	256 ± 2	254 ± 2	-	-	259 to 283
Lychee	China	-	-	-	249 ± 2	-	-	-	-	261 to 280
Aristichthys nobilis	Shenzhen	-	-	-	251 ± 2	-	245 ± 2	-	-	263 to 268
	Yuen Long	239 ± 4	254 ± 3	251 ± 2	-	245 ± 2	-	257 ± 4	-	265 to 273
Nemipterus japonicus	H.K. West	-	-	-	251 ± 2	-	-	-	-	227 to 261
Trichiurus haumela	H.K. Waters	252 ± 4	255 ± 3	246 ± 2	-	-	-	-	-	252
	H.K. West	-	-	-	-	257 ± 2	-	-	-	248 to 263
Portunus sanguinolentus	H.K. West	-	-	-	-	-	-	255 ± 4	-	225 to 256
Metapenaeopsis barbata	Daya Bay	-	-	-	-	-	-	-	-	223 to 263
	DayaBay East	-	-	-	-	-	-	-	-	233 to 267
	H.K. Waters	249 ± 4	252 ± 3	255 ± 2	-	-	-	-	-	259 to 260
	H.K. West	-	-	-	247 ± 2	-	-	-	-	221 to 279
Loligo edulis	H.K. Waters	252 ± 4	253 ± 3	244 ± 2	-	-	-	-	-	231 to 257
	H.K. West	-	-	-	-	253 ± 2	-	-	-	226 to 296
Tapes philippinarum	Tolo	250 ± 5	251 ± 3	240 ± 2	-	-	-	-	-	256 to 267
Perna viridis	Cheung Chau	-	-	-	-	-	249 ± 2	-	-	223 to 264

Table 6 Summary of typical measurement parameters

Measurement type		Sample size	Counting time (second)	Background (CPM)	Counting efficiency (%)	Chemical recovery (%)	Detection limit	
							I-131	Cs-137
Gamma emitting radionuclides	Airborne particulate	20000 m^3	55000	-	-	-	10 µBq m^{-3}	10 µBq m^{-3}
	Airborne radioiodine	400 m^3	55000	-	-	-	0.0001 Bq m^{-3}	-
	Wet deposition	4 L	55000	-	-	-	0.1 Bq L^{-1}	0.1 Bq L^{-1}
	Total deposition	0.03 m^2	55000	-	-	-	12 Bq m^{-2}	15 Bq m^{-2}
	Rice	4 kg	20000	-	-	-	0.1 Bq kg^{-1}	0.2 Bq kg^{-1}
	Milk	1 L	20000	-	-	-	0.2 Bq L^{-1}	0.3 Bq L^{-1}
	Vegetable	1 kg	20000	-	-	-	0.3 Bq kg^{-1}	0.4 Bq kg^{-1}
	Fruit	2 kg	20000	-	-	-	0.2 Bq kg^{-1}	0.3 Bq kg^{-1}
	Poultry	2 kg	20000	-	-	-	0.1 Bq kg^{-1}	0.2 Bq kg^{-1}
	Meat	1 kg	20000	-	-	-	0.3 Bq kg^{-1}	0.4 Bq kg^{-1}
	Land soil	1 kg	10000	-	-	-	2 Bq kg^{-1}	2 Bq kg^{-1}
	Water samples	4 L	55000	-	-	-	0.1 Bq L^{-1}	0.1 Bq L^{-1}
	Suspended particulate	4 L	55000	-	-	-	0.01 Bq L^{-1}	0.02 Bq L^{-1}
	Seafood	2 kg	20000	-	-	-	0.1 Bq kg^{-1}	0.2 Bq kg^{-1}
	Seaweed	0.5 kg	20000	-	-	-	1 Bq kg^{-1}	2 Bq kg^{-1}
	Sediment	2 kg	20000	-	-	-	0.4 Bq kg^{-1}	0.5 Bq kg^{-1}
Tritium	Wet deposition	0.007 L	36000	10	20	-	6 Bq L^{-1}	
	Total deposition	0.0001 m^2	36000	10	20	-	400 Bq m^{-2}	
	Water vapour	0.0008 m^3	36000	10	20	-	70 Bq m^{-3}	
	Rice	0.07 kg	36000	10	20	-	1 Bq kg^{-1}	
	Milk	0.007 L	36000	10	20	-	6 Bq L^{-1}	
	Vegetable	0.008 kg	36000	10	20	-	5 Bq kg^{-1}	
	Fruit	0.01 kg	36000	10	20	-	4 Bq kg^{-1}	
	Poultry	0.01 kg	36000	10	20	-	4 Bq kg^{-1}	
	Meat	0.01 kg	36000	10	20	-	4 Bq kg^{-1}	
	Water samples	0.007 L	36000	10	20	-	6 Bq L^{-1}	
	Underground water	0.1 L	36000	10	20	-	0.4 Bq L^{-1}	
	Seafood	0.01 kg	36000	10	20	-	4 Bq kg^{-1}	
	Seaweed	0.02 kg	36000	10	20	-	2 Bq kg^{-1}	
Plutonium-239	Airborne particulate	5000 m^3	220000	-	20	40	0.2 µ Bq m^{-3}	
	Wet deposition	3 L	220000	-	20	40	0.0002 Bq L^{-1}	
	Total deposition	0.02 m^2	220000	-	20	40	0.04 Bq m^{-2}	
	Land soil	0.004 kg	220000	-	20	60	0.2 Bq kg^{-1}	
	Suspended particulate	2 L	220000	-	20	50	0.0003 Bq L^{-1}	
	Seafood	0.5 kg	220000	-	20	40	0.002 Bq kg^{-1}	
	Seaweed	0.03 kg	220000	-	20	40	0.01 Bq kg^{-1}	
	Sediment	0.005 kg	220000	-	20	50	0.2 Bq kg^{-1}	

Table 6 cont'd

Measurement type		Sample size	Counting time (second)	Background (CPM)	Counting efficiency (%)	Chemical recovery (%)	Detection limit
Strontium-90	Airborne particulate	5000 m^3	30000	1	75	90	1 μ Bq m^{-3}
	Wet deposition	3 L	30000	1	75	100	0.001 Bq L^{-1}
	Total deposition	0.01 m^2	30000	1	75	100	0.3 Bq m^{-2}
	Rice	3 kg	30000	1	75	90	0.002 Bq kg^{-1}
	Milk	1 L	30000	1	75	90	0.005 Bq L^{-1}
	Vegetable	1 kg	30000	1	75	90	0.005 Bq kg^{-1}
	Fruit	2 kg	30000	1	75	90	0.003 Bq kg^{-1}
	Poultry	2 kg	30000	1	75	90	0.002 Bq kg^{-1}
	Meat	1 kg	30000	1	75	90	0.005 Bq kg^{-1}
	Land soil	0.005 kg	30000	1	75	90	1 Bq kg^{-1}
	Suspended particulate	3 L	30000	1	75	90	0.002 Bq L^{-1}
	Seafood	2 kg	30000	1	75	90	0.003 Bq kg^{-1}
	Seaweed	0.1 kg	30000	1	75	90	0.05 Bq kg^{-1}

The values given in the table are typical values and are bound to variations in practice. These values should be used as quick reference only. Under certain special circumstances, some samples may be measured under substantially different conditions.

Table 7 Inter-laboratory comparison results on ambient gamma absorbed dose rate measurement in November 1998 organised by the China Institute for Radiation Protection (CIRP)

Field Measurement Site	**Survey Point**	**Measurement Result of the Hong Kong Observatory ($nGy\ h^{-1}$)**	**Reference Value of CIRP ($nGy\ h^{-1}$)**
Lawn of Sun Yat-sen Memorial Hall, Guangzhou	1	128 ± 3	129 ± 4
	2	117 ± 6	124 ± 5
	3	145 ± 3	145 ± 5
King's Park Meteorological Station, Hong Kong	A	168 ± 3	170 ± 5
	B	171 ± 2	174 ± 4
	C	166 ± 3	166 ± 4

Table 8 Results of the Inter-laboratory Comparison Exercise IAEA-384 (Fangatuafa Sediment)

Reference Date: 1 August 1996, unit: Bq kg^{-1} dry weight

	HKO	IAEA Results	
Radionuclide	Reported Value	Reference Value	95% Confidence Interval
Co-60	2.5 ± 0.3	2.50	2.29 - 2.57
Pu-239+240*	110 ± 17.2	107.0	105.4 - 108.9
Pu-238*	42.5 ± 8.0	38.95	38.10 - 39.60
Sr-90	3.2 ± 0.3	2.1	1.1 - 5.2

* Although the reported values for plutonium-238 and plutonium-239+240 were outside the 95% confidence interval given by IAEA, the values passed the test for outliers.

Table 9 Results of the Inter-laboratory Comparison Exercise IAEA-381 (Irish Sea Water)

Reference Date: 7 September 1993, unit: mBq kg^{-1}

	HKO	IAEA Results	
Radionuclide	Reported Value	Reference Value	95% Confidence Interval
Cs-137	480 ± 70	482	480 -500
Pu-239+240	13.0 ± 2.0	13.2	13.0 - 14.0
H-3	63000 ± 7000	74700	63000 - 88000
Sr-90**	68 ± 27	141	132 - 150

** The discrepancy between the reported value for strontium-90 and the IAEA reference value is the result of the presence of strontium at elevated levels in the seawater samples, which interferes with the determination of the chemical yield. The Government Laboratory is investigating into the use of .strontium-85 as a tracer with a view to more accurate determination of the chemical yield.

Table 10 Ambient gamma dose rates recorded by the Radiation Monitoring Network in January 1999

(All readings are in μGyh^{-1})

Station / Day	Ping Chau			Tap Mun			Kat O			Yuen Ng Fan			Tai Mei Tuk		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.092	0.102	0.084	0.092	0.102	0.082	0.111	0.120	0.102	0.120	0.130	0.111	0.123	0.135	0.113
2	0.094	0.101	0.086	0.094	0.104	0.086	0.112	0.121	0.102	0.122	0.131	0.113	0.125	0.134	0.117
3	0.093	0.101	0.086	0.094	0.103	0.086	0.112	0.123	0.104	0.122	0.132	0.114	0.124	0.134	0.117
4	0.093	0.104	0.085	0.094	0.105	0.084	0.112	0.121	0.103	0.121	0.133	0.113	0.124	0.132	0.116
5	0.093	0.106	0.086	0.093	0.104	0.084	0.112	0.120	0.103	0.120	0.131	0.112	0.123	0.135	0.114
6	0.093	0.107	0.084	0.094	0.104	0.085	0.112	0.121	0.103	0.122	0.131	0.112	0.124	0.136	0.115
7	0.093	0.101	0.084	0.093	0.100	0.085	0.110	0.119	0.103	0.121	0.129	0.113	0.122	0.132	0.114
8	0.093	0.105	0.084	0.093	0.107	0.082	0.111	0.121	0.103	0.122	0.134	0.112	0.123	0.133	0.114
9	0.093	0.102	0.084	0.092	0.101	0.084	0.111	0.121	0.103	0.120	0.130	0.111	0.123	0.132	0.114
10	0.094	0.105	0.086	0.094	0.104	0.085	0.112	0.121	0.102	0.122	0.134	0.112	0.124	0.137	0.114
11	0.095	0.103	0.085	0.093	0.103	0.086	0.112	0.120	0.103	0.123	0.133	0.112	0.125	0.135	0.116
12	0.095	0.110	0.087	0.096	0.110	0.086	0.112	0.122	0.105	0.123	0.135	0.114	0.125	0.137	0.115
13	0.095	0.105	0.086	0.095	0.107	0.086	0.112	0.123	0.104	0.123	0.134	0.114	0.126	0.138	0.117
14	0.094	0.103	0.086	0.094	0.105	0.086	0.112	0.122	0.104	0.121	0.130	0.113	0.124	0.134	0.114
15	0.091	0.100	0.082	0.090	0.099	0.082	0.109	0.117	0.102	0.120	0.132	0.112	0.120	0.129	0.113
16	0.092	0.100	0.084	0.091	0.101	0.084	0.110	0.119	0.102	0.121	0.131	0.112	0.122	0.131	0.114
17	0.094	0.105	0.087	0.093	0.100	0.085	0.112	0.124	0.103	0.122	0.130	0.113	0.124	0.132	0.117
18	0.095	0.103	0.087	0.094	0.102	0.086	0.112	0.122	0.105	0.122	0.133	0.114	0.124	0.134	0.115
19	0.093	0.103	0.084	0.093	0.107	0.084	0.112	0.121	0.102	0.120	0.130	0.111	0.124	0.134	0.112
20	0.091	0.100	0.084	0.090	0.099	0.082	0.111	0.121	0.103	0.119	0.130	0.111	0.123	0.135	0.112
21	0.093	0.106	0.084	0.092	0.102	0.081	0.111	0.121	0.102	0.122	0.135	0.112	0.124	0.136	0.112
22	0.091	0.101	0.082	0.089	0.100	0.081	0.109	0.120	0.100	0.119	0.128	0.109	0.121	0.130	0.112
23	0.090	0.100	0.082	0.089	0.098	0.082	0.109	0.116	0.101	0.117	0.128	0.107	0.120	0.129	0.112
24	0.089	0.100	0.081	0.089	0.100	0.081	0.109	0.118	0.101	0.117	0.128	0.109	0.119	0.128	0.110
25	0.090	0.101	0.082	0.090	0.100	0.084	0.110	0.121	0.100	0.118	0.128	0.109	0.120	0.130	0.113
26	0.091	0.100	0.084	0.090	0.099	0.084	0.110	0.117	0.104	0.119	0.128	0.111	0.121	0.128	0.114
27	0.091	0.101	0.084	0.090	0.100	0.084	0.110	0.120	0.103	0.118	0.128	0.110	0.120	0.128	0.112
28	0.091	0.102	0.082	0.090	0.100	0.082	0.110	0.120	0.101	0.118	0.128	0.108	0.121	0.135	0.112
29	0.090	0.098	0.084	0.088	0.096	0.082	0.109	0.120	0.101	0.117	0.128	0.110	0.120	0.129	0.111
30	0.090	0.100	0.084	0.088	0.100	0.082	0.108	0.120	0.101	0.117	0.127	0.109	0.119	0.129	0.112
31	0.091	0.100	0.084	0.088	0.101	0.082	0.109	0.119	0.102	0.117	0.128	0.111	0.120	0.129	0.112
$\bar{x}$	0.092			0.092			0.111			0.120			0.122		
σ	0.002			0.002			0.001			0.002			0.002		
max	0.110			0.110			0.124			0.135			0.138		
min	0.081			0.081			0.100			0.107			0.110		

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

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Table 10 cont'd

Day \ Station	Sha Tau Kok			Kwun Tong			Sai Wan Ho			King's Park			Tsim Bei Tsui		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.107	0.116	0.099	0.114	0.123	0.107	0.096	0.108	0.089	0.142	0.153	0.132	0.139	0.151	0.130
2	0.109	0.118	0.100	0.116	0.125	0.107	0.098	0.111	0.089	0.144	0.156	0.135	0.141	0.152	0.133
3	0.108	0.117	0.100	0.116	0.125	0.107	0.098	0.110	0.092	0.145	0.154	0.136	0.141	0.153	0.133
4	0.107	0.115	0.099	0.116	0.124	0.108	0.098	0.107	0.091	0.144	0.150	0.136	0.141	0.151	0.131
5	0.107	0.115	0.099	0.115	0.125	0.109	0.097	0.107	0.089	0.143	0.154	0.135	0.141	0.151	0.131
6	0.108	0.118	0.099	0.115	0.124	0.107	0.097	0.107	0.087	0.143	0.155	0.135	0.142	0.154	0.132
7	0.107	0.116	0.099	0.116	0.124	0.108	0.097	0.110	0.089	0.143	0.154	0.135	0.140	0.150	0.130
8	0.108	0.119	0.099	0.117	0.126	0.108	0.097	0.107	0.090	0.144	0.154	0.135	0.141	0.155	0.131
9	0.109	0.119	0.099	0.114	0.128	0.107	0.095	0.103	0.089	0.143	0.152	0.134	0.141	0.154	0.132
10	0.109	0.121	0.100	0.115	0.125	0.107	0.097	0.107	0.089	0.145	0.156	0.135	0.142	0.152	0.132
11	0.109	0.117	0.101	0.115	0.127	0.107	0.097	0.107	0.087	0.145	0.153	0.136	0.141	0.155	0.133
12	0.110	0.124	0.100	0.115	0.126	0.107	0.097	0.106	0.090	0.146	0.162	0.136	0.144	0.161	0.133
13	0.109	0.118	0.101	0.116	0.126	0.109	0.097	0.107	0.089	0.143	0.159	0.133	0.144	0.158	0.135
14	0.109	0.116	0.099	0.115	0.124	0.107	0.097	0.106	0.090	0.142	0.150	0.134	0.143	0.155	0.132
15	0.105	0.114	0.098	0.113	0.120	0.106	0.095	0.103	0.089	0.140	0.149	0.133	0.139	0.150	0.130
16	0.106	0.115	0.098	0.115	0.122	0.107	0.096	0.103	0.089	0.142	0.151	0.134	0.140	0.149	0.130
17	0.108	0.117	0.100	0.117	0.126	0.109	0.097	0.105	0.089	0.143	0.155	0.135	0.141	0.151	0.134
18	0.108	0.117	0.099	0.116	0.123	0.108	0.096	0.106	0.089	0.142	0.152	0.133	0.142	0.150	0.133
19	0.108	0.119	0.100	0.115	0.124	0.105	0.097	0.107	0.086	0.144	0.154	0.133	0.144	0.155	0.133
20	0.107	0.116	0.098	0.112	0.121	0.104	0.094	0.103	0.087	0.141	0.151	0.133	0.141	0.155	0.130
21	0.108	0.119	0.098	0.114	0.124	0.104	0.096	0.107	0.087	0.143	0.153	0.133	0.141	0.151	0.129
22	0.105	0.114	0.098	0.113	0.125	0.106	0.095	0.103	0.086	0.141	0.150	0.132	0.138	0.149	0.128
23	0.104	0.114	0.097	0.113	0.121	0.106	0.094	0.104	0.086	0.140	0.148	0.132	0.138	0.149	0.128
24	0.104	0.114	0.096	0.114	0.123	0.106	0.094	0.102	0.086	0.139	0.151	0.129	0.137	0.148	0.128
25	0.105	0.113	0.096	0.115	0.122	0.107	0.094	0.104	0.086	0.140	0.149	0.131	0.137	0.153	0.128
26	0.105	0.114	0.098	0.113	0.121	0.106	0.095	0.103	0.087	0.140	0.149	0.133	0.137	0.147	0.128
27	0.105	0.116	0.098	0.112	0.121	0.105	0.095	0.103	0.087	0.140	0.149	0.132	0.137	0.149	0.128
28	0.105	0.115	0.097	0.114	0.123	0.106	0.095	0.104	0.085	0.141	0.152	0.132	0.137	0.150	0.126
29	0.104	0.112	0.097	0.112	0.121	0.105	0.094	0.103	0.086	0.140	0.149	0.133	0.136	0.146	0.127
30	0.103	0.111	0.096	0.112	0.121	0.104	0.093	0.101	0.085	0.140	0.150	0.132	0.136	0.147	0.125
31	0.104	0.116	0.097	0.113	0.121	0.105	0.094	0.103	0.086	0.140	0.149	0.133	0.136	0.145	0.126
$\bar{x}$	0.107			0.114			0.096			0.142			0.140		
σ	0.002			0.001			0.001			0.002			0.002		
max	0.124			0.128			0.111			0.162			0.161		
min	0.096			0.104			0.085			0.129			0.125		

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

Table 11 Ambient gamma dose rates recorded by the Radiation Monitoring Network in February 1999

(All readings are in μGyh^{-1})

Station / Day	Ping Chau			Tap Mun			Kat O			Yuen Ng Fan			Tai Mei Tuk		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.091	0.099	0.082	0.090	0.098	0.081	0.110	0.117	0.102	0.118	0.131	0.110	0.121	0.130	0.111
2	0.091	0.100	0.081	0.091	0.099	0.082	0.109	0.117	0.100	0.118	0.126	0.109	0.120	0.130	0.113
3	0.091	0.100	0.082	0.090	0.101	0.081	0.108	0.116	0.099	0.118	0.129	0.109	0.120	0.129	0.112
4	0.092	0.100	0.084	0.090	0.100	0.081	0.109	0.117	0.100	0.119	0.128	0.110	0.121	0.131	0.114
5	0.092	0.102	0.082	0.089	0.099	0.080	0.109	0.120	0.099	0.118	0.129	0.109	0.120	0.130	0.111
6	0.091	0.102	0.084	0.089	0.100	0.080	0.108	0.119	0.101	0.118	0.129	0.109	0.120	0.130	0.110
7	0.091	0.100	0.084	0.090	0.102	0.081	0.109	0.118	0.100	0.118	0.128	0.109	0.121	0.132	0.111
8	0.091	0.101	0.084	0.091	0.100	0.080	0.109	0.118	0.100	0.118	0.129	0.109	0.120	0.130	0.112
9	0.091	0.102	0.084	0.090	0.100	0.081	0.109	0.119	0.100	0.118	0.130	0.110	0.120	0.130	0.112
10	0.092	0.103	0.085	0.090	0.100	0.082	0.109	0.117	0.102	0.119	0.128	0.111	0.121	0.130	0.113
11	0.094	0.103	0.086	0.093	0.104	0.085	0.111	0.121	0.103	0.121	0.133	0.112	0.124	0.134	0.114
12	0.093	0.103	0.085	0.091	0.102	0.082	0.109	0.120	0.098	0.120	0.131	0.111	0.121	0.131	0.112
13	0.091	0.100	0.084	0.089	0.097	0.082	0.108	0.116	0.098	0.118	0.128	0.110	0.120	0.131	0.113
14	0.091	0.101	0.084	0.089	0.102	0.081	0.108	0.118	0.100	0.118	0.128	0.110	0.120	0.134	0.108
15	0.091	0.100	0.082	0.089	0.102	0.082	0.109	0.118	0.100	0.118	0.128	0.110	0.120	0.128	0.110
16	0.092	0.100	0.082	0.091	0.100	0.082	0.110	0.119	0.101	0.118	0.128	0.111	0.121	0.131	0.113
17	0.091	0.100	0.082	0.090	0.102	0.082	0.110	0.119	0.102	0.118	0.128	0.111	0.121	0.130	0.114
18	0.092	0.100	0.086	0.092	0.101	0.082	0.111	0.121	0.104	0.118	0.128	0.110	0.122	0.135	0.114
19	0.092	0.100	0.086	0.091	0.099	0.085	0.109	0.121	0.100	0.119	0.131	0.110	0.121	0.129	0.114
20	0.093	0.106	0.086	0.092	0.100	0.085	0.110	0.118	0.102	0.120	0.128	0.111	0.122	0.132	0.113
21	0.095	0.104	0.087	0.093	0.100	0.086	0.111	0.122	0.103	0.122	0.132	0.112	0.124	0.132	0.116
22	0.094	0.105	0.085	0.092	0.104	0.082	0.110	0.119	0.099	0.121	0.131	0.111	0.123	0.135	0.112
23	0.092	0.100	0.084	0.090	0.101	0.079	0.108	0.121	0.100	0.119	0.128	0.109	0.121	0.133	0.113
24	0.093	0.106	0.084	0.092	0.101	0.084	0.110	0.120	0.103	0.119	0.128	0.110	0.123	0.134	0.113
25	0.092	0.101	0.086	0.090	0.100	0.079	0.110	0.119	0.102	0.118	0.128	0.110	0.121	0.131	0.113
26	0.092	0.100	0.085	0.089	0.099	0.079	0.110	0.120	0.101	0.118	0.128	0.108	0.121	0.129	0.112
27	0.091	0.100	0.082	0.090	0.102	0.082	0.110	0.122	0.102	0.118	0.135	0.108	0.121	0.134	0.111
28	0.092	0.104	0.082	0.090	0.099	0.080	0.110	0.120	0.099	0.119	0.129	0.110	0.121	0.132	0.112
$\bar{x}$	0.092			0.090			0.109			0.119			0.121		
σ	0.001			0.001			0.001			0.001			0.001		
max	0.106			0.104			0.122			0.135			0.135		
min	0.081			0.079			0.098			0.108			0.108		

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

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Table 11 cont'd

Station / Day	Sha Tau Kok			Kwun Tong			Sai Wan Ho			King's Park			Tsim Bei Tsui		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.104	0.114	0.097	0.114	0.122	0.106	0.094	0.101	0.085	0.139	0.151	0.131	0.136	0.146	0.127
2	0.105	0.117	0.097	0.114	0.124	0.106	0.095	0.102	0.087	0.140	0.152	0.132	0.138	0.149	0.129
3	0.104	0.113	0.098	0.112	0.121	0.104	0.094	0.103	0.086	0.140	0.151	0.132	0.137	0.147	0.128
4	0.105	0.114	0.097	0.112	0.121	0.105	0.095	0.104	0.087	0.141	0.151	0.133	0.138	0.153	0.128
5	0.105	0.114	0.095	0.111	0.121	0.103	0.094	0.103	0.086	0.141	0.152	0.132	0.138	0.154	0.128
6	0.105	0.114	0.096	0.111	0.121	0.102	0.094	0.106	0.085	0.141	0.149	0.132	0.137	0.149	0.128
7	0.105	0.114	0.094	0.112	0.122	0.102	0.094	0.105	0.087	0.141	0.152	0.132	0.138	0.149	0.129
8	0.105	0.114	0.097	0.112	0.120	0.105	0.094	0.103	0.085	0.141	0.150	0.133	0.138	0.149	0.128
9	0.104	0.114	0.095	0.113	0.122	0.106	0.094	0.102	0.085	0.141	0.150	0.132	0.137	0.149	0.126
10	0.105	0.115	0.096	0.114	0.125	0.107	0.094	0.103	0.085	0.141	0.151	0.133	0.136	0.147	0.125
11	0.107	0.118	0.098	0.116	0.125	0.107	0.097	0.105	0.089	0.143	0.152	0.135	0.140	0.152	0.130
12	0.106	0.114	0.096	0.113	0.122	0.103	0.095	0.104	0.087	0.142	0.152	0.133	0.138	0.148	0.128
13	0.104	0.113	0.095	0.111	0.121	0.104	0.094	0.103	0.085	0.141	0.149	0.133	0.137	0.149	0.128
14	0.104	0.114	0.096	0.112	0.124	0.103	0.094	0.102	0.086	0.141	0.151	0.133	0.137	0.150	0.125
15	0.104	0.112	0.094	0.112	0.121	0.105	0.094	0.102	0.086	0.141	0.151	0.132	0.137	0.148	0.127
16	0.105	0.113	0.097	0.113	0.121	0.105	0.094	0.103	0.085	0.141	0.152	0.133	0.137	0.147	0.127
17	0.104	0.113	0.096	0.114	0.121	0.106	0.094	0.103	0.086	0.141	0.149	0.134	0.137	0.151	0.128
18	0.106	0.118	0.097	0.115	0.126	0.107	0.095	0.104	0.086	0.143	0.154	0.135	0.138	0.149	0.128
19	0.105	0.114	0.098	0.114	0.123	0.105	0.095	0.103	0.087	0.143	0.153	0.136	0.138	0.146	0.129
20	0.106	0.114	0.099	0.113	0.121	0.106	0.095	0.104	0.089	0.144	0.152	0.136	0.138	0.146	0.130
21	0.108	0.114	0.100	0.114	0.123	0.107	0.096	0.105	0.089	0.146	0.154	0.138	0.141	0.149	0.132
22	0.107	0.116	0.098	0.114	0.121	0.106	0.096	0.105	0.086	0.143	0.154	0.135	0.141	0.153	0.131
23	0.104	0.113	0.098	0.113	0.124	0.106	0.094	0.104	0.086	0.141	0.152	0.131	0.137	0.147	0.127
24	0.107	0.115	0.099	0.115	0.128	0.107	0.096	0.105	0.085	0.143	0.153	0.132	0.139	0.151	0.130
25	0.105	0.117	0.098	0.114	0.123	0.107	0.094	0.102	0.084	0.142	0.151	0.132	0.138	0.149	0.128
26	0.105	0.113	0.097	0.114	0.121	0.106	0.094	0.106	0.087	0.141	0.150	0.132	0.136	0.146	0.125
27	0.105	0.114	0.096	0.113	0.122	0.104	0.095	0.105	0.086	0.142	0.151	0.133	0.137	0.149	0.127
28	0.105	0.114	0.096	0.112	0.121	0.103	0.094	0.105	0.085	0.142	0.155	0.134	0.137	0.147	0.128
$\bar{x}$	0.105			0.113			0.095			0.142			0.138		
σ	0.001			0.001			0.001			0.001			0.001		
max	0.118			0.128			0.106			0.155			0.154		
min	0.094			0.102			0.084			0.131			0.125		

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

Table 12 Ambient gamma dose rates recorded by the Radiation Monitoring Network in March 1999

(All readings are in μGyh^{-1})

Station / Day	Ping Chau			Tap Mun			Kat O			Yuen Ng Fan			Tai Mei Tuk		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.092	0.101	0.085	0.089	0.101	0.082	0.109	0.121	0.100	0.118	0.130	0.108	0.121	0.131	0.112
2	0.092	0.101	0.084	0.089	0.097	0.082	0.109	0.121	0.102	0.118	0.128	0.110	0.121	0.133	0.112
3	0.092	0.100	0.082	0.090	0.100	0.082	0.109	0.122	0.101	0.118	0.126	0.109	0.120	0.131	0.110
4	0.092	0.100	0.084	0.089	0.096	0.082	0.109	0.124	0.102	0.118	0.128	0.109	0.121	0.132	0.114
5	0.094	0.103	0.085	0.092	0.101	0.082	0.111	0.124	0.100	0.119	0.130	0.109	0.123	0.133	0.114
6	0.093	0.103	0.085	0.090	0.100	0.082	0.110	0.119	0.100	0.118	0.129	0.109	0.121	0.128	0.112
7	0.093	0.102	0.086	0.090	0.100	0.081	0.110	0.120	0.102	0.118	0.132	0.111	0.122	0.135	0.114
8	0.093	0.106	0.085	0.090	0.100	0.082	0.110	0.121	0.101	0.118	0.131	0.108	0.121	0.136	0.112
9	0.092	0.101	0.086	0.089	0.099	0.082	0.110	0.120	0.102	0.117	0.126	0.110	0.120	0.128	0.112
10	0.093	0.105	0.086	0.089	0.100	0.082	0.110	0.121	0.101	0.118	0.131	0.110	0.122	0.136	0.112
11	0.096	0.112	0.087	0.095	0.108	0.086	0.112	0.123	0.103	0.125	0.146	0.115	0.124	0.137	0.114
12	0.096	0.105	0.089	0.094	0.103	0.086	0.112	0.123	0.103	0.124	0.135	0.115	0.125	0.136	0.114
13	0.099	0.111	0.089	0.100	0.114	0.089	0.117	0.128	0.107	0.128	0.143	0.116	0.129	0.140	0.119
14	0.098	0.111	0.090	0.097	0.106	0.087	0.115	0.123	0.106	0.123	0.135	0.114	0.127	0.136	0.119
15	0.094	0.102	0.086	0.092	0.100	0.085	0.111	0.119	0.102	0.120	0.131	0.112	0.123	0.135	0.114
16	0.094	0.114	0.082	0.093	0.102	0.084	0.111	0.123	0.100	0.121	0.140	0.111	0.124	0.140	0.114
17	0.091	0.103	0.082	0.090	0.100	0.082	0.109	0.118	0.100	0.119	0.131	0.111	0.121	0.130	0.114
18	0.088	0.099	0.080	0.089	0.099	0.082	0.108	0.118	0.100	0.116	0.128	0.107	0.119	0.128	0.113
19	0.086	0.093	0.080	0.089	0.096	0.082	0.108	0.116	0.100	0.116	0.125	0.110	0.120	0.127	0.112
20	0.086	0.093	0.079	0.090	0.098	0.080	0.108	0.115	0.100	*	*	*	0.120	0.136	0.113
21	0.092	0.111	0.081	0.097	0.116	0.084	0.111	0.121	0.100	*	*	*	0.126	0.144	0.114
22	0.090	0.115	0.082	0.096	0.124	0.086	0.111	0.134	0.102	0.121	0.130	0.114	0.125	0.146	0.117
23	0.088	0.097	0.081	0.091	0.101	0.082	0.108	0.118	0.100	0.119	0.133	0.109	0.121	0.133	0.113
24	0.088	0.095	0.080	0.087	0.095	0.080	0.107	0.116	0.100	0.116	0.126	0.107	0.119	0.128	0.112
25	0.087	0.096	0.080	0.087	0.097	0.080	0.107	0.115	0.100	0.116	0.123	0.107	0.119	0.127	0.111
26	0.088	0.094	0.081	0.087	0.096	0.079	0.107	0.114	0.100	0.115	0.125	0.106	0.119	0.128	0.111
27	0.088	0.097	0.081	0.088	0.098	0.081	0.108	0.117	0.100	0.114	0.122	0.106	0.119	0.128	0.112
28	0.087	0.097	0.079	0.087	0.096	0.080	0.107	0.115	0.098	0.115	0.124	0.107	0.119	0.130	0.112
29	0.089	0.100	0.081	0.089	0.099	0.082	0.109	0.124	0.100	0.117	0.128	0.107	0.120	0.130	0.111
30	0.091	0.099	0.084	0.092	0.101	0.085	0.109	0.120	0.102	0.118	0.128	0.108	0.122	0.130	0.114
31	0.090	0.102	0.081	0.090	0.100	0.082	0.109	0.117	0.100	0.117	0.127	0.107	0.121	0.130	0.111
$\bar{x}$	0.091			0.091			0.110			0.119			0.122		
σ	0.003			0.003			0.002			0.003			0.003		
max	0.115			0.124			0.134			0.146			0.146		
min	0.079			0.079			0.098			0.106			0.110		

* Station under maintenance

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

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Table 12 cont'd

Station / Day	Sha Tau Kok			Kwun Tong			Sai Wan Ho			King's Park			Tsim Bei Tsui		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.105	0.116	0.095	0.112	0.120	0.105	0.094	0.103	0.085	0.142	0.153	0.134	0.137	0.149	0.129
2	0.105	0.114	0.097	0.113	0.121	0.105	0.094	0.105	0.085	0.141	0.151	0.132	0.137	0.149	0.127
3	0.104	0.114	0.098	0.112	0.120	0.105	0.094	0.107	0.086	0.141	0.149	0.132	0.136	0.149	0.127
4	0.103	0.112	0.095	0.112	0.121	0.106	0.094	0.102	0.086	0.141	0.149	0.131	0.136	0.146	0.128
5	0.104	0.113	0.097	0.115	0.124	0.107	0.095	0.106	0.085	0.141	0.156	0.131	0.137	0.147	0.128
6	0.104	0.112	0.097	0.114	0.123	0.107	0.095	0.103	0.087	0.141	0.150	0.132	0.137	0.147	0.128
7	0.104	0.112	0.096	0.113	0.121	0.106	0.094	0.103	0.087	0.141	0.150	0.134	0.136	0.149	0.128
8	0.105	0.114	0.098	0.114	0.128	0.106	0.095	0.109	0.085	0.143	0.173	0.133	0.136	0.146	0.128
9	0.104	0.114	0.096	0.112	0.121	0.105	0.094	0.103	0.085	0.139	0.149	0.131	0.135	0.142	0.128
10	0.106	0.125	0.096	0.113	0.126	0.106	0.094	0.107	0.085	0.140	0.151	0.130	0.139	0.155	0.128
11	0.108	0.120	0.099	0.115	0.126	0.107	0.097	0.106	0.089	0.144	0.161	0.133	0.141	0.153	0.132
12	0.110	0.121	0.100	0.116	0.128	0.109	0.097	0.108	0.089	0.143	0.152	0.135	0.142	0.153	0.134
13	0.114	0.125	0.102	0.120	0.132	0.110	0.099	0.108	0.090	0.144	0.154	0.135	0.145	0.155	0.136
14	0.112	0.121	0.103	0.118	0.128	0.110	0.099	0.109	0.090	0.144	0.160	0.135	0.146	0.156	0.138
15	0.107	0.120	0.099	0.115	0.126	0.107	0.097	0.107	0.090	0.143	0.154	0.135	0.141	0.153	0.130
16	0.108	0.121	0.100	0.114	0.128	0.106	0.097	0.114	0.087	0.144	0.163	0.134	0.141	0.163	0.129
17	0.106	0.116	0.096	0.113	0.123	0.107	0.095	0.103	0.085	0.141	0.151	0.131	0.137	0.149	0.128
18	0.105	0.112	0.096	0.113	0.122	0.107	0.094	0.102	0.086	0.137	0.147	0.128	0.135	0.144	0.127
19	0.106	0.114	0.098	0.113	0.121	0.106	0.093	0.101	0.086	0.136	0.145	0.127	0.134	0.147	0.125
20	0.105	0.117	0.097	0.112	0.120	0.105	0.093	0.103	0.084	0.136	0.146	0.128	0.134	0.142	0.127
21	0.112	0.126	0.096	0.116	0.129	0.107	0.096	0.109	0.086	0.142	0.164	0.130	0.140	0.160	0.127
22	0.109	0.126	0.100	0.116	0.128	0.107	0.096	0.106	0.089	0.140	0.159	0.132	0.140	0.165	0.131
23	0.106	0.118	0.097	0.114	0.125	0.107	0.094	0.105	0.086	0.138	0.148	0.131	0.138	0.155	0.128
24	0.104	0.114	0.096	0.112	0.119	0.106	0.093	0.101	0.085	0.137	0.146	0.128	0.136	0.145	0.128
25	0.104	0.112	0.096	0.112	0.121	0.105	0.094	0.103	0.086	0.136	0.143	0.128	0.135	0.146	0.124
26	0.104	0.114	0.097	0.112	0.122	0.105	0.093	0.102	0.085	0.137	0.145	0.130	0.134	0.143	0.124
27	0.105	0.115	0.097	0.112	0.121	0.105	0.093	0.100	0.084	0.138	0.145	0.129	0.135	0.147	0.124
28	0.103	0.113	0.094	0.112	0.121	0.105	0.093	0.101	0.084	0.137	0.146	0.129	0.134	0.145	0.126
29	0.105	0.115	0.097	0.115	0.126	0.107	0.095	0.104	0.086	0.139	0.148	0.131	0.137	0.153	0.128
30	0.106	0.114	0.098	0.116	0.123	0.109	0.096	0.104	0.089	0.141	0.150	0.130	0.138	0.149	0.128
31	0.106	0.114	0.096	0.114	0.125	0.106	0.095	0.105	0.086	0.140	0.152	0.130	0.139	0.150	0.128
$\bar{x}$	0.106			0.114			0.095			0.140			0.138		
σ	0.003			0.002			0.002			0.003			0.003		
max	0.126			0.132			0.114			0.173			0.165		
min	0.094			0.105			0.084			0.127			0.124		

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

Table 13 Ambient gamma dose rates recorded by the Radiation Monitoring Network in April 1999

(All readings are in μGyh^{-1})

Station / Day	Ping Chau			Tap Mun			Kat O			Yuen Ng Fan			Tai Mei Tuk		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.088	0.100	0.080	0.089	0.100	0.081	0.108	0.117	0.100	0.116	0.126	0.107	0.119	0.128	0.111
2	0.088	0.096	0.081	0.089	0.097	0.082	0.109	0.118	0.101	0.116	0.128	0.107	0.120	0.128	0.111
3	0.088	0.096	0.081	0.088	0.095	0.082	0.108	0.116	0.101	0.117	0.128	0.107	0.119	0.128	0.111
4	0.091	0.100	0.082	0.090	0.098	0.081	0.110	0.121	0.100	0.119	0.128	0.110	0.122	0.131	0.112
5	0.092	0.100	0.084	0.092	0.102	0.086	0.110	0.120	0.101	0.120	0.130	0.111	0.123	0.132	0.115
6	0.091	0.101	0.082	0.092	0.100	0.082	0.110	0.119	0.102	0.119	0.134	0.108	0.122	0.133	0.112
7	0.090	0.097	0.082	0.089	0.097	0.081	0.109	0.117	0.102	0.117	0.128	0.109	0.120	0.129	0.111
8	0.090	0.098	0.082	0.088	0.098	0.079	0.109	0.116	0.101	0.117	0.129	0.108	0.120	0.128	0.112
9	0.090	0.099	0.082	0.088	0.098	0.081	0.109	0.115	0.102	0.116	0.126	0.107	0.119	0.128	0.110
10	0.092	0.104	0.084	0.090	0.100	0.082	0.110	0.119	0.102	0.117	0.128	0.107	0.122	0.131	0.114
11	0.091	0.098	0.084	0.089	0.098	0.081	0.109	0.119	0.102	0.117	0.125	0.109	0.120	0.131	0.113
12	0.091	0.114	0.082	0.091	0.107	0.081	0.109	0.122	0.101	0.118	0.136	0.105	0.122	0.137	0.111
13	0.089	0.099	0.081	0.089	0.098	0.080	0.108	0.117	0.100	0.114	0.122	0.107	0.120	0.135	0.113
14	0.089	0.100	0.081	0.087	0.095	0.079	0.107	0.118	0.099	0.114	0.128	0.106	0.119	0.128	0.111
15	0.089	0.099	0.079	0.087	0.096	0.079	0.108	0.118	0.099	0.114	0.124	0.105	0.119	0.133	0.111
16	0.090	0.099	0.082	0.088	0.097	0.079	0.109	0.124	0.100	0.114	0.132	0.105	0.120	0.127	0.112
17	0.090	0.098	0.082	0.087	0.097	0.080	0.108	0.115	0.101	0.114	0.122	0.104	0.119	0.128	0.113
18	0.089	0.099	0.082	0.088	0.098	0.081	0.109	0.118	0.099	0.114	0.124	0.106	0.120	0.128	0.112
19	0.091	0.105	0.082	0.091	0.102	0.082	0.111	0.121	0.101	0.116	0.135	0.106	0.123	0.135	0.114
20	0.088	0.098	0.080	0.088	0.098	0.080	0.108	0.119	0.099	0.113	0.122	0.105	0.119	0.131	0.109
21	0.089	0.102	0.080	0.088	0.102	0.079	0.108	0.120	0.100	0.113	0.126	0.104	0.120	0.133	0.112
22	0.088	0.102	0.080	0.089	0.100	0.080	0.107	0.115	0.100	0.115	0.127	0.105	0.120	0.129	0.113
23	0.089	0.098	0.081	0.090	0.102	0.080	0.109	0.123	0.099	0.116	0.127	0.106	0.120	0.135	0.110
24	0.091	0.104	0.079	0.092	0.114	0.079	0.105	0.115	0.098	0.114	0.129	0.103	0.119	0.128	0.107
25	0.086	0.094	0.079	0.086	0.093	0.079	0.104	0.114	0.097	0.111	0.121	0.103	0.119	0.128	0.109
26	0.085	0.092	0.077	0.086	0.094	0.079	0.104	0.114	0.097	0.111	0.120	0.102	0.119	0.136	0.109
27	0.085	0.093	0.077	0.088	0.100	0.080	0.105	0.114	0.097	0.113	0.129	0.103	0.120	0.131	0.110
28	0.087	0.097	0.080	0.089	0.098	0.079	0.106	0.119	0.099	0.116	0.126	0.107	0.122	0.131	0.115
29	0.087	0.096	0.081	0.090	0.104	0.079	0.107	0.119	0.099	0.118	0.134	0.107	0.123	0.133	0.114
30	0.087	0.098	0.079	0.089	0.100	0.080	0.107	0.118	0.099	0.115	0.132	0.107	0.121	0.134	0.114
$\bar{x}$		0.089			0.089			0.108			0.115			0.120	
σ		0.002			0.002			0.002			0.002			0.001	
max		0.114			0.114			0.124			0.136			0.137	
min		0.077			0.079			0.097			0.102			0.107	

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

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Table 13 cont'd

Day \ Station	Sha Tau Kok			Kwun Tong			Sai Wan Ho			King's Park			Tsim Bei Tsui		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.104	0.113	0.097	0.112	0.127	0.105	0.094	0.103	0.086	0.139	0.148	0.130	0.135	0.143	0.127
2	0.104	0.112	0.096	0.112	0.124	0.106	0.093	0.100	0.084	0.139	0.149	0.129	0.136	0.144	0.127
3	0.104	0.114	0.096	0.111	0.121	0.104	0.093	0.103	0.084	0.139	0.149	0.132	0.135	0.145	0.127
4	0.106	0.114	0.096	0.114	0.123	0.107	0.095	0.106	0.084	0.142	0.152	0.134	0.138	0.149	0.128
5	0.107	0.118	0.099	0.115	0.125	0.107	0.096	0.106	0.089	0.144	0.155	0.135	0.139	0.149	0.128
6	0.106	0.115	0.098	0.115	0.126	0.107	0.095	0.104	0.087	0.142	0.153	0.131	0.139	0.148	0.131
7	0.104	0.113	0.096	0.113	0.122	0.106	0.093	0.101	0.085	0.140	0.148	0.132	0.135	0.145	0.125
8	0.103	0.112	0.095	0.112	0.120	0.104	0.094	0.102	0.085	0.139	0.151	0.131	0.134	0.143	0.126
9	0.103	0.111	0.096	0.111	0.119	0.104	0.093	0.101	0.086	0.139	0.149	0.131	0.134	0.146	0.127
10	0.105	0.113	0.097	0.112	0.120	0.103	0.094	0.103	0.085	0.140	0.153	0.130	0.136	0.147	0.128
11	0.104	0.113	0.097	0.112	0.121	0.106	0.093	0.101	0.085	0.140	0.149	0.132	0.135	0.146	0.127
12	0.106	0.121	0.098	0.115	0.128	0.105	0.096	0.106	0.086	0.136	0.152	0.126	0.137	0.153	0.128
13	0.104	0.114	0.096	0.113	0.122	0.106	0.094	0.103	0.082	0.134	0.142	0.124	0.135	0.147	0.125
14	0.103	0.114	0.095	0.113	0.121	0.105	0.093	0.101	0.084	0.134	0.143	0.125	0.134	0.144	0.127
15	0.102	0.114	0.095	0.113	0.125	0.103	0.093	0.100	0.085	0.134	0.142	0.124	0.134	0.142	0.125
16	0.103	0.111	0.095	0.112	0.121	0.105	0.093	0.100	0.085	0.135	0.143	0.125	0.134	0.144	0.126
17	0.103	0.112	0.095	0.112	0.120	0.105	0.093	0.104	0.086	0.135	0.147	0.127	0.133	0.145	0.125
18	0.104	0.113	0.095	0.112	0.123	0.105	0.093	0.101	0.086	0.135	0.142	0.125	0.133	0.146	0.126
19	0.107	0.120	0.098	0.114	0.125	0.105	0.094	0.105	0.086	0.136	0.150	0.125	0.138	0.154	0.128
20	0.103	0.114	0.095	0.112	0.122	0.105	0.093	0.101	0.086	0.134	0.142	0.123	0.135	0.146	0.124
21	0.104	0.117	0.096	0.112	0.121	0.105	0.093	0.101	0.082	0.134	0.143	0.127	0.135	0.148	0.124
22	0.104	0.113	0.096	0.114	0.122	0.106	0.095	0.104	0.087	0.134	0.142	0.122	0.135	0.143	0.125
23	0.104	0.116	0.095	0.114	0.123	0.106	0.094	0.103	0.086	0.133	0.142	0.122	0.135	0.146	0.125
24	0.103	0.110	0.094	0.113	0.121	0.106	0.093	0.102	0.086	0.134	0.142	0.124	0.133	0.143	0.125
25	0.103	0.114	0.096	0.113	0.121	0.106	0.093	0.104	0.082	0.134	0.142	0.125	0.133	0.142	0.125
26	0.102	0.109	0.094	0.112	0.128	0.105	0.093	0.104	0.085	0.133	0.142	0.125	0.133	0.144	0.124
27	0.103	0.111	0.094	0.112	0.120	0.105	0.093	0.102	0.084	0.135	0.144	0.128	0.134	0.144	0.124
28	0.104	0.113	0.096	0.114	0.121	0.107	0.095	0.104	0.086	0.138	0.147	0.130	0.136	0.143	0.128
29	0.106	0.118	0.097	0.118	0.135	0.107	0.098	0.112	0.089	0.141	0.159	0.129	0.137	0.152	0.128
30	0.105	0.114	0.097	0.114	0.130	0.107	0.095	0.109	0.087	0.135	0.153	0.127	0.137	0.149	0.127
$\bar{x}$		0.104			0.113			0.094			0.137			0.135	
σ		0.001			0.001			0.001			0.003			0.002	
max		0.121			0.135			0.112			0.159			0.154	
min		0.094			0.103			0.082			0.122			0.124	

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

Table 14 Ambient gamma dose rates recorded by the Radiation Monitoring Network in May 1999

(All readings are in μGyh^{-1})

Station / Day	Ping Chau			Tap Mun			Kat O			Yuen Ng Fan			Tai Mei Tuk		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.087	0.095	0.079	0.089	0.098	0.081	0.108	0.119	0.100	0.116	0.131	0.106	0.123	0.134	0.114
2	0.094	0.123	0.079	0.089	0.100	0.081	0.108	0.125	0.098	0.119	0.144	0.107	0.125	0.142	0.115
3	0.085	0.093	0.077	0.088	0.096	0.079	0.106	0.118	0.099	0.114	0.123	0.105	0.121	0.132	0.113
4	0.089	0.141	0.077	0.089	0.099	0.082	0.107	0.117	0.099	0.113	0.123	0.103	0.123	0.131	0.114
5	0.096	0.128	0.077	0.101	0.138	0.082	0.113	0.135	0.099	0.128	0.178	0.104	0.131	0.168	0.114
6	0.092	0.127	0.077	0.093	0.120	0.079	0.110	0.130	0.098	0.120	0.141	0.106	0.125	0.145	0.114
7	0.083	0.091	0.076	0.086	0.095	0.079	0.103	0.111	0.095	0.113	0.123	0.102	0.119	0.128	0.111
8	0.087	0.096	0.077	0.090	0.107	0.080	0.105	0.115	0.097	0.115	0.128	0.106	0.121	0.132	0.112
9	0.088	0.102	0.077	0.090	0.107	0.079	0.106	0.118	0.098	0.118	0.138	0.107	0.122	0.141	0.114
10	0.085	0.092	0.077	0.088	0.099	0.081	0.106	0.114	0.097	0.114	0.125	0.104	0.120	0.129	0.110
11	0.085	0.094	0.077	0.088	0.100	0.081	0.106	0.115	0.098	0.113	0.123	0.105	0.122	0.138	0.112
12	0.084	0.091	0.077	0.086	0.096	0.079	0.104	0.114	0.095	0.112	0.124	0.105	0.118	0.128	0.111
13	0.084	0.094	0.079	0.086	0.094	0.077	0.105	0.114	0.097	0.113	0.123	0.105	0.119	0.127	0.110
14	0.084	0.096	0.077	0.086	0.095	0.079	0.105	0.114	0.098	0.113	0.122	0.104	0.119	0.128	0.109
15	0.085	0.093	0.077	0.085	0.093	0.079	0.105	0.114	0.098	0.113	0.121	0.103	0.119	0.128	0.110
16	0.085	0.093	0.077	0.085	0.093	0.077	0.106	0.116	0.098	0.112	0.121	0.102	0.119	0.128	0.111
17	0.085	0.093	0.077	0.086	0.099	0.079	0.106	0.114	0.099	0.112	0.121	0.104	0.119	0.129	0.112
18	0.085	0.094	0.079	0.087	0.097	0.079	0.107	0.114	0.100	0.112	0.123	0.104	0.119	0.128	0.113
19	0.086	0.098	0.077	0.089	0.099	0.081	0.107	0.117	0.099	0.115	0.125	0.107	0.121	0.134	0.110
20	0.084	0.093	0.077	0.085	0.095	0.079	0.105	0.114	0.097	0.112	0.122	0.104	0.119	0.127	0.110
21	0.084	0.092	0.077	0.085	0.093	0.079	0.104	0.112	0.095	0.112	0.123	0.102	0.117	0.126	0.110
22	0.084	0.091	0.077	0.085	0.092	0.079	0.105	0.114	0.094	0.111	0.121	0.102	0.118	0.128	0.110
23	0.084	0.093	0.076	0.085	0.093	0.077	0.106	0.114	0.098	0.112	0.124	0.102	0.119	0.128	0.110
24	0.084	0.094	0.077	0.086	0.094	0.079	0.107	0.120	0.098	0.112	0.124	0.104	0.118	0.127	0.111
25	0.084	0.094	0.076	0.086	0.094	0.079	0.106	0.116	0.097	0.112	0.125	0.103	0.118	0.128	0.110
26	0.083	0.093	0.076	0.086	0.094	0.079	0.106	0.116	0.099	0.111	0.121	0.103	0.118	0.129	0.110
27	0.085	0.096	0.077	0.089	0.102	0.082	0.106	0.115	0.098	0.115	0.126	0.105	0.121	0.133	0.112
28	0.087	0.105	0.079	0.089	0.102	0.080	0.106	0.119	0.098	0.116	0.131	0.106	0.121	0.136	0.114
29	0.083	0.093	0.077	0.086	0.096	0.079	0.105	0.117	0.095	0.113	0.129	0.104	0.119	0.131	0.111
30	0.084	0.095	0.077	0.086	0.095	0.079	0.106	0.116	0.098	0.113	0.121	0.105	0.119	0.127	0.110
31	0.085	0.093	0.077	0.086	0.096	0.079	0.106	0.114	0.098	0.113	0.128	0.104	0.120	0.129	0.111
$\bar{x}$	0.086			0.088			0.106			0.114			0.120		
σ	0.003			0.003			0.002			0.003			0.003		
max	0.141			0.138			0.135			0.178			0.168		
min	0.076			0.077			0.094			0.102			0.109		

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

- to be continued on next page -

Table 14 cont'd

Station / Day	Sha Tau Kok			Kwun Tong			Sai Wan Ho			King's Park			Tsim Bei Tsui		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.106	0.116	0.095	0.115	0.123	0.107	0.095	0.105	0.086	0.135	0.147	0.125	0.137	0.148	0.128
2	0.105	0.114	0.097	0.117	0.134	0.107	0.097	0.113	0.086	0.138	0.155	0.125	0.137	0.153	0.128
3	0.106	0.116	0.098	0.114	0.123	0.107	0.095	0.104	0.087	0.134	0.142	0.126	0.137	0.152	0.128
4	0.105	0.117	0.094	0.113	0.125	0.106	0.095	0.104	0.087	0.134	0.143	0.126	0.137	0.149	0.128
5	0.113	0.138	0.099	0.122	0.154	0.107	0.103	0.131	0.086	0.148	0.212	0.128	0.144	0.180	0.129
6	0.110	0.132	0.096	0.117	0.133	0.107	0.099	0.115	0.084	0.141	0.160	0.124	0.141	0.165	0.128
7	0.103	0.113	0.095	0.113	0.121	0.105	0.094	0.100	0.084	0.133	0.142	0.126	0.135	0.144	0.128
8	0.105	0.114	0.096	0.113	0.124	0.105	0.095	0.107	0.086	0.135	0.147	0.126	0.137	0.149	0.127
9	0.106	0.118	0.094	0.116	0.129	0.106	0.097	0.108	0.087	0.137	0.155	0.125	0.139	0.154	0.128
10	0.105	0.112	0.096	0.115	0.123	0.107	0.095	0.106	0.086	0.134	0.142	0.126	0.138	0.154	0.127
11	0.105	0.114	0.095	0.115	0.126	0.106	0.096	0.107	0.087	0.134	0.146	0.128	0.137	0.146	0.128
12	0.103	0.114	0.093	0.111	0.121	0.105	0.093	0.100	0.084	0.133	0.142	0.125	0.135	0.145	0.125
13	0.103	0.112	0.093	0.111	0.120	0.104	0.093	0.105	0.084	0.134	0.142	0.127	0.135	0.143	0.127
14	0.103	0.111	0.095	0.111	0.119	0.104	0.093	0.106	0.086	0.134	0.142	0.126	0.135	0.144	0.126
15	0.103	0.114	0.094	0.111	0.121	0.103	0.093	0.101	0.085	0.135	0.143	0.126	0.134	0.145	0.127
16	0.102	0.111	0.095	0.112	0.121	0.105	0.093	0.101	0.086	0.135	0.146	0.128	0.134	0.143	0.126
17	0.102	0.111	0.094	0.113	0.122	0.105	0.093	0.100	0.086	0.135	0.144	0.127	0.133	0.143	0.126
18	0.103	0.112	0.095	0.113	0.121	0.106	0.093	0.101	0.086	0.135	0.146	0.128	0.133	0.142	0.126
19	0.105	0.118	0.096	0.116	0.125	0.107	0.095	0.105	0.087	0.135	0.147	0.126	0.136	0.151	0.126
20	0.102	0.110	0.095	0.113	0.122	0.106	0.093	0.101	0.084	0.132	0.138	0.123	0.134	0.144	0.126
21	0.102	0.111	0.093	0.111	0.120	0.104	0.092	0.100	0.082	0.132	0.142	0.122	0.133	0.141	0.123
22	0.102	0.111	0.094	0.111	0.127	0.104	0.093	0.102	0.085	0.132	0.141	0.124	0.133	0.143	0.125
23	0.102	0.116	0.093	0.111	0.121	0.104	0.093	0.105	0.084	0.132	0.144	0.125	0.133	0.144	0.123
24	0.103	0.112	0.093	0.112	0.122	0.105	0.092	0.100	0.086	0.133	0.142	0.126	0.134	0.149	0.126
25	0.102	0.111	0.093	0.112	0.121	0.104	0.093	0.102	0.086	0.132	0.138	0.124	0.133	0.143	0.123
26	0.102	0.112	0.095	0.112	0.119	0.105	0.093	0.100	0.086	0.132	0.148	0.126	0.133	0.145	0.122
27	0.105	0.114	0.095	0.116	0.129	0.107	0.097	0.108	0.090	0.137	0.153	0.128	0.137	0.150	0.128
28	0.105	0.119	0.097	0.115	0.125	0.107	0.095	0.104	0.087	0.134	0.144	0.125	0.137	0.150	0.128
29	0.103	0.111	0.097	0.114	0.125	0.106	0.095	0.106	0.087	0.133	0.146	0.125	0.136	0.145	0.128
30	0.103	0.112	0.095	0.112	0.123	0.105	0.094	0.102	0.086	0.132	0.142	0.124	0.135	0.144	0.127
31	0.103	0.111	0.096	0.112	0.121	0.105	0.094	0.103	0.087	0.133	0.142	0.126	0.135	0.145	0.128
$\bar{x}$	0.104			0.114			0.095			0.135			0.136		
σ	0.002			0.002			0.002			0.003			0.003		
max	0.138			0.154			0.131			0.212			0.180		
min	0.093			0.103			0.082			0.122			0.122		

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

Table 15 Ambient gamma dose rates recorded by the Radiation Monitoring Network in June 1999

(All readings are in μGyh^{-1})

Station / Day	Ping Chau			Tap Mun			Kat O			Yuen Ng Fan			Tai Mei Tuk		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.084	0.093	0.077	0.085	0.093	0.079	0.106	0.113	0.098	0.112	0.128	0.103	0.119	0.129	0.111
2	0.085	0.093	0.077	0.088	0.097	0.080	0.107	0.116	0.100	0.113	0.124	0.104	0.120	0.129	0.113
3	0.085	0.094	0.079	0.088	0.099	0.079	0.107	0.117	0.100	0.113	0.121	0.101	0.120	0.132	0.111
4	0.086	0.093	0.079	0.087	0.094	0.079	0.107	0.115	0.100	0.114	0.124	0.106	0.119	0.128	0.111
5	0.086	0.096	0.079	0.087	0.095	0.080	0.109	0.118	0.102	0.115	0.127	0.106	0.121	0.131	0.112
6	0.088	0.109	0.081	0.089	0.108	0.082	0.110	0.121	0.101	0.118	0.140	0.109	0.123	0.135	0.115
7	0.108	0.203	0.079	0.106	0.169	0.086	0.120	0.176	0.100	0.136	0.192	0.110	0.136	0.197	0.114
8	0.088	0.114	0.077	0.093	0.120	0.080	0.107	0.125	0.095	0.117	0.149	0.104	0.123	0.155	0.109
9	0.083	0.092	0.075	0.086	0.093	0.080	0.102	0.110	0.095	0.111	0.119	0.102	0.118	0.127	0.110
10	0.083	0.090	0.077	0.086	0.094	0.080	0.104	0.114	0.096	0.110	0.120	0.101	0.118	0.125	0.109
11	0.084	0.092	0.077	0.088	0.098	0.081	0.105	0.116	0.098	0.111	0.120	0.103	0.118	0.127	0.112
12	0.084	0.093	0.077	0.088	0.095	0.080	0.105	0.114	0.096	0.112	0.121	0.103	0.118	0.128	0.109
13	0.085	0.096	0.077	0.088	0.097	0.080	0.105	0.115	0.099	0.112	0.121	0.104	0.119	0.129	0.110
14	0.085	0.093	0.077	0.088	0.100	0.080	0.106	0.118	0.097	0.112	0.122	0.104	0.119	0.127	0.112
15	0.085	0.093	0.077	0.088	0.098	0.082	0.107	0.116	0.100	0.112	0.121	0.105	0.119	0.135	0.111
16	0.085	0.093	0.079	0.087	0.096	0.079	0.107	0.114	0.100	0.112	0.121	0.105	0.119	0.128	0.112
17	0.084	0.094	0.077	0.087	0.097	0.079	0.106	0.114	0.099	0.112	0.121	0.105	0.119	0.128	0.111
18	0.083	0.096	0.076	0.087	0.094	0.080	0.106	0.114	0.098	0.112	0.121	0.104	0.119	0.128	0.110
19	0.083	0.092	0.076	0.087	0.096	0.079	0.106	0.116	0.098	0.113	0.122	0.105	0.119	0.128	0.111
20	0.083	0.092	0.077	0.088	0.096	0.079	0.106	0.120	0.096	0.113	0.121	0.102	0.118	0.128	0.111
21	0.086	0.102	0.073	0.089	0.105	0.081	0.107	0.121	0.097	0.114	0.132	0.105	0.121	0.134	0.112
22	0.084	0.098	0.076	0.088	0.102	0.079	0.105	0.120	0.094	0.112	0.128	0.104	0.119	0.133	0.110
23	0.081	0.091	0.075	0.087	0.097	0.080	0.103	0.114	0.096	0.111	0.121	0.103	0.118	0.130	0.109
24	0.081	0.092	0.075	0.086	0.094	0.080	0.103	0.113	0.096	0.111	0.120	0.102	0.118	0.136	0.111
25	0.082	0.092	0.075	0.087	0.094	0.080	0.103	0.111	0.094	0.111	0.121	0.102	0.118	0.127	0.109
26	0.082	0.090	0.076	0.087	0.095	0.080	0.103	0.115	0.095	0.111	0.121	0.102	0.118	0.127	0.110
27	0.082	0.090	0.076	0.087	0.095	0.080	0.104	0.112	0.095	0.111	0.125	0.102	0.118	0.127	0.111
28	0.083	0.091	0.075	0.087	0.096	0.080	0.104	0.112	0.095	0.112	0.121	0.104	0.118	0.128	0.111
29	0.083	0.092	0.076	0.088	0.099	0.079	0.104	0.114	0.096	0.113	0.127	0.104	0.119	0.127	0.111
30	0.084	0.093	0.076	0.087	0.098	0.079	0.103	0.114	0.095	0.113	0.122	0.104	0.119	0.126	0.111
$\bar{x}$	0.085			0.088			0.106			0.113			0.120		
σ	0.005			0.004			0.003			0.005			0.003		
max	0.203			0.169			0.176			0.192			0.197		
min	0.073			0.079			0.094			0.101			0.109		

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

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Table 15 cont'd

Station / Day	Sha Tau Kok			Kwun Tong			Sai Wan Ho			King's Park			Tsim Bei Tsui		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.102	0.115	0.093	0.112	0.121	0.103	0.093	0.103	0.085	0.133	0.141	0.125	0.134	0.144	0.125
2	0.103	0.112	0.095	0.112	0.122	0.106	0.094	0.102	0.087	0.134	0.143	0.126	0.134	0.145	0.125
3	0.103	0.111	0.095	0.112	0.121	0.105	0.094	0.102	0.086	0.135	0.145	0.128	0.134	0.146	0.124
4	0.103	0.110	0.095	0.112	0.121	0.105	0.093	0.102	0.086	0.135	0.144	0.128	0.134	0.142	0.125
5	0.104	0.115	0.095	0.112	0.120	0.104	0.094	0.104	0.086	0.137	0.145	0.129	0.134	0.144	0.125
6	0.105	0.116	0.098	0.115	0.124	0.105	0.096	0.103	0.087	0.139	0.149	0.129	0.135	0.147	0.123
7	0.124	0.173	0.097	0.128	0.159	0.112	0.105	0.123	0.090	0.150	0.182	0.129	0.147	0.208	0.129
8	0.108	0.134	0.093	0.118	0.142	0.107	0.098	0.118	0.086	0.135	0.162	0.124	0.135	0.157	0.124
9	0.101	0.109	0.094	0.112	0.124	0.104	0.093	0.100	0.086	0.130	0.138	0.123	0.132	0.142	0.124
10	0.101	0.114	0.092	0.111	0.120	0.103	0.093	0.101	0.086	0.131	0.142	0.124	0.132	0.142	0.121
11	0.102	0.111	0.092	0.111	0.119	0.105	0.093	0.101	0.086	0.132	0.145	0.123	0.133	0.142	0.125
12	0.102	0.111	0.093	0.111	0.122	0.105	0.093	0.104	0.086	0.133	0.148	0.124	0.133	0.143	0.125
13	0.102	0.110	0.094	0.111	0.121	0.103	0.093	0.107	0.086	0.134	0.143	0.127	0.133	0.142	0.125
14	0.103	0.115	0.096	0.111	0.120	0.103	0.093	0.104	0.086	0.135	0.142	0.127	0.133	0.145	0.122
15	0.104	0.111	0.097	0.112	0.122	0.102	0.093	0.102	0.086	0.135	0.143	0.128	0.133	0.147	0.125
16	0.103	0.113	0.094	0.112	0.121	0.104	0.093	0.102	0.086	0.135	0.142	0.128	0.133	0.142	0.125
17	0.102	0.113	0.094	0.112	0.121	0.105	0.093	0.101	0.085	0.133	0.142	0.124	0.133	0.142	0.125
18	0.102	0.112	0.093	0.113	0.120	0.104	0.093	0.101	0.086	0.131	0.142	0.122	0.133	0.143	0.124
19	0.102	0.110	0.094	0.114	0.122	0.106	0.093	0.100	0.086	0.131	0.149	0.124	0.133	0.146	0.126
20	0.103	0.114	0.095	0.114	0.125	0.107	0.093	0.102	0.086	0.131	0.140	0.123	0.134	0.146	0.124
21	0.103	0.113	0.094	0.115	0.128	0.106	0.095	0.109	0.086	0.133	0.148	0.122	0.134	0.144	0.125
22	0.102	0.110	0.093	0.113	0.125	0.105	0.093	0.102	0.086	0.131	0.140	0.123	0.133	0.144	0.123
23	0.103	0.118	0.094	0.111	0.121	0.104	0.093	0.100	0.086	0.131	0.138	0.124	0.133	0.143	0.125
24	0.102	0.111	0.094	0.111	0.121	0.104	0.093	0.103	0.086	0.131	0.140	0.123	0.133	0.142	0.124
25	0.102	0.109	0.093	0.112	0.121	0.103	0.093	0.101	0.084	0.132	0.141	0.125	0.133	0.142	0.124
26	0.101	0.111	0.094	0.113	0.121	0.105	0.092	0.101	0.085	0.131	0.142	0.123	0.132	0.140	0.123
27	0.102	0.111	0.093	0.113	0.121	0.104	0.093	0.107	0.086	0.131	0.140	0.124	0.132	0.142	0.124
28	0.102	0.112	0.094	0.112	0.121	0.104	0.093	0.101	0.085	0.132	0.142	0.126	0.133	0.141	0.125
29	0.102	0.112	0.093	0.111	0.121	0.103	0.093	0.102	0.086	0.133	0.141	0.124	0.133	0.143	0.126
30	0.102	0.111	0.094	0.111	0.121	0.103	0.093	0.103	0.086	0.133	0.141	0.124	0.133	0.142	0.126
$\bar{x}$	0.103			0.113			0.094			0.134			0.134		
σ	0.004			0.003			0.002			0.004			0.003		
max	0.173			0.159			0.123			0.182			0.208		
min	0.092			0.102			0.084			0.122			0.121		

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

Table 16 Ambient gamma dose rates recorded by the Radiation Monitoring Network in July 1999

(All readings are in μGyh^{-1})

Station / Day	Ping Chau			Tap Mun			Kat O			Yuen Ng Fan			Tai Mei Tuk		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.084	0.093	0.077	0.087	0.094	0.080	0.105	0.114	0.097	0.113	0.122	0.104	0.119	0.128	0.112
2	0.084	0.093	0.077	0.088	0.098	0.080	0.106	0.114	0.098	0.113	0.124	0.105	0.120	0.128	0.112
3	0.084	0.093	0.076	0.087	0.095	0.079	0.105	0.113	0.098	0.113	0.125	0.105	0.119	0.128	0.111
4	0.084	0.093	0.077	0.088	0.100	0.081	0.105	0.114	0.098	0.113	0.123	0.105	0.119	0.128	0.111
5	0.084	0.093	0.077	0.088	0.097	0.081	0.104	0.113	0.097	0.113	0.121	0.105	0.120	0.127	0.111
6	0.084	0.097	0.075	0.088	0.096	0.081	0.104	0.114	0.097	0.114	0.125	0.106	0.119	0.130	0.110
7	0.083	0.092	0.076	0.088	0.096	0.080	0.105	0.114	0.097	0.112	0.121	0.103	0.119	0.127	0.111
8	0.086	0.112	0.074	0.089	0.109	0.080	0.106	0.124	0.096	0.113	0.127	0.103	0.122	0.142	0.111
9	0.084	0.107	0.075	0.090	0.116	0.079	0.103	0.113	0.094	0.115	0.147	0.103	0.121	0.143	0.110
10	0.082	0.091	0.073	0.088	0.095	0.081	0.103	0.112	0.096	0.111	0.119	0.103	0.119	0.128	0.110
11	0.082	0.089	0.075	0.088	0.098	0.080	0.103	0.112	0.096	0.112	0.121	0.103	0.119	0.127	0.110
12	0.083	0.091	0.075	0.089	0.097	0.082	0.105	0.114	0.097	0.112	0.122	0.104	0.119	0.128	0.111
13	0.084	0.092	0.076	0.088	0.095	0.080	0.106	0.115	0.098	0.113	0.133	0.105	0.120	0.128	0.113
14	0.083	0.091	0.075	0.088	0.097	0.079	0.105	0.115	0.098	0.111	0.120	0.103	0.119	0.128	0.111
15	0.083	0.093	0.075	0.088	0.100	0.082	0.105	0.114	0.098	0.112	0.120	0.102	0.120	0.128	0.111
16	0.081	0.090	0.073	0.087	0.099	0.080	0.103	0.113	0.095	0.112	0.121	0.104	0.119	0.129	0.110
17	0.080	0.094	0.073	0.088	0.100	0.081	0.105	0.114	0.097	0.110	0.120	0.102	0.118	0.129	0.110
18	0.080	0.093	0.073	0.088	0.096	0.081	0.105	0.116	0.099	0.112	0.121	0.104	0.118	0.128	0.112
19	0.081	0.098	0.073	0.088	0.098	0.079	0.105	0.114	0.098	0.112	0.121	0.104	0.119	0.128	0.112
20	0.081	0.087	0.074	0.089	0.100	0.080	0.106	0.114	0.098	0.113	0.121	0.106	0.119	0.129	0.112
21	0.081	0.092	0.073	0.089	0.097	0.081	0.107	0.116	0.099	0.113	0.122	0.105	0.120	0.130	0.113
22	0.082	0.089	0.074	0.089	0.100	0.082	0.107	0.115	0.100	0.114	0.123	0.107	0.120	0.135	0.113
23	0.082	0.093	0.075	0.089	0.100	0.080	0.107	0.116	0.100	0.114	0.135	0.106	0.120	0.128	0.111
24	0.082	0.091	0.075	0.089	0.100	0.082	0.107	0.117	0.100	0.113	0.122	0.105	0.120	0.129	0.112
25	0.083	0.093	0.075	0.088	0.100	0.081	0.106	0.116	0.099	0.113	0.121	0.107	0.119	0.127	0.111
26	0.082	0.096	0.075	0.088	0.100	0.080	0.106	0.116	0.097	0.114	0.130	0.105	0.120	0.128	0.112
27	0.084	0.100	0.076	0.091	0.111	0.082	0.108	0.118	0.100	0.115	0.132	0.106	0.121	0.130	0.113
28	0.083	0.093	0.074	0.091	0.099	0.084	0.108	0.118	0.101	0.114	0.123	0.106	0.121	0.129	0.113
29	0.082	0.091	0.076	0.089	0.097	0.082	0.108	0.115	0.101	0.113	0.122	0.103	0.120	0.133	0.113
30	0.082	0.092	0.076	0.088	0.097	0.081	0.107	0.114	0.100	0.112	0.121	0.103	0.119	0.129	0.111
31	0.082	0.092	0.073	0.087	0.095	0.080	0.106	0.115	0.099	0.112	0.120	0.103	0.119	0.128	0.109
$\bar{x}$	0.083			0.088			0.106			0.113			0.120		
σ	0.001			0.001			0.001			0.001			0.001		
max	0.112			0.116			0.124			0.147			0.143		
min	0.073			0.079			0.094			0.102			0.109		

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

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Table 16 cont'd

Station / Day	Sha Tau Kok			Kwun Tong			Sai Wan Ho			King's Park			Tsim Bei Tsui		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.102	0.110	0.095	0.111	0.121	0.104	0.093	0.101	0.086	0.134	0.149	0.127	0.133	0.142	0.124
2	0.102	0.111	0.094	0.111	0.121	0.103	0.093	0.101	0.086	0.134	0.143	0.127	0.133	0.144	0.124
3	0.102	0.111	0.095	0.111	0.121	0.104	0.093	0.100	0.086	0.133	0.142	0.124	0.132	0.142	0.124
4	0.102	0.110	0.094	0.112	0.120	0.104	0.093	0.100	0.085	0.132	0.143	0.124	0.133	0.142	0.125
5	0.102	0.111	0.094	0.112	0.121	0.105	0.093	0.102	0.084	0.131	0.138	0.123	0.133	0.144	0.124
6	0.102	0.114	0.094	0.112	0.121	0.105	0.094	0.103	0.084	0.130	0.140	0.123	0.133	0.143	0.125
7	0.102	0.111	0.094	0.113	0.121	0.106	0.094	0.103	0.086	0.130	0.140	0.122	0.133	0.144	0.124
8	0.104	0.124	0.094	0.114	0.124	0.106	0.093	0.105	0.085	0.131	0.150	0.122	0.135	0.157	0.124
9	0.103	0.114	0.094	0.114	0.127	0.105	0.094	0.105	0.085	0.131	0.150	0.121	0.134	0.150	0.124
10	0.102	0.111	0.095	0.112	0.120	0.104	0.093	0.105	0.086	0.130	0.138	0.121	0.133	0.144	0.126
11	0.103	0.114	0.094	0.112	0.124	0.105	0.093	0.101	0.085	0.131	0.142	0.124	0.133	0.144	0.125
12	0.103	0.113	0.095	0.112	0.121	0.104	0.093	0.103	0.086	0.132	0.143	0.125	0.134	0.153	0.125
13	0.103	0.111	0.096	0.113	0.124	0.105	0.095	0.109	0.086	0.132	0.149	0.123	0.133	0.146	0.124
14	0.102	0.111	0.094	0.112	0.121	0.104	0.093	0.100	0.086	0.130	0.142	0.121	0.133	0.142	0.126
15	0.103	0.115	0.094	0.112	0.121	0.104	0.094	0.102	0.087	0.130	0.138	0.122	0.133	0.142	0.125
16	0.102	0.111	0.094	0.112	0.124	0.105	0.093	0.101	0.086	0.130	0.140	0.123	0.133	0.141	0.123
17	0.101	0.109	0.094	0.112	0.121	0.103	0.093	0.101	0.086	0.130	0.138	0.121	0.132	0.143	0.122
18	0.102	0.110	0.094	0.112	0.122	0.105	0.093	0.100	0.085	0.130	0.137	0.123	0.132	0.142	0.124
19	0.102	0.112	0.094	0.113	0.121	0.106	0.094	0.102	0.086	0.131	0.144	0.123	0.133	0.142	0.124
20	0.102	0.110	0.093	0.113	0.123	0.106	0.093	0.100	0.086	0.132	0.140	0.124	0.134	0.144	0.124
21	0.103	0.113	0.096	0.114	0.122	0.106	0.094	0.102	0.087	0.133	0.142	0.125	0.134	0.151	0.125
22	0.103	0.112	0.095	0.114	0.122	0.106	0.094	0.101	0.086	0.134	0.142	0.125	0.134	0.146	0.126
23	0.103	0.119	0.095	0.113	0.121	0.106	0.094	0.103	0.086	0.134	0.147	0.127	0.135	0.154	0.128
24	0.103	0.111	0.094	0.113	0.122	0.104	0.094	0.105	0.085	0.134	0.144	0.126	0.134	0.147	0.123
25	0.102	0.111	0.094	0.112	0.119	0.104	0.093	0.101	0.086	0.134	0.145	0.127	0.133	0.144	0.123
26	0.102	0.110	0.095	0.113	0.125	0.106	0.095	0.107	0.087	0.134	0.144	0.124	0.133	0.142	0.126
27	0.103	0.114	0.095	0.114	0.126	0.107	0.096	0.104	0.087	0.133	0.145	0.125	0.135	0.151	0.124
28	0.104	0.115	0.098	0.114	0.125	0.107	0.095	0.104	0.086	0.133	0.143	0.125	0.135	0.147	0.127
29	0.103	0.113	0.093	0.113	0.121	0.105	0.094	0.102	0.087	0.132	0.146	0.125	0.134	0.142	0.125
30	0.102	0.112	0.095	0.112	0.121	0.104	0.093	0.100	0.086	0.133	0.147	0.126	0.133	0.144	0.125
31	0.101	0.111	0.094	0.112	0.121	0.105	0.093	0.103	0.084	0.133	0.142	0.126	0.133	0.144	0.124
$\bar{x}$		0.102			0.113			0.094			0.132			0.133	
σ		0.001			0.001			0.001			0.002			0.001	
max		0.124			0.127			0.109			0.150			0.157	
min		0.093			0.103			0.084			0.121			0.122	

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

Table 17 Ambient gamma dose rates recorded by the Radiation Monitoring Network in August 1999

(All readings are in μGyh^{-1})

Station / Day	Ping Chau			Tap Mun			Kat O			Yuen Ng Fan			Tai Mei Tuk		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.082	0.093	0.076	0.088	0.097	0.081	0.108	0.120	0.099	0.112	0.121	0.104	0.119	0.130	0.112
2	0.083	0.093	0.076	0.091	0.099	0.082	0.109	0.117	0.102	0.113	0.125	0.104	0.121	0.129	0.113
3	0.084	0.093	0.076	0.089	0.100	0.080	0.109	0.121	0.100	0.114	0.138	0.105	0.121	0.133	0.111
4	0.083	0.098	0.076	0.089	0.098	0.080	0.108	0.119	0.100	0.113	0.126	0.102	0.120	0.129	0.111
5	0.084	0.102	0.077	0.091	0.106	0.081	0.109	0.124	0.099	0.114	0.128	0.105	0.123	0.138	0.114
6	0.084	0.109	0.076	0.090	0.101	0.082	0.106	0.117	0.098	0.114	0.125	0.104	0.120	0.129	0.114
7	0.082	0.093	0.076	0.089	0.099	0.082	0.106	0.117	0.099	0.114	0.123	0.106	0.120	0.134	0.113
8	0.081	0.087	0.073	0.090	0.100	0.081	0.107	0.116	0.099	0.113	0.123	0.106	0.120	0.129	0.112
9	0.084	0.107	0.074	0.091	0.111	0.082	0.108	0.121	0.100	0.114	0.131	0.103	0.121	0.134	0.113
10	0.086	0.111	0.074	0.094	0.116	0.082	0.107	0.123	0.098	0.117	0.143	0.105	0.122	0.141	0.112
11	0.083	0.107	0.074	0.091	0.110	0.079	0.106	0.118	0.098	0.117	0.140	0.103	0.121	0.140	0.110
12	0.080	0.087	0.073	0.088	0.096	0.079	0.104	0.112	0.095	0.113	0.130	0.105	0.119	0.130	0.111
13	0.081	0.098	0.073	0.090	0.106	0.079	0.105	0.120	0.097	0.115	0.130	0.105	0.121	0.134	0.111
14	0.079	0.093	0.073	0.087	0.099	0.080	0.104	0.113	0.096	0.112	0.126	0.101	0.118	0.128	0.110
15	0.079	0.087	0.072	0.087	0.100	0.080	0.104	0.112	0.097	0.111	0.121	0.102	0.118	0.128	0.111
16	0.079	0.087	0.073	0.088	0.100	0.079	0.104	0.113	0.096	0.111	0.121	0.103	0.118	0.127	0.110
17	0.080	0.087	0.074	0.088	0.097	0.080	0.104	0.112	0.097	0.112	0.121	0.103	0.118	0.128	0.110
18	0.081	0.089	0.074	0.089	0.099	0.081	0.105	0.115	0.098	0.113	0.124	0.105	0.119	0.128	0.112
19	0.082	0.090	0.074	0.090	0.098	0.081	0.106	0.116	0.098	0.113	0.121	0.104	0.120	0.128	0.113
20	0.084	0.093	0.076	0.091	0.100	0.082	0.108	0.118	0.100	0.114	0.125	0.105	0.122	0.132	0.114
21	0.088	0.137	0.075	0.096	0.141	0.082	0.111	0.141	0.099	0.119	0.165	0.107	0.126	0.155	0.114
22	0.099	0.158	0.074	0.104	0.147	0.082	0.114	0.145	0.098	0.133	0.183	0.107	0.134	0.176	0.114
23	0.107	0.142	0.082	0.115	0.144	0.093	0.115	0.142	0.098	0.140	0.175	0.114	0.139	0.165	0.117
24	0.094	0.125	0.074	0.097	0.121	0.082	0.110	0.131	0.096	0.121	0.148	0.104	0.128	0.155	0.110
25	0.088	0.110	0.074	0.097	0.118	0.082	0.106	0.124	0.097	0.126	0.165	0.105	0.123	0.140	0.111
26	0.080	0.087	0.073	0.089	0.096	0.082	0.103	0.110	0.096	0.111	0.119	0.104	0.118	0.126	0.110
27	0.080	0.087	0.073	0.089	0.098	0.082	0.102	0.116	0.094	0.111	0.121	0.102	0.118	0.131	0.111
28	0.081	0.087	0.073	0.089	0.100	0.079	0.102	0.110	0.093	0.111	0.120	0.101	0.118	0.125	0.110
29	0.081	0.089	0.074	0.089	0.100	0.081	0.102	0.114	0.096	0.110	0.118	0.100	0.118	0.126	0.111
30	0.079	0.091	0.072	0.088	0.097	0.080	0.103	0.111	0.093	0.109	0.121	0.100	0.117	0.126	0.110
31	0.079	0.086	0.073	0.087	0.095	0.080	0.103	0.116	0.095	0.110	0.119	0.101	0.118	0.127	0.110
$\bar{x}$	0.084			0.091			0.106			0.115			0.121		
σ	0.006			0.006			0.003			0.007			0.005		
max	0.158			0.147			0.145			0.183			0.176		
min	0.072			0.079			0.093			0.100			0.110		

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

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Table 17 cont'd

Station / Day	Sha Tau Kok			Kwun Tong			Sai Wan Ho			King's Park			Tsim Bei Tsui		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.102	0.115	0.094	0.111	0.120	0.105	0.093	0.105	0.085	0.134	0.142	0.127	0.133	0.144	0.124
2	0.103	0.114	0.095	0.113	0.122	0.105	0.094	0.103	0.086	0.135	0.170	0.124	0.133	0.148	0.123
3	0.104	0.114	0.097	0.113	0.124	0.105	0.094	0.104	0.086	0.132	0.138	0.124	0.135	0.156	0.126
4	0.104	0.114	0.095	0.115	0.132	0.107	0.095	0.108	0.086	0.133	0.155	0.124	0.132	0.142	0.124
5	0.106	0.128	0.095	0.114	0.128	0.107	0.095	0.105	0.086	0.133	0.151	0.124	0.133	0.151	0.120
6	0.103	0.112	0.096	0.113	0.122	0.107	0.095	0.102	0.087	0.132	0.142	0.124	0.131	0.149	0.121
7	0.103	0.111	0.095	0.113	0.126	0.105	0.094	0.103	0.086	0.132	0.141	0.123	0.131	0.141	0.123
8	0.102	0.111	0.095	0.112	0.119	0.106	0.094	0.101	0.087	0.132	0.142	0.123	0.131	0.142	0.122
9	0.103	0.116	0.095	0.113	0.121	0.106	0.095	0.113	0.086	0.132	0.146	0.123	0.133	0.154	0.121
10	0.105	0.122	0.095	0.114	0.133	0.107	0.096	0.115	0.087	0.134	0.154	0.122	0.134	0.152	0.121
11	0.103	0.114	0.096	0.116	0.131	0.106	0.096	0.112	0.086	0.134	0.153	0.123	0.131	0.144	0.121
12	0.102	0.110	0.093	0.114	0.125	0.106	0.094	0.105	0.086	0.131	0.150	0.121	0.130	0.140	0.123
13	0.103	0.114	0.095	0.113	0.122	0.105	0.095	0.107	0.087	0.131	0.144	0.121	0.132	0.145	0.122
14	0.102	0.113	0.094	0.113	0.123	0.105	0.093	0.101	0.085	0.129	0.138	0.121	0.130	0.142	0.123
15	0.101	0.109	0.093	0.112	0.120	0.106	0.093	0.100	0.086	0.129	0.138	0.121	0.131	0.141	0.122
16	0.101	0.109	0.094	0.112	0.121	0.104	0.093	0.105	0.086	0.130	0.140	0.121	0.131	0.142	0.123
17	0.102	0.109	0.093	0.112	0.121	0.105	0.093	0.100	0.086	0.130	0.138	0.122	0.130	0.141	0.122
18	0.102	0.110	0.093	0.111	0.122	0.105	0.093	0.101	0.086	0.132	0.140	0.125	0.130	0.140	0.121
19	0.102	0.112	0.096	0.112	0.120	0.105	0.094	0.101	0.086	0.134	0.141	0.127	0.132	0.141	0.121
20	0.103	0.112	0.096	0.113	0.121	0.106	0.095	0.103	0.087	0.135	0.145	0.127	0.133	0.143	0.123
21	0.108	0.137	0.098	0.115	0.131	0.105	0.097	0.115	0.086	0.139	0.169	0.126	0.137	0.179	0.126
22	0.114	0.147	0.096	0.125	0.170	0.107	0.106	0.164	0.086	0.153	0.222	0.127	0.139	0.188	0.121
23	0.126	0.149	0.106	0.140	0.176	0.118	0.118	0.156	0.096	0.176	0.265	0.133	0.161	0.192	0.134
24	0.113	0.138	0.096	0.118	0.135	0.105	0.099	0.116	0.087	0.140	0.170	0.121	0.138	0.171	0.119
25	0.108	0.141	0.097	0.121	0.147	0.105	0.101	0.127	0.086	0.141	0.177	0.121	0.131	0.143	0.121
26	0.102	0.110	0.095	0.112	0.120	0.105	0.093	0.101	0.086	0.128	0.137	0.121	0.130	0.143	0.121
27	0.102	0.110	0.095	0.111	0.123	0.103	0.092	0.103	0.085	0.129	0.138	0.121	0.131	0.141	0.122
28	0.102	0.114	0.094	0.110	0.118	0.103	0.092	0.101	0.085	0.129	0.136	0.121	0.130	0.138	0.121
29	0.102	0.110	0.093	0.111	0.120	0.103	0.092	0.103	0.086	0.128	0.135	0.121	0.130	0.140	0.119
30	0.101	0.109	0.093	0.111	0.120	0.105	0.092	0.100	0.085	0.129	0.137	0.121	0.130	0.143	0.120
31	0.101	0.109	0.093	0.111	0.118	0.104	0.093	0.102	0.085	0.129	0.137	0.121	0.131	0.145	0.121
$\bar{x}$	0.104			0.114			0.095			0.134			0.133		
σ	0.005			0.006			0.005			0.009			0.006		
max	0.149			0.176			0.164			0.265			0.192		
min	0.093			0.103			0.085			0.121			0.119		

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

Table 18 Ambient gamma dose rates recorded by the Radiation Monitoring Network in September 1999

(All readings are in μGyh^{-1})

Station / Day	Ping Chau			Tap Mun			Kat O			Yuen Ng Fan			Tai Mei Tuk		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.081	0.093	0.073	0.089	0.101	0.079	0.104	0.112	0.096	0.112	0.126	0.102	0.120	0.131	0.111
2	0.081	0.089	0.073	0.089	0.097	0.081	0.105	0.114	0.097	0.111	0.121	0.104	0.119	0.128	0.111
3	0.083	0.092	0.076	0.091	0.100	0.084	0.106	0.115	0.097	0.113	0.124	0.106	0.121	0.131	0.114
4	0.083	0.092	0.076	0.090	0.099	0.082	0.106	0.115	0.099	0.114	0.125	0.105	0.121	0.129	0.114
5	0.083	0.102	0.074	0.090	0.108	0.082	0.105	0.118	0.095	0.117	0.154	0.103	0.121	0.138	0.111
6	0.082	0.090	0.076	0.090	0.101	0.084	0.103	0.111	0.096	0.111	0.120	0.104	0.118	0.129	0.111
7	0.083	0.089	0.077	0.090	0.096	0.082	0.103	0.113	0.096	0.112	0.121	0.104	0.118	0.127	0.112
8	0.081	0.090	0.074	0.088	0.096	0.080	0.104	0.112	0.096	0.111	0.122	0.103	0.118	0.127	0.110
9	0.081	0.090	0.074	0.088	0.097	0.080	0.104	0.114	0.097	0.111	0.121	0.103	0.118	0.127	0.110
10	0.082	0.094	0.076	0.088	0.099	0.080	0.105	0.114	0.099	0.111	0.120	0.103	0.119	0.131	0.110
11	0.082	0.090	0.075	0.090	0.098	0.082	0.107	0.118	0.099	0.112	0.122	0.104	0.119	0.128	0.112
12	0.083	0.092	0.077	0.091	0.100	0.084	0.107	0.119	0.099	0.114	0.122	0.106	0.121	0.131	0.112
13	0.084	0.095	0.077	0.092	0.128	0.082	0.108	0.119	0.100	0.113	0.123	0.105	0.120	0.128	0.111
14	0.085	0.094	0.077	0.091	0.100	0.084	0.109	0.120	0.100	0.115	0.125	0.107	0.122	0.131	0.114
15	0.086	0.098	0.079	0.092	0.104	0.084	0.108	0.118	0.099	0.117	0.135	0.109	0.122	0.131	0.114
16	0.131	0.160	0.093	0.138	0.209	0.097	0.143	0.194	0.102	0.187	0.250	0.123	0.172	0.227	0.120
17	0.090	0.134	0.076	0.092	0.112	0.081	0.104	0.119	0.096	0.120	0.159	0.107	0.121	0.146	0.112
18	0.082	0.093	0.073	0.088	0.110	0.076	0.103	0.114	0.096	0.113	0.121	0.104	0.119	0.130	0.112
19	0.083	0.095	0.073	0.089	0.101	0.079	0.104	0.114	0.097	0.113	0.122	0.105	0.120	0.132	0.112
20	0.088	0.128	0.074	0.092	0.121	0.082	0.109	0.155	0.097	0.114	0.124	0.106	0.125	0.155	0.113
21	0.084	0.094	0.074	0.089	0.100	0.081	0.103	0.111	0.095	0.114	0.122	0.107	0.119	0.128	0.110
22	0.084	0.095	0.075	0.089	0.100	0.084	0.103	0.110	0.095	0.114	0.124	0.107	0.119	0.128	0.112
23	0.084	0.096	0.075	0.091	0.099	0.084	0.104	0.111	0.097	0.115	0.124	0.107	0.120	0.134	0.112
24	0.085	0.096	0.074	0.090	0.100	0.082	0.105	0.117	0.097	0.116	0.126	0.107	0.120	0.138	0.114
25	0.086	0.098	0.077	0.091	0.099	0.084	0.106	0.114	0.099	0.117	0.129	0.109	0.121	0.131	0.114
26	0.096	0.138	0.073	0.098	0.150	0.080	0.110	0.164	0.096	0.127	0.218	0.106	0.128	0.192	0.114
27	0.081	0.092	0.072	0.086	0.096	0.077	0.102	0.111	0.096	0.111	0.122	0.103	0.118	0.128	0.110
28	0.078	0.087	0.071	0.083	0.093	0.075	0.101	0.109	0.093	0.110	0.118	0.102	0.116	0.124	0.108
29	0.079	0.086	0.073	0.084	0.093	0.076	0.101	0.112	0.093	0.110	0.119	0.102	0.117	0.126	0.108
30	0.080	0.087	0.072	0.084	0.093	0.077	0.102	0.111	0.094	0.111	0.121	0.103	0.117	0.127	0.109
$\bar{x}$	0.085			0.091			0.106			0.116			0.122		
σ	0.009			0.009			0.007			0.014			0.010		
max	0.160			0.209			0.194			0.250			0.227		
min	0.071			0.075			0.093			0.102			0.108		

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

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Table 18 cont'd

Station / Day	Sha Tau Kok			Kwun Tong			Sai Wan Ho			King's Park			Tsim Bei Tsui		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.103	0.114	0.095	0.112	0.121	0.103	0.094	0.103	0.086	0.130	0.138	0.122	0.131	0.145	0.121
2	0.102	0.111	0.094	0.112	0.120	0.105	0.094	0.102	0.086	0.130	0.140	0.123	0.133	0.149	0.123
3	0.103	0.111	0.095	0.113	0.123	0.106	0.095	0.104	0.087	0.132	0.140	0.123	0.133	0.145	0.125
4	0.104	0.112	0.096	0.114	0.122	0.107	0.095	0.103	0.087	0.133	0.142	0.126	0.133	0.142	0.125
5	0.103	0.111	0.096	0.112	0.126	0.104	0.095	0.104	0.086	0.131	0.141	0.123	0.132	0.144	0.123
6	0.102	0.115	0.097	0.111	0.121	0.103	0.092	0.100	0.086	0.130	0.138	0.123	0.130	0.147	0.121
7	0.102	0.110	0.094	0.111	0.120	0.103	0.092	0.102	0.085	0.131	0.140	0.124	0.131	0.142	0.121
8	0.101	0.112	0.093	0.111	0.121	0.104	0.093	0.105	0.086	0.130	0.140	0.123	0.131	0.147	0.121
9	0.101	0.114	0.093	0.112	0.120	0.106	0.093	0.100	0.085	0.131	0.142	0.124	0.130	0.140	0.121
10	0.102	0.113	0.094	0.111	0.125	0.103	0.093	0.104	0.086	0.132	0.141	0.124	0.131	0.141	0.120
11	0.102	0.111	0.094	0.112	0.120	0.105	0.093	0.101	0.086	0.133	0.142	0.126	0.131	0.149	0.122
12	0.103	0.114	0.095	0.113	0.124	0.105	0.094	0.103	0.087	0.135	0.144	0.127	0.133	0.158	0.123
13	0.104	0.113	0.097	0.113	0.121	0.106	0.095	0.103	0.087	0.135	0.144	0.125	0.133	0.147	0.124
14	0.103	0.114	0.097	0.114	0.123	0.106	0.095	0.105	0.089	0.136	0.145	0.127	0.133	0.147	0.123
15	0.103	0.112	0.095	0.113	0.123	0.106	0.095	0.105	0.087	0.137	0.149	0.128	0.133	0.144	0.124
16	0.149	0.197	0.101	0.152	0.192	0.113	0.129	0.165	0.093	0.197	0.254	0.142	0.165	0.210	0.128
17	0.108	0.147	0.097	0.117	0.154	0.106	0.098	0.135	0.087	0.136	0.206	0.122	0.137	0.183	0.123
18	0.104	0.114	0.096	0.113	0.122	0.104	0.094	0.106	0.087	0.131	0.141	0.123	0.132	0.160	0.121
19	0.105	0.116	0.097	0.113	0.122	0.106	0.094	0.102	0.087	0.132	0.146	0.124	0.133	0.149	0.124
20	0.109	0.137	0.099	0.113	0.121	0.105	0.095	0.105	0.086	0.132	0.145	0.124	0.138	0.169	0.126
21	0.104	0.114	0.096	0.113	0.121	0.105	0.094	0.102	0.087	0.131	0.140	0.124	0.132	0.145	0.124
22	0.103	0.111	0.097	0.113	0.122	0.105	0.094	0.102	0.086	0.132	0.140	0.124	0.133	0.142	0.124
23	0.105	0.114	0.098	0.113	0.122	0.106	0.095	0.102	0.087	0.134	0.143	0.126	0.134	0.145	0.124
24	0.105	0.115	0.098	0.113	0.121	0.105	0.095	0.102	0.086	0.135	0.143	0.127	0.134	0.142	0.124
25	0.106	0.114	0.098	0.113	0.121	0.106	0.094	0.103	0.087	0.136	0.144	0.127	0.134	0.142	0.125
26	0.110	0.151	0.097	0.115	0.133	0.103	0.096	0.112	0.086	0.136	0.165	0.124	0.138	0.190	0.125
27	0.102	0.111	0.093	0.112	0.122	0.104	0.093	0.106	0.086	0.129	0.138	0.122	0.131	0.144	0.122
28	0.099	0.114	0.092	0.111	0.118	0.104	0.092	0.104	0.085	0.128	0.135	0.121	0.130	0.140	0.121
29	0.100	0.107	0.092	0.111	0.120	0.103	0.092	0.100	0.086	0.129	0.144	0.121	0.131	0.141	0.122
30	0.100	0.111	0.093	0.111	0.125	0.103	0.093	0.101	0.086	0.130	0.138	0.121	0.131	0.141	0.123
$\bar{x}$	0.105			0.114			0.095			0.134			0.134		
σ	0.009			0.007			0.007			0.012			0.006		
max	0.197			0.192			0.165			0.254			0.210		
min	0.092			0.103			0.085			0.121			0.120		

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

Table 19 Ambient gamma dose rates recorded by the Radiation Monitoring Network in October 1999

(All readings are in μGyh^{-1})

Station / Day	Ping Chau			Tap Mun			Kat O			Yuen Ng Fan			Tai Mei Tuk		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.080	0.090	0.073	0.084	0.092	0.077	0.103	0.114	0.095	0.111	0.119	0.104	0.117	0.126	0.109
2	0.081	0.087	0.074	0.085	0.094	0.076	0.102	0.111	0.095	0.112	0.121	0.103	0.118	0.128	0.109
3	0.082	0.093	0.074	0.086	0.103	0.079	0.103	0.115	0.095	0.112	0.121	0.103	0.119	0.128	0.111
4	0.081	0.092	0.074	0.085	0.096	0.077	0.104	0.112	0.094	0.112	0.123	0.103	0.120	0.131	0.112
5	0.083	0.092	0.077	0.088	0.096	0.080	0.104	0.114	0.097	0.115	0.124	0.107	0.121	0.131	0.114
6	0.084	0.092	0.077	0.088	0.096	0.081	0.106	0.113	0.098	0.115	0.127	0.105	0.121	0.132	0.113
7	0.084	0.092	0.077	0.088	0.096	0.080	0.105	0.114	0.097	0.115	0.126	0.105	0.122	0.131	0.114
8	0.084	0.091	0.077	0.086	0.094	0.077	0.106	0.115	0.099	0.115	0.124	0.107	0.122	0.130	0.115
9	0.084	0.093	0.077	0.087	0.097	0.079	0.107	0.116	0.100	0.116	0.125	0.107	0.122	0.134	0.114
10	0.084	0.094	0.077	0.088	0.099	0.079	0.107	0.114	0.100	0.116	0.126	0.108	0.122	0.130	0.114
11	0.084	0.093	0.074	0.087	0.098	0.079	0.106	0.119	0.097	0.115	0.126	0.106	0.123	0.135	0.113
12	0.082	0.093	0.075	0.084	0.091	0.077	0.105	0.115	0.097	0.113	0.122	0.105	0.119	0.129	0.111
13	0.083	0.090	0.075	0.084	0.091	0.076	0.104	0.111	0.097	0.113	0.123	0.102	0.119	0.129	0.110
14	0.083	0.092	0.077	0.084	0.093	0.077	0.104	0.114	0.095	0.113	0.121	0.104	0.118	0.128	0.110
15	0.083	0.092	0.076	0.084	0.096	0.075	0.105	0.113	0.097	0.113	0.122	0.104	0.119	0.128	0.110
16	0.085	0.101	0.074	0.088	0.112	0.079	0.106	0.121	0.096	0.121	0.206	0.105	0.121	0.132	0.113
17	0.085	0.093	0.077	0.087	0.093	0.077	0.105	0.113	0.098	0.114	0.122	0.107	0.121	0.128	0.113
18	0.085	0.093	0.079	0.087	0.093	0.080	0.105	0.116	0.097	0.115	0.126	0.107	0.121	0.129	0.113
19	0.086	0.093	0.079	0.088	0.096	0.080	0.106	0.117	0.099	0.116	0.124	0.107	0.122	0.129	0.114
20	0.086	0.094	0.077	0.087	0.096	0.077	0.107	0.116	0.099	0.114	0.125	0.104	0.122	0.131	0.113
21	0.084	0.094	0.077	0.085	0.092	0.076	0.105	0.114	0.097	0.113	0.122	0.104	0.120	0.128	0.111
22	0.084	0.093	0.076	0.085	0.094	0.079	0.104	0.113	0.096	0.113	0.121	0.105	0.119	0.130	0.110
23	0.085	0.095	0.079	0.085	0.096	0.079	0.107	0.120	0.098	0.114	0.126	0.107	0.121	0.134	0.109
24	0.088	0.100	0.079	0.088	0.099	0.077	0.109	0.124	0.098	0.118	0.138	0.107	0.122	0.137	0.113
25	0.085	0.093	0.079	0.085	0.092	0.077	0.105	0.115	0.097	0.114	0.127	0.107	0.120	0.128	0.111
26	0.085	0.096	0.079	0.085	0.093	0.079	0.107	0.115	0.099	0.114	0.126	0.107	0.120	0.130	0.112
27	0.088	0.097	0.079	0.088	0.098	0.079	0.108	0.119	0.100	0.117	0.127	0.107	0.123	0.134	0.114
28	0.086	0.093	0.079	0.086	0.095	0.077	0.107	0.119	0.099	0.115	0.125	0.103	0.121	0.130	0.113
29	0.086	0.093	0.077	0.086	0.098	0.077	0.107	0.117	0.097	0.115	0.127	0.107	0.121	0.131	0.113
30	0.086	0.093	0.077	0.085	0.093	0.079	0.106	0.114	0.098	0.115	0.123	0.108	0.120	0.129	0.112
31	0.086	0.097	0.079	0.085	0.093	0.077	0.106	0.115	0.098	0.114	0.123	0.106	0.120	0.128	0.114
$\bar{x}$	0.084			0.086			0.106			0.114			0.121		
σ	0.002			0.001			0.002			0.002			0.002		
max	0.101			0.112			0.124			0.206			0.137		
min	0.073			0.075			0.094			0.102			0.109		

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

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Table 19 cont'd

Day \ Station	Sha Tau Kok			Kwun Tong			Sai Wan Ho			King's Park			Tsim Bei Tsui		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.100	0.109	0.093	0.112	0.121	0.105	0.093	0.102	0.086	0.131	0.140	0.123	0.131	0.142	0.123
2	0.100	0.109	0.093	0.112	0.122	0.103	0.093	0.100	0.086	0.132	0.140	0.125	0.131	0.142	0.122
3	0.102	0.114	0.093	0.112	0.121	0.104	0.093	0.104	0.086	0.132	0.140	0.124	0.132	0.146	0.123
4	0.102	0.111	0.094	0.112	0.121	0.105	0.093	0.101	0.085	0.132	0.152	0.124	0.132	0.143	0.122
5	0.103	0.111	0.096	0.114	0.124	0.107	0.095	0.105	0.087	0.134	0.144	0.126	0.134	0.144	0.124
6	0.104	0.113	0.096	0.114	0.121	0.107	0.095	0.105	0.087	0.135	0.147	0.126	0.134	0.144	0.125
7	0.104	0.113	0.096	0.114	0.123	0.106	0.096	0.105	0.089	0.136	0.147	0.128	0.135	0.144	0.125
8	0.104	0.111	0.096	0.114	0.123	0.106	0.095	0.105	0.089	0.136	0.147	0.128	0.134	0.143	0.126
9	0.105	0.112	0.097	0.114	0.124	0.107	0.096	0.105	0.087	0.137	0.149	0.129	0.135	0.147	0.125
10	0.105	0.114	0.098	0.114	0.122	0.107	0.096	0.106	0.087	0.136	0.145	0.127	0.134	0.146	0.125
11	0.104	0.114	0.095	0.113	0.124	0.103	0.095	0.106	0.084	0.136	0.145	0.128	0.134	0.145	0.125
12	0.101	0.112	0.093	0.112	0.121	0.101	0.093	0.100	0.084	0.134	0.142	0.128	0.131	0.142	0.122
13	0.101	0.109	0.093	0.111	0.122	0.103	0.093	0.102	0.086	0.135	0.143	0.127	0.131	0.141	0.121
14	0.100	0.109	0.093	0.111	0.120	0.103	0.092	0.100	0.086	0.135	0.143	0.128	0.131	0.143	0.122
15	0.101	0.109	0.092	0.111	0.121	0.103	0.093	0.100	0.085	0.135	0.146	0.128	0.131	0.142	0.122
16	0.103	0.111	0.095	0.115	0.142	0.105	0.098	0.128	0.086	0.142	0.215	0.127	0.133	0.149	0.123
17	0.102	0.110	0.093	0.113	0.125	0.105	0.095	0.103	0.087	0.134	0.145	0.125	0.132	0.145	0.122
18	0.102	0.110	0.096	0.114	0.121	0.104	0.095	0.102	0.085	0.135	0.145	0.127	0.133	0.145	0.125
19	0.103	0.111	0.096	0.114	0.122	0.106	0.095	0.103	0.087	0.136	0.146	0.128	0.134	0.144	0.126
20	0.104	0.112	0.094	0.113	0.121	0.105	0.094	0.103	0.086	0.135	0.144	0.127	0.134	0.147	0.124
21	0.102	0.112	0.093	0.112	0.122	0.104	0.093	0.101	0.085	0.134	0.144	0.126	0.132	0.145	0.124
22	0.101	0.110	0.094	0.111	0.124	0.103	0.093	0.103	0.085	0.134	0.144	0.127	0.132	0.144	0.124
23	0.102	0.113	0.093	0.112	0.121	0.101	0.093	0.103	0.084	0.136	0.148	0.128	0.133	0.146	0.123
24	0.104	0.114	0.094	0.114	0.128	0.104	0.095	0.105	0.086	0.137	0.147	0.126	0.134	0.145	0.121
25	0.101	0.109	0.093	0.112	0.125	0.102	0.093	0.100	0.085	0.135	0.143	0.127	0.132	0.142	0.124
26	0.102	0.111	0.093	0.112	0.123	0.102	0.093	0.100	0.086	0.135	0.145	0.126	0.133	0.142	0.123
27	0.105	0.117	0.096	0.115	0.127	0.103	0.095	0.105	0.086	0.138	0.149	0.128	0.135	0.147	0.125
28	0.102	0.110	0.095	0.112	0.124	0.104	0.093	0.102	0.086	0.136	0.153	0.128	0.133	0.146	0.124
29	0.103	0.113	0.095	0.113	0.127	0.103	0.094	0.103	0.086	0.137	0.145	0.127	0.133	0.145	0.123
30	0.102	0.113	0.094	0.112	0.121	0.103	0.093	0.101	0.086	0.136	0.146	0.128	0.132	0.143	0.124
31	0.101	0.111	0.093	0.112	0.123	0.103	0.093	0.100	0.085	0.136	0.144	0.127	0.131	0.141	0.122
$\bar{x}$	0.102			0.113			0.094			0.135			0.133		
σ	0.002			0.001			0.001			0.002			0.001		
max	0.117			0.142			0.128			0.215			0.149		
min	0.092			0.101			0.084			0.123			0.121		

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

Table 20 Ambient gamma dose rates recorded by the Radiation Monitoring Network in November 1999

(All readings are in µGyh^{-1})

Station / Day	Ping Chau			Tap Mun			Kat O			Yuen Ng Fan			Tai Mei Tuk		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.087	0.097	0.080	0.087	0.095	0.079	0.108	0.118	0.098	0.117	0.125	0.108	0.122	0.131	0.114
2	0.087	0.097	0.080	0.088	0.097	0.081	0.106	0.114	0.098	0.117	0.126	0.109	0.121	0.133	0.114
3	0.088	0.099	0.079	0.090	0.099	0.081	0.107	0.116	0.098	0.118	0.128	0.111	0.123	0.133	0.114
4	0.088	0.098	0.079	0.088	0.098	0.079	0.108	0.117	0.100	0.117	0.128	0.107	0.122	0.135	0.114
5	0.087	0.097	0.080	0.087	0.098	0.079	0.108	0.117	0.099	0.116	0.127	0.107	0.121	0.131	0.112
6	0.087	0.095	0.079	0.086	0.093	0.079	0.107	0.116	0.100	0.116	0.125	0.107	0.120	0.128	0.112
7	0.086	0.095	0.079	0.085	0.093	0.079	0.106	0.114	0.099	0.115	0.127	0.107	0.120	0.128	0.112
8	0.089	0.098	0.079	0.089	0.100	0.077	0.109	0.120	0.100	0.118	0.131	0.108	0.123	0.135	0.114
9	0.089	0.098	0.081	0.090	0.099	0.081	0.109	0.121	0.102	0.119	0.132	0.111	0.124	0.135	0.114
10	0.086	0.096	0.079	0.086	0.095	0.077	0.106	0.115	0.096	0.116	0.127	0.108	0.121	0.131	0.112
11	0.086	0.095	0.079	0.086	0.093	0.079	0.107	0.118	0.100	0.116	0.125	0.107	0.121	0.129	0.113
12	0.094	0.125	0.079	0.096	0.130	0.081	0.113	0.131	0.102	0.123	0.150	0.108	0.127	0.148	0.115
13	0.087	0.096	0.077	0.088	0.099	0.079	0.108	0.120	0.097	0.117	0.128	0.109	0.122	0.133	0.114
14	0.085	0.098	0.076	0.087	0.097	0.079	0.107	0.115	0.099	0.115	0.124	0.106	0.121	0.131	0.112
15	0.086	0.094	0.079	0.089	0.098	0.082	0.107	0.117	0.099	0.117	0.126	0.108	0.122	0.133	0.113
16	0.086	0.097	0.079	0.088	0.096	0.079	0.107	0.114	0.099	0.117	0.125	0.109	0.121	0.137	0.110
17	0.087	0.095	0.079	0.089	0.096	0.081	0.107	0.116	0.100	0.117	0.127	0.109	0.122	0.135	0.112
18	0.088	0.098	0.079	0.089	0.098	0.081	0.108	0.119	0.100	0.118	0.128	0.110	0.123	0.136	0.114
19	0.087	0.097	0.079	0.089	0.099	0.080	0.108	0.120	0.100	0.118	0.128	0.107	0.122	0.133	0.113
20	0.088	0.100	0.079	0.089	0.099	0.079	0.108	0.118	0.097	0.118	0.128	0.109	0.123	0.135	0.112
21	0.086	0.095	0.079	0.087	0.096	0.077	0.108	0.119	0.100	0.116	0.125	0.108	0.121	0.132	0.111
22	0.086	0.093	0.079	0.086	0.093	0.079	0.108	0.116	0.100	0.116	0.127	0.108	0.120	0.129	0.109
23	0.087	0.099	0.077	0.088	0.103	0.079	0.107	0.115	0.099	0.117	0.128	0.108	0.121	0.132	0.111
24	0.086	0.093	0.077	0.086	0.096	0.079	0.107	0.117	0.100	0.116	0.125	0.107	0.120	0.131	0.111
25	0.087	0.096	0.079	0.088	0.096	0.079	0.108	0.116	0.100	0.117	0.131	0.108	0.123	0.135	0.114
26	0.087	0.095	0.077	0.086	0.096	0.076	0.107	0.119	0.099	0.116	0.127	0.107	0.120	0.129	0.112
27	0.088	0.099	0.079	0.087	0.098	0.080	0.108	0.119	0.100	0.117	0.127	0.108	0.122	0.132	0.113
28	0.088	0.097	0.076	0.090	0.099	0.079	0.109	0.116	0.100	0.119	0.129	0.111	0.123	0.133	0.113
29	0.089	0.100	0.077	0.090	0.098	0.080	0.108	0.115	0.099	0.120	0.131	0.112	0.123	0.134	0.114
30	0.089	0.099	0.079	0.091	0.100	0.082	0.109	0.118	0.100	0.120	0.131	0.110	0.124	0.133	0.115
$\bar{x}$	0.087			0.088			0.108			0.117			0.122		
σ	0.002			0.002			0.001			0.002			0.002		
max	0.125			0.130			0.131			0.150			0.148		
min	0.076			0.076			0.096			0.106			0.109		

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

- to be continued on next page -

Table 20 cont'd

Station / Day	Sha Tau Kok			Kwun Tong			Sai Wan Ho			King's Park			Tsim Bei Tsui		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.103	0.112	0.094	0.113	0.124	0.103	0.094	0.102	0.087	0.137	0.149	0.129	0.133	0.144	0.125
2	0.103	0.112	0.097	0.113	0.125	0.103	0.094	0.101	0.086	0.139	0.149	0.130	0.134	0.144	0.125
3	0.106	0.115	0.099	0.114	0.127	0.105	0.095	0.107	0.087	0.140	0.149	0.130	0.135	0.149	0.127
4	0.105	0.113	0.097	0.114	0.125	0.104	0.094	0.103	0.086	0.138	0.148	0.128	0.135	0.147	0.125
5	0.104	0.114	0.096	0.113	0.124	0.103	0.093	0.103	0.086	0.137	0.148	0.129	0.134	0.143	0.123
6	0.103	0.112	0.094	0.112	0.122	0.104	0.093	0.102	0.086	0.137	0.146	0.127	0.132	0.142	0.123
7	0.103	0.113	0.094	0.113	0.123	0.102	0.093	0.102	0.086	0.137	0.145	0.128	0.132	0.142	0.123
8	0.105	0.114	0.096	0.116	0.127	0.103	0.094	0.107	0.086	0.139	0.150	0.128	0.135	0.145	0.125
9	0.107	0.114	0.099	0.115	0.125	0.105	0.096	0.105	0.087	0.141	0.149	0.133	0.136	0.146	0.126
10	0.103	0.115	0.094	0.111	0.121	0.104	0.093	0.101	0.086	0.137	0.146	0.126	0.133	0.146	0.123
11	0.102	0.110	0.095	0.112	0.124	0.103	0.093	0.101	0.086	0.137	0.146	0.128	0.132	0.142	0.124
12	0.109	0.129	0.099	0.119	0.142	0.106	0.098	0.112	0.086	0.145	0.176	0.130	0.139	0.165	0.127
13	0.105	0.118	0.096	0.116	0.128	0.106	0.096	0.105	0.087	0.136	0.147	0.128	0.135	0.144	0.126
14	0.104	0.114	0.096	0.112	0.124	0.103	0.094	0.102	0.086	0.135	0.145	0.127	0.134	0.145	0.125
15	0.104	0.112	0.096	0.114	0.125	0.106	0.095	0.106	0.086	0.137	0.149	0.128	0.134	0.143	0.125
16	0.105	0.114	0.097	0.114	0.126	0.106	0.095	0.105	0.087	0.137	0.145	0.127	0.135	0.147	0.125
17	0.105	0.114	0.096	0.115	0.125	0.106	0.095	0.105	0.085	0.138	0.146	0.128	0.135	0.145	0.127
18	0.106	0.115	0.096	0.114	0.123	0.107	0.096	0.105	0.086	0.140	0.149	0.130	0.136	0.147	0.127
19	0.106	0.115	0.099	0.115	0.127	0.106	0.096	0.106	0.087	0.138	0.147	0.129	0.137	0.147	0.128
20	0.106	0.119	0.096	0.114	0.126	0.105	0.095	0.107	0.086	0.139	0.148	0.129	0.137	0.150	0.125
21	0.104	0.114	0.096	0.114	0.125	0.105	0.094	0.103	0.086	0.137	0.149	0.128	0.134	0.144	0.124
22	0.103	0.114	0.094	0.113	0.124	0.105	0.093	0.103	0.086	0.137	0.148	0.128	0.133	0.143	0.122
23	0.104	0.114	0.096	0.114	0.126	0.105	0.094	0.106	0.084	0.137	0.149	0.127	0.133	0.145	0.122
24	0.102	0.111	0.094	0.113	0.124	0.105	0.093	0.101	0.082	0.137	0.147	0.127	0.133	0.142	0.124
25	0.104	0.113	0.096	0.116	0.130	0.106	0.095	0.105	0.084	0.139	0.150	0.130	0.136	0.148	0.125
26	0.103	0.111	0.095	0.114	0.124	0.106	0.093	0.104	0.086	0.138	0.146	0.128	0.133	0.145	0.124
27	0.104	0.114	0.094	0.114	0.124	0.106	0.094	0.104	0.086	0.138	0.147	0.131	0.134	0.144	0.124
28	0.104	0.115	0.096	0.115	0.128	0.107	0.095	0.105	0.087	0.140	0.149	0.131	0.135	0.146	0.127
29	0.106	0.114	0.099	0.116	0.129	0.106	0.096	0.107	0.089	0.142	0.152	0.134	0.136	0.148	0.128
30	0.107	0.115	0.099	0.116	0.127	0.107	0.096	0.105	0.089	0.142	0.151	0.135	0.137	0.150	0.128
$\bar{x}$	0.105			0.114			0.095			0.138			0.135		
σ	0.002			0.002			0.001			0.002			0.002		
max	0.129			0.142			0.112			0.176			0.165		
min	0.094			0.102			0.082			0.126			0.122		

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

Table 21 Ambient gamma dose rates recorded by the Radiation Monitoring Network in December 1999

(All readings are in μGyh^{-1})

Day \ Station	Ping Chau			Tap Mun			Kat O			Yuen Ng Fan			Tai Mei Tuk		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.091	0.100	0.081	0.092	0.100	0.084	0.110	0.118	0.101	0.121	0.133	0.111	0.125	0.135	0.112
2	0.090	0.099	0.080	0.091	0.100	0.082	0.109	0.116	0.100	0.120	0.130	0.110	0.124	0.135	0.116
3	0.090	0.100	0.077	0.091	0.098	0.081	0.109	0.119	0.099	0.121	0.128	0.110	0.124	0.132	0.114
4	0.088	0.097	0.075	0.090	0.099	0.081	0.108	0.118	0.100	0.121	0.132	0.113	0.123	0.134	0.112
5	0.088	0.097	0.077	0.089	0.098	0.081	0.108	0.116	0.099	0.119	0.128	0.110	0.122	0.133	0.114
6	0.088	0.097	0.081	0.089	0.099	0.079	0.107	0.116	0.098	0.119	0.129	0.111	0.122	0.132	0.113
7	0.089	0.098	0.082	0.090	0.100	0.082	0.108	0.118	0.100	0.120	0.131	0.111	0.122	0.134	0.113
8	0.090	0.099	0.082	0.092	0.100	0.084	0.109	0.119	0.100	0.121	0.129	0.112	0.125	0.136	0.115
9	0.089	0.097	0.082	0.091	0.101	0.084	0.109	0.118	0.099	0.119	0.129	0.111	0.123	0.133	0.114
10	0.090	0.097	0.082	0.092	0.103	0.084	0.110	0.121	0.102	0.120	0.129	0.112	0.125	0.135	0.116
11	0.091	0.100	0.081	0.091	0.101	0.081	0.110	0.120	0.101	0.120	0.133	0.110	0.125	0.137	0.113
12	0.089	0.099	0.081	0.088	0.096	0.081	0.110	0.118	0.101	0.118	0.129	0.110	0.123	0.135	0.114
13	0.091	0.101	0.082	0.091	0.101	0.080	0.112	0.122	0.101	0.121	0.133	0.110	0.125	0.138	0.114
14	0.090	0.100	0.080	0.090	0.100	0.082	0.111	0.120	0.102	0.121	0.130	0.110	0.124	0.136	0.114
15	0.089	0.098	0.077	0.090	0.101	0.081	0.110	0.118	0.102	0.119	0.135	0.109	0.123	0.136	0.113
16	0.090	0.106	0.077	0.091	0.103	0.082	0.111	0.122	0.100	0.121	0.132	0.111	0.124	0.138	0.114
17	0.091	0.109	0.076	0.092	0.101	0.082	0.112	0.121	0.103	0.122	0.134	0.113	0.125	0.138	0.116
18	0.089	0.107	0.076	0.093	0.110	0.086	0.111	0.122	0.102	0.122	0.135	0.113	0.125	0.142	0.115
19	0.085	0.096	0.073	0.090	0.102	0.081	0.108	0.116	0.099	0.119	0.129	0.110	0.122	0.132	0.114
20	0.083	0.096	0.071	0.088	0.097	0.081	0.106	0.114	0.099	0.117	0.128	0.109	0.120	0.128	0.113
21	0.084	0.093	0.072	0.088	0.098	0.080	0.107	0.116	0.100	0.118	0.130	0.109	0.120	0.128	0.110
22	0.083	0.093	0.072	0.088	0.095	0.079	0.107	0.114	0.100	0.118	0.128	0.109	0.119	0.132	0.111
23	0.084	0.093	0.072	0.088	0.096	0.081	0.108	0.115	0.100	0.119	0.129	0.109	0.120	0.129	0.111
24	0.085	0.097	0.073	0.089	0.097	0.081	0.108	0.116	0.101	0.119	0.131	0.110	0.121	0.129	0.113
25	0.085	0.094	0.073	0.090	0.098	0.082	0.108	0.115	0.100	0.120	0.131	0.111	0.121	0.132	0.114
26	0.086	0.097	0.073	0.090	0.104	0.079	0.109	0.118	0.100	0.120	0.129	0.109	0.123	0.135	0.111
27	0.086	0.095	0.071	0.088	0.095	0.079	0.108	0.120	0.100	0.119	0.128	0.109	0.122	0.130	0.112
28	0.087	0.100	0.074	0.090	0.098	0.082	0.111	0.121	0.101	0.119	0.128	0.110	0.123	0.133	0.114
29	0.087	0.097	0.073	0.089	0.100	0.081	0.110	0.121	0.102	0.120	0.128	0.108	0.123	0.135	0.112
30	0.088	0.100	0.074	0.091	0.102	0.082	0.112	0.123	0.101	0.120	0.131	0.108	0.125	0.140	0.113
31	0.086	0.095	0.073	0.088	0.098	0.080	0.109	0.119	0.100	0.119	0.128	0.109	0.122	0.132	0.113
$\bar{x}$	0.088			0.090			0.109			0.120			0.123		
σ	0.002			0.001			0.002			0.001			0.002		
max	0.109			0.110			0.123			0.135			0.142		
min	0.071			0.079			0.098			0.108			0.110		

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

- to be continued on next page -

Table 21 cont'd

Day \ Station	Sha Tau Kok			Kwun Tong			Sai Wan Ho			King's Park			Tsim Bei Tsui		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
1	0.108	0.117	0.099	0.118	0.130	0.110	0.097	0.107	0.087	0.142	0.154	0.133	0.137	0.149	0.128
2	0.107	0.115	0.100	0.116	0.129	0.107	0.096	0.107	0.086	0.141	0.149	0.133	0.137	0.147	0.128
3	0.107	0.116	0.100	0.115	0.126	0.107	0.096	0.104	0.087	0.140	0.149	0.131	0.137	0.147	0.127
4	0.105	0.114	0.096	0.115	0.125	0.107	0.095	0.105	0.087	0.138	0.149	0.130	0.135	0.146	0.125
5	0.104	0.114	0.096	0.115	0.131	0.105	0.096	0.106	0.086	0.138	0.149	0.130	0.135	0.145	0.122
6	0.104	0.111	0.096	0.115	0.129	0.107	0.095	0.107	0.087	0.139	0.147	0.129	0.135	0.144	0.126
7	0.105	0.114	0.098	0.115	0.124	0.107	0.096	0.107	0.087	0.140	0.149	0.131	0.136	0.147	0.128
8	0.107	0.115	0.100	0.116	0.128	0.109	0.096	0.104	0.087	0.141	0.152	0.132	0.137	0.149	0.128
9	0.105	0.114	0.095	0.116	0.127	0.107	0.096	0.106	0.085	0.140	0.151	0.130	0.136	0.147	0.127
10	0.107	0.115	0.098	0.119	0.128	0.107	0.097	0.107	0.089	0.141	0.149	0.133	0.137	0.149	0.127
11	0.107	0.118	0.098	0.117	0.128	0.107	0.096	0.106	0.086	0.142	0.152	0.132	0.137	0.148	0.126
12	0.106	0.114	0.096	0.116	0.128	0.107	0.094	0.102	0.087	0.139	0.151	0.128	0.136	0.148	0.127
13	0.107	0.117	0.097	0.117	0.128	0.108	0.096	0.108	0.087	0.141	0.152	0.130	0.138	0.149	0.128
14	0.106	0.118	0.097	0.117	0.128	0.108	0.096	0.106	0.087	0.142	0.153	0.132	0.138	0.147	0.128
15	0.106	0.114	0.097	0.117	0.128	0.107	0.096	0.106	0.086	0.141	0.154	0.132	0.136	0.147	0.126
16	0.107	0.120	0.095	0.116	0.125	0.107	0.096	0.105	0.086	0.141	0.151	0.132	0.137	0.150	0.125
17	0.108	0.118	0.099	0.119	0.128	0.112	0.097	0.106	0.090	0.141	0.150	0.131	0.139	0.157	0.128
18	0.110	0.122	0.101	0.121	0.132	0.110	0.098	0.107	0.090	0.141	0.150	0.133	0.139	0.150	0.128
19	0.105	0.114	0.097	0.117	0.128	0.110	0.096	0.105	0.087	0.137	0.147	0.129	0.136	0.146	0.123
20	0.104	0.112	0.094	0.116	0.124	0.107	0.095	0.105	0.087	0.136	0.146	0.129	0.135	0.150	0.125
21	0.104	0.112	0.097	0.114	0.127	0.105	0.095	0.105	0.086	0.137	0.149	0.127	0.136	0.149	0.126
22	0.103	0.111	0.096	0.113	0.121	0.104	0.094	0.101	0.086	0.137	0.146	0.128	0.136	0.146	0.127
23	0.104	0.112	0.097	0.115	0.125	0.106	0.095	0.106	0.087	0.139	0.154	0.129	0.137	0.150	0.128
24	0.103	0.111	0.096	0.115	0.128	0.107	0.095	0.104	0.086	0.139	0.147	0.131	0.137	0.148	0.125
25	0.105	0.113	0.097	0.115	0.128	0.108	0.096	0.106	0.087	0.139	0.149	0.129	0.137	0.149	0.124
26	0.106	0.114	0.097	0.116	0.128	0.107	0.096	0.107	0.087	0.140	0.151	0.129	0.138	0.150	0.126
27	0.105	0.116	0.098	0.117	0.128	0.107	0.094	0.104	0.087	0.139	0.149	0.129	0.136	0.146	0.123
28	0.107	0.115	0.099	0.117	0.128	0.107	0.095	0.106	0.086	0.139	0.149	0.131	0.138	0.149	0.128
29	0.107	0.116	0.098	0.116	0.126	0.108	0.095	0.107	0.087	0.139	0.149	0.131	0.140	0.155	0.128
30	0.108	0.118	0.099	0.117	0.132	0.107	0.097	0.106	0.089	0.141	0.153	0.132	0.141	0.159	0.127
31	0.105	0.114	0.097	0.115	0.126	0.107	0.095	0.103	0.086	0.139	0.149	0.129	0.136	0.152	0.123
$\bar{x}$	0.106			0.116			0.096			0.140			0.137		
σ	0.002			0.002			0.001			0.002			0.001		
max	0.122			0.132			0.108			0.154			0.159		
min	0.094			0.104			0.085			0.127			0.122		

$\bar{x}$ = Monthly mean

max = Monthly maximum

σ = Monthly standard deviaton

min = Monthly minimum

Table 22 Summary on ambient gamma dose rates recorded by the Radiation Monitoring Network in 1999

(All readings are in μGy h^{-1})

		Ping Chau	Tap Mun	Kat O	Yuen Ng Fan	Tai Mei Tuk	Sha Tau Kok	Kwun Tong	Sai Wan Ho	King's Park	Tsim Bei Tsui
Jan	Mean	0.092	0.092	0.111	0.120	0.122	0.107	0.114	0.096	0.142	0.140
	Standard deviation	0.002	0.002	0.001	0.002	0.002	0.002	0.001	0.001	0.002	0.002
	[Min, Max]	[0.081, 0.110]	[0.081, 0.110]	[0.100, 0.124]	[0.107 , 0.135]	[0.110, 0.138]	[0.096 , 0.124]	[0.104 , 0.128]	[0.085 , 0.111]	[0.129 , 0.162]	[0.125 , 0.161]
Feb	Mean	0.092	0.090	0.109	0.119	0.121	0.105	0.113	0.095	0.142	0.138
	Standard deviation	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	[Min, Max]	[0.081 , 0.106]	[0.079 , 0.104]	[0.098 , 0.122]	[0.108, 0.135]	[0.108 , 0.135]	[0.094 , 0.118]	[0.102 , 0.128]	[0.084 , 0.106]	[0.131 , 0.155]	[0.125 , 0.154]
Mar	Mean	0.091	0.091	0.110	0.119	0.122	0.106	0.114	0.095	0.140	0.138
	Standard deviation	0.003	0.003	0.002	0.003	0.003	0.003	0.002	0.002	0.003	0.003
	[Min, Max]	[0.079, 0.115]	[0.079 , 0.124]	[0.098 , 0.134]	[0.106 , 0.146]	[0.110 , 0.146]	[0.094 , 0.126]	[0.105 , 0.132]	[0.084 , 0.114]	[0.127 , 0.173]	[0.124 , 0.165]
Apr	Mean	0.089	0.089	0.108	0.115	0.120	0.104	0.113	0.094	0.137	0.135
	Standard deviation	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.003	0.002
	[Min, Max]	[0.077 , 0.114]	[0.079 , 0.114]	[0.097 , 0.124]	[0.102 , 0.136]	[0.107 , 0.137]	[0.094 , 0.121]	[0.103 , 0.135]	[0.082 , 0.112]	[0.122 , 0.159]	[0.124 , 0.154]
May	Mean	0.086	0.088	0.106	0.114	0.120	0.104	0.114	0.095	0.135	0.136
	Standard deviation	0.003	0.003	0.002	0.003	0.003	0.002	0.002	0.002	0.003	0.003
	[Min, Max]	[0.076 , 0.141]	[0.077 , 0.138]	[0.094 , 0.135]	[0.102 , 0.178]	[0.109 , 0.168]	[0.093 , 0.138]	[0.103 , 0.154]	[0.082 , 0.131]	[0.122 , 0.212]	[0.122 , 0.180]
Jun	Mean	0.085	0.088	0.106	0.113	0.120	0.103	0.113	0.094	0.134	0.134
	Standard deviation	0.005	0.004	0.003	0.005	0.003	0.004	0.003	0.002	0.004	0.003
	[Min, Max]	[0.073 , 0.203]	[0.079 , 0.169]	[0.094 , 0.176]	[0.101 , 0.192]	[0.109 , 0.197]	[0.092 , 0.173]	[0.102 , 0.159]	[0.084 , 0.123]	[0.122 , 0.182]	[0.121 , 0.208]
Jul	Mean	0.083	0.088	0.106	0.113	0.120	0.102	0.113	0.094	0.132	0.133
	Standard deviation	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001
	[Min, Max]	[0.073 , 0.112]	[0.079 , 0.116]	[0.094 , 0.124]	[0.102 , 0.147]	[0.109 , 0.143]	[0.093 , 0.124]	[0.103 , 0.127]	[0.084 , 0.109]	[0.121 , 0.150]	[0.122 , 0.157]
Aug	Mean	0.084	0.091	0.106	0.115	0.121	0.104	0.114	0.095	0.134	0.133
	Standard deviation	0.006	0.006	0.003	0.007	0.005	0.005	0.006	0.005	0.009	0.006
	[Min, Max]	[0.072 , 0.158]	[0.079 , 0.147]	[0.093 , 0.145]	[0.100 , 0.183]	[0.110 , 0.176]	[0.093 , 0.149]	[0.103 , 0.176]	[0.085 , 0.164]	[0.121 , 0.265]	[0.119, 0.192]
Sep	Mean	0.085	0.091	0.106	0.116	0.122	0.105	0.114	0.095	0.134	0.134
	Standard deviation	0.009	0.009	0.007	0.014	0.010	0.009	0.007	0.007	0.012	0.006
	[Min, Max]	[0.071 , 0.160]	[0.075 , 0.209]	[0.093 , 0.194]	[0.102 , 0.250]	[0.108 , 0.227]	[0.092, 0.197]	[0.103 , 0.192]	[0.085, 0.165]	[0.121 , 0.254]	[0.120 , 0.210]
Oct	Mean	0.084	0.086	0.106	0.114	0.121	0.102	0.113	0.094	0.135	0.133
	Standard deviation	0.002	0.001	0.002	0.002	0.002	0.002	0.001	0.001	0.002	0.001
	[Min, Max]	[0.073 , 0.101]	[0.075 , 0.112]	[0.094 , 0.124]	[0.102 , 0.206]	[0.109 , 0.137]	[0.092 , 0.117]	[0.101 , 0.142]	[0.084 , 0.128]	[0.123 , 0.215]	[0.121 , 0.149]
Nov	Mean	0.087	0.088	0.108	0.117	0.122	0.105	0.114	0.095	0.138	0.135
	Standard deviation	0.002	0.002	0.001	0.002	0.002	0.002	0.002	0.001	0.002	0.002
	[Min, Max]	[0.076 , 0.125]	[0.076 , 0.130]	[0.096 , 0.131]	[0.106, 0.150]	[0.109 , 0.148]	[0.094 , 0.129]	[0.102 , 0.142]	[0.082 , 0.112]	[0.126 , 0.176]	[0.122 , 0.165]
Dec	Mean	0.088	0.090	0.109	0.120	0.123	0.106	0.116	0.096	0.140	0.137
	Standard deviation	0.002	0.001	0.002	0.001	0.002	0.002	0.002	0.001	0.002	0.001
	[Min, Max]	[0.071 , 0.109]	[0.079 , 0.110]	[0.098 , 0.123]	[0.108 , 0.135]	[0.110 , 0.142]	[0.094 , 0.122]	[0.104 , 0.132]	[0.085 , 0.108]	[0.127 , 0.154]	[0.122 , 0.159]
Yearly	Mean	0.087	0.089	0.108	0.116	0.121	0.104	0.114	0.095	0.137	0.135
	Standard deviation	0.005	0.004	0.003	0.005	0.004	0.004	0.003	0.003	0.006	0.004
	[Min, Max]	[0.071 , 0.203]	[0.075 , 0.209]	[0.093 , 0.194]	[0.100 , 0.250]	[0.107, 0.227]	[0.092 , 0.197]	[0.101, 0.192]	[0.082 , 0.165]	[0.121 , 0.265]	[0.119 , 0.210]

Table 23 Summary of occurrences when significant rise in ambient gamma dose rates were observed in 1999

Date	Range of percentage rise in ambient gamma dose rates *	Cause of rise in ambient gamma dose rates
5 May 1999	27% (Kat O) to 57% (King's Park)	Heavy rain associated with a trough of low pressure
7 June 1999	31% (Sai Wan Ho) to 139% (Ping Chau)	Heavy rain associated with Typhoon Maggie
22 – 25 August 1999	37% (Kat O) to 98% (King's Park)	Heavy rain associated with Typhoon Sam
16 September 1999	57% (Tsim Bei Tsui) to 130% (Tap Mun)	Heavy rain associated with Typhoon York
26 September 1999	17% (Kwun Tong) to 88% (Yuen Ng Fan)	Heavy rain associated with Typhoon Cam
12 November 1999	18% (Sai Wan Ho) to 48% (Tap Mun)	Heavy rain associated with a rainband covering the coastal areas of Guangdong

* Percentage rise determined against the baseline of 24-hour running average.

Table 24 Readings recorded by the Automatic Gamma Spectrometry System located at Ping Chau in January 1999

Day	Ambient gamma dose rate ($\mu Gy\ h^{-1}$)			Airborne particulate: Artificial alpha concentration ($Bq\ m^{-3}$)	Airborne particulate: Artificial beta concentration ($Bq\ m^{-3}$)	Airborne particulate: I-131 concentration ($mBq\ m^{-3}$)	Airborne particulate: Cs-137 concentration ($mBq\ m^{-3}$)	Gaseous iodine-131 concentration ($Bq\ m^{-3}$)
	Mean	Max.	Min.					
1	0.119	0.131	0.107	< detection limit	1.094	***	***	< detection limit
2	0.122	0.131	0.114	1.228	2.198	***	***	< detection limit
3	0.120	0.123	0.116	< detection limit	1.615	***	***	< detection limit
4	0.121	0.132	0.111	< detection limit	1.624	***	***	< detection limit
5	0.120	0.129	0.112	< detection limit	1.465	***	***	< detection limit
6	0.120	0.131	0.108	< detection limit	1.727	***	***	< detection limit
7	0.120	0.129	0.110	< detection limit	1.133	***	***	< detection limit
8	0.120	0.128	0.109	1.020	1.244	***	***	< detection limit
9	0.119	0.131	0.108	< detection limit	1.326	***	***	< detection limit
10	0.121	0.133	0.110	1.093	1.637	***	***	< detection limit
11	0.122	0.131	0.112	1.402	1.984	***	***	< detection limit
12	0.123	0.141	0.110	< detection limit	1.444	***	***	< detection limit
13	0.121	0.132	0.112	< detection limit	1.989	***	***	< detection limit
14	0.121	0.132	0.112	< detection limit	1.986	***	***	< detection limit
15	0.117	0.126	0.108	< detection limit	< detection limit	***	***	< detection limit
16	0.118	0.128	0.107	< detection limit	1.096	***	***	< detection limit
17	0.121	0.129	0.109	1.198	1.810	***	***	< detection limit
18	0.122	0.133	0.113	1.203	2.334	***	***	< detection limit
19	0.121	0.132	0.107	1.163	2.320	***	***	< detection limit
20	0.118	0.128	0.107	< detection limit	1.034	***	***	< detection limit
21	0.120	0.131	0.105	< detection limit	1.633	***	***	< detection limit
22	0.117	0.125	0.106	< detection limit	< detection limit	***	***	< detection limit
23	0.116	0.126	0.108	< detection limit	1.184	***	***	< detection limit
24	0.115	0.126	0.105	< detection limit	< detection limit	***	***	< detection limit
25	0.117	0.126	0.108	< detection limit	< detection limit	***	***	< detection limit
26	0.117	0.125	0.108	< detection limit	< detection limit	***	***	< detection limit
27	0.117	0.129	0.107	< detection limit	< detection limit	***	***	< detection limit
28	0.118	0.130	0.108	< detection limit	1.917	***	***	< detection limit
29	0.116	0.128	0.106	< detection limit	< detection limit	***	***	< detection limit
30	0.115	0.124	0.105	< detection limit	< detection limit	***	***	< detection limit
31	0.116	0.124	0.107	< detection limit	< detection limit	***	***	< detection limit

*** under maintenance

	Ambient gamma dose rate
Monthly mean ($\bar{x}$) :	0.119
Monthly standard deviation (σ) :	0.004
Monthly maximum :	0.141
Monthly minimum :	0.105

Typical detection limits of the system are as follow :
Artificial alpha concentration in airborne particulate - 1 $Bq\ m^{-3}$
Artificial beta concentration in airborne particulate - 1 $Bq\ m^{-3}$
Gaseous iodine-131 concentration - 1 $Bq\ m^{-3}$

Table 25 Readings recorded by the Automatic Gamma Spectrometry System located at Ping Chau in February 1999

Day	Ambient gamma dose rate ($\mu Gy\ h^{-1}$)			Airborne particulate: Artificial alpha concentration ($Bq\ m^{-3}$)	Airborne particulate: Artificial beta concentration ($Bq\ m^{-3}$)	Airborne particulate: I-131 concentration ($mBq\ m^{-3}$)	Airborne particulate: Cs-137 concentration ($mBq\ m^{-3}$)	Gaseous iodine-131 concentration ($Bq\ m^{-3}$)
	Mean	Max.	Min.					
1	0.117	0.129	0.107	< detection limit	1.119	***	***	< detection limit
2	0.118	0.129	0.109	< detection limit	< detection limit	***	***	< detection limit
3	0.117	0.129	0.109	< detection limit	< detection limit	***	***	< detection limit
4	0.117	0.127	0.108	< detection limit	< detection limit	***	***	< detection limit
5	0.117	0.127	0.106	***	***	***	***	< detection limit
6	0.116	0.125	0.103	***	***	***	***	< detection limit
7	0.117	0.126	0.108	***	***	***	***	< detection limit
8	0.117	0.128	0.101	***	***	***	***	< detection limit
9	0.117	0.124	0.107	***	***	***	***	< detection limit
10	0.117	0.127	0.108	***	***	***	***	< detection limit
11	0.121	0.131	0.112	***	***	***	***	< detection limit
12	0.119	0.131	0.108	< detection limit	< detection limit	***	***	< detection limit
13	0.116	0.126	0.107	< detection limit	< detection limit	***	***	< detection limit
14	0.116	0.124	0.107	< detection limit	< detection limit	***	***	< detection limit
15	0.116	0.124	0.106	< detection limit	< detection limit	***	***	< detection limit
16	0.118	0.129	0.108	< detection limit	1.631	***	***	< detection limit
17	0.117	0.126	0.108	< detection limit	< detection limit	***	***	< detection limit
18	0.119	0.130	0.111	< detection limit	1.563	***	***	< detection limit
19	0.119	0.129	0.111	< detection limit	1.139	***	***	< detection limit
20	0.119	0.128	0.109	< detection limit	1.233	***	***	< detection limit
21	0.121	0.132	0.113	< detection limit	1.765	***	***	< detection limit
22	0.120	0.129	0.109	< detection limit	1.601	***	***	< detection limit
23	0.117	0.127	0.107	< detection limit	< detection limit	***	***	< detection limit
24	0.119	0.134	0.110	< detection limit	2.330	***	***	< detection limit
25	0.118	0.128	0.106	< detection limit	1.195	***	***	< detection limit
26	0.117	0.127	0.109	< detection limit	< detection limit	***	***	< detection limit
27	0.118	0.129	0.108	< detection limit	1.611	***	***	< detection limit
28	0.118	0.127	0.105	< detection limit	< detection limit	***	***	< detection limit

*** under maintenance

	Ambient gamma dose rate
Monthly mean ($\bar{X}$) :	0.118
Monthly standard deviation (σ) :	0.004
Monthly maximum :	0.134
Monthly minimum :	0.101

Typical detection limits of the system are as follow :
Artificial alpha concentration in airborne particulate - 1 $Bq\ m^{-3}$
Artificial beta concentration in airborne particulate - 1 $Bq\ m^{-3}$
Gaseous iodine-131 concentration - 1 $Bq\ m^{-3}$

Table 26 Readings recorded by the Automatic Gamma Spectrometry System located at Ping Chau in March 1999

Day	Ambient gamma dose rate (μGy h⁻¹)			Airborne particulate: Artificial alpha concentration (Bq m⁻³)	Airborne particulate: Artificial beta concentration (Bq m⁻³)	Airborne particulate: I-131 concentration (mBq m⁻³)	Airborne particulate: Cs-137 concentration (mBq m⁻³)	Gaseous iodine-131 concentration (Bq m⁻³)
	Mean	Max.	Min.					
1	0.117	0.129	0.107	< detection limit	< detection limit	***	***	< detection limit
2	0.117	0.128	0.108	< detection limit	< detection limit	***	***	< detection limit
3	0.118	0.128	0.107	< detection limit	< detection limit	***	***	< detection limit
4	0.117	0.127	0.108	< detection limit	< detection limit	***	***	< detection limit
5	0.120	0.131	0.111	< detection limit	1.341	***	***	< detection limit
6	0.118	0.127	0.108	< detection limit	1.911	***	***	< detection limit
7	0.119	0.129	0.109	1.689	3.146	***	***	< detection limit
8	0.119	0.133	0.109	< detection limit	1.497	***	***	< detection limit
9	0.117	0.127	0.109	< detection limit	1.190	***	***	< detection limit
10	0.119	0.134	0.108	< detection limit	1.661	***	***	< detection limit
11	0.123	0.142	0.111	1.770	3.424	***	***	< detection limit
12	0.123	0.134	0.113	2.513	4.537	***	***	< detection limit
13	0.127	0.148	0.115	3.321	7.063	< 2.5	< 2.1	< detection limit
14	0.126	0.142	0.116	5.787	10.087	< 1.4	< 1.2	< detection limit
15	0.121	0.133	0.108	2.751	4.604	< 1.2	< 1.0	< detection limit
16	0.122	0.149	0.108	2.612	4.411	< 1.2	< 1.1	< detection limit
17	0.118	0.134	0.106	1.220	2.217	< 1.1	< 1.0	< detection limit
18	0.114	0.124	0.104	< detection limit	1.002	< 1.1	< 0.9	< detection limit
19	0.113	0.123	0.104	< detection limit	< detection limit	< 0.9	< 0.9	< detection limit
20	0.114	0.126	0.105	< detection limit	< detection limit	< 1.0	< 0.9	< detection limit
21	0.121	0.146	0.105	1.228	2.376	< 1.1	< 1.0	< detection limit
22	0.119	0.147	0.107	1.646	3.312	< 1.2	< 1.0	< detection limit
23	0.115	0.124	0.106	1.516	2.714	< 1.2	< 1.0	< detection limit
24	0.113	0.122	0.102	< detection limit	1.453	< 1.1	< 0.9	< detection limit
25	0.112	0.123	0.103	< detection limit	< detection limit	< 1.0	< 0.9	< detection limit
26	0.113	0.122	0.103	< detection limit	< detection limit	< 1.0	< 0.9	< detection limit
27	0.114	0.134	0.104	< detection limit	< detection limit	< 1.0	< 0.9	< detection limit
28	0.111	0.122	0.101	< detection limit	< detection limit	< 1.0	< 0.9	< detection limit
29	0.115	0.129	0.103	< detection limit	1.769	< 1.1	< 0.9	< detection limit
30	0.117	0.128	0.107	1.663	3.348	< 1.8	< 1.6	< detection limit
31	0.116	0.125	0.108	2.089	3.675	< 1.2	< 1.0	< detection limit

*** under maintenance

	Ambient gamma dose rate
Monthly mean ($\bar{x}$) :	0.118
Monthly standard deviation (σ) :	0.006
Monthly maximum :	0.149
Monthly minimum :	0.101

Typical detection limits of the system are as follow :
Artificial alpha concentration in airborne particulate - 1 Bq m^{-3}
Artificial beta concentration in airborne particulate - 1 Bq m^{-3}
Gaseous iodine-131 concentration - 1 Bq m^{-3}

Table 27 Readings recorded by the Automatic Gamma Spectrometry System located at Ping Chau in April 1999

Day	Ambient gamma dose rate ($\mu Gy\ h^{-1}$)			Airborne particulate: Artificial alpha concentration ($Bq\ m^{-3}$)	Airborne particulate: Artificial beta concentration ($Bq\ m^{-3}$)	Airborne particulate: I-131 concentration ($mBq\ m^{-3}$)	Airborne particulate: Cs-137 concentration ($mBq\ m^{-3}$)	Gaseous iodine-131 concentration ($Bq\ m^{-3}$)
	Mean	Max.	Min.					
1	0.114	0.122	0.105	< detection limit	1.565	< 1.1	< 0.9	< detection limit
2	0.115	0.126	0.103	1.002	2.010	< 1.1	< 1.0	< detection limit
3	0.115	0.124	0.103	< detection limit	1.218	< 1.1	< 0.9	< detection limit
4	0.118	0.130	0.103	1.491	2.916	< 1.2	< 1.0	< detection limit
5	0.119	0.131	0.109	1.599	3.291	< 1.2	< 1.1	< detection limit
6	0.118	0.129	0.106	1.572	3.077	< 1.2	< 1.0	< detection limit
7	0.115	0.126	0.106	< detection limit	< detection limit	< 1.0	< 0.9	< detection limit
8	0.116	0.125	0.102	< detection limit	< detection limit	< 1.1	< 1.0	< detection limit
9	0.116	0.127	0.106	< detection limit	< detection limit	< 1.0	< 0.9	< detection limit
10	0.118	0.130	0.106	1.323	2.959	< 1.2	< 1.0	< detection limit
11	0.116	0.125	0.107	< detection limit	< detection limit	< 1.1	< 0.9	< detection limit
12	0.118	0.144	0.105	< detection limit	1.541	< 1.1	< 1.0	< detection limit
13	0.114	0.124	0.104	< detection limit	1.164	< 1.1	< 0.9	< detection limit
14	0.114	0.125	0.104	< detection limit	< detection limit	< 1.0	< 0.9	< detection limit
15	0.114	0.122	0.105	< detection limit	< detection limit	< 1.0	< 0.9	< detection limit
16	0.114	0.123	0.106	< detection limit	< detection limit	< 1.0	< 0.9	< detection limit
17	0.115	0.123	0.106	< detection limit	< detection limit	< 1.0	< 0.9	< detection limit
18	0.115	0.123	0.104	< detection limit	< detection limit	< 1.0	< 0.9	< detection limit
19	0.118	0.135	0.107	< detection limit	1.779	< 1.1	< 1.0	< detection limit
20	0.114	0.125	0.106	< detection limit	1.147	< 1.1	< 1.0	< detection limit
21	0.115	0.130	0.104	< detection limit	< detection limit	< 1.5	< 1.4	< detection limit
22	0.114	0.130	0.105	< detection limit	1.383	< 1.1	< 0.9	< detection limit
23	0.115	0.128	0.106	< detection limit	2.088	< 1.2	< 1.0	< detection limit
24	0.116	0.133	0.098	< detection limit	< detection limit	< 1.6	< 1.5	< detection limit
25	0.108	0.116	0.099	< detection limit	< detection limit	< 0.9	< 0.9	< detection limit
26	0.109	0.118	0.097	< detection limit	< detection limit	< 1.0	< 0.9	< detection limit
27	0.110	0.126	0.101	< detection limit	1.049	< 1.0	< 0.9	< detection limit
28	0.113	0.123	0.105	< detection limit	1.941	< 1.1	< 1.0	< detection limit
29	0.114	0.125	0.103	< detection limit	1.877	< 1.2	< 1.0	< detection limit
30	0.113	0.129	0.101	< detection limit	1.369	< 1.1	< 1.0	< detection limit

	Ambient gamma dose rate
Monthly mean ($\bar{X}$) :	0.115
Monthly standard deviation (σ) :	0.005
Monthly maximum :	0.144
Monthly minimum :	0.097

Typical detection limits of the system are as follow :
Artificial alpha concentration in airborne particulate - 1 $Bq\ m^{-3}$
Artificial beta concentration in airborne particulate - 1 $Bq\ m^{-3}$
Gaseous iodine-131 concentration - 1 $Bq\ m^{-3}$

Table 28 Readings recorded by the Automatic Gamma Spectrometry System located at Ping Chau in May 1999

Day	Ambient gamma dose rate (μGy h⁻¹)			Airborne particulate				Gaseous iodine-131 concentration (Bq m⁻³)
				Artificial alpha concentration (Bq m⁻³)	Artificial beta concentration (Bq m⁻³)	I-131 concentration (mBq m⁻³)	Cs-137 concentration (mBq m⁻³)	
	Mean	Max.	Min.					
1	0.115	0.127	0.107	< detection limit	1.254	***	***	< detection limit
2	0.111	0.115	0.107	< detection limit	< detection limit	< 1.0	< 0.9	< detection limit
3	0.111	0.120	0.103	< detection limit	1.787	< 1.1	< 1.0	< detection limit
4	0.115	0.183	0.101	1.118	3.216	***	***	< detection limit
5	0.127	0.167	0.103	< detection limit	1.708	***	***	< detection limit
6	0.120	0.169	0.102	< detection limit	< detection limit	***	***	< detection limit
7	0.108	0.117	0.101	< detection limit	< detection limit	***	***	< detection limit
8	0.113	0.125	0.101	< detection limit	< detection limit	***	***	< detection limit
9	0.114	0.135	0.100	< detection limit	1.388	***	***	< detection limit
10	0.110	0.117	0.101	< detection limit	1.899	***	***	< detection limit
11	0.111	0.120	0.100	< detection limit	2.044	< 1.2	< 1.0	< detection limit
12	0.108	0.119	0.100	< detection limit	1.455	< 1.3	< 1.3	< detection limit
13	0.109	0.121	0.100	< detection limit	1.892	< 0.7	< 0.7	< detection limit
14	0.110	0.120	0.100	< detection limit	1.702	< 0.7	< 0.7	***
15	0.110	0.118	0.100	< detection limit	1.152	< 0.7	< 0.7	***
16	0.110	0.119	0.100	< detection limit	< detection limit	< 0.6	< 0.6	***
17	0.109	0.122	0.101	< detection limit	< detection limit	< 0.6	< 0.6	***
18	0.110	0.119	0.102	***	***	< 0.6	< 0.7	***
19	0.112	0.126	0.102	***	***	< 0.8	< 0.7	***
20	0.109	0.121	0.100	***	***	< 0.8	< 0.7	***
21	0.108	0.117	0.099	***	***	< 0.7	< 0.7	***
22	0.109	0.120	0.098	***	***	< 0.7	< 0.6	***
23	0.109	0.119	0.100	***	***	< 0.7	< 0.6	***
24	0.109	0.123	0.101	***	***	< 0.6	< 0.6	***
25	0.108	0.120	0.099	***	***	< 0.6	< 0.6	***
26	0.107	0.119	0.099	***	***	< 0.6	< 0.6	***
27	0.112	0.128	0.102	***	***	< 0.7	< 0.7	***
28	0.114	0.134	0.100	***	***	< 0.7	< 0.7	***
29	0.109	0.119	0.102	***	***	***	***	***
30	0.108	0.119	0.100	***	***	***	***	***
31	0.109	0.118	0.100	1.131	2.090	***	***	***

*** under maintenance

	Ambient gamma dose rate
Monthly mean ($\overline{X}$) :	0.111
Monthly standard deviation (σ) :	0.007
Monthly maximum :	0.183
Monthly minimum :	0.098

Typical detection limits of the system are as follow :
Artificial alpha concentration in airborne particulate - 1 Bq m^{-3}
Artificial beta concentration in airborne particulate - 1 Bq m^{-3}
Gaseous iodine-131 concentration - 1 Bq m^{-3}

Table 29 Readings recorded by the Automatic Gamma Spectrometry System located at Ping Chau in June 1999

Day	Ambient gamma dose rate ($\mu Gy\ h^{-1}$)			Airborne particulate: Artificial alpha concentration ($Bq\ m^{-3}$)	Airborne particulate: Artificial beta concentration ($Bq\ m^{-3}$)	Airborne particulate: I-131 concentration ($mBq\ m^{-3}$)	Airborne particulate: Cs-137 concentration ($mBq\ m^{-3}$)	Gaseous iodine-131 concentration ($Bq\ m^{-3}$)
	Mean	Max.	Min.					
1	0.109	0.119	0.099	< detection limit	1.027	***	***	***
2	0.110	0.120	0.103	< detection limit	2.113	< 0.7	< 0.7	***
3	0.111	0.120	0.102	***	***	***	***	***
4	0.111	0.120	0.101	***	***	***	***	***
5	0.112	0.122	0.103	***	***	***	***	***
6	0.115	0.139	0.107	***	***	***	***	***
7	0.140	0.238	0.103	***	***	***	***	***
8	0.112	0.145	0.096	***	***	***	***	***
9	0.106	0.114	0.097	< detection limit	< detection limit	***	***	< detection limit
10	0.106	0.115	0.097	< detection limit	< detection limit	< 0.6	< 0.6	< detection limit
11	0.107	0.115	0.099	< detection limit	< detection limit	< 0.6	< 0.6	< detection limit
12	0.109	0.119	0.099	< detection limit	< detection limit	< 0.7	< 0.6	< detection limit
13	0.109	0.117	0.102	< detection limit	< detection limit	***	***	< detection limit
14	0.110	0.120	0.102	< detection limit	< detection limit	***	***	< detection limit
15	0.110	0.119	0.101	< detection limit	< detection limit	***	***	***
16	0.110	0.121	0.101	< detection limit	< detection limit	***	***	***
17	0.108	0.121	0.099	< detection limit	< detection limit	***	***	***
18	0.107	0.119	0.098	< detection limit	< detection limit	***	***	***
19	0.108	0.117	0.100	< detection limit	< detection limit	***	***	***
20	0.108	0.120	0.098	< detection limit	< detection limit	***	***	***
21	0.112	0.135	0.099	< detection limit	< detection limit	***	***	***
22	0.109	0.128	0.097	< detection limit	< detection limit	***	***	***
23	0.106	0.119	0.096	< detection limit	< detection limit	***	***	***
24	0.106	0.115	0.098	< detection limit	< detection limit	***	***	***
25	0.107	0.114	0.098	< detection limit	< detection limit	***	***	***
26	0.107	0.116	0.098	< detection limit	< detection limit	***	***	***
27	0.108	0.117	0.099	< detection limit	< detection limit	***	***	***
28	0.108	0.117	0.100	< detection limit	< detection limit	***	***	***
29	0.109	0.118	0.098	< detection limit	< detection limit	***	***	***
30	0.109	0.117	0.099	< detection limit	< detection limit	***	***	***

*** under maintenance

	Ambient gamma dose rate
Monthly mean ($\bar{X}$) :	0.110
Monthly standard deviation (σ) :	0.009
Monthly maximum :	0.238
Monthly minimum :	0.096

Typical detection limits of the system are as follow :
Artificial alpha concentration in airborne particulate - 1 $Bq\ m^{-3}$
Artificial beta concentration in airborne particulate - 1 $Bq\ m^{-3}$
Gaseous iodine-131 concentration - 1 $Bq\ m^{-3}$

Table 30 Readings recorded by the Automatic Gamma Spectrometry System located at Ping Chau in July 1999

Day	Ambient gamma dose rate ($\mu Gy\ h^{-1}$)			Airborne particulate: Artificial alpha concentration ($Bq\ m^{-3}$)	Airborne particulate: Artificial beta concentration ($Bq\ m^{-3}$)	Airborne particulate: I-131 concentration ($mBq\ m^{-3}$)	Airborne particulate: Cs-137 concentration ($mBq\ m^{-3}$)	Gaseous iodine-131 concentration ($Bq\ m^{-3}$)
	Mean	Max.	Min.					
1	0.109	0.118	0.099	< detection limit	< detection limit	***	***	***
2	0.110	0.118	0.100	< detection limit	< detection limit	***	***	***
3	0.109	0.116	0.098	< detection limit	< detection limit	***	***	***
4	0.108	0.116	0.100	< detection limit	< detection limit	***	***	***
5	0.109	0.118	0.099	< detection limit	< detection limit	***	***	***
6	0.109	0.128	0.097	< detection limit	< detection limit	***	***	***
7	0.108	0.116	0.100	< detection limit	< detection limit	***	***	***
8	0.112	0.146	0.099	< detection limit	< detection limit	***	***	***
9	0.111	0.145	0.098	< detection limit	< detection limit	***	***	***
10	0.107	0.117	0.099	< detection limit	< detection limit	***	***	***
11	0.108	0.118	0.099	< detection limit	< detection limit	***	***	***
12	0.108	0.117	0.100	< detection limit	< detection limit	***	***	***
13	0.110	0.118	0.100	< detection limit	< detection limit	***	***	***
14	0.109	0.122	0.100	< detection limit	< detection limit	***	***	***
15	0.110	0.117	0.101	< detection limit	< detection limit	***	***	***
16	0.108	0.121	0.098	< detection limit	< detection limit	***	***	***
17	0.106	0.116	0.098	< detection limit	< detection limit	***	***	***
18	0.107	0.118	0.097	< detection limit	< detection limit	***	***	***
19	0.108	0.130	0.100	< detection limit	< detection limit	***	***	***
20	0.108	0.117	0.099	< detection limit	< detection limit	***	***	***
21	0.109	0.119	0.100	< detection limit	< detection limit	***	***	***
22	0.110	0.121	0.100	< detection limit	< detection limit	***	***	***
23	0.110	0.120	0.102	< detection limit	< detection limit	***	***	***
24	0.110	0.119	0.101	< detection limit	< detection limit	***	***	***
25	0.109	0.119	0.099	< detection limit	< detection limit	***	***	< detection limit
26	0.108	0.125	0.097	< detection limit	< detection limit	***	***	< detection limit
27	0.110	0.137	0.101	< detection limit	< detection limit	***	***	< detection limit
28	0.110	0.118	0.100	< detection limit	< detection limit	***	***	< detection limit
29	0.109	0.118	0.099	< detection limit	< detection limit	***	***	< detection limit
30	0.109	0.118	0.098	< detection limit	< detection limit	***	***	< detection limit
31	0.109	0.120	0.098	< detection limit	< detection limit	***	***	< detection limit

*** under maintenance

	Ambient gamma dose rate
Monthly mean ($\bar{X}$) :	0.097
Monthly standard deviation (σ) :	0.004
Monthly maximum :	0.146
Monthly minimum :	0.097

Typical detection limits of the system are as follow :
Artificial alpha concentration in airborne particulate - 1 $Bq\ m^{-3}$
Artificial beta concentration in airborne particulate - 1 $Bq\ m^{-3}$
Gaseous iodine-131 concentration - 1 $Bq\ m^{-3}$

Table 31 Readings recorded by the Automatic Gamma Spectrometry System located at Ping Chau in August 1999

Day	Ambient gamma dose rate ($\mu Gy\ h^{-1}$)			Airborne particulate: Artificial alpha concentration ($Bq\ m^{-3}$)	Airborne particulate: Artificial beta concentration ($Bq\ m^{-3}$)	Airborne particulate: I-131 concentration ($mBq\ m^{-3}$)	Airborne particulate: Cs-137 concentration ($mBq\ m^{-3}$)	Gaseous iodine-131 concentration ($Bq\ m^{-3}$)
	Mean	Max.	Min.					
1	0.110	0.118	0.102	< detection limit	< detection limit	***	***	< detection limit
2	0.111	0.119	0.100	< detection limit	< detection limit	***	***	< detection limit
3	0.112	0.123	0.101	< detection limit	< detection limit	***	***	< detection limit
4	0.111	0.131	0.096	< detection limit	< detection limit	***	***	< detection limit
5	0.113	0.141	0.102	< detection limit	< detection limit	***	***	< detection limit
6	0.111	0.145	0.099	< detection limit	< detection limit	***	***	< detection limit
7	0.109	0.119	0.099	< detection limit	< detection limit	***	***	< detection limit
8	0.108	0.116	0.097	< detection limit	< detection limit	***	***	< detection limit
9	0.112	0.143	0.099	< detection limit	< detection limit	***	***	< detection limit
10	0.115	0.147	0.098	< detection limit	< detection limit	***	***	< detection limit
11	0.112	0.141	0.099	< detection limit	< detection limit	***	***	< detection limit
12	0.108	0.119	0.097	< detection limit	< detection limit	***	***	< detection limit
13	0.110	0.130	0.098	< detection limit	< detection limit	***	***	< detection limit
14	0.107	0.128	0.096	< detection limit	< detection limit	***	***	< detection limit
15	0.106	0.114	0.097	< detection limit	< detection limit	***	***	< detection limit
16	0.107	0.117	0.098	< detection limit	< detection limit	***	***	< detection limit
17	0.108	0.117	0.099	< detection limit	< detection limit	***	***	< detection limit
18	0.110	0.124	0.101	< detection limit	< detection limit	***	***	< detection limit
19	0.111	0.119	0.102	< detection limit	< detection limit	***	***	< detection limit
20	0.112	0.121	0.103	< detection limit	< detection limit	***	***	< detection limit
21	0.119	0.188	0.098	< detection limit	< detection limit	***	***	< detection limit
22	0.109	0.121	0.099	< detection limit	< detection limit	***	***	< detection limit
23	0.141	0.181	0.108	< detection limit	< detection limit	***	***	< detection limit
24	0.124	0.164	0.096	< detection limit	< detection limit	***	***	< detection limit
25	0.117	0.149	0.098	< detection limit	< detection limit	***	***	< detection limit
26	0.105	0.120	0.096	< detection limit	< detection limit	***	***	< detection limit
27	0.106	0.114	0.098	< detection limit	< detection limit	***	***	< detection limit
28	0.105	0.114	0.097	< detection limit	< detection limit	***	***	< detection limit
29	0.105	0.114	0.097	< detection limit	< detection limit	***	***	< detection limit
30	0.105	0.114	0.095	< detection limit	< detection limit	***	***	< detection limit
31	0.107	0.117	0.098	< detection limit	< detection limit	***	***	< detection limit

*** under maintenance

	Ambient gamma dose rate
Monthly mean ($\bar{X}$) :	0.111
Monthly standard deviation (σ) :	0.010
Monthly maximum :	0.188
Monthly minimum :	0.095

Typical detection limits of the system are as follow :

Artificial alpha concentration in airborne particulate - 1 $Bq\ m^{-3}$

Artificial beta concentration in airborne particulate - 1 $Bq\ m^{-3}$

Gaseous iodine-131 concentration - 1 $Bq\ m^{-3}$

Table 32 Readings recorded by the Automatic Gamma Spectrometry System located at Ping Chau in September 1999

Day	Ambient gamma dose rate ($\mu Gy\ h^{-1}$)			Airborne particulate: Artificial alpha concentration ($Bq\ m^{-3}$)	Airborne particulate: Artificial beta concentration ($Bq\ m^{-3}$)	Airborne particulate: I-131 concentration ($mBq\ m^{-3}$)	Airborne particulate: Cs-137 concentration ($mBq\ m^{-3}$)	Gaseous iodine-131 concentration ($Bq\ m^{-3}$)
	Mean	Max.	Min.					
1	0.109	0.124	0.099	< detection limit	< detection limit	***	***	< detection limit
2	0.109	0.119	0.100	< detection limit	< detection limit	***	***	< detection limit
3	0.112	0.122	0.103	< detection limit	< detection limit	***	***	< detection limit
4	0.112	0.121	0.102	< detection limit	< detection limit	***	***	< detection limit
5	0.110	0.119	0.102	< detection limit	< detection limit	***	***	< detection limit
6	***	***	***	***	***	***	***	< detection limit
7	***	***	***	< detection limit	< detection limit	***	***	< detection limit
8	0.108	0.117	0.100	< detection limit	< detection limit	***	***	< detection limit
9	0.108	0.119	0.096	< detection limit	< detection limit	***	***	< detection limit
10	0.110	0.118	0.102	< detection limit	< detection limit	***	***	< detection limit
11	0.110	0.121	0.101	< detection limit	< detection limit	***	***	< detection limit
12	0.112	0.123	0.102	< detection limit	< detection limit	***	***	< detection limit
13	0.113	0.124	0.101	< detection limit	< detection limit	***	***	< detection limit
14	0.114	0.124	0.102	< detection limit	< detection limit	***	***	< detection limit
15	0.115	0.126	0.105	< detection limit	< detection limit	***	***	< detection limit
16	0.180	0.229	0.122	< detection limit	< detection limit	***	***	< detection limit
17	0.119	0.174	0.096	< detection limit	< detection limit	***	***	< detection limit
18	0.107	0.121	0.099	< detection limit	< detection limit	***	***	< detection limit
19	0.108	0.118	0.100	< detection limit	< detection limit	***	***	< detection limit
20	0.115	0.163	0.100	< detection limit	< detection limit	***	***	< detection limit
21	0.108	0.119	0.100	< detection limit	< detection limit	***	***	< detection limit
22	0.109	0.120	0.099	***	***	***	***	< detection limit
23	0.110	0.121	0.099	***	***	***	***	< detection limit
24	0.111	0.120	0.102	***	***	***	***	< detection limit
25	0.113	0.124	0.103	***	***	***	***	< detection limit
26	0.124	0.183	0.097	***	***	***	***	< detection limit
27	0.105	0.115	0.096	***	***	***	***	< detection limit
28	0.104	0.114	0.096	***	***	***	***	< detection limit
29	0.105	0.113	0.096	***	***	***	***	< detection limit
30	0.106	0.115	0.096	***	***	***	***	< detection limit

*** under maintenance

	Ambient gamma dose rate
Monthly mean ($\bar{X}$) :	0.113
Monthly standard deviation (σ) :	0.016
Monthly maximum :	0.229
Monthly minimum :	0.096

Typical detection limits of the system are as follow :
Artificial alpha concentration in airborne particulate - 1 $Bq\ m^{-3}$
Artificial beta concentration in airborne particulate - 1 $Bq\ m^{-3}$
Gaseous iodine-131 concentration - 1 $Bq\ m^{-3}$

Table 33 Readings recorded by the Automatic Gamma Spectrometry System located at Ping Chau in October 1999

Day	Ambient gamma dose rate ($\mu Gy\ h^{-1}$)			Airborne particulate: Artificial alpha concentration ($Bq\ m^{-3}$)	Airborne particulate: Artificial beta concentration ($Bq\ m^{-3}$)	Airborne particulate: I-131 concentration ($mBq\ m^{-3}$)	Airborne particulate: Cs-137 concentration ($mBq\ m^{-3}$)	Gaseous iodine-131 concentration ($Bq\ m^{-3}$)
	Mean	Max.	Min.					
1	0.107	0.116	0.091	***	***	***	***	< detection limit
2	0.108	0.116	0.099	***	***	***	***	< detection limit
3	0.110	0.123	0.101	***	***	***	***	< detection limit
4	0.108	0.119	0.097	***	***	***	***	< detection limit
5	0.111	0.122	0.103	***	***	***	***	< detection limit
6	0.111	0.121	0.103	< detection limit	< detection limit	***	***	< detection limit
7	0.113	0.124	0.104	< detection limit	< detection limit	***	***	< detection limit
8	0.112	0.122	0.103	< detection limit	< detection limit	***	***	< detection limit
9	0.113	0.123	0.105	< detection limit	< detection limit	***	***	< detection limit
10	0.114	0.123	0.105	< detection limit	< detection limit	***	***	< detection limit
11	0.113	0.124	0.100	< detection limit	< detection limit	***	***	< detection limit
12	0.110	0.119	0.099	< detection limit	< detection limit	***	***	< detection limit
13	0.109	0.120	0.103	< detection limit	< detection limit	***	***	< detection limit
14	0.110	0.122	0.102	< detection limit	< detection limit	***	***	< detection limit
15	0.110	0.119	0.099	< detection limit	< detection limit	***	***	< detection limit
16	0.114	0.137	0.102	< detection limit	< detection limit	***	***	< detection limit
17	0.114	0.122	0.105	< detection limit	< detection limit	***	***	< detection limit
18	0.114	0.123	0.105	< detection limit	< detection limit	***	***	< detection limit
19	0.115	0.124	0.106	< detection limit	< detection limit	***	***	< detection limit
20	0.114	0.125	0.103	< detection limit	< detection limit	***	***	< detection limit
21	0.112	0.121	0.105	< detection limit	< detection limit	***	***	< detection limit
22	0.112	0.120	0.101	< detection limit	< detection limit	***	***	< detection limit
23	0.113	0.127	0.104	< detection limit	< detection limit	***	***	< detection limit
24	0.116	0.134	0.105	< detection limit	< detection limit	***	***	< detection limit
25	0.112	0.123	0.103	< detection limit	< detection limit	***	***	< detection limit
26	0.113	0.123	0.103	< detection limit	< detection limit	***	***	< detection limit
27	0.116	0.129	0.105	< detection limit	< detection limit	***	***	< detection limit
28	0.114	0.125	0.103	< detection limit	< detection limit	***	***	< detection limit
29	0.114	0.126	0.106	< detection limit	< detection limit	***	***	< detection limit
30	0.114	0.124	0.106	< detection limit	< detection limit	***	***	< detection limit
31	0.113	0.122	0.103	< detection limit	< detection limit	***	***	< detection limit

*** under maintenance

	Ambient gamma dose rate
Monthly mean ($\bar{x}$) :	0.112
Monthly standard deviation (σ) :	0.004
Monthly maximum :	0.137
Monthly minimum :	0.091

Typical detection limits of the system are as follow :
Artificial alpha concentration in airborne particulate - 1 $Bq\ m^{-3}$
Artificial beta concentration in airborne particulate - 1 $Bq\ m^{-3}$
Gaseous iodine-131 concentration - 1 $Bq\ m^{-3}$

Table 34 Readings recorded by the Automatic Gamma Spectrometry System located at Ping Chau in November 1999

Day	Ambient gamma dose rate ($\mu Gy\ h^{-1}$)			Airborne particulate: Artificial alpha concentration ($Bq\ m^{-3}$)	Airborne particulate: Artificial beta concentration ($Bq\ m^{-3}$)	Airborne particulate: I-131 concentration ($mBq\ m^{-3}$)	Airborne particulate: Cs-137 concentration ($mBq\ m^{-3}$)	Gaseous iodine-131 concentration ($Bq\ m^{-3}$)
	Mean	Max.	Min.					
1	0.115	0.126	0.104	< detection limit	< detection limit	***	***	< detection limit
2	0.116	0.123	0.107	< detection limit	< detection limit	***	***	< detection limit
3	0.118	0.127	0.108	< detection limit	< detection limit	***	***	< detection limit
4	0.117	0.129	0.107	< detection limit	< detection limit	***	***	< detection limit
5	0.115	0.125	0.107	< detection limit	< detection limit	***	***	< detection limit
6	0.115	0.126	0.102	< detection limit	< detection limit	***	***	< detection limit
7	0.113	0.124	0.105	< detection limit	< detection limit	***	***	< detection limit
8	0.118	0.130	0.106	< detection limit	< detection limit	***	***	< detection limit
9	0.118	0.129	0.106	< detection limit	< detection limit	***	***	< detection limit
10	0.114	0.124	0.104	< detection limit	< detection limit	***	***	< detection limit
11	0.114	0.125	0.107	< detection limit	< detection limit	***	***	< detection limit
12	0.125	0.171	0.110	< detection limit	< detection limit	***	***	< detection limit
13	0.116	0.127	0.105	< detection limit	< detection limit	***	***	< detection limit
14	0.114	0.123	0.105	< detection limit	< detection limit	***	***	< detection limit
15	0.116	0.128	0.107	< detection limit	< detection limit	***	***	< detection limit
16	0.116	0.127	0.108	< detection limit	< detection limit	***	***	< detection limit
17	0.116	0.126	0.108	< detection limit	< detection limit	***	***	< detection limit
18	0.118	0.131	0.110	< detection limit	< detection limit	***	***	< detection limit
19	0.117	0.129	0.107	< detection limit	< detection limit	***	***	< detection limit
20	0.119	0.130	0.105	< detection limit	< detection limit	***	***	< detection limit
21	0.115	0.125	0.107	< detection limit	< detection limit	***	***	< detection limit
22	0.115	0.125	0.107	< detection limit	< detection limit	***	***	< detection limit
23	0.115	0.123	0.105	< detection limit	< detection limit	***	***	< detection limit
24	0.115	0.125	0.104	< detection limit	< detection limit	***	***	< detection limit
25	0.118	0.129	0.109	< detection limit	< detection limit	***	***	< detection limit
26	0.116	0.126	0.106	< detection limit	< detection limit	***	***	< detection limit
27	0.116	0.125	0.106	< detection limit	< detection limit	***	***	< detection limit
28	0.118	0.129	0.110	< detection limit	< detection limit	***	***	< detection limit
29	0.119	0.128	0.109	< detection limit	< detection limit	***	***	< detection limit
30	0.120	0.129	0.110	< detection limit	< detection limit	***	***	< detection limit

*** under maintenance

	Ambient gamma dose rate
Monthly mean ($\bar{X}$) :	0.117
Monthly standard deviation (σ) :	0.005
Monthly maximum :	0.171
Monthly minimum :	0.102

Typical detection limits of the system are as follow :
Artificial alpha concentration in airborne particulate - 1 $Bq\ m^{-3}$
Artificial beta concentration in airborne particulate - 1 $Bq\ m^{-3}$
Gaseous iodine-131 concentration - 1 $Bq\ m^{-3}$

Table 35 Readings recorded by the Automatic Gamma Spectrometry System located at Ping Chau in December 1999

Day	Ambient gamma dose rate ($\mu Gy\ h^{-1}$)			Airborne particulate: Artificial alpha concentration ($Bq\ m^{-3}$)	Airborne particulate: Artificial beta concentration ($Bq\ m^{-3}$)	Airborne particulate: I-131 concentration ($mBq\ m^{-3}$)	Airborne particulate: Cs-137 concentration ($mBq\ m^{-3}$)	Gaseous iodine-131 concentration ($Bq\ m^{-3}$)
	Mean	Max.	Min.					
1	0.122	0.132	0.112	< detection limit	< detection limit	***	***	< detection limit
2	0.121	0.131	0.111	< detection limit	< detection limit	***	***	< detection limit
3	0.121	0.131	0.111	< detection limit	< detection limit	***	***	< detection limit
4	0.118	0.128	0.108	< detection limit	< detection limit	***	***	< detection limit
5	0.118	0.128	0.108	< detection limit	< detection limit	***	***	< detection limit
6	0.117	0.127	0.107	< detection limit	< detection limit	***	***	< detection limit
7	0.119	0.128	0.110	< detection limit	< detection limit	***	***	< detection limit
8	0.120	0.132	0.107	< detection limit	< detection limit	***	***	< detection limit
9	0.119	0.130	0.109	< detection limit	< detection limit	***	***	< detection limit
10	0.120	0.129	0.111	< detection limit	< detection limit	***	***	< detection limit
11	0.120	0.130	0.109	< detection limit	< detection limit	***	***	< detection limit
12	0.118	0.128	0.109	< detection limit	< detection limit	***	***	< detection limit
13	0.122	0.134	0.106	< detection limit	< detection limit	***	***	< detection limit
14	0.121	0.132	0.110	< detection limit	< detection limit	***	***	< detection limit
15	0.120	0.130	0.107	< detection limit	< detection limit	***	***	< detection limit
16	0.121	0.135	0.109	< detection limit	< detection limit	***	***	< detection limit
17	0.122	0.148	0.110	< detection limit	< detection limit	***	***	< detection limit
18	0.122	0.138	0.109	< detection limit	< detection limit	***	***	< detection limit
19	0.115	0.124	0.105	< detection limit	< detection limit	***	***	< detection limit
20	0.113	0.123	0.102	< detection limit	< detection limit	***	***	< detection limit
21	0.113	0.123	0.105	< detection limit	< detection limit	***	***	< detection limit
22	0.112	0.122	0.103	< detection limit	< detection limit	***	***	< detection limit
23	0.113	0.123	0.101	< detection limit	< detection limit	***	***	< detection limit
24	0.114	0.123	0.105	< detection limit	< detection limit	***	***	< detection limit
25	0.115	0.128	0.104	< detection limit	< detection limit	***	***	< detection limit
26	0.116	0.125	0.106	< detection limit	< detection limit	***	***	< detection limit
27	0.116	0.128	0.105	< detection limit	< detection limit	***	***	< detection limit
28	0.116	0.127	0.106	< detection limit	< detection limit	***	***	< detection limit
29	0.117	0.127	0.108	< detection limit	< detection limit	***	***	< detection limit
30	0.119	0.132	0.105	< detection limit	< detection limit	***	***	< detection limit
31	0.116	0.126	0.106	< detection limit	< detection limit	***	***	< detection limit

*** under maintenance

	Ambient gamma dose rate
Monthly mean ($\bar{X}$) :	0.118
Monthly standard deviation (σ) :	0.005
Monthly maximum :	0.148
Monthly minimum :	0.101

Typical detection limits of the system are as follow :
Artificial alpha concentration in airborne particulate - 1 $Bq\ m^{-3}$
Artificial beta concentration in airborne particulate - 1 $Bq\ m^{-3}$
Gaseous iodine-131 concentration - 1 $Bq\ m^{-3}$

Table 36 Summary of occurrences of alpha and beta activity concentrations exceeding detection limits

Month	1998 Number of days above detection limit		1998 Wind Dir/Speed (km h^{-1})	1998 Rainfall (mm)	1999 Number of days above detection limit		1999 Wind Dir/Speed (km h^{-1})	1999 Rainfall (mm)	Monthly Normal Rainfall ++ (mm)
	Alpha	Beta			Alpha	Beta			
Jan	0	0	060/28.9	48.9	7	22	060/24.9	4.5	23.4
Feb	0	0	020/24.6	153.7	0	10	070/24.9	Tr	48.0
Mar	0	0	050/25.8	55.3	13	21	070/25.1	23.6	66.9
Apr	0	0	060/17.9	237.1	5	17	070/27.2	176.9	161.5
May	0	0	100/18.7	335.2	2	11	070/25.1	177.8	316.7
Jun	0	0	210/24.7	814.5	0	2	190/20.0	197.4	376.0
Jul	0	0	230/23.2	267.2	0	0	220/20.9	203.8	323.5
Aug	0	0	230/16.5	245.4	0	0	220/19.7	892.0	391.4
Sept	0	0	080/23.3	230.9	0	0	010/21.7	365.7	299.7
Oct	0	0	080/30.4	133.9	0	0	080/28.3	38.8	144.8
Nov	0	0	070/26.1	28.8	0	0	070/29.1	15.7	35.1
Dec	0	0	010/26.9	13.7	0	0	010/28.0	32.9	27.3

++ Monthly Normal Rainfall for the 30 years 1961 - 1990

Table 37 Mean gamma and gamma plus beta radiation levels measured by radioactivity sonde on 3 February 1999

Height interval (m)	Mean radiation level (count s^{-1})						Mean ratio
	Gamma + beta			Gamma			(gamma + beta) / gamma
	Mean	Min.	Max.	Mean	Min.	Max.	
66 - 100	0.18	0.14	0.21	0.66	0.60	0.69	0.27
100 - 200	0.13	0.10	0.14	0.58	0.51	0.67	0.22
200 - 300	0.06	0.03	0.09	0.45	0.41	0.50	0.13
300 - 400	0.03	0.03	0.03	0.25	0.13	0.38	0.12
400 - 500	0.16	0.02	0.25	0.21	0.12	0.25	0.76
500 - 600	0.17	0.07	0.25	0.21	0.12	0.30	0.81
600 - 700	0.11	0.09	0.12	0.10	0.09	0.12	1.10
700 - 800	0.08	0.02	0.09	0.16	0.12	0.25	0.50
800 - 900	0.05	0.01	0.06	0.24	0.21	0.28	0.21
900 - 1000	0.10	0.06	0.12	0.21	0.15	0.25	0.48
1000 - 1100	0.11	0.09	0.12	0.22	0.19	0.26	0.50
1100 - 1200	0.08	0.06	0.09	0.17	0.13	0.22	0.47
1200 - 1300	0.08	0.06	0.12	0.14	0.13	0.17	0.57
1300 - 1400	0.09	0.06	0.12	0.11	0.06	0.16	0.82
1400 - 1500	0.06	0.03	0.09	0.13	0.09	0.19	0.46
1500 - 1600	0.09	0.04	0.12	0.29	0.25	0.30	0.31
1600 - 1700	0.10	0.09	0.12	0.33	0.29	0.38	0.30
1700 - 1800	0.07	0.03	0.12	0.22	0.16	0.28	0.32
1800 - 1900	0.07	0.06	0.09	0.15	0.12	0.18	0.47
1900 - 2000	0.06	0.03	0.06	0.23	0.15	0.31	0.26
2000 - 2100	0.04	0.03	0.06	0.38	0.28	0.41	0.11
2100 - 2200	0.07	0.06	0.09	0.28	0.25	0.35	0.25
2200 - 2300	0.10	0.06	0.14	0.21	0.16	0.26	0.48
2300 - 2400	0.16	0.12	0.19	0.19	0.17	0.20	0.84
2400 - 2500	0.16	0.12	0.19	0.19	0.16	0.23	0.84
2500 - 2600	0.11	0.09	0.12	0.38	0.28	0.47	0.29
2600 - 2700	0.05	0.03	0.11	0.49	0.44	0.53	0.10
2700 - 2800	0.03	0.03	0.03	0.27	0.20	0.44	0.11
2800 - 2900	0.04	0.03	0.05	0.23	0.16	0.35	0.17
2900 - 3000	0.10	0.06	0.12	0.31	0.28	0.34	0.32
3000 - 3300	0.19	0.09	0.26	0.15	0.09	0.30	1.27
3300 - 3600	0.20	0.12	0.28	0.27	0.13	0.38	0.74
3600 - 3900	0.17	0.12	0.22	0.22	0.09	0.35	0.77
3900 - 4200	0.19	0.12	0.25	0.21	0.12	0.29	0.90
4200 - 4500	0.26	0.17	0.37	0.39	0.29	0.44	0.67
4500 - 4800	0.23	0.17	0.30	0.34	0.25	0.43	0.68
4800 - 5100	0.15	0.09	0.20	0.52	0.43	0.61	0.29
5100 - 5400	0.20	0.15	0.23	0.65	0.58	0.73	0.31
5400 - 5700	0.36	0.26	0.44	0.60	0.40	0.75	0.60
5700 - 6000	0.23	0.16	0.26	0.63	0.45	0.79	0.37
6000 - 6300	0.34	0.16	0.44	0.52	0.41	0.58	0.65
6300 - 6600	0.30	0.16	0.40	0.60	0.55	0.63	0.50
6600 - 6900	0.34	0.29	0.48	0.90	0.55	1.22	0.38
6900 - 7200	0.52	0.29	0.60	1.04	0.89	1.24	0.50
7200 - 7500	0.51	0.45	0.58	1.00	0.84	1.11	0.51
7500 - 7800	0.45	0.42	0.52	1.05	0.90	1.13	0.43

- to be continued on next page -

Table 37 cont'd

Height interval (m)	Mean radiation level (count s^{-1})						Mean ratio
	Gamma + beta			Gamma			(gamma + beta) / gamma
	Mean	Min.	Max.	Mean	Min.	Max.	
7800 - 8100	0.50	0.43	0.63	1.10	0.98	1.24	0.45
8100 - 8400	0.46	0.35	0.59	1.18	1.07	1.45	0.39
8400 - 8700	0.50	0.32	0.66	1.63	1.42	1.85	0.31
8700 - 9000	0.67	0.61	0.74	1.58	1.16	1.78	0.42
9000 - 9300	0.82	0.68	0.95	1.28	1.09	1.51	0.64
9300 - 9600	0.76	0.67	0.94	1.51	1.26	1.75	0.50
9600 - 9900	0.81	0.65	0.93	1.73	1.57	1.94	0.47
9900 - 10200	0.74	0.53	0.94	1.95	1.83	2.19	0.38
10200 - 10500	0.90	0.77	1.00	1.95	1.54	2.28	0.46
10500 - 10800	0.79	0.64	1.01	2.18	1.78	2.47	0.36
10800 - 11100	1.00	0.86	1.16	2.05	1.84	2.37	0.49
11100 - 11400	1.21	1.04	1.44	2.81	2.39	3.18	0.43
11400 - 11700	1.30	1.10	1.51	2.18	1.92	2.52	0.60
11700 - 12000	1.18	1.04	1.27	2.40	2.14	2.72	0.49
12000 - 12300	1.27	0.92	1.53	2.79	2.53	3.08	0.46
12300 - 12600	1.38	1.22	1.48	2.91	2.67	3.09	0.47
12600 - 12900	1.22	0.95	1.47	2.63	2.20	3.08	0.46
12900 - 13200	1.35	1.09	1.55	2.82	2.38	3.03	0.48
13200 - 13500	***	***	***	2.74	2.40	3.12	***
13500 - 13800	***	***	***	3.12	2.62	3.63	***
13800 - 14100	***	***	***	3.00	2.85	3.32	***
14100 - 14400	***	***	***	3.24	2.84	3.72	***
14400 - 14700	***	***	***	3.51	3.18	3.90	***
14700 - 15000	***	***	***	3.37	3.10	3.57	***
15000 - 15300	***	***	***	3.36	3.19	3.55	***
15300 - 15600	***	***	***	3.46	3.30	3.64	***
15600 - 15900	***	***	***	3.51	3.06	3.94	***
15900 - 16200	***	***	***	3.28	2.79	3.75	***
16200 - 16500	***	***	***	3.29	3.11	3.57	***
16500 - 16800	***	***	***	3.87	3.26	4.15	***
16800 - 17100	***	***	***	3.63	3.54	3.74	***
17100 - 17400	***	***	***	3.26	3.11	3.53	***
17400 - 17700	***	***	***	3.16	2.99	3.33	***
17700 - 18000	***	***	***	3.48	3.22	3.88	***
18000 - 18300	***	***	***	3.54	2.93	4.15	***
18300 - 18600	***	***	***	3.31	2.89	3.75	***
18600 - 18900	***	***	***	3.50	3.16	3.81	***
18900 - 19200	***	***	***	3.50	2.98	3.71	***
19200 - 19500	***	***	***	3.09	2.59	3.59	***
19500 - 19800	***	***	***	3.43	3.23	3.61	***
19800 - 20100	***	***	***	3.24	2.87	3.47	***
20100 - 20400	***	***	***	3.16	2.85	3.37	***
20400 - 20700	***	***	***	2.69	2.44	2.92	***
20700 - 21000	***	***	***	3.07	2.75	3.37	***
21000 - 21300	***	***	***	2.61	2.43	2.89	***

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Table 37 cont'd

Height interval (m)	Mean radiation level (count s^{-1})						Mean ratio
	Gamma + beta			Gamma			(gamma + beta) / gamma
	Mean	Min.	Max.	Mean	Min.	Max.	
21300 - 21600	***	***	***	2.49	1.78	2.88	***
21600 - 21900	***	***	***	2.74	1.81	3.14	***
21900 - 22200	***	***	***	2.81	2.35	3.25	***
22200 - 22500	***	***	***	2.39	2.27	2.53	***
22500 - 22800	***	***	***	2.73	2.44	2.97	***
22800 - 23100	***	***	***	2.74	2.54	3.05	***
23100 - 23400	***	***	***	2.46	2.26	2.88	***
23400 - 23700	***	***	***	2.57	2.23	3.01	***
23700 - 24000	***	***	***	2.73	2.24	3.34	***
24000 - 24300	***	***	***	2.28	2.15	2.53	***
24300 - 24600	***	***	***	2.25	2.20	2.31	***

*** data not available

Table 38 Mean gamma and gamma plus beta radiation levels measured by radioactivity sonde on 5 June 1999

Height interval (m)	Mean radiation level (count s^{-1})						Mean ratio
	Gamma + beta			Gamma			(gamma + beta) / gamma
	Mean	Min.	Max.	Mean	Min.	Max.	
66 - 100	0.35	0.28	0.43	0.45	0.40	0.49	0.78
100 - 200	0.20	0.09	0.28	0.28	0.19	0.37	0.71
200 - 300	0.11	0.09	0.12	0.16	0.13	0.18	0.69
300 - 400	0.09	0.09	0.09	0.20	0.17	0.25	0.45
400 - 500	0.12	0.09	0.17	0.13	0.07	0.17	0.92
500 - 600	0.15	0.13	0.17	0.15	0.11	0.18	1.00
600 - 700	0.22	0.17	0.25	0.22	0.17	0.26	1.00
700 - 800	0.24	0.21	0.26	0.24	0.17	0.28	1.00
800 - 900	0.19	0.16	0.22	0.20	0.14	0.24	0.95
900 - 1000	0.09	0.04	0.16	0.19	0.17	0.21	0.47
1000 - 1100	0.08	0.04	0.10	0.13	0.08	0.17	0.62
1100 - 1200	0.14	0.10	0.17	0.17	0.14	0.21	0.82
1200 - 1300	0.18	0.13	0.23	0.23	0.20	0.26	0.78
1300 - 1400	0.20	0.17	0.23	0.34	0.29	0.37	0.59
1400 - 1500	0.23	0.19	0.28	0.38	0.30	0.43	0.61
1500 - 1600	0.28	0.24	0.31	0.25	0.19	0.34	1.12
1600 - 1700	0.24	0.19	0.29	0.21	0.12	0.32	1.14
1700 - 1800	0.18	0.16	0.20	0.33	0.29	0.36	0.55
1800 - 1900	0.21	0.20	0.23	0.15	0.09	0.27	1.40
1900 - 2000	0.20	0.13	0.23	0.15	0.13	0.17	1.33
2000 - 2100	0.09	0.03	0.13	0.11	0.03	0.17	0.82
2100 - 2200	0.05	0.03	0.06	0.12	0.06	0.23	0.42
2200 - 2300	0.08	0.06	0.13	0.24	0.17	0.28	0.33
2300 - 2400	0.11	0.07	0.13	0.21	0.17	0.25	0.52
2400 - 2500	0.12	0.10	0.17	0.19	0.13	0.25	0.63
2500 - 2600	0.17	0.11	0.22	0.25	0.15	0.34	0.68
2600 - 2700	0.22	0.18	0.25	0.22	0.16	0.28	1.00
2700 - 2800	0.15	0.13	0.20	0.26	0.19	0.38	0.58
2800 - 2900	0.26	0.19	0.37	0.36	0.30	0.40	0.72
2900 - 3000	0.36	0.30	0.43	0.30	0.24	0.36	1.20
3000 - 3300	0.18	0.12	0.30	0.28	0.23	0.31	0.64
3300 - 3600	0.16	0.08	0.20	0.24	0.19	0.32	0.67
3600 - 3900	0.24	0.19	0.29	0.46	0.30	0.54	0.52
3900 - 4200	0.29	0.15	0.38	0.52	0.39	0.65	0.56
4200 - 4500	0.19	0.10	0.26	0.40	0.25	0.55	0.47
4500 - 4800	0.30	0.17	0.43	0.47	0.34	0.64	0.64
4800 - 5100	0.18	0.06	0.29	0.52	0.42	0.87	0.35
5100 - 5400	0.30	0.17	0.39	0.86	0.65	1.14	0.35
5400 - 5700	0.30	0.25	0.38	0.63	0.53	0.72	0.48
5700 - 6000	0.29	0.21	0.38	0.55	0.43	0.72	0.53
6000 - 6300	0.31	0.24	0.46	0.89	0.68	1.23	0.35
6300 - 6600	0.38	0.19	0.59	0.95	0.81	1.08	0.40
6600 - 6900	0.40	0.23	0.54	0.78	0.59	0.98	0.51
6900 - 7200	0.44	0.30	0.61	1.11	0.89	1.34	0.40
7200 - 7500	0.31	0.17	0.53	1.14	0.96	1.27	0.27
7500 - 7800	0.36	0.16	0.52	1.09	0.91	1.36	0.33

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Table 38 cont'd

Height interval (m)	Mean radiation level (count s^{-1})						Mean ratio
	Gamma + beta			Gamma			(gamma + beta) / gamma
	Mean	Min.	Max.	Mean	Min.	Max.	
7800 - 8100	0.53	0.44	0.61	1.12	1.00	1.27	0.47
8100 - 8400	0.53	0.40	0.72	1.13	1.04	1.21	0.47
8400 - 8700	0.73	0.59	0.82	1.48	1.16	1.68	0.49
8700 - 9000	0.79	0.56	0.91	1.24	1.10	1.49	0.64
9000 - 9300	0.75	0.53	0.92	1.54	1.35	1.67	0.49
9300 - 9600	0.81	0.63	0.94	1.56	1.42	1.73	0.52
9600 - 9900	0.54	0.40	0.68	1.81	1.48	2.04	0.30
9900 - 10200	0.57	0.45	0.79	1.74	1.51	1.93	0.33
10200 - 10500	0.87	0.66	0.98	1.78	1.37	2.30	0.49
10500 - 10800	1.11	0.68	1.41	2.04	1.74	2.43	0.54
10800 - 11100	0.95	0.76	1.15	2.75	2.45	3.07	0.35
11100 - 11400	0.99	0.79	1.23	2.35	2.06	2.68	0.42
11400 - 11700	1.21	0.95	1.41	2.35	2.19	2.52	0.51
11700 - 12000	1.03	0.75	1.33	2.29	2.00	2.69	0.45
12000 - 12300	1.40	1.16	1.68	2.40	1.93	2.80	0.58
12300 - 12600	1.30	1.13	1.45	2.63	1.91	3.59	0.49
12600 - 12900	1.19	0.99	1.34	2.89	2.43	3.52	0.41
12900 - 13200	1.30	1.09	1.49	3.11	2.67	3.36	0.42
13200 - 13500	1.46	1.19	1.71	3.59	3.30	3.80	0.41
13500 - 13800	1.48	1.33	1.73	3.48	3.18	3.76	0.43
13800 - 14100	1.50	1.26	1.69	3.45	3.15	3.62	0.43
14100 - 14400	1.67	1.44	1.99	3.97	3.58	4.34	0.42
14400 - 14700	1.43	1.03	1.98	3.38	3.15	3.66	0.42
14700 - 15000	1.29	1.03	1.54	3.29	3.01	3.67	0.39
15000 - 15300	1.68	1.14	2.05	3.66	3.26	3.88	0.46
15300 - 15600	1.78	1.61	1.97	3.61	3.35	3.81	0.49
15600 - 15900	1.63	1.36	1.88	3.86	3.43	4.48	0.42
15900 - 16200	1.58	1.23	1.93	3.76	3.29	4.08	0.42
16200 - 16500	1.41	1.11	1.65	3.67	3.32	4.00	0.38
16500 - 16800	1.56	1.41	1.75	3.49	3.17	3.93	0.45
16800 - 17100	1.59	1.38	1.85	3.61	3.45	3.84	0.44
17100 - 17400	1.45	1.20	1.60	3.57	3.17	3.97	0.41
17400 - 17700	1.68	1.31	2.01	3.20	2.77	3.82	0.52
17700 - 18000	1.57	1.39	1.83	3.32	2.90	4.26	0.47
18000 - 18300	1.60	1.41	1.80	3.72	3.26	4.30	0.43
18300 - 18600	1.46	1.34	1.58	3.70	2.91	4.27	0.39
18600 - 18900	1.33	1.11	1.58	3.51	3.00	3.99	0.38
18900 - 19200	1.47	1.22	1.62	3.83	3.59	4.09	0.38
19200 - 19500	1.42	1.16	1.68	3.47	3.25	3.75	0.41
19500 - 19800	1.26	1.12	1.58	3.40	3.22	3.70	0.37
19800 - 20100	1.46	1.22	1.74	3.52	3.23	3.74	0.41
20100 - 20400	1.45	1.09	1.99	3.65	3.33	3.88	0.40
20400 - 20700	1.42	1.14	1.62	3.34	3.01	3.74	0.43
20700 - 21000	1.55	1.41	1.70	3.54	3.50	3.59	0.44
21000 - 21300	1.68	1.49	1.81	3.51	3.30	3.63	0.48

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Table 38 cont'd

Height interval (m)	Mean radiation level (count s^{-1})						Mean ratio (gamma + beta) / gamma
	Gamma + beta			Gamma			
	Mean	Min.	Max.	Mean	Min.	Max.	
21300 - 21600	1.18	0.90	1.46	2.96	2.55	3.27	0.40
21600 - 21900	1.31	1.07	1.58	2.59	2.42	2.99	0.51
21900 - 22200	1.48	1.12	1.83	2.88	2.60	3.17	0.51
22200 - 22500	1.16	0.96	1.32	2.67	2.34	3.07	0.43
22500 - 22800	1.29	0.98	1.66	2.66	2.47	2.91	0.48
22800 - 23100	1.16	0.98	1.55	2.73	2.49	2.90	0.42
23100 - 23400	1.25	0.94	1.52	2.60	2.25	2.95	0.48
23400 - 23700	1.41	1.17	1.64	2.85	2.60	3.05	0.49
23700 - 24000	1.02	0.69	1.40	2.64	2.47	2.94	0.39
24000 - 24300	1.06	0.91	1.24	2.62	2.39	2.97	0.40
24300 - 24600	0.90	0.71	1.14	2.60	2.26	2.97	0.35
24600 - 24900	1.10	0.86	1.29	2.49	2.21	2.75	0.44
24900 - 25200	0.96	0.70	1.17	2.39	2.16	2.78	0.40
25200 - 25500	0.96	0.84	1.05	2.36	2.05	2.57	0.41
25500 - 25800	0.97	0.77	1.11	2.34	1.97	2.64	0.41
25800 - 26100	0.73	0.50	1.01	2.18	1.92	2.44	0.33
26100 - 26400	1.00	0.82	1.10	2.02	1.83	2.28	0.50
26400 - 26700	0.83	0.71	0.92	2.41	2.19	2.61	0.34
26700 - 27000	0.81	0.65	1.03	2.05	1.89	2.24	0.40
27000 - 27300	0.92	0.74	1.15	1.98	1.85	2.11	0.46
27300 - 27600	0.86	0.79	0.94	2.10	1.85	2.25	0.41

Table 39 Mean gamma and gamma plus beta radiation levels measured by radioactivity sonde on 24 July 1999

Height interval (m)	Mean radiation level (count s^{-1})						Mean ratio
	Gamma + beta			Gamma			(gamma + beta) / gamma
	Mean	Min.	Max.	Mean	Min.	Max.	
66 - 100	0.23	0.22	0.25	0.48	0.45	0.52	0.48
100 - 200	0.19	0.12	0.27	0.36	0.29	0.42	0.53
200 - 300	0.14	0.10	0.17	0.37	0.30	0.43	0.38
300 - 400	0.10	0.06	0.16	0.34	0.27	0.40	0.29
400 - 500	0.03	0.03	0.03	0.30	0.26	0.34	0.10
500 - 600	0.03	0.03	0.03	0.32	0.27	0.39	0.09
600 - 700	0.04	0.03	0.07	0.16	0.07	0.26	0.25
700 - 800	0.14	0.10	0.17	0.16	0.14	0.18	0.88
800 - 900	0.15	0.09	0.17	0.15	0.09	0.17	1.00
900 - 1000	0.10	0.09	0.12	0.11	0.09	0.17	0.91
1000 - 1100	0.11	0.09	0.12	0.18	0.14	0.21	0.61
1100 - 1200	0.05	0.03	0.09	0.21	0.19	0.25	0.24
1200 - 1300	0.09	0.06	0.10	0.17	0.12	0.20	0.53
1300 - 1400	0.06	0.04	0.10	0.19	0.09	0.28	0.32
1400 - 1500	0.03	0.03	0.03	0.39	0.32	0.45	0.08
1500 - 1600	0.05	0.03	0.06	0.37	0.23	0.46	0.14
1600 - 1700	0.06	0.06	0.09	0.20	0.17	0.28	0.30
1700 - 1800	0.03	0.03	0.06	0.32	0.18	0.40	0.09
1800 - 1900	0.03	0.03	0.03	0.33	0.29	0.39	0.09
1900 - 2000	***	***	***	0.13	0.06	0.26	***
2000 - 2100	0.04	0.03	0.06	0.09	0.03	0.13	0.44
2100 - 2200	0.09	0.06	0.13	0.29	0.25	0.34	0.31
2200 - 2300	0.23	0.15	0.29	0.34	0.26	0.40	0.68
2300 - 2400	0.25	0.20	0.26	0.28	0.17	0.33	0.89
2400 - 2500	0.10	0.04	0.20	0.28	0.26	0.31	0.36
2500 - 2600	0.07	0.06	0.09	0.17	0.16	0.25	0.41
2600 - 2700	0.11	0.09	0.12	0.17	0.16	0.19	0.65
2700 - 2800	0.13	0.12	0.16	0.16	0.12	0.19	0.81
2800 - 2900	0.11	0.09	0.12	0.31	0.22	0.46	0.35
2900 - 3000	0.08	0.06	0.09	0.53	0.50	0.57	0.15
3000 - 3300	0.07	0.01	0.12	0.43	0.27	0.59	0.16
3300 - 3600	0.10	0.05	0.16	0.36	0.17	0.62	0.28
3600 - 3900	0.10	0.06	0.16	0.33	0.22	0.49	0.30
3900 - 4200	0.06	0.04	0.11	0.40	0.29	0.52	0.15
4200 - 4500	0.17	0.09	0.27	0.55	0.40	0.69	0.31
4500 - 4800	0.25	0.13	0.32	0.55	0.43	0.63	0.45
4800 - 5100	0.19	0.13	0.23	0.40	0.29	0.50	0.47
5100 - 5400	0.21	0.13	0.30	0.46	0.40	0.55	0.46
5400 - 5700	0.12	0.03	0.26	0.59	0.47	0.69	0.20
5700 - 6000	0.25	0.10	0.35	0.67	0.56	0.80	0.37
6000 - 6300	0.33	0.25	0.41	0.83	0.55	1.01	0.40
6300 - 6600	0.24	0.18	0.30	0.69	0.57	0.78	0.35
6600 - 6900	0.33	0.16	0.48	0.55	0.40	0.69	0.60
6900 - 7200	0.41	0.36	0.46	0.98	0.72	1.22	0.42
7200 - 7500	0.47	0.36	0.69	0.90	0.76	1.10	0.52
7500 - 7800	0.42	0.20	0.67	0.86	0.76	1.14	0.49

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Table 39 cont'd

Height interval (m)	Mean radiation level (count s^{-1})						Mean ratio
	Gamma + beta			Gamma			(gamma + beta) / gamma
	Mean	Min.	Max.	Mean	Min.	Max.	
7800 - 8100	0.57	0.38	0.74	1.28	0.98	1.48	0.45
8100 - 8400	0.71	0.54	0.88	1.44	0.99	1.92	0.49
8400 - 8700	0.55	0.44	0.66	1.54	1.01	2.08	0.36
8700 - 9000	0.66	0.47	0.80	1.27	1.05	1.58	0.52
9000 - 9300	0.71	0.63	0.78	1.52	1.28	1.80	0.47
9300 - 9600	0.66	0.51	0.80	1.73	1.54	1.89	0.38
9600 - 9900	0.64	0.55	0.80	1.72	1.41	1.91	0.37
9900 - 10200	0.62	0.42	0.86	1.54	1.17	2.09	0.40
10200 - 10500	0.95	0.78	1.11	1.92	1.70	2.12	0.49
10500 - 10800	0.67	0.52	0.91	1.75	1.44	1.99	0.38
10800 - 11100	1.09	0.81	1.26	1.99	1.50	2.49	0.55
11100 - 11400	1.03	0.82	1.30	2.49	1.95	2.88	0.41
11400 - 11700	0.98	0.83	1.10	2.56	1.86	3.25	0.38
11700 - 12000	1.04	0.92	1.12	3.07	2.69	3.44	0.34
12000 - 12300	1.04	0.70	1.35	2.33	2.12	2.63	0.45
12300 - 12600	1.34	1.06	1.67	3.05	2.31	3.67	0.44
12600 - 12900	1.45	1.32	1.66	2.83	2.26	3.51	0.51
12900 - 13200	1.25	1.06	1.53	2.92	2.55	3.38	0.43
13200 - 13500	1.20	1.09	1.36	3.32	2.96	3.61	0.36
13500 - 13800	1.30	1.08	1.46	3.23	2.96	3.63	0.40
13800 - 14100	1.52	1.38	1.69	3.30	2.84	3.78	0.46
14100 - 14400	1.38	1.20	1.57	3.52	3.10	3.85	0.39
14400 - 14700	1.63	1.28	1.93	3.53	3.31	3.76	0.46
14700 - 15000	1.67	1.46	1.96	3.38	3.03	3.77	0.49
15000 - 15300	1.48	1.22	1.80	3.35	3.10	3.61	0.44
15300 - 15600	1.60	1.27	1.90	3.57	3.39	3.83	0.45
15600 - 15900	1.41	1.31	1.56	3.44	2.93	3.74	0.41
15900 - 16200	1.53	1.08	1.93	3.51	3.27	3.99	0.44
16200 - 16500	1.55	1.04	1.94	3.70	3.24	4.30	0.42
16500 - 16800	1.63	1.29	1.94	3.45	3.13	4.03	0.47
16800 - 17100	1.69	1.50	1.94	3.48	3.14	3.68	0.49
17100 - 17400	1.56	1.27	1.74	3.50	3.02	4.34	0.45
17400 - 17700	1.29	1.10	1.49	3.71	3.24	4.31	0.35
17700 - 18000	1.34	0.95	1.71	3.66	3.38	4.01	0.37
18000 - 18300	1.30	0.86	1.56	3.07	2.83	3.37	0.42
18300 - 18600	1.66	1.26	1.98	3.30	3.04	3.60	0.50
18600 - 18900	1.41	1.14	1.58	3.64	3.23	4.03	0.39
18900 - 19200	1.32	1.11	1.55	3.45	3.09	3.63	0.38
19200 - 19500	1.26	1.08	1.45	3.09	2.92	3.38	0.41
19500 - 19800	1.69	1.47	1.81	3.46	3.14	3.70	0.49
19800 - 20100	1.41	1.27	1.63	3.16	2.84	3.57	0.45
20100 - 20400	1.14	0.96	1.38	3.50	3.09	3.88	0.33
20400 - 20700	1.59	1.36	1.82	3.31	2.96	3.82	0.48
20700 - 21000	1.66	1.37	1.93	3.08	2.50	3.51	0.54
21000 - 21300	1.28	1.14	1.41	3.09	2.45	3.73	0.41

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Table 39 cont'd

Height interval (m)	Mean radiation level (count s^{-1})						Mean ratio
	Gamma + beta			Gamma			(gamma + beta) / gamma
	Mean	Min.	Max.	Mean	Min.	Max.	
21300 - 21600	1.21	1.07	1.31	3.44	2.66	4.04	0.35
21600 - 21900	1.13	0.90	1.33	3.15	2.55	3.75	0.36
21900 - 22200	1.28	1.06	1.46	2.86	2.44	3.18	0.45
22200 - 22500	1.01	0.87	1.26	2.94	2.45	3.33	0.34
22500 - 22800	1.14	0.92	1.35	3.06	2.63	3.42	0.37
22800 - 23100	1.26	1.02	1.45	2.52	2.12	2.73	0.50
23100 - 23400	1.39	0.77	1.76	2.59	2.39	2.78	0.54
23400 - 23700	1.08	0.85	1.42	2.58	2.06	2.99	0.42
23700 - 24000	1.07	0.77	1.38	2.24	2.06	2.48	0.48
24000 - 24300	1.09	0.77	1.41	2.75	2.48	2.97	0.40
24300 - 24600	0.87	0.75	1.21	2.88	2.57	3.24	0.30
24600 - 24900	1.11	0.85	1.37	2.29	1.78	2.85	0.48
24900 - 25200	0.92	0.78	1.09	2.16	2.00	2.26	0.43

*** data not available

Table 40 Mean gamma and gamma plus beta radiation levels measured by radioactivity sonde on 22 September 1999

Height interval (m)	Mean radiation level ($count\ s^{-1}$) Gamma + beta Mean	Gamma + beta Min.	Gamma + beta Max.	Gamma Mean	Gamma Min.	Gamma Max.	Mean ratio (gamma + beta) / gamma
66 - 100	0.19	0.17	0.21	0.51	0.49	0.55	0.37
100 - 200	0.24	0.21	0.26	0.37	0.29	0.46	0.65
200 - 300	0.31	0.28	0.35	0.30	0.26	0.37	1.03
300 - 400	0.31	0.27	0.35	0.27	0.23	0.31	1.15
400 - 500	0.29	0.26	0.34	0.26	0.25	0.29	1.12
500 - 600	0.19	0.15	0.26	0.32	0.26	0.39	0.59
600 - 700	0.05	0.03	0.09	0.24	0.19	0.29	0.21
700 - 800	0.07	0.06	0.09	0.19	0.16	0.22	0.37
800 - 900	0.11	0.09	0.12	0.22	0.19	0.25	0.50
900 - 1000	0.11	0.09	0.12	0.20	0.19	0.22	0.55
1000 - 1100	0.07	0.03	0.12	0.28	0.22	0.34	0.25
1100 - 1200	0.06	0.03	0.09	0.24	0.19	0.29	0.25
1200 - 1300	0.16	0.11	0.20	0.11	0.09	0.12	1.45
1300 - 1400	0.18	0.12	0.20	0.11	0.09	0.12	1.64
1400 - 1500	0.08	0.03	0.12	0.07	0.06	0.12	1.14
1500 - 1600	0.09	0.03	0.12	0.11	0.09	0.12	0.82
1600 - 1700	0.13	0.12	0.16	0.11	0.09	0.14	1.18
1700 - 1800	0.05	0.03	0.14	0.15	0.14	0.17	0.33
1800 - 1900	0.06	0.03	0.12	0.18	0.12	0.21	0.33
1900 - 2000	0.16	0.12	0.19	0.19	0.19	0.22	0.84
2000 - 2100	0.16	0.12	0.19	0.26	0.19	0.32	0.62
2100 - 2200	0.10	0.06	0.12	0.29	0.23	0.33	0.34
2200 - 2300	0.17	0.09	0.19	0.24	0.21	0.27	0.71
2300 - 2400	0.20	0.19	0.22	0.22	0.20	0.26	0.91
2400 - 2500	0.13	0.09	0.22	0.25	0.19	0.28	0.52
2500 - 2600	0.11	0.09	0.13	0.25	0.23	0.26	0.44
2600 - 2700	0.14	0.13	0.17	0.21	0.19	0.23	0.67
2700 - 2800	0.15	0.13	0.17	0.22	0.19	0.25	0.68
2800 - 2900	0.14	0.07	0.17	0.11	0.06	0.16	1.27
2900 - 3000	0.07	0.03	0.10	0.08	0.06	0.09	0.88
3000 - 3300	0.15	0.03	0.25	0.22	0.09	0.41	0.68
3300 - 3600	0.14	0.07	0.23	0.48	0.28	0.74	0.29
3600 - 3900	0.08	0.03	0.19	0.37	0.25	0.68	0.22
3900 - 4200	0.16	0.09	0.23	0.46	0.29	0.54	0.35
4200 - 4500	0.15	0.09	0.25	0.38	0.32	0.45	0.39
4500 - 4800	0.29	0.19	0.35	0.38	0.28	0.52	0.76
4800 - 5100	0.19	0.13	0.26	0.56	0.37	0.72	0.34
5100 - 5400	0.13	0.06	0.23	0.57	0.47	0.68	0.23
5400 - 5700	0.21	0.12	0.29	0.59	0.48	0.71	0.36
5700 - 6000	0.21	0.09	0.33	0.54	0.38	0.72	0.39
6000 - 6300	0.40	0.12	0.66	0.53	0.38	0.61	0.75
6300 - 6600	0.39	0.13	0.66	0.71	0.57	0.82	0.55
6600 - 6900	0.47	0.24	0.68	0.90	0.82	0.99	0.52
6900 - 7200	0.43	0.25	0.62	0.79	0.61	1.12	0.54
7200 - 7500	0.40	0.24	0.51	1.18	1.06	1.25	0.34
7500 - 7800	0.57	0.37	0.74	1.06	0.91	1.25	0.54

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Table 40 cont'd

Height interval (m)	Mean radiation level (count s^{-1})						Mean ratio (gamma + beta) / gamma
	Gamma + beta			Gamma			
	Mean	Min.	Max.	Mean	Min.	Max.	
7800 - 8100	0.38	0.22	0.49	1.27	0.89	1.51	0.30
8100 - 8400	0.62	0.42	0.75	1.35	1.23	1.43	0.46
8400 - 8700	0.77	0.54	0.98	1.72	1.41	1.93	0.45
8700 - 9000	0.42	0.27	0.67	1.61	1.43	1.70	0.26
9000 - 9300	0.70	0.53	0.97	1.71	1.24	2.13	0.41
9300 - 9600	0.51	0.40	0.60	1.65	1.49	1.88	0.31
9600 - 9900	0.91	0.44	1.09	1.82	1.64	2.09	0.50
9900 - 10200	0.99	0.73	1.24	1.78	1.47	2.04	0.56
10200 - 10500	1.00	0.72	1.23	1.90	1.64	2.12	0.53
10500 - 10800	0.93	0.77	1.11	2.29	1.74	2.66	0.41
10800 - 11100	0.95	0.86	1.04	2.93	2.62	3.39	0.32
11100 - 11400	1.19	0.84	1.35	2.20	1.90	2.69	0.54
11400 - 11700	1.12	0.95	1.31	2.81	2.02	3.25	0.40
11700 - 12000	1.14	0.90	1.44	2.81	2.31	3.18	0.41
12000 - 12300	1.16	0.99	1.46	2.92	2.69	3.26	0.40
12300 - 12600	1.31	1.11	1.49	2.54	2.20	2.91	0.52
12600 - 12900	1.54	1.43	1.73	2.67	2.50	2.83	0.58
12900 - 13200	1.34	1.18	1.52	3.12	2.68	3.42	0.43
13200 - 13500	1.12	0.77	1.57	3.35	3.03	3.85	0.33
13500 - 13800	1.33	0.90	2.06	2.98	2.76	3.26	0.45
13800 - 14100	1.45	1.15	1.94	3.30	2.89	3.88	0.44
14100 - 14400	1.50	1.32	1.63	3.63	2.94	4.10	0.41
14400 - 14700	1.42	1.20	1.78	3.29	2.89	3.56	0.43
14700 - 15000	1.41	1.05	1.76	3.59	3.36	3.80	0.39
15000 - 15300	1.68	1.39	1.83	3.76	3.30	4.16	0.45
15300 - 15600	1.66	1.54	1.84	3.95	3.34	4.42	0.42
15600 - 15900	1.55	1.16	1.98	4.19	3.76	4.68	0.37
15900 - 16200	1.50	1.15	1.89	3.67	3.03	4.60	0.41
16200 - 16500	1.69	1.41	1.96	3.66	3.18	4.11	0.46
16500 - 16800	1.91	1.45	2.43	3.53	3.30	3.79	0.54
16800 - 17100	1.85	1.58	2.30	3.57	3.08	4.09	0.52
17100 - 17400	1.53	1.01	2.14	3.62	3.21	4.20	0.42
17400 - 17700	1.33	0.93	1.63	3.91	3.72	4.20	0.34
17700 - 18000	1.52	1.20	1.88	3.65	3.20	4.10	0.42
18000 - 18300	1.42	1.16	1.83	3.27	2.96	3.60	0.43
18300 - 18600	1.69	1.55	2.01	4.11	3.30	4.81	0.41
18600 - 18900	1.63	1.24	2.09	3.52	2.93	4.12	0.46
18900 - 19200	1.56	1.37	1.91	3.33	2.94	3.83	0.47
19200 - 19500	1.53	1.36	1.82	3.63	2.91	4.10	0.42
19500 - 19800	1.36	1.12	1.94	3.32	2.82	3.89	0.41
19800 - 20100	1.66	1.40	1.94	3.09	2.58	3.95	0.54
20100 - 20400	1.63	1.40	1.91	3.39	2.86	3.78	0.48
20400 - 20700	1.49	1.24	1.68	3.27	2.99	3.56	0.46
20700 - 21000	1.29	1.15	1.39	3.47	3.33	3.67	0.37
21000 - 21300	1.22	1.05	1.41	3.29	2.97	3.52	0.37

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Table 40 cont'd

Height interval (m)	Mean radiation level (count s^{-1})						Mean ratio
	Gamma + beta			Gamma			(gamma + beta) / gamma
	Mean	Min.	Max.	Mean	Min.	Max.	
21300 - 21600	1.38	1.28	1.52	3.40	3.22	3.63	0.41
21600 - 21900	1.33	1.16	1.51	2.76	2.55	3.25	0.48
21900 - 22200	1.37	1.19	1.51	2.96	2.49	3.30	0.46
22200 - 22500	1.21	0.99	1.48	2.84	2.49	3.16	0.43
22500 - 22800	1.45	1.32	1.59	2.33	2.10	2.73	0.62
22800 - 23100	1.32	1.16	1.42	2.72	2.07	3.21	0.49
23100 - 23400	1.27	1.13	1.36	2.35	1.81	3.02	0.54
23400 - 23700	1.08	0.92	1.29	1.94	1.76	2.19	0.56

Table 41 Specific gamma activity of airborne particulate samples

Sampling Location and Sampling Period	Specific Activity in μBq m^{-3}	
	I-131	Cs-137
King's Park :		
04-Jan-99 to 01-Feb-99	< 5	< 6
01-Feb-99 to 02-Mar-99	< 13	< 16
02-Mar-99 to 01-Apr-99	< 5	< 6
01-Apr-99 to 03-May-99	< 4	< 5
03-May-99 to 01-Jun-99	< 8	< 9
01-Jun-99 to 02-Jul-99	< 7	< 9
02-Jul-99 to 02-Aug-99	< 6	< 7
02-Aug-99 to 01-Sep-99	< 8	< 10
01-Sep-99 to 27-Sep-99	< 7	< 8
27-Sep-99 to 27-Oct-99	< 5	< 5
27-Oct-99 to 01-Nov-99	***	***
01-Nov-99 to 30-Nov-99	< 5	< 6
30-Nov-99 to 01-Dec-99	***	***
01-Dec-99 to 28-Dec-99	< 6	< 7
Sha Tau Kok :		
04-Jan-99 to 28-Jan-99	< 12	< 15
28-Jan-99 to 05-Feb-99	***	***
05-Feb-99 to 04-Mar-99	< 14	< 16
04-Mar-99 to 01-Apr-99	< 23	< 26
01-Apr-99 to 29-Apr-99	< 9	< 11
29-Apr-99 to 03-Jun-99	< 6	< 7
03-Jun-99 to 30-Jun-99	***	***
30-Jun-99 to 29-Jul-99	< 8	< 10
29-Jul-99 to 02-Sep-99	< 6	< 7
02-Sep-99 to 30-Sep-99	< 30	< 35
30-Sep-99 to 29-Oct-99	< 6	< 7
29-Oct-99 to 02-Dec-99	< 11	< 12
02-Dec-99 to 05-Dec-99	***	***
05-Dec-99 to 29-Dec-99	< 12	< 14
Yuen Ng Fan :		
31-Dec-98 to 03-Feb-99	< 9	< 11
03-Feb-99 to 02-Mar-99	< 16	< 19
02-Mar-99 to 30-Mar-99	< 13	< 18
30-Mar-99 to 27-Apr-99	< 11	< 12
27-Apr-99 to 01-Jun-99	< 8	< 9
01-Jun-99 to 29-Jun-99	< 8	< 9
29-Jun-99 to 23-Jul-99	***	***
23-Jul-99 to 03-Aug-99	< 36	< 46
03-Aug-99 to 31-Aug-99	< 15	< 21
31-Aug-99 to 28-Sep-99	< 10	< 12
28-Sep-99 to 02-Nov-99	< 12	< 15
02-Nov-99 to 30-Nov-99	< 16	< 21
30-Nov-99 to 05-Dec-99	***	***
05-Dec-99 to 03-Jan-00	< 11	< 13

*** sampler under maintenance

Note : No other artificial gamma-emitting radionuclide was detected in all of the samples

Table 42 Specific gamma activity of air sampled by iodine cartridges at King's Park

Sampling Period	Specific I-131 Activity in Bq m^{-3}
30-Dec-98 to 07-Jan-99	< 0.0001
07-Jan-99 to 13-Jan-99	< 0.0002
13-Jan-99 to 21-Jan-99	< 0.0001
21-Jan-99 to 27-Jan-99	< 0.0001
27-Jan-99 to 03-Feb-99	< 0.0001
03-Feb-99 to 10-Feb-99	< 0.0001
10-Feb-99 to 19-Feb-99	< 0.0001
19-Feb-99 to 25-Feb-99	< 0.0001
25-Feb-99 to 03-Mar-99	< 0.0002
03-Mar-99 to 10-Mar-99	< 0.0003
10-Mar-99 to 18-Mar-99	< 0.0002
18-Mar-99 to 24-Mar-99	< 0.0002
24-Mar-99 to 31-Mar-99	< 0.0002
31-Mar-99 to 08-Apr-99	< 0.0003
08-Apr-99 to 14-Apr-99	< 0.0002
14-Apr-99 to 21-Apr-99	< 0.0003
21-Apr-99 to 28-Apr-99	< 0.0003
28-Apr-99 to 05-May-99	< 0.0003
05-May-99 to 12-May-99	< 0.0003
12-May-99 to 19-May-99	< 0.0003
19-May-99 to 27-May-99	< 0.0003
27-May-99 to 02-Jun-99	< 0.0003
02-Jun-99 to 09-Jun-99	< 0.0004
09-Jun-99 to 16-Jun-99	< 0.0003
16-Jun-99 to 23-Jun-99	< 0.0004
23-Jun-99 to 30-Jun-99	< 0.0004
30-Jun-99 to 08-Jul-99	< 0.0003
08-Jul-99 to 14-Jul-99	< 0.0003
14-Jul-99 to 22-Jul-99	< 0.0002
22-Jul-99 to 28-Jul-99	< 0.0003
26-Jul-99 to 04-Aug-99	< 0.0002
04-Aug-99 to 11-Aug-99	< 0.0003
11-Aug-99 to 18-Aug-99	< 0.0003
18-Aug-99 to 26-Aug-99	< 0.0002
26-Aug-99 to 01-Sep-99	< 0.0004
01-Sep-99 to 08-Sep-99	< 0.0004
08-Sep-99 to 15-Sep-99	< 0.0004
22-Sep-99 to 29-Sep-99	< 0.0003
29-Sep-99 to 06-Oct-99	< 0.0003
06-Oct-99 to 13-Oct-99	< 0.0004
13-Oct-99 to 27-Oct-99	< 0.0002
27-Oct-99 to 02-Nov-99	< 0.0003
02-Nov-99 to 10-Nov-99	< 0.0002
10-Nov-99 to 17-Nov-99	< 0.0004
17-Nov-99 to 24-Nov-99	< 0.0003
24-Nov-99 to 01-Dec-99	< 0.0003
01-Dec-99 to 07-Dec-99	< 0.0003
07-Dec-99 to 16-Dec-99	< 0.0002
16-Dec-99 to 22-Dec-99	< 0.0004
22-Dec-99 to 29-Dec-99	< 0.0004

Note : No other artificial gamma-emitting radionuclide was detected in all of the samples

Table 43 Specific gamma activity of deposition samples

Sampling Location And Sampling Period	Specific Activity in Bq L^{-1}	
	I-131	Cs-137
Wet Deposition at King's Park :		
04-Jan-99 to 01-Feb-99	< 0.2	< 0.2
01-Feb-99 to 03-Mar-99	**	**
03-Mar-99 to 31-Mar-99	< 0.1	< 0.1
31-Mar-99 to 03-May-99	< 0.1	< 0.1
03-May-99 to 01-Jun-99	< 0.1	< 0.1
01-Jun-99 to 02-Jul-99	< 0.1	< 0.1
02-Jul-99 to 02-Aug-99	< 0.1	< 0.1
02-Aug-99 to 01-Sep-99	< 0.1	< 0.1
01-Sep-99 to 04-Oct-99	< 0.1	< 0.1
04-Oct-99 to 01-Nov-99	< 0.1	< 0.1
01-Nov-99 to 01-Dec-99	< 0.1	< 0.1
01-Dec-99 to 03-Jan-00	< 0.1	< 0.1
Wet Deposition at Sha Tau Kok :		
31-Dec-98 to 28-Jan-99	< 0.2	< 0.3
28-Jan-99 to 04-Mar-99	**	**
04-Mar-99 to 01-Apr-99	< 0.1	< 0.2
01-Apr-99 to 29-Apr-99	< 0.1	< 0.1
29-Apr-99 to 03-Jun-99	< 0.1	< 0.1
03-Jun-99 to 30-Jun-99	< 0.1	< 0.1
30-Jun-99 to 29-Jul-99	< 0.1	< 0.1
29-Jul-99 to 02-Sep-99	< 0.1	< 0.1
02-Sep-99 to 30-Sep-99	< 0.1	< 0.1
30-Sep-99 to 29-Oct-99	< 0.2	< 0.3
29-Oct-99 to 02-Dec-99	< 0.2	< 0.2
02-Dec-99 to 29-Dec-99	< 0.1	< 0.2
Wet Deposition at Yuen Ng Fan :		
31-Dec-98 to 03-Feb-99	**	**
03-Feb-99 to 02-Mar-99	**	**
02-Mar-99 to 30-Mar-99	< 0.2	< 0.2
30-Mar-99 to 27-Apr-99	< 0.1	< 0.1
27-Apr-99 to 01-Jun-99	< 0.1	< 0.1
01-Jun-99 to 29-Jun-99	< 0.1	< 0.2
29-Jun-99 to 03-Aug-99	< 0.1	< 0.1
03-Aug-99 to 31-Aug-99	< 0.1	< 0.1
31-Aug-99 to 28-Sep-99	< 0.1	< 0.1
28-Sep-99 to 02-Nov-99	< 0.1	< 0.1
02-Nov-99 to 30-Nov-99	< 0.1	< 0.1
30-Nov-99 to 03-Jan-00	< 0.1	< 0.2

** insufficient precipitation collected

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Table 43 cont'd

Sampling Location and Sampling Period	Rainfall amount (mm)*	Specific Activity in Bq m^{-2}	
		I-131	Cs-137
Total Deposition at King's Park :			
04-Jan-99 to 01-Feb-99	6.0	< 11	< 12
01-Feb-99 to 02-Mar-99	0.1	< 11	< 11
02-Mar-99 to 01-Apr-99	23.8	< 17	< 20
01-Apr-99 to 03-May-99	174.7	< 22	< 25
03-May-99 to 01-Jun-99	187.0	< 22	< 22
01-Jun-99 to 02-Jul-99	214.4	< 21	< 21
02-Jul-99 to 02-Aug-99	216.6	< 18	< 18
02-Aug-99 to 01-Sep-99	923.1	< 76	< 79
01-Sep-99 to 04-Oct-99	362.5	< 30	< 36
04-Oct-99 to 01-Nov-99	9.7	< 15	< 18
01-Nov-99 to 01-Dec-99	18.0	< 19	< 22
01-Dec-99 to 03-Jan-00	31.5	< 11	< 12

* 24-hour rainfall is recorded daily at 3 p.m. Hong Kong Time

Note : No other artificial gamma-emitting radionuclide was detected in all of the samples

Table 44 Specific gamma activity of terrestrial food samples

Sample Type and Sampling Location	Sampling Date	Specific Activity in Bq kg^{-1} (except milk in Bq L^{-1})		
		K-40	I-131	Cs-137
Rice and milk :				
Rice (China)	08-Feb-99	17 ± 2	< 0.2	< 0.2
Rice (China)	12-Apr-99	21 ± 3	< 0.2	< 0.2
Rice (China)	20-Jul-99	21 ± 2	< 0.2	< 0.2
Rice (China)	19-Oct-99	21 ± 3	< 0.2	< 0.2
Milk (Pasteurized) (SHENZHEN)	08-Feb-99	57 ± 6	< 0.3	< 0.4
Milk (Pasteurized) (SHENZHEN)	12-Apr-99	64 ± 6	< 0.3	< 0.4
Milk (Pasteurized) (SHENZHEN)	20-Jul-99	52 ± 5	< 0.3	< 0.4
Milk (Pasteurized) (SHENZHEN)	19-Oct-99	53 ± 6	< 0.4	< 0.4
Milk (Pasteurized) (SHA TAU KOK)	24-Feb-99	53 ± 6	< 0.3	< 0.4
Milk (Pasteurized) (SHA TAU KOK)	12-Apr-99	68 ± 4	< 0.2	< 0.2
Milk (Pasteurized) (SHA TAU KOK)	20-Jul-99	64 ± 6	< 0.3	< 0.3
Milk (Pasteurized) (SHA TAU KOK)	19-Oct-99	59 ± 5	< 0.3	< 0.3
Leafy vegetable :				
Flowering Cabbage (SHENZHEN)	08-Feb-99	128 ± 9	< 0.4	< 0.5
Flowering Cabbage (SHENZHEN)	03-May-99	131 ± 9	< 0.4	< 0.4
Flowering Cabbage (SHENZHEN)	28-Jul-99	105 ± 10	< 0.5	< 0.6
Flowering Cabbage (SHENZHEN)	20-Oct-99	170 ± 12	< 0.4	< 0.4
Flowering Cabbage (LOCAL FARM)	24-Feb-99	92 ± 7	< 0.3	< 0.4
Flowering Cabbage (LOCAL FARM)	28-Jul-99	110 ± 10	< 0.5	< 0.5
Flowering Cabbage (LOCAL FARM)	27-Oct-99	115 ± 9	< 0.4	< 0.4
White Cabbage (SHENZHEN)	08-Feb-99	143 ± 9	< 0.3	< 0.4
White Cabbage (SHENZHEN)	03-May-99	129 ± 9	< 0.4	< 0.5
White Cabbage (SHENZHEN)	28-Jul-99	181 ± 13	< 0.5	< 0.5
White Cabbage (SHENZHEN)	20-Oct-99	166 ± 11	< 0.3	< 0.4
White Cabbage (LOCAL FARM)	24-Feb-99	86 ± 7	< 0.3	< 0.4
White Cabbage (LOCAL FARM)	05-May-99	87 ± 7	< 0.3	< 0.4
White Cabbage (LOCAL FARM)	28-Jul-99	118 ± 9	< 0.4	< 0.5
White Cabbage (LOCAL FARM)	27-Oct-99	135 ± 10	< 0.4	< 0.5
Fruit :				
Banana (China)	02-Feb-99	77 ± 5	< 0.2	< 0.2
Banana (China)	21-Apr-99	57 ± 3	< 0.1	< 0.1
Banana (China)	09-Jul-99	76 ± 5	< 0.2	< 0.2
Banana (China)	13-Oct-99	81 ± 6	< 0.2	< 0.3
Lychee (China)	08-Jun-99	39 ± 4	< 0.2	< 0.3
Mandarin (China)	13-Oct-99	42 ± 4	< 0.2	< 0.3
Mandarin (China)	10-Dec-99	36 ± 4	< 0.2	< 0.3
Sugar Cane (China)	19-Mar-99	40 ± 4	< 0.2	< 0.2

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Table 44 cont'd

Sample Type and Sampling Location	Sampling Date	Specific Activity in Bq kg^{-1}		
		K-40	I-131	Cs-137
Poultry :				
Chicken (China)	05-Jan-99	29 ± 3	< 0.2	< 0.2
Chicken (China)	12-Mar-99	25 ± 2	< 0.1	< 0.2
Chicken (China)	08-Jun-99	27 ± 3	< 0.2	< 0.2
Chicken (China)	02-Sep-99	29 ± 3	< 0.1	< 0.2
Chicken (LOCAL FARM)	05-Jan-99	26 ± 2	< 0.1	< 0.1
Chicken (LOCAL FARM)	12-Mar-99	31 ± 3	< 0.2	< 0.2
Chicken (LOCAL FARM)	08-Jun-99	27 ± 3	< 0.2	< 0.2
Chicken (LOCAL FARM)	02-Sep-99	31 ± 3	< 0.1	< 0.2
Duck (China)	05-Jan-99	15 ± 2	< 0.1	< 0.2
Duck (China)	12-Mar-99	19 ± 3	< 0.2	< 0.2
Duck (China)	08-Jun-99	36 ± 3	< 0.2	< 0.2
Duck (China)	02-Sep-99	22 ± 2	< 0.1	< 0.1
Duck (LOCAL FARM)	05-Jan-99	26 ± 3	< 0.1	< 0.2
Duck (LOCAL FARM)	12-Mar-99	23 ± 3	< 0.2	< 0.2
Duck (LOCAL FARM)	08-Jun-99	36 ± 4	< 0.2	< 0.3
Duck (LOCAL FARM)	02-Sep-99	35 ± 4	< 0.2	< 0.3
Meat :				
Beef (China)	24-Feb-99	92 ± 7	< 0.3	< 0.3
Beef (China)	12-Apr-99	103 ± 8	< 0.3	< 0.4
Beef (China)	28-Jul-99	105 ± 8	< 0.3	< 0.4
Beef (China)	19-Oct-99	105 ± 8	< 0.3	< 0.4
Pig's Liver (China)	08-Feb-99	80 ± 7	< 0.3	< 0.4
Pig's Liver (China)	12-Apr-99	79 ± 6	< 0.3	< 0.3
Pig's Liver (China)	28-Jul-99	90 ± 7	< 0.3	< 0.3
Pig's Liver (China)	19-Oct-99	77 ± 7	< 0.4	< 0.4
Pig's Liver (LOCAL FARM)	08-Feb-99	80 ± 6	< 0.3	< 0.3
Pig's Liver (LOCAL FARM)	12-Apr-99	82 ± 6	< 0.3	< 0.3
Pig's Liver (LOCAL FARM)	28-Jul-99	92 ± 7	< 0.3	< 0.4
Pig's Liver (LOCAL FARM)	19-Oct-99	86 ± 7	< 0.3	< 0.3
Pork (China)	08-Feb-99	116 ± 8	< 0.3	< 0.5
Pork (China)	12-Apr-99	108 ± 8	< 0.3	< 0.4
Pork (China)	28-Jul-99	116 ± 9	< 0.3	< 0.5
Pork (China)	19-Oct-99	107 ± 8	< 0.3	< 0.4
Pork (LOCAL FARM)	08-Feb-99	107 ± 8	< 0.3	0.1 ± 0.1
Pork (LOCAL FARM)	12-Apr-99	103 ± 7	< 0.3	< 0.3
Pork (LOCAL FARM)	28-Jul-99	100 ± 8	< 0.3	< 0.4
Pork (LOCAL FARM)	19-Oct-99	110 ± 8	< 0.3	0.3 ± 0.1

Note : No other artificial gamma-emitting radionuclide was detected in all of the samples

Table 45 Specific gamma activity of water and suspended particulate in sea water samples

Sampling Location	Sampling Date	Specific Activity in Bq L^{-1}		
		K-40	I-131	Cs-137
Treated drinking water :				
KOWLOON DISTRIBUTION TAP	09-Jan-99	< 1.3	< 0.1	< 0.1
KOWLOON DISTRIBUTION TAP	10-Apr-99	< 1.5	< 0.1	< 0.1
KOWLOON DISTRIBUTION TAP	10-Jul-99	< 1.4	< 0.1	< 0.1
KOWLOON DISTRIBUTION TAP	02-Oct-99	< 1.4	< 0.1	< 0.1
TUEN MUN DISTRIBUTION TAP	01-Feb-99	< 1.6	< 0.1	< 0.1
TUEN MUN DISTRIBUTION TAP	04-May-99	< 1.3	< 0.1	< 0.1
TUEN MUN DISTRIBUTION TAP	03-Aug-99	< 1.8	< 0.1	< 0.1
TUEN MUN DISTRIBUTION TAP	03-Nov-99	< 1.4	< 0.1	< 0.1
YAU KOM TAU TREATMENT WORKS	06-Jan-99	< 1.5	< 0.1	< 0.1
YAU KOM TAU TREATMENT WORKS	13-Apr-99	< 1.6	< 0.1	< 0.1
YAU KOM TAU TREATMENT WORKS	12-Jul-99	1.9 ± 1.0	< 0.1	< 0.1
YAU KOM TAU TREATMENT WORKS	04-Oct-99	< 1.8	< 0.1	< 0.1
TUEN MUN TREATMENT WORKS	01-Feb-99	< 1.6	< 0.1	< 0.1
TUEN MUN TREATMENT WORKS	04-May-99	< 1.6	< 0.1	< 0.1
TUEN MUN TREATMENT WORKS	03-Aug-99	< 1.7	< 0.1	< 0.1
TUEN MUN TREATMENT WORKS	03-Nov-99	< 1.4	< 0.1	< 0.1
SHATIN TREATMENT WORKS	09-Jan-99	< 1.5	< 0.1	< 0.1
SHATIN TREATMENT WORKS	10-Apr-99	< 1.3	< 0.1	< 0.1
SHATIN TREATMENT WORKS	13-Jul-99	< 1.3	< 0.1	< 0.1
SHATIN TREATMENT WORKS	05-Oct-99	< 1.5	< 0.1	< 0.1
Untreated drinking water :				
MUK WU B PUMPING STATION	02-Feb-99	< 1.7	< 0.1	< 0.1
MUK WU B PUMPING STATION	05-May-99	< 1.6	< 0.1	< 0.1
MUK WU B PUMPING STATION	05-Aug-99	< 1.8	< 0.1	< 0.1
MUK WU B PUMPING STATION	04-Nov-99	< 1.5	< 0.1	< 0.1
YAU KOM TAU TREATMENT WORKS	06-Jan-99	< 1.6	< 0.1	< 0.1
YAU KOM TAU TREATMENT WORKS	13-Apr-99	< 1.5	< 0.1	< 0.1
YAU KOM TAU TREATMENT WORKS	12-Jul-99	< 1.4	< 0.1	< 0.1
YAU KOM TAU TREATMENT WORKS	04-Oct-99	< 1.5	< 0.1	< 0.1
TUEN MUN TREATMENT WORKS	01-Feb-99	< 1.7	< 0.1	< 0.1
TUEN MUN TREATMENT WORKS	04-May-99	< 1.6	< 0.1	< 0.1
TUEN MUN TREATMENT WORKS	05-Aug-99	< 1.5	< 0.1	< 0.1
TUEN MUN TREATMENT WORKS	03-Nov-99	< 1.4	< 0.1	< 0.1
SHATIN TREATMENT WORKS	09-Jan-99	< 1.6	< 0.1	< 0.1
SHATIN TREATMENT WORKS	10-Apr-99	< 1.5	< 0.1	< 0.1
SHATIN TREATMENT WORKS	13-Jul-99	< 1.7	< 0.1	< 0.1
SHATIN TREATMENT WORKS	05-Oct-99	< 1.2	< 0.1	< 0.1
High Island Reservoir	14-Jan-99	< 1.2	< 0.1	< 0.1
High Island Reservoir	14-Apr-99	< 1.4	< 0.1	< 0.1
High Island Reservoir	15-Jul-99	< 1.6	< 0.1	< 0.1
High Island Reservoir	11-Oct-99	< 1.4	< 0.1	< 0.1
Plover Cove Reservoir	03-Feb-99	< 1.6	< 0.1	< 0.1
Plover Cove Reservoir	05-May-99	< 1.6	< 0.1	< 0.1
Plover Cove Reservoir	05-Aug-99	< 1.4	< 0.1	< 0.1
Plover Cove Reservoir	04-Nov-99	< 1.8	< 0.1	< 0.1

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Table 45 cont'd

Sampling Location	Sampling Date	Specific Activity in Bq L^{-1}		
		K-40	I-131	Cs-137
Underground water :				
Siu Hong Court	19-Jul-99	< 1.7	< 0.1	< 0.1
CHEUNG HONG ESTATE	19-Jul-99	< 1.4	< 0.1	< 0.1
YUEN LONG ESTATE	19-Jul-99	< 1.4	< 0.1	< 0.1
WAN TSUI ESTATE	20-Jul-99	< 1.5	< 0.1	< 0.1
WAH FU ESTATE	20-Jul-99	< 1.7	< 0.1	< 0.1
Fu Shan Estate	19-Jul-99	< 1.8	< 0.1	< 0.2
Sea water (Upper level) :				
WAGLAN ISLAND	17-Jun-99	10.3 ± 1.3	< 0.1	< 0.1
BASALT ISLAND	17-Jun-99	11.7 ± 1.3	< 0.1	< 0.1
TAI LONG WAN	17-Jun-99	10.3 ± 1.2	< 0.1	< 0.1
PORT ISLAND	17-Jun-99	9.9 ± 1.2	< 0.1	< 0.1
Sea water (Middle level) :				
WAGLAN ISLAND	17-Jun-99	10.8 ± 1.2	< 0.1	< 0.1
BASALT ISLAND	17-Jun-99	10.9 ± 1.2	< 0.1	< 0.1
TAI LONG WAN	17-Jun-99	12.4 ± 1.3	< 0.1	< 0.1
PORT ISLAND	17-Jun-99	12.9 ± 1.3	< 0.1	< 0.1
Sea water (Lower level) :				
WAGLAN ISLAND	17-Jun-99	11.6 ± 1.3	< 0.1	< 0.1
BASALT ISLAND	17-Jun-99	12.6 ± 1.2	< 0.1	< 0.1
TAI LONG WAN	17-Jun-99	12.1 ± 1.2	< 0.1	< 0.1
PORT ISLAND	17-Jun-99	9.9 ± 1.2	< 0.1	< 0.1

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Table 45 cont'd

Sampling Location	Sampling Date	Specific Activity in Bq L^{-1}		
		K-40	I-131	Cs-137
Suspended particulate in sea water (Upper level) :				
WAGLAN ISLAND	17-Jun-99	< 0.4	< 0.02	< 0.02
BASALT ISLAND	17-Jun-99	< 0.4	< 0.02	< 0.02
TAI LONG WAN	17-Jun-99	< 0.3	< 0.01	< 0.01
PORT ISLAND	17-Jun-99	< 0.4	< 0.02	< 0.02
Suspended particulate in sea water (Middle level):				
WAGLAN ISLAND	17-Jun-99	0.2 ± 0.1	< 0.01	< 0.02
BASALT ISLAND	17-Jun-99	< 0.4	< 0.02	< 0.02
TAI LONG WAN	17-Jun-99	< 0.3	< 0.01	< 0.02
PORT ISLAND	17-Jun-99	< 0.4	< 0.02	< 0.02
Suspended particulate in sea water (Lower level) :				
WAGLAN ISLAND	17-Jun-99	< 0.3	< 0.01	< 0.02
BASALT ISLAND	17-Jun-99	< 0.4	< 0.02	< 0.02
TAI LONG WAN	17-Jun-99	< 0.3	< 0.01	< 0.02
PORT ISLAND	17-Jun-99	< 0.3	< 0.01	< 0.02

Note : No other artificial gamma-emitting radionuclide was detected in all of the samples

Table 46 Specific gamma activity of aquatic food and seaweed samples

Sample Type and Sampling Location	Sampling Date	Specific Activity in Bq kg^{-1}		
		K-40	I-131	Cs-137
Fish :				
Freshwater Fish (Aristichthys Nobilis) (SHENZHEN)	05-Feb-99	38 ± 3	< 0.1	< 0.1
Freshwater Fish (Aristichthys Nobilis) (SHENZHEN)	03-May-99	31 ± 3	< 0.1	< 0.1
Freshwater Fish (Aristichthys Nobilis) (SHENZHEN)	28-Jul-99	35 ± 3	< 0.1	< 0.1
Freshwater Fish (Aristichthys Nobilis) (SHENZHEN)	20-Oct-99	37 ± 3	< 0.2	< 0.2
Freshwater Fish (Aristichthys Nobilis) (YUEN LONG)	05-Feb-99	42 ± 3	< 0.1	< 0.2
Freshwater Fish (Aristichthys Nobilis) (YUEN LONG)	03-May-99	34 ± 3	< 0.1	< 0.2
Freshwater Fish (Aristichthys Nobilis) (YUEN LONG)	28-Jul-99	35 ± 3	< 0.1	< 0.1
Freshwater Fish (Aristichthys Nobilis) (YUEN LONG)	20-Oct-99	40 ± 3	< 0.1	< 0.1
Marine Fish (Nemipterus Japonicus) (H.K.WATERS)	04-Aug-99	42 ± 3	< 0.1	< 0.1
Marine Fish (Nemipterus Japonicus) (H.K.WATERS)	14-Oct-99	38 ± 3	< 0.1	< 0.2
Marine Fish (Nemipterus Japonicus) (H.K.WEST)	10-Nov-99	42 ± 3	< 0.1	< 0.1
Marine Fish (Platycephalus Indicus) (H.K.WATERS)	17-May-99	54 ± 4	< 0.2	< 0.2
Marine Fish (Platycephalus Indicus) (H.K.WATERS)	04-Aug-99	58 ± 4	< 0.2	< 0.2
Marine Fish (Platycephalus Indicus) (H.K.WATERS)	06-Oct-99	41 ± 3	< 0.1	< 0.1
Marine Fish (Platycephalus Indicus) (H.K.WEST)	22-Oct-99	47 ± 3	< 0.1	< 0.1
Marine Fish (Trichiurus Haumela) (H.K.WATERS)	12-Apr-99	45 ± 4	< 0.2	< 0.2
Marine Fish (Trichiurus Haumela) (H.K.WATERS)	04-Aug-99	69 ± 5	< 0.2	< 0.2
Marine Fish (Trichiurus Haumela) (H.K.WATERS)	14-Oct-99	60 ± 5	< 0.2	< 0.3
Marine Fish (Trichiurus Haumela) (H.K.WEST)	13-Apr-99	36 ± 3	< 0.2	0.1 ± 0.1
Marine Fish (Trichiurus Haumela) (H.K.WEST)	10-Nov-99	59 ± 4	< 0.2	0.1 ± 0.1

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Table 46 cont'd

Sample Type and Sampling Location	Sampling Date	Specific Activity in Bq kg^{-1}		
		K-40	I-131	Cs-137
Other seafood :				
Crab (portunus sanguinolentus) (H.K.WATERS)	11-Jan-99	19 ± 2	< 0.1	< 0.1
Crab (portunus sanguinolentus) (H.K.WATERS)	17-May-99	23 ± 2	< 0.1	< 0.1
Crab (portunus sanguinolentus) (H.K.WATERS)	12-Jul-99	23 ± 2	< 0.1	< 0.1
Crab (portunus sanguinolentus) (H.K.WATERS)	14-Oct-99	31 ± 3	< 0.2	< 0.2
Crab (portunus sanguinolentus) (H.K.WEST)	18-Aug-99	19 ± 2	< 0.1	< 0.1
Shellfish (babylonia formosae) (H.K.WATERS)	11-Jan-99	22 ± 2	< 0.1	< 0.1
Shellfish (babylonia formosae) (H.K.WATERS)	17-May-99	24 ± 2	< 0.1	< 0.1
Shellfish (babylonia formosae) (H.K.WATERS)	04-Aug-99	24 ± 2	< 0.1	< 0.1
Shrimp (metapenaeopsis barbata) (H.K.WATERS)	17-May-99	29 ± 3	< 0.1	< 0.2
Shrimp (metapenaeopsis barbata) (H.K.WATERS)	04-Aug-99	41 ± 3	< 0.2	< 0.2
Shrimp (metapenaeopsis barbata) (H.K.WATERS)	06-Oct-99	35 ± 3	< 0.1	< 0.2
Cuttle Fish (H.K.WATERS)	11-Jan-99	50 ± 4	< 0.2	< 0.2
Cuttle Fish (H.K.WATERS)	16-Apr-99	68 ± 5	< 0.2	< 0.2
Cuttle Fish (H.K.WATERS)	14-Oct-99	58 ± 5	< 0.3	< 0.3
Squid (loligo edulis) (H.K.WATERS)	12-Apr-99	49 ± 4	< 0.2	< 0.3
Squid (loligo edulis) (H.K.WATERS)	12-Jul-99	45 ± 5	< 0.3	< 0.3
Squid (loligo edulis) (H.K.WATERS)	14-Oct-99	69 ± 5	< 0.2	< 0.2
Squid (loligo edulis) (H.K.WEST)	13-Apr-99	45 ± 4	< 0.2	< 0.3
Squid (loligo edulis) (H.K.WEST)	10-Nov-99	49 ± 5	< 0.3	< 0.3
Shellfish (tapes philippinarum) (TOLO)	11-Jan-99	13 ± 1	< 0.1	< 0.1
Shellfish (tapes philippinarum) (TOLO)	12-Apr-99	26 ± 2	< 0.1	< 0.1
Shellfish (tapes philippinarum) (TOLO)	12-Jul-99	20 ± 2	< 0.1	< 0.1
Shellfish (tapes philippinarum) (TOLO)	06-Oct-99	24 ± 2	< 0.1	< 0.1
Shellfish (perna viridis) (CHEUNG CHAU)	16-Apr-99	22 ± 2	< 0.1	< 0.1
Shellfish (perna viridis) (CHEUNG CHAU)	27-Jul-99	22 ± 2	< 0.1	< 0.2
Shellfish (perna viridis) (CHEUNG CHAU)	22-Oct-99	13 ± 2	< 0.1	< 0.1
Shellfish (perna viridis) (TOLO)	11-Jan-99	15 ± 2	< 0.1	< 0.1
Shellfish (perna viridis) (TOLO)	12-Apr-99	22 ± 2	< 0.1	< 0.1
Shellfish (perna viridis) (TOLO)	12-Jul-99	20 ± 2	< 0.1	< 0.1
Shellfish (perna viridis) (H.K.WATERS)	06-Oct-99	12 ± 1	< 0.1	< 0.1
Oyster (ostrea rivularis) (LAU FAU SHAN)	20-Oct-99	9 ± 1	< 0.1	< 0.1

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Table 46 cont'd

Sample Type and Sampling Location	Sampling Date	Specific Activity in Bq kg^{-1}		
		K-40	I-131	Cs-137
Seaweed :				
Seaweed (brown algae : sargassum hemiphyllum) (PO TOI O)	05-Jan-99	2620 ± 125	< 1.2	< 1.5
Seaweed (brown algae : sargassum hemiphyllum) (PO TOI O)	30-Apr-99	1880 ± 97	< 1.0	< 1.3
Seaweed (green algae : enteromorpha prolifera) (TOLO)	08-Feb-99	124 ± 9	< 0.4	< 0.5
Seaweed (green algae : ulva lactuca) (PO TOI O)	05-Jan-99	277 ± 22	< 1.0	< 1.4
Seaweed (green algae : ulva lactuca) (PO TOI O)	30-Apr-99	616 ± 33	< 0.6	< 0.8
Seaweed (red algae : porphyra dentata) (PO TOI ISLAND)	24-Jan-99	815 ± 69	< 3.2	< 4.0

Note : No other artificial gamma-emitting radionuclide was detected in all of the samples

Table 47 Specific gamma activity of sediment and land soil samples

Sampling Location	Sampling Date	Specific Activity in Bq kg^{-1}		
		K-40	I-131	Cs-137
Intertidal sediment (Upper layer):				
Sha Tau Kok	08-Jan-99	420 ± 20	< 0.4	0.6 ± 0.2
Sha Tau Kok	16-Apr-99	480 ± 30	< 0.4	0.6 ± 0.2
Sha Tau Kok	14-Jul-99	460 ± 20	< 0.4	0.4 ± 0.2
Sha Tau Kok	04-Oct-99	480 ± 20	< 0.4	0.6 ± 0.4
TSIM BEI TSUI	07-Jan-99	460 ± 20	< 0.4	1.0 ± 0.5
TSIM BEI TSUI	15-Apr-99	240 ± 10	< 0.4	0.9 ± 0.2
TSIM BEI TSUI	13-Jul-99	240 ± 10	< 0.4	0.9 ± 0.2
TSIM BEI TSUI	05-Oct-99	260 ± 20	< 0.4	0.9 ± 0.2
HEBE HAVEN (Pak Sha Wan)	08-Jan-99	450 ± 20	< 0.4	0.4 ± 0.2
HEBE HAVEN (Pak Sha Wan)	16-Apr-99	480 ± 20	< 0.4	0.4 ± 0.2
HEBE HAVEN (Pak Sha Wan)	14-Jul-99	490 ± 30	< 0.4	0.5 ± 0.4
HEBE HAVEN (Pak Sha Wan)	04-Oct-99	520 ± 30	< 0.4	0.3 ± 0.2
Intertidal sediment (Lower layer):				
Sha Tau Kok	08-Jan-99	610 ± 30	< 0.5	0.9 ± 0.2
Sha Tau Kok	16-Apr-99	510 ± 20	< 0.4	0.9 ± 0.5
Sha Tau Kok	14-Jul-99	460 ± 20	< 0.4	0.5 ± 0.2
Sha Tau Kok	04-Oct-99	480 ± 30	< 0.4	0.4 ± 0.2
TSIM BEI TSUI	07-Jan-99	190 ± 10	< 0.3	0.6 ± 0.1
TSIM BEI TSUI	15-Apr-99	290 ± 20	< 0.5	0.9 ± 0.2
TSIM BEI TSUI	13-Jul-99	260 ± 20	< 0.5	1.0 ± 0.2
TSIM BEI TSUI	05-Oct-99	190 ± 10	< 0.4	0.5 ± 0.2
HEBE HAVEN (Pak Sha Wan)	08-Jan-99	440 ± 20	< 0.4	0.4 ± 0.2
HEBE HAVEN (Pak Sha Wan)	16-Apr-99	520 ± 30	< 0.4	0.5 ± 0.4
HEBE HAVEN (Pak Sha Wan)	14-Jul-99	500 ± 30	< 0.4	0.5 ± 0.2
HEBE HAVEN (Pak Sha Wan)	04-Oct-99	500 ± 30	< 0.4	0.4 ± 0.2
Seabed sediment:				
TAI TAN HOI HAP	06-May-99	370 ± 20	< 0.5	0.9 ± 0.2
TAI TAN HOI HAP	06-Oct-99	280 ± 20	< 0.4	0.5 ± 0.2
LUNG HA WAN	06-May-99	380 ± 20	< 0.5	1.7 ± 0.2
LUNG HA WAN	06-Oct-99	200 ± 10	< 0.3	< 0.4
PICNIC BAY	05-May-99	460 ± 30	< 0.5	0.4 ± 0.2
PICNIC BAY	05-Oct-99	420 ± 20	< 0.4	0.7 ± 0.2
WESTERN ANCHORAGE	05-May-99	510 ± 30	< 0.5	0.6 ± 0.2
WESTERN ANCHORAGE	05-Oct-99	390 ± 20	< 0.4	0.3 ± 0.2

Table 48 Specific activity of tritium in deposition and airborne water vapour samples

Sampling Location and Sampling Period	Specific Activity of H-3 in Bq L^{-1}
Wet Deposition at King's Park :	
04-Jan-99 to 01-Feb-99	1.0 ± 1.9
01-Feb-99 to 03-Mar-99	**
03-Mar-99 to 31-Mar-99	2.8 ± 2.3
31-Mar-99 to 03-May-99	##
03-May-99 to 01-Jun-99	1.3 ± 2.1
01-Jun-99 to 02-Jul-99	##
02-Jul-99 to 02-Aug-99	##
02-Aug-99 to 01-Sep-99	##
01-Sep-99 to 04-Oct-99	##
04-Oct-99 to 01-Nov-99	5.2 ± 2.3
01-Nov-99 to 01-Dec-99	##
01-Dec-99 to 03-Jan-00	##
Wet Deposition at Sha Tau Kok :	
31-Dec-98 to 28-Jan-99	1.1 ± 2.7
28-Jan-99 to 04-Mar-99	**
04-Mar-99 to 01-Apr-99	##
01-Apr-99 to 29-Apr-99	##
29-Apr-99 to 03-Jun-99	0.3 ± 2.8
03-Jun-99 to 30-Jun-99	##
30-Jun-99 to 29-Jul-99	##
29-Jul-99 to 02-Sep-99	##
02-Sep-99 to 30-Sep-99	0.9 ± 2.2
30-Sep-99 to 29-Oct-99	6.4 ± 3.8
29-Oct-99 to 02-Dec-99	##
02-Dec-99 to 29-Dec-99	##
Wet Deposition at Yuen Ng Fan :	
31-Dec-98 to 03-Feb-99	**
03-Feb-99 to 02-Mar-99	**
02-Mar-99 to 30-Mar-99	0.8 ± 3.2
30-Mar-99 to 27-Apr-99	##
27-Apr-99 to 01-Jun-99	0.3 ± 1.9
01-Jun-99 to 29-Jun-99	##
29-Jun-99 to 03-Aug-99	##
03-Aug-99 to 31-Aug-99	##
31-Aug-99 to 28-Sep-99	1.4 ± 2.4
28-Sep-99 to 02-Nov-99	4.4 ± 2.7
02-Nov-99 to 30-Nov-99	##
30-Nov-99 to 03-Jan-00	##

** insufficient precipitation collected

Less than detection limit

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Table 48 cont'd

Sampling Location and Sampling Period	Rainfall amount (mm)*	Specific Activity of H-3 in Bq m^{-2} for total deposition and in Bq m^{-3} for water vapour
Total Deposition at King's Park :		
04-Jan-99 to 01-Feb-99	6.0	##
01-Feb-99 to 02-Mar-99	0.1	290 ± 210
02-Mar-99 to 01-Apr-99	23.8	##
01-Apr-99 to 03-May-99	174.7	##
03-May-99 to 01-Jun-99	187.0	##
01-Jun-99 to 02-Jul-99	214.4	##
02-Jul-99 to 02-Aug-99	216.6	##
02-Aug-99 to 01-Sep-99	923.1	2210 ± 1380
01-Sep-99 to 04-Oct-99	362.5	390 ± 650
04-Oct-99 to 01-Nov-99	9.7	##
01-Nov-99 to 01-Dec-99	18.0	##
01-Dec-99 to 03-Jan-00	31.5	##
Water vapour in air at King's Park :		
19-Jan-99 to 25-Jan-99		##
22-Feb-99 to 27-Feb-99		61 ± 24
15-Mar-99 to 22-Mar-99		105 ± 22
20-Apr-99 to 26-Apr-99		26 ± 20
14-May-99 to 20-May-99		##
21-Jun-99 to 28-Jun-99		##
22-Jul-99 to 28-Jul-99		##
12-Aug-99 to 18-Aug-99		36 ± 19
23-Sep-99 to 29-Sep-99		13 ± 20
15-Oct-99 to 21-Oct-99		8 ± 18
18-Nov-99 to 24-Nov-99		28 ± 20
16-Dec-99 to 22-Dec-99		174 ± 35

* 24-hour rainfall is recorded daily at 3 p.m. Hong Kong Time

Less than detection limit

Table 49 Specific activity of tritium in terrestrial food samples

Sample Type and Sampling Location	Sampling Date	Specific Activity of H-3 in Bq kg^{-1} (except milk in Bq L^{-1})
Rice and milk :		
Rice (China)	08-Feb-99	##
Rice (China)	12-Apr-99	##
Rice (China)	20-Jul-99	0.2 ± 0.2
Rice (China)	19-Oct-99	##
Milk (Pasteurized) (SHENZHEN)	08-Feb-99	2.2 ± 1.7
Milk (Pasteurized) (SHENZHEN)	12-Apr-99	##
Milk (Pasteurized) (SHENZHEN)	20-Jul-99	0.2 ± 3.4
Milk (Pasteurized) (SHENZHEN)	19-Oct-99	##
Milk (Pasteurized) (SHA TAU KOK)	24-Feb-99	##
Milk (Pasteurized) (SHA TAU KOK)	12-Apr-99	##
Milk (Pasteurized) (SHA TAU KOK)	20-Jul-99	##
Milk (Pasteurized) (SHA TAU KOK)	19-Oct-99	0.2 ± 1.8
Leafy vegetable :		
Flowering Cabbage (SHENZHEN)	08-Feb-99	1.6 ± 1.6
Flowering Cabbage (SHENZHEN)	03-May-99	2.8 ± 1.7
Flowering Cabbage (SHENZHEN)	28-Jul-99	2.7 ± 1.8
Flowering Cabbage (SHENZHEN)	20-Oct-99	0.9 ± 1.6
Flowering Cabbage (LOCAL FARM)	24-Feb-99	##
Flowering Cabbage (LOCAL FARM)	28-Jul-99	3.3 ± 2.2
Flowering Cabbage (LOCAL FARM)	27-Oct-99	5.8 ± 2.0
White Cabbage (SHENZHEN)	08-Feb-99	2.7 ± 1.8
White Cabbage (SHENZHEN)	03-May-99	1.5 ± 1.6
White Cabbage (SHENZHEN)	28-Jul-99	0.4 ± 1.9
White Cabbage (SHENZHEN)	20-Oct-99	1.9 ± 1.8
White Cabbage (LOCAL FARM)	24-Feb-99	0.9 ± 2.0
White Cabbage (LOCAL FARM)	05-May-99	1.1 ± 1.8
White Cabbage (LOCAL FARM)	28-Jul-99	##
White Cabbage (LOCAL FARM)	27-Oct-99	2.5 ± 1.9
Fruit :		
Banana (China)	02-Feb-99	0.5 ± 0.7
Banana (China)	21-Apr-99	0.7 ± 0.6
Banana (China)	09-Jul-99	##
Banana (China)	13-Oct-99	##
Lychee (China)	08-Jun-99	0.5 ± 1.0
Mandarin (China)	13-Oct-99	##
Mandarin (China)	10-Dec-99	##
Sugar Cane (China)	19-Mar-99	1.8 ± 0.9

Less than detection limit

- to be continued on next page -

Table 49 cont'd

Sample Type and Sampling Location	Sampling Date	Specific Activity of H-3 in Bq kg^{-1}
Poultry:		
Chicken (China)	05-Jan-99	##
Chicken (China)	12-Mar-99	##
Chicken (China)	08-Jun-99	0.4 ± 0.6
Chicken (China)	02-Sep-99	0.4 ± 0.5
Chicken (LOCAL FARM)	05-Jan-99	0.1 ± 1.3
Chicken (LOCAL FARM)	12-Mar-99	0.9 ± 0.6
Chicken (LOCAL FARM)	08-Jun-99	##
Chicken (LOCAL FARM)	02-Sep-99	0.1 ± 0.6
Duck (China)	05-Jan-99	1.8 ± 0.6
Duck (China)	12-Mar-99	0.1 ± 1.9
Duck (China)	08-Jun-99	##
Duck (China)	02-Sep-99	##
Duck (LOCAL FARM)	05-Jan-99	0.4 ± 0.7
Duck (LOCAL FARM)	12-Mar-99	0.8 ± 0.8
Duck (LOCAL FARM)	08-Jun-99	##
Duck (LOCAL FARM)	02-Sep-99	##
Meat:		
Beef (China)	24-Feb-99	0.2 ± 1.1
Beef (China)	12-Apr-99	3.3 ± 1.4
Beef (China)	28-Jul-99	3.1 ± 1.6
Beef (China)	19-Oct-99	##
Pig's Liver (China)	08-Feb-99	0.7 ± 1.2
Pig's Liver (China)	12-Apr-99	1.0 ± 1.4
Pig's Liver (China)	28-Jul-99	3.6 ± 1.2
Pig's Liver (China)	19-Oct-99	0.8 ± 1.3
Pig's Liver (LOCAL FARM)	08-Feb-99	0.5 ± 1.4
Pig's Liver (LOCAL FARM)	12-Apr-99	2.2 ± 1.4
Pig's Liver (LOCAL FARM)	28-Jul-99	4.8 ± 1.2
Pig's Liver (LOCAL FARM)	19-Oct-99	1.8 ± 1.3
Pork (China)	08-Feb-99	0.4 ± 1.9
Pork (China)	12-Apr-99	0.2 ± 1.7
Pork (China)	28-Jul-99	2.4 ± 1.4
Pork (China)	19-Oct-99	2.5 ± 1.4
Pork (LOCAL FARM)	08-Feb-99	##
Pork (LOCAL FARM)	12-Apr-99	##
Pork (LOCAL FARM)	28-Jul-99	4.7 ± 1.5
Pork (LOCAL FARM)	19-Oct-99	1.4 ± 1.5

less than detection limit

Table 50 Specific activity of tritium in water samples

Sampling Location	Sampling Date	Specific Activity of H-3 in Bq L^{-1}
Treated drinking water:		
KOWLOON DISTRIBUTION TAP	09-Jan-99	##
KOWLOON DISTRIBUTION TAP	10-Apr-99	2.9 ± 1.9
KOWLOON DISTRIBUTION TAP	10-Jul-99	3.6 ± 2.0
KOWLOON DISTRIBUTION TAP	02-Oct-99	##
TUEN MUN DISTRIBUTION TAP	01-Feb-99	##
TUEN MUN DISTRIBUTION TAP	04-May-99	1.7 ± 1.9
TUEN MUN DISTRIBUTION TAP	03-Aug-99	4.3 ± 1.9
TUEN MUN DISTRIBUTION TAP	03-Nov-99	1.9 ± 1.8
YAU KOM TAU TREATMENT WORKS	06-Jan-99	1.7 ± 2.0
YAU KOM TAU TREATMENT WORKS	13-Apr-99	0.2 ± 2.0
YAU KOM TAU TREATMENT WORKS	12-Jul-99	1.9 ± 1.8
YAU KOM TAU TREATMENT WORKS	04-Oct-99	##
TUEN MUN TREATMENT WORKS	01-Feb-99	0.5 ± 1.7
TUEN MUN TREATMENT WORKS	04-May-99	4.0 ± 2.0
TUEN MUN TREATMENT WORKS	03-Aug-99	1.9 ± 1.9
TUEN MUN TREATMENT WORKS	03-Nov-99	0.7 ± 1.7
SHATIN TREATMENT WORKS	09-Jan-99	##
SHATIN TREATMENT WORKS	10-Apr-99	0.2 ± 1.5
SHATIN TREATMENT WORKS	13-Jul-99	0.7 ± 2.1
SHATIN TREATMENT WORKS	05-Oct-99	1.2 ± 2.0
Untreated drinking water:		
MUK WU B PUMPING STATION	02-Feb-99	0.5 ± 1.7
MUK WU B PUMPING STATION	05-May-99	2.9 ± 2.0
MUK WU B PUMPING STATION	05-Aug-99	3.3 ± 1.8
MUK WU B PUMPING STATION	04-Nov-99	0.7 ± 1.7
YAU KOM TAU TREATMENT WORKS	06-Jan-99	1.0 ± 2.0
YAU KOM TAU TREATMENT WORKS	13-Apr-99	0.5 ± 1.6
YAU KOM TAU TREATMENT WORKS	12-Jul-99	4.3 ± 1.9
YAU KOM TAU TREATMENT WORKS	04-Oct-99	3.8 ± 2.1
TUEN MUN TREATMENT WORKS	01-Feb-99	2.1 ± 1.9
TUEN MUN TREATMENT WORKS	04-May-99	0.7 ± 1.8
TUEN MUN TREATMENT WORKS	05-Aug-99	##
TUEN MUN TREATMENT WORKS	03-Nov-99	2.6 ± 1.8
SHATIN TREATMENT WORKS	09-Jan-99	##
SHATIN TREATMENT WORKS	10-Apr-99	0.2 ± 3.6
SHATIN TREATMENT WORKS	13-Jul-99	##
SHATIN TREATMENT WORKS	05-Oct-99	##
High Island Reservoir	14-Jan-99	0.7 ± 1.8
High Island Reservoir	14-Apr-99	2.1 ± 1.9
High Island Reservoir	15-Jul-99	5.5 ± 2.0
High Island Reservoir	11-Oct-99	##
Plover Cove Reservoir	03-Feb-99	##
Plover Cove Reservoir	05-May-99	2.9 ± 2.1
Plover Cove Reservoir	05-Aug-99	3.6 ± 2.0
Plover Cove Reservoir	04-Nov-99	0.2 ± 2.3

Less than detection limit

- to be continued on next page -

Table 50 cont'd

Sampling Location	Sampling Date	Specific Activity of H-3 in Bq L^{-1}
Underground water:		
Siu Hong Court	19-Jul-99	0.4 ± 0.2
CHEUNG HONG ESTATE	19-Jul-99	0.3 ± 0.1
YUEN LONG ESTATE	19-Jul-99	1.0 ± 0.2
WAN TSUI ESTATE	20-Jul-99	0.3 ± 0.2
WAH FU ESTATE	20-Jul-99	0.6 ± 0.2
Fu Shan Estate	19-Jul-99	0.8 ± 0.2
Sea water (Upper level):		
WAGLAN ISLAND	17-Jun-99	##
BASALT ISLAND	17-Jun-99	0.9 ± 1.8
TAI LONG WAN	17-Jun-99	2.6 ± 2.0
PORT ISLAND	17-Jun-99	##
Sea water (Middle level):		
WAGLAN ISLAND	17-Jun-99	##
BASALT ISLAND	17-Jun-99	##
TAI LONG WAN	17-Jun-99	##
PORT ISLAND	17-Jun-99	##
Sea water (Lower level):		
WAGLAN ISLAND	17-Jun-99	##
BASALT ISLAND	17-Jun-99	1.8 ± 2.1
TAI LONG WAN	17-Jun-99	0.7 ± 2.3
PORT ISLAND	17-Jun-99	0.5 ± 1.9

Less than detection limit

Table 51 Specific activity of tritium in aquatic food and seaweed samples

Sample Type and Sampling Location	Sampling Date	Specific Activity of H-3 in Bq kg^{-1}
Fish :		
Freshwater Fish (Aristichthys Nobilis) (SHENZHEN)	05-Feb-99	##
Freshwater Fish (Aristichthys Nobilis) (SHENZHEN)	03-May-99	0.4 ± 0.6
Freshwater Fish (Aristichthys Nobilis) (SHENZHEN)	28-Jul-99	1.0 ± 0.5
Freshwater Fish (Aristichthys Nobilis) (SHENZHEN)	20-Oct-99	##
Freshwater Fish (Aristichthys Nobilis) (YUEN LONG)	05-Feb-99	0.2 ± 0.7
Freshwater Fish (Aristichthys Nobilis) (YUEN LONG)	03-May-99	0.2 ± 0.8
Freshwater Fish (Aristichthys Nobilis) (YUEN LONG)	28-Jul-99	0.5 ± 0.5
Freshwater Fish (Aristichthys Nobilis) (YUEN LONG)	20-Oct-99	0.5 ± 0.6
Marine Fish (Nemipterus Japonicus) (H.K.WATERS)	04-Aug-99	##
Marine Fish (Nemipterus Japonicus) (H.K.WATERS)	14-Oct-99	##
Marine Fish (Nemipterus Japonicus) (H.K.WEST)	10-Nov-99	0.6 ± 0.5
Marine Fish (Platycephalus Indicus) (H.K.WATERS)	17-May-99	0.9 ± 0.7
Marine Fish (Platycephalus Indicus) (H.K.WATERS)	04-Aug-99	##
Marine Fish (Platycephalus Indicus) (H.K.WATERS)	06-Oct-99	##
Marine Fish (Platycephalus Indicus) (H.K.WEST)	22-Oct-99	##
Marine Fish (Trichiurus Haumela) (H.K.WATERS)	12-Apr-99	##
Marine Fish (Trichiurus Haumela) (H.K.WATERS)	04-Aug-99	##
Marine Fish (Trichiurus Haumela) (H.K.WATERS)	14-Oct-99	##
Marine Fish (Trichiurus Haumela) (H.K.WEST)	13-Apr-99	0.3 ± 0.7
Marine Fish (Trichiurus Haumela) (H.K.WEST)	10-Nov-99	##

Less than detection limit

- to be continued on next page -

Table 51 cont'd

Sample Type and Sampling Location	Sampling Date	Specific Activity of H-3 in Bq kg^{-1}
Other seafood :		
Crab (portunus sanguinolentus) (H.K.WATERS)	11-Jan-99	##
Crab (portunus sanguinolentus) (H.K.WATERS)	17-May-99	1.5 ± 0.6
Crab (portunus sanguinolentus) (H.K.WATERS)	12-Jul-99	1.3 ± 0.6
Crab (portunus sanguinolentus) (H.K.WATERS)	14-Oct-99	##
Crab (portunus sanguinolentus) (H.K.WEST)	18-Aug-99	0.3 ± 0.4
Shellfish (babylonia formosae) (H.K.WATERS)	11-Jan-99	0.3 ± 0.3
Shellfish (babylonia formosae) (H.K.WATERS)	17-May-99	0.8 ± 0.4
Shellfish (babylonia formosae) (H.K.WATERS)	04-Aug-99	##
Shrimp (metapenaeopsis barbata) (H.K.WATERS)	17-May-99	1.6 ± 0.8
Shrimp (metapenaeopsis barbata) (H.K.WATERS)	04-Aug-99	##
Shrimp (metapenaeopsis barbata) (H.K.WATERS)	06-Oct-99	##
Cuttle Fish (H.K.WATERS)	11-Jan-99	1.3 ± 1.0
Cuttle Fish (H.K.WATERS)	16-Apr-99	2.2 ± 0.8
Cuttle Fish (H.K.WATERS)	14-Oct-99	##
Squid (loligo edulis) (H.K.WATERS)	12-Apr-99	##
Squid (loligo edulis) (H.K.WATERS)	12-Jul-99	0.4 ± 1.2
Squid (loligo edulis) (H.K.WATERS)	14-Oct-99	##
Squid (loligo edulis) (H.K.WEST)	13-Apr-99	1.6 ± 1.1
Squid (loligo edulis) (H.K.WEST)	10-Nov-99	0.5 ± 1.2
Shellfish (tapes philippinarum) (TOLO)	11-Jan-99	0.2 ± 0.4
Shellfish (tapes philippinarum) (TOLO)	12-Apr-99	##
Shellfish (tapes philippinarum) (TOLO)	12-Jul-99	0.4 ± 0.6
Shellfish (tapes philippinarum) (TOLO)	06-Oct-99	0.3 ± 0.5
Shellfish (perna viridis) (CHEUNG CHAU)	16-Apr-99	0.6 ± 0.4
Shellfish (perna viridis) (CHEUNG CHAU)	27-Jul-99	1.3 ± 0.5
Shellfish (perna viridis) (CHEUNG CHAU)	22-Oct-99	0.2 ± 0.4
Shellfish (perna viridis) (TOLO)	11-Jan-99	##
Shellfish (perna viridis) (TOLO)	12-Apr-99	##
Shellfish (perna viridis) (TOLO)	12-Jul-99	0.6 ± 0.6
Shellfish (perna viridis) (H.K.WATERS)	06-Oct-99	##
Seaweed :		
Seaweed (brown algae : sargassum hemiphyllum) (PO TOI O)	05-Jan-99	0.6 ± 0.3
Seaweed (brown algae : sargassum hemiphyllum) (PO TOI O)	30-Apr-99	##
Seaweed (green algae : ulva lactuca) (PO TOI O)	05-Jan-99	0.4 ± 0.4
Seaweed (green algae : ulva lactuca) (PO TOI O)	30-Apr-99	0.5 ± 0.7
Seaweed (red algae : porphyra dentata) (PO TOI ISLAND)	24-Jan-99	0.2 ± 0.2

Less than detection limit

Table 52 Specific activity of strontium-90 in airborne particulate samples

Sampling Location and Sampling period	Specific Activity of Sr-90 in μBq m^{-3}
King's Park :	
04-Jan-99 to 01-Feb-99	< 0.9
01-Feb-99 to 02-Mar-99	3.0 ± 0.7
02-Mar-99 to 01-Apr-99	< 0.6
01-Apr-99 to 03-May-99	2.2 ± 0.7
03-May-99 to 01-Jun-99	< 1.0
01-Jun-99 to 02-Jul-99	1.8 ± 0.6
02-Jul-99 to 02-Aug-99	< 1.2
02-Aug-99 to 01-Sep-99	1.7 ± 0.4
01-Sep-99 to 27-Sep-99	4.6 ± 0.8
27-Sep-99 to 27-Oct-99	2.6 ± 0.6
27-Oct-99 to 01-Nov-99	***
01-Nov-99 to 30-Nov-99	***
30-Nov-99 to 01-Dec-99	***
01-Dec-99 to 12-Apr-99	2.2 ± 0.6
Sha Tau Kok :	
04-Jan-99 to 28-Jan-99	< 1.0
28-Jan-99 to 05-Feb-99	***
05-Feb-99 to 04-Mar-99	4.9 ± 0.6
04-Mar-99 to 01-Apr-99	< 0.8
01-Apr-99 to 29-Apr-99	< 1.2
29-Apr-99 to 03-Jun-99	< 0.7
03-Jun-99 to 30-Jun-99	***
30-Jun-99 to 29-Jul-99	< 1.2
29-Jul-99 to 02-Sep-99	< 1.0
02-Sep-99 to 30-Sep-99	1.6 ± 0.6
30-Sep-99 to 29-Oct-99	< 1.4
29-Oct-99 to 02-Dec-99	***
02-Dec-99 to 05-Dec-99	***
05-Dec-99 to 12-Jul-99	< 1.5
Yuen Ng Fan :	
31-Dec-98 to 03-Feb-99	< 1.2
03-Feb-99 to 02-Mar-99	< 1.9
02-Mar-99 to 30-Mar-99	< 0.9
30-Mar-99 to 27-Apr-99	< 1.5
27-Apr-99 to 01-Jun-99	< 1.0
01-Jun-99 to 29-Jun-99	< 1.4
29-Jun-99 to 23-Jul-99	***
23-Jul-99 to 03-Aug-99	3.9 ± 1.5
03-Aug-99 to 31-Aug-99	4.6 ± 0.8
31-Aug-99 to 28-Sep-99	3.1 ± 0.8
28-Sep-99 to 02-Nov-99	4.6 ± 1.0
02-Nov-99 to 30-Nov-99	***
30-Nov-99 to 05-Dec-99	***
05-Dec-99 to 05-Dec-99	4.2 ± 0.4

*** sampler under maintenance

Table 53 Specific activity of strontium-90 in deposition samples

Sampling Location and Sampling period	Specific Activity of Sr-90 in Bq L^{-1}
Wet Deposition at King's Park :	
04-Jan-99 to 01-Feb-99	< 0.012
01-Feb-99 to 03-Mar-99	**
03-Mar-99 to 31-Mar-99	< 0.002
31-Mar-99 to 03-May-99	< 0.002
03-May-99 to 01-Jun-99	< 0.002
01-Jun-99 to 02-Jul-99	0.005 ± 0.001
02-Jul-99 to 02-Aug-99	0.009 ± 0.001
02-Aug-99 to 01-Sep-99	< 0.002
01-Sep-99 to 04-Oct-99	< 0.001
04-Oct-99 to 01-Nov-99	< 0.004
01-Nov-99 to 01-Dec-99	0.003 ± 0.002
01-Dec-99 to 03-Jan-00	< 0.002
Wet Deposition at Sha Tau Kok :	
31-Dec-98 to 28-Jan-99	< 0.009
28-Jan-99 to 04-Mar-99	**
04-Mar-99 to 01-Apr-99	0.003 ± 0.001
01-Apr-99 to 29-Apr-99	< 0.003
29-Apr-99 to 03-Jun-99	< 0.002
03-Jun-99 to 30-Jun-99	0.005 ± 0.001
30-Jun-99 to 29-Jul-99	0.024 ± 0.002
29-Jul-99 to 02-Sep-99	< 0.002
02-Sep-99 to 30-Sep-99	< 0.002
30-Sep-99 to 29-Oct-99	< 0.006
29-Oct-99 to 02-Dec-99	< 0.006
02-Dec-99 to 29-Dec-99	< 0.003
Wet Deposition at Yuen Ng Fan :	
31-Dec-98 to 03-Feb-99	**
03-Feb-99 to 02-Mar-99	**
02-Mar-99 to 30-Mar-99	< 0.002
30-Mar-99 to 27-Apr-99	< 0.002
27-Apr-99 to 01-Jun-99	0.012 ± 0.002
01-Jun-99 to 29-Jun-99	0.012 ± 0.001
29-Jun-99 to 03-Aug-99	0.003 ± 0.001
03-Aug-99 to 31-Aug-99	0.002 ± 0.001
31-Aug-99 to 28-Sep-99	0.003 ± 0.001
28-Sep-99 to 02-Nov-99	< 0.002
02-Nov-99 to 30-Nov-99	0.005 ± 0.002
30-Nov-99 to 03-Jan-00	0.005 ± 0.002

** insufficient precipitation collected

Table 53 cont'd

Sample Type and Sampling Location	Rainfall amount (mm)*	Specific Activity of Sr-90 in Bq m^{-2}
Total Deposition at King's Park :		
04-Jan-99 to 01-Feb-99	6.0	1.0 ± 0.2
01-Feb-99 to 02-Mar-99	0.1	< 0.1
02-Mar-99 to 01-Apr-99	23.8	< 0.3
01-Apr-99 to 03-May-99	174.7	< 0.3
03-May-99 to 01-Jun-99	187.0	< 0.3
01-Jun-99 to 02-Jul-99	214.4	< 0.3
02-Jul-99 to 02-Aug-99	216.6	< 0.3
02-Aug-99 to 01-Sep-99	923.1	< 1.0
01-Sep-99 to 04-Oct-99	362.5	< 0.6
04-Oct-99 to 01-Nov-99	9.7	< 0.2
01-Nov-99 to 01-Dec-99	18.0	#
01-Dec-99 to 03-Jan-00	31.5	< 0.4

* 24-hour rainfall is recorded daily at 3 p.m. Hong Kong Time

\# data did not meet quality assurance requirement

Table 54 Specific activity of strontium-90 in terrestrial food samples

Sample Type and Sampling Location	Sampling Date	Specific Activity of Sr-90 in Bq kg^{-1} (except milk in Bq L^{-1})
Rice and milk :		
Rice (China)	08-Feb-99	0.004 ± 0.001
Rice (China)	12-Apr-99	0.006 ± 0.001
Rice (China)	20-Jul-99	0.001 ± 0.001
Rice (China)	19-Oct-99	0.012 ± 0.001
Milk (Pasteurized) (SHENZHEN)	08-Feb-99	< 0.003
Milk (Pasteurized) (SHENZHEN)	12-Apr-99	0.018 ± 0.003
Milk (Pasteurized) (SHENZHEN)	20-Jul-99	0.006 ± 0.002
Milk (Pasteurized) (SHENZHEN)	19-Oct-99	0.047 ± 0.004
Milk (Pasteurized) (SHA TAU KOK)	24-Feb-99	0.012 ± 0.002
Milk (Pasteurized) (SHA TAU KOK)	12-Apr-99	0.013 ± 0.004
Milk (Pasteurized) (SHA TAU KOK)	20-Jul-99	0.008 ± 0.002
Milk (Pasteurized) (SHA TAU KOK)	19-Oct-99	0.036 ± 0.004
Leafy vegetable :		
Flowering Cabbage (SHENZHEN)	08-Feb-99	0.063 ± 0.005
Flowering Cabbage (SHENZHEN)	03-May-99	0.090 ± 0.007
Flowering Cabbage (SHENZHEN)	28-Jul-99	0.097 ± 0.005
Flowering Cabbage (SHENZHEN)	20-Oct-99	0.182 ± 0.010
Flowering Cabbage (LOCAL FARM)	24-Feb-99	0.185 ± 0.008
Flowering Cabbage (LOCAL FARM)	28-Jul-99	0.038 ± 0.003
Flowering Cabbage (LOCAL FARM)	27-Oct-99	0.048 ± 0.005
White Cabbage (SHENZHEN)	08-Feb-99	0.084 ± 0.006
White Cabbage (SHENZHEN)	03-May-99	0.101 ± 0.007
White Cabbage (SHENZHEN)	28-Jul-99	0.079 ± 0.006
White Cabbage (SHENZHEN)	20-Oct-99	0.106 ± 0.007
White Cabbage (LOCAL FARM)	24-Feb-99	0.042 ± 0.005
White Cabbage (LOCAL FARM)	05-May-99	0.162 ± 0.009
White Cabbage (LOCAL FARM)	28-Jul-99	0.047 ± 0.005
Fruit :		
Banana (China)	02-Feb-99	0.005 ± 0.002
Banana (China)	21-Apr-99	0.011 ± 0.004
Banana (China)	09-Jul-99	0.005 ± 0.002
Banana (China)	13-Oct-99	0.006 ± 0.002
Lychee (China)	08-Jun-99	0.002 ± 0.001
Mandarin (China)	13-Oct-99	0.082 ± 0.003
Mandarin (China)	10-Dec-99	0.037 ± 0.001
Sugar Cane (China)	19-Mar-99	< 0.002

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Table 54 cont'd

Sample Type and Sampling Location	Sampling Date	Specific Activity of Sr-90 in Bq kg^{-1}
Poultry:		
Chicken (China)	05-Jan-99	0.005 ± 0.001
Chicken (China)	12-Mar-99	0.004 ± 0.001
Chicken (China)	08-Jun-99	< 0.002
Chicken (China)	02-Sep-99	< 0.002
Chicken (LOCAL FARM)	05-Jan-99	0.004 ± 0.002
Chicken (LOCAL FARM)	12-Mar-99	0.006 ± 0.001
Chicken (LOCAL FARM)	08-Jun-99	< 0.002
Chicken (LOCAL FARM)	02-Sep-99	< 0.003
Duck (China)	05-Jan-99	0.003 ± 0.001
Duck (China)	12-Mar-99	< 0.001
Duck (China)	08-Jun-99	< 0.001
Duck (China)	02-Sep-99	< 0.001
Duck (LOCAL FARM)	05-Jan-99	0.005 ± 0.001
Duck (LOCAL FARM)	12-Mar-99	< 0.002
Duck (LOCAL FARM)	08-Jun-99	< 0.001
Duck (LOCAL FARM)	02-Sep-99	< 0.002
Meat:		
Beef (China)	24-Feb-99	< 0.005
Beef (China)	12-Apr-99	< 0.006
Beef (China)	28-Jul-99	< 0.007
Beef (China)	19-Oct-99	< 0.011
Pig's Liver (China)	08-Feb-99	< 0.007
Pig's Liver (China)	12-Apr-99	< 0.006
Pig's Liver (China)	28-Jul-99	< 0.008
Pig's Liver (China)	19-Oct-99	< 0.011
Pig's Liver (LOCAL FARM)	08-Feb-99	< 0.006
Pig's Liver (LOCAL FARM)	12-Apr-99	< 0.005
Pig's Liver (LOCAL FARM)	28-Jul-99	< 0.009
Pig's Liver (LOCAL FARM)	19-Oct-99	< 0.009
Pork (China)	08-Feb-99	< 0.005
Pork (China)	12-Apr-99	< 0.006
Pork (China)	28-Jul-99	< 0.008
Pork (China)	19-Oct-99	< 0.008
Pork (LOCAL FARM)	08-Feb-99	< 0.006
Pork (LOCAL FARM)	12-Apr-99	< 0.006
Pork (LOCAL FARM)	28-Jul-99	< 0.007

Table 55 Specific activity of strontium-90 in suspended particulate in sea water samples

Sample Type and Sampling Location	Sampling Date	Specific Activity of Sr-90 in Bq L^{-1}
Suspended particulate in sea water (Upper level):		
WAGLAN ISLAND	17-Jun-99	< 0.002
BASALT ISLAND	17-Jun-99	< 0.002
TAI LONG WAN	17-Jun-99	0.006 ± 0.001
PORT ISLAND	17-Jun-99	0.005 ± 0.001
Suspended particulate in sea water (Middle level):		
WAGLAN ISLAND	17-Jun-99	< 0.002
BASALT ISLAND	17-Jun-99	0.003 ± 0.002
TAI LONG WAN	17-Jun-99	< 0.003
PORT ISLAND	17-Jun-99	< 0.002
Suspended particulate in sea water (Lower level):		
WAGLAN ISLAND	17-Jun-99	0.007 ± 0.002
BASALT ISLAND	17-Jun-99	< 0.002
TAI LONG WAN	17-Jun-99	< 0.002
PORT ISLAND	17-Jun-99	0.005 ± 0.002

Table 56 Specific activity of strontium-90 in aquatic food and seaweed samples

Sample Type and Sampling Location	Sampling Date	Specific Activity of Sr-90 in Bq kg^{-1}
Fish :		
Freshwater Fish (Aristichthys Nobilis) (SHENZHEN)	05-Feb-99	0.004 ± 0.001
Freshwater Fish (Aristichthys Nobilis) (SHENZHEN)	03-May-99	0.004 ± 0.001
Freshwater Fish (Aristichthys Nobilis) (SHENZHEN)	28-Jul-99	0.005 ± 0.001
Freshwater Fish (Aristichthys Nobilis) (SHENZHEN)	20-Oct-99	0.004 ± 0.002
Freshwater Fish (Aristichthys Nobilis) (YUEN LONG)	05-Feb-99	0.009 ± 0.002
Freshwater Fish (Aristichthys Nobilis) (YUEN LONG)	03-May-99	0.010 ± 0.002
Freshwater Fish (Aristichthys Nobilis) (YUEN LONG)	28-Jul-99	< 0.002
Freshwater Fish (Aristichthys Nobilis) (YUEN LONG)	20-Oct-99	0.004 ± 0.002
Marine Fish (Nemipterus Japonicus) (H.K.WATERS)	04-Aug-99	0.004 ± 0.002
Marine Fish (Nemipterus Japonicus) (H.K.WATERS)	14-Oct-99	< 0.004
Marine Fish (Nemipterus Japonicus) (H.K.WEST)	10-Nov-99	< 0.004
Marine Fish (Platycephalus Indicus) (H.K.WATERS)	17-May-99	< 0.005
Marine Fish (Platycephalus Indicus) (H.K.WATERS)	04-Aug-99	0.005 ± 0.003
Marine Fish (Platycephalus Indicus) (H.K.WATERS)	06-Oct-99	0.006 ± 0.002
Marine Fish (Platycephalus Indicus) (H.K.WEST)	22-Oct-99	< 0.006
Marine Fish (Trichiurus Haumela) (H.K.WATERS)	12-Apr-99	< 0.003
Marine Fish (Trichiurus Haumela) (H.K.WATERS)	04-Aug-99	< 0.004
Marine Fish (Trichiurus Haumela) (H.K.WATERS)	14-Oct-99	< 0.005
Marine Fish (Trichiurus Haumela) (H.K.WEST)	13-Apr-99	0.025 ± 0.003
Marine Fish (Trichiurus Haumela) (H.K.WEST)	10-Nov-99	< 0.006

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Table 56 cont'd

Sample Type and Sampling Location	Sampling Date	Specific Activity of Sr-90 in Bq kg^{-1}
Other seafood :		
Crab (portunus sanguinolentus) (H.K.WATERS)	11-Jan-99	0.012 ± 0.003
Crab (portunus sanguinolentus) (H.K.WATERS)	17-May-99	< 0.005
Crab (portunus sanguinolentus) (H.K.WATERS)	12-Jul-99	< 0.003
Crab (portunus sanguinolentus) (H.K.WATERS)	14-Oct-99	< 0.009
Crab (portunus sanguinolentus) (H.K.WEST)	18-Aug-99	0.006 ± 0.002
Shellfish (babylonia formosae) (H.K.WATERS)	11-Jan-99	0.004 ± 0.002
Shellfish (babylonia formosae) (H.K.WATERS)	17-May-99	0.007 ± 0.003
Shellfish (babylonia formosae) (H.K.WATERS)	04-Aug-99	0.006 ± 0.004
Shrimp (metapenaeopsis barbata) (H.K.WATERS)	17-May-99	0.023 ± 0.006
Shrimp (metapenaeopsis barbata) (H.K.WATERS)	04-Aug-99	0.007 ± 0.004
Shrimp (metapenaeopsis barbata) (H.K.WATERS)	06-Oct-99	< 0.007
Cuttle Fish (H.K.WATERS)	11-Jan-99	0.022 ± 0.005
Cuttle Fish (H.K.WATERS)	16-Apr-99	0.020 ± 0.004
Cuttle Fish (H.K.WATERS)	14-Oct-99	< 0.007
Squid (loligo edulis) (H.K.WATERS)	12-Apr-99	0.011 ± 0.003
Squid (loligo edulis) (H.K.WATERS)	12-Jul-99	< 0.006
Squid (loligo edulis) (H.K.WATERS)	14-Oct-99	< 0.016
Squid (loligo edulis) (H.K.WEST)	13-Apr-99	0.006 ± 0.002
Squid (loligo edulis) (H.K.WEST)	10-Nov-99	< 0.009
Shellfish (tapes philippinarum) (TOLO)	11-Jan-99	< 0.004
Shellfish (tapes philippinarum) (TOLO)	12-Apr-99	0.009 ± 0.002
Shellfish (tapes philippinarum) (TOLO)	12-Jul-99	0.004 ± 0.002
Shellfish (tapes philippinarum) (TOLO)	06-Oct-99	0.011 ± 0.003
Shellfish (perna viridis) (CHEUNG CHAU)	16-Apr-99	< 0.003
Shellfish (perna viridis) (CHEUNG CHAU)	27-Jul-99	< 0.004
Shellfish (perna viridis) (CHEUNG CHAU)	22-Oct-99	< 0.005
Shellfish (perna viridis) (TOLO)	11-Jan-99	0.006 ± 0.002
Shellfish (perna viridis) (TOLO)	12-Apr-99	< 0.005
Shellfish (perna viridis) (TOLO)	12-Jul-99	< 0.003
Shellfish (perna viridis) (H.K.WATERS)	06-Oct-99	0.005 ± 0.002
Seaweed :		
Seaweed (brown algae : sargassum hemiphyllum) (PO TOI O)	05-Jan-99	0.198 ± 0.039
Seaweed (brown algae : sargassum hemiphyllum) (PO TOI O)	30-Apr-99	0.146 ± 0.028
Seaweed (green algae : ulva lactuca) (PO TOI O)	05-Jan-99	0.143 ± 0.042
Seaweed (green algae : ulva lactuca) (PO TOI O)	30-Apr-99	0.134 ± 0.018
Seaweed (red algae : porphyra dentata) (PO TOI ISLAND)	24-Jan-99	0.041 ± 0.019

Table 57 Specific activity of plutonium-239 in airborne particulate samples

Sampling Location and Sampling period	Specific Activity of Pu-239 in μBq m^{-3}
King's Park :	
04-Jan-99 to 01-Feb-99	< 0.17
01-Feb-99 to 02-Mar-99	< 0.12
02-Mar-99 to 01-Apr-99	< 0.05
01-Apr-99 to 03-May-99	< 0.18
03-May-99 to 01-Jun-99	< 0.16
01-Jun-99 to 02-Jul-99	< 0.15
02-Jul-99 to 02-Aug-99	< 0.26
02-Aug-99 to 01-Sep-99	< 0.06
01-Sep-99 to 27-Sep-99	< 0.23
27-Sep-99 to 27-Oct-99	< 0.11
27-Oct-99 to 01-Nov-99	***
01-Nov-99 to 30-Nov-99	< 0.12
30-Nov-99 to 01-Dec-99	***
01-Dec-99 to 12-Apr-99	< 0.09
Sha Tau Kok :	
04-Jan-99 to 28-Jan-99	< 0.09
28-Jan-99 to 05-Feb-99	***
05-Feb-99 to 04-Mar-99	< 0.15
04-Mar-99 to 01-Apr-99	< 0.15
01-Apr-99 to 29-Apr-99	< 0.29
29-Apr-99 to 03-Jun-99	< 0.17
03-Jun-99 to 30-Jun-99	***
30-Jun-99 to 29-Jul-99	< 0.04
29-Jul-99 to 02-Sep-99	< 0.24
02-Sep-99 to 30-Sep-99	< 0.13
30-Sep-99 to 29-Oct-99	< 0.11
29-Oct-99 to 02-Dec-99	< 0.39
02-Dec-99 to 05-Dec-99	***
05-Dec-99 to 12-Jul-99	< 0.17
Yuen Ng Fan :	
31-Dec-98 to 03-Feb-99	< 0.27
03-Feb-99 to 02-Mar-99	< 0.64
02-Mar-99 to 30-Mar-99	< 0.38
30-Mar-99 to 27-Apr-99	< 0.70
27-Apr-99 to 01-Jun-99	< 0.16
01-Jun-99 to 29-Jun-99	< 0.35
29-Jun-99 to 23-Jul-99	***
23-Jul-99 to 03-Aug-99	< 1.02
03-Aug-99 to 31-Aug-99	< 0.43
31-Aug-99 to 28-Sep-99	< 0.14
28-Sep-99 to 02-Nov-99	< 0.19
02-Nov-99 to 30-Nov-99	< 0.34
30-Nov-99 to 05-Dec-99	***
05-Dec-99 to 05-Dec-99	< 0.28

*** sampler under maintenance

Table 58 Specific activity of plutonium-239 in deposition samples

Sampling Location and Sampling period	Specific Activity of Pu-239 in Bq L^{-1}
Wet Deposition at King's Park :	
04-Jan-99 to 01-Feb-99	###
01-Feb-99 to 03-Mar-99	**
03-Mar-99 to 31-Mar-99	< 0.0004
31-Mar-99 to 03-May-99	< 0.0002
03-May-99 to 01-Jun-99	< 0.0002
01-Jun-99 to 02-Jul-99	< 0.0003
02-Jul-99 to 02-Aug-99	< 0.0001
02-Aug-99 to 01-Sep-99	< 0.0003
01-Sep-99 to 04-Oct-99	< 0.0002
04-Oct-99 to 01-Nov-99	< 0.0002
01-Nov-99 to 01-Dec-99	< 0.0005
01-Dec-99 to 03-Jan-00	< 0.0001
Wet Deposition at Sha Tau Kok :	
31-Dec-98 to 28-Jan-99	###
28-Jan-99 to 04-Mar-99	**
04-Mar-99 to 01-Apr-99	< 0.0002
01-Apr-99 to 29-Apr-99	< 0.0005
29-Apr-99 to 03-Jun-99	< 0.0002
03-Jun-99 to 30-Jun-99	< 0.0001
30-Jun-99 to 29-Jul-99	< 0.0002
29-Jul-99 to 02-Sep-99	< 0.0001
02-Sep-99 to 30-Sep-99	< 0.0002
30-Sep-99 to 29-Oct-99	< 0.0004
29-Oct-99 to 02-Dec-99	< 0.0006
02-Dec-99 to 29-Dec-99	< 0.0002
Wet Deposition at Yuen Ng Fan :	
31-Dec-98 to 03-Feb-99	**
03-Feb-99 to 02-Mar-99	**
02-Mar-99 to 30-Mar-99	< 0.0006
30-Mar-99 to 27-Apr-99	< 0.0001
27-Apr-99 to 01-Jun-99	< 0.0002
01-Jun-99 to 29-Jun-99	< 0.0002
29-Jun-99 to 03-Aug-99	< 0.0002
03-Aug-99 to 31-Aug-99	< 0.0002
31-Aug-99 to 28-Sep-99	< 0.0002
28-Sep-99 to 02-Nov-99	< 0.0003
02-Nov-99 to 30-Nov-99	< 0.0001
30-Nov-99 to 03-Jan-00	< 0.0001

sample contaminated during chemical treatment process

**   insufficient precipitation collected

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Table 58 cont'd

Sample Location and Sampling Period	Rainfall amount (mm)*	Specific Activity of Pu-239 in Bq m^{-2}
Total Deposition at King's Park :		
04-Jan-99 to 01-Feb-99	6.0	###
01-Feb-99 to 02-Mar-99	0.1	< 0.02
02-Mar-99 to 01-Apr-99	23.8	< 0.11
01-Apr-99 to 03-May-99	174.7	< 0.05
03-May-99 to 01-Jun-99	187.0	< 0.04
01-Jun-99 to 02-Jul-99	214.4	< 0.08
02-Jul-99 to 02-Aug-99	216.6	< 0.07
02-Aug-99 to 01-Sep-99	923.1	< 0.02
01-Sep-99 to 04-Oct-99	362.5	< 0.02
04-Oct-99 to 01-Nov-99	9.7	< 0.02
01-Nov-99 to 01-Dec-99	18.0	< 0.04
01-Dec-99 to 03-Jan-00	31.5	< 0.01

* 24-hour rainfall is recorded daily at 3 p.m. Hong Kong Time

sample contaminated during chemical treatment process

Table 59 Specific activity of plutonium-239 in suspended particulate in sea water samples

Sample Type and Sampling Location	Sampling Date	Specific Activity of Pu-239 in Bq L^{-1}
Suspended particulate in sea water (Upper level):		
WAGLAN ISLAND	17-Jun-99	< 0.0003
BASALT ISLAND	17-Jun-99	< 0.0001
TAI LONG WAN	17-Jun-99	< 0.0007
PORT ISLAND	17-Jun-99	< 0.0002
Suspended particulate in sea water (Middle level):		
WAGLAN ISLAND	17-Jun-99	< 0.0004
BASALT ISLAND	17-Jun-99	< 0.0004
TAI LONG WAN	17-Jun-99	< 0.0002
PORT ISLAND	17-Jun-99	< 0.0003
Suspended particulate in sea water (Lower level):		
WAGLAN ISLAND	17-Jun-99	< 0.0003
BASALT ISLAND	17-Jun-99	< 0.0003
TAI LONG WAN	17-Jun-99	< 0.0002
PORT ISLAND	17-Jun-99	< 0.0001

Table 60 Specific activity of plutonium-239 in aquatic food and seaweed samples

Sample Type and Sampling Location	Sampling Date	Specific Activity of Pu-239 in Bq kg^{-1}
Fish :		
Freshwater Fish (Aristichthys Nobilis) (SHENZHEN)	05-Feb-99	< 0.0018
Freshwater Fish (Aristichthys Nobilis) (SHENZHEN)	03-May-99	< 0.0006
Freshwater Fish (Aristichthys Nobilis) (SHENZHEN)	28-Jul-99	< 0.0005
Freshwater Fish (Aristichthys Nobilis) (SHENZHEN)	20-Oct-99	< 0.0010
Freshwater Fish (Aristichthys Nobilis) (YUEN LONG)	05-Feb-99	< 0.0011
Freshwater Fish (Aristichthys Nobilis) (YUEN LONG)	03-May-99	< 0.0006
Freshwater Fish (Aristichthys Nobilis) (YUEN LONG)	28-Jul-99	< 0.0002
Freshwater Fish (Aristichthys Nobilis) (YUEN LONG)	20-Oct-99	< 0.0007
Marine Fish (Nemipterus Japonicus) (H.K.WATERS)	04-Aug-99	< 0.0009
Marine Fish (Nemipterus Japonicus) (H.K.WATERS)	14-Oct-99	< 0.0009
Marine Fish (Nemipterus Japonicus) (H.K.WEST)	10-Nov-99	< 0.0015
Marine Fish (Platycephalus Indicus) (H.K.WATERS)	17-May-99	< 0.0016
Marine Fish (Platycephalus Indicus) (H.K.WATERS)	04-Aug-99	< 0.0013
Marine Fish (Platycephalus Indicus) (H.K.WATERS)	06-Oct-99	< 0.0016
Marine Fish (Platycephalus Indicus) (H.K.WEST)	22-Oct-99	< 0.0018
Marine Fish (Trichiurus Haumela) (H.K.WATERS)	12-Apr-99	< 0.0003
Marine Fish (Trichiurus Haumela) (H.K.WATERS)	04-Aug-99	< 0.0004
Marine Fish (Trichiurus Haumela) (H.K.WATERS)	14-Oct-99	< 0.0017
Marine Fish (Trichiurus Haumela) (H.K.WEST)	13-Apr-99	< 0.0014
Marine Fish (Trichiurus Haumela) (H.K.WEST)	10-Nov-99	< 0.0020

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Table 60 cont'd

Sample Type and Sampling Location	Sampling Date	Specific Activity of Pu-239 in Bq kg^{-1}
Other seafood :		
Crab (portunus sanguinolentus) (H.K.WATERS)	11-Jan-99	< 0.0019
Crab (portunus sanguinolentus) (H.K.WATERS)	17-May-99	< 0.0012
Crab (portunus sanguinolentus) (H.K.WATERS)	12-Jul-99	< 0.0020
Crab (portunus sanguinolentus) (H.K.WATERS)	14-Oct-99	< 0.0030
Crab (portunus sanguinolentus) (H.K.WEST)	18-Aug-99	< 0.0008
Shellfish (babylonia formosae) (H.K.WATERS)	11-Jan-99	< 0.0004
Shellfish (babylonia formosae) (H.K.WATERS)	17-May-99	< 0.0014
Shellfish (babylonia formosae) (H.K.WATERS)	04-Aug-99	< 0.0010
Shrimp (metapenaeopsis barbata) (H.K.WATERS)	17-May-99	< 0.0053
Shrimp (metapenaeopsis barbata) (H.K.WATERS)	04-Aug-99	< 0.0023
Shrimp (metapenaeopsis barbata) (H.K.WATERS)	06-Oct-99	< 0.0025
Cuttle Fish (H.K.WATERS)	11-Jan-99	< 0.0023
Cuttle Fish (H.K.WATERS)	16-Apr-99	< 0.0005
Cuttle Fish (H.K.WATERS)	14-Oct-99	< 0.0032
Squid (loligo edulis) (H.K.WATERS)	12-Apr-99	< 0.0015
Squid (loligo edulis) (H.K.WATERS)	12-Jul-99	< 0.0028
Squid (loligo edulis) (H.K.WATERS)	14-Oct-99	< 0.0043
Squid (loligo edulis) (H.K.WEST)	13-Apr-99	< 0.0026
Squid (loligo edulis) (H.K.WEST)	10-Nov-99	< 0.0013
Shellfish (tapes philippinarum) (TOLO)	11-Jan-99	< 0.0016
Shellfish (tapes philippinarum) (TOLO)	12-Apr-99	< 0.0015
Shellfish (tapes philippinarum) (TOLO)	12-Jul-99	< 0.0019
Shellfish (tapes philippinarum) (TOLO)	06-Oct-99	< 0.0013
Shellfish (perna viridis) (CHEUNG CHAU)	16-Apr-99	< 0.0023
Shellfish (perna viridis) (CHEUNG CHAU)	27-Jul-99	< 0.0013
Shellfish (perna viridis) (CHEUNG CHAU)	22-Oct-99	< 0.0065
Shellfish (perna viridis) (TOLO)	11-Jan-99	< 0.0021
Shellfish (perna viridis) (TOLO)	12-Apr-99	< 0.0015
Shellfish (perna viridis) (TOLO)	12-Jul-99	< 0.0014
Shellfish (perna viridis) (H.K.WATERS)	06-Oct-99	< 0.0007
Seaweed :		
Seaweed (brown algae : sargassum hemiphyllum) (PO TOI O)	05-Jan-99	0.0278 ± 0.0139
Seaweed (brown algae : sargassum hemiphyllum) (PO TOI O)	30-Apr-99	0.0363 ± 0.0155
Seaweed (green algae : enteromorpha prolifera) (TOLO)	08-Feb-99	< 0.0106
Seaweed (green algae : ulva lactuca) (PO TOI O)	05-Jan-99	0.0256 ± 0.0112
Seaweed (green algae : ulva lactuca) (PO TOI O)	30-Apr-99	< 0.0202
Seaweed (red algae : porphyra dentata) (PO TOI ISLAND)	24-Jan-99	< 0.0205

Table 61 Specific activity of plutonium-239 in sediment samples

Sample Type and Sampling Location	Sampling Date	Specific Activity of Pu-239 in Bq kg^{-1}
Intertidal sediment (Upper layer) :		
Sha Tau Kok	08-Jan-99	0.2 ± 0.1
Sha Tau Kok	16-Apr-99	0.2 ± 0.1
Sha Tau Kok	14-Jul-99	0.3 ± 0.1
Sha Tau Kok	04-Oct-99	< 0.3
TSIM BEI TSUI	07-Jan-99	< 0.2
TSIM BEI TSUI	15-Apr-99	0.2 ± 0.1
TSIM BEI TSUI	13-Jul-99	0.3 ± 0.1
TSIM BEI TSUI	05-Oct-99	0.2 ± 0.1
HEBE HAVEN (Pak Sha Wan)	08-Jan-99	< 0.2
HEBE HAVEN (Pak Sha Wan)	16-Apr-99	< 0.2
HEBE HAVEN (Pak Sha Wan)	14-Jul-99	0.2 ± 0.1
HEBE HAVEN (Pak Sha Wan)	04-Oct-99	< 0.3
Intertidal sediment (Lower layer) :		
Sha Tau Kok	08-Jan-99	0.2 ± 0.1
Sha Tau Kok	16-Apr-99	0.2 ± 0.1
Sha Tau Kok	14-Jul-99	0.2 ± 0.1
Sha Tau Kok	04-Oct-99	< 0.3
TSIM BEI TSUI	07-Jan-99	< 0.2
TSIM BEI TSUI	15-Apr-99	< 0.3
TSIM BEI TSUI	13-Jul-99	< 0.3
TSIM BEI TSUI	05-Oct-99	< 0.2
HEBE HAVEN (Pak Sha Wan)	08-Jan-99	< 0.2
HEBE HAVEN (Pak Sha Wan)	16-Apr-99	< 0.2
HEBE HAVEN (Pak Sha Wan)	14-Jul-99	< 0.2
HEBE HAVEN (Pak Sha Wan)	04-Oct-99	< 0.2
Seabed sediment :		
TAI TAN HOI HAP	06-Oct-99	0.6 ± 0.3
LUNG HA WAN	06-Oct-99	< 0.4
PICNIC BAY	05-Oct-99	0.4 ± 0.2
WESTERN ANCHORAGE	05-May-99	0.4 ± 0.1
WESTERN ANCHORAGE	05-Oct-99	0.2 ± 0.1

Table 62 Specific activity of carbon-14 in airborne particulate, airborne carbon dioxide, terrestrial food and aquatic food

Sample Type and Sampling Location	Sampling Date	Specific Activity of C-14 in Bq kg^{-1} carbon
Airborne Particulate :		
KING'S PARK	18-Jan-99 to 30-Dec-99 15-Feb-99 to 30-Dec-99 17-Mar-99 to 30-Dec-99 17-Apr-99 to 30-Dec-99 18-May-99 to 30-Dec-99 17-Jun-99 to 30-Dec-99 18-Jul-99 to 30-Dec-99 17-Aug-99 to 30-Dec-99	269 ± 4
Carbon dioxide in air :		
KING'S PARK	22-Jan-99 to 30-Dec-99 25-Feb-99 to 30-Dec-99 19-Mar-99 to 30-Dec-99 23-Apr-99 to 30-Dec-99 17-May-99 to 30-Dec-99 25-Jun-99 to 30-Dec-99 25-Jul-99 to 30-Dec-99 15-Aug-99 to 30-Dec-99 26-Sep-99 to 30-Dec-99	243 ± 3
Terrestrial food :		
Chicken (LOCAL FARM)	05-Jan-99 12-Mar-99 08-Jun-99 02-Sep-99	253 ± 4
Pork (LOCAL FARM)	08-Feb-99 12-Apr-99 28-Jul-99	257 ± 4
Banana (China)	02-Feb-99 21-Apr-99 09-Jul-99	241 ± 3
Rice (China)	08-Feb-99 12-Apr-99 20-Jul-99	249 ± 4
Flowering Cabbage (SHENZHEN)	08-Feb-99 03-May-99 28-Jul-99	243 ± 4
Milk (Pasteurized) (SHENZHEN)	08-Feb-99 12-Apr-99 20-Jul-99	254 ± 4

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Table 62 cont'd

Sample Type and Sampling Location	Sampling Date	Specific Activity of C-14 in Bq kg^{-1} carbon
Aquatic food :		
Freshwater Fish (Aristichthys Nobilis) (YUEN LONG)	05-Feb-99 03-May-99 28-Jul-99	239 ± 4
Marine Fish (Trichiurus Haumela) (H.K.WATERS)	12-Apr-99 04-Aug-99	252 ± 4
Shrimp (metapenaeopsis barbata) (H.K.WATERS)	17-May-99	249 ± 4
Squid (loligo edulis) (H.K.WATERS)	12-Apr-99 12-Jul-99	252 ± 4
Shellfish (tapes philippinarum) (TOLO)	11-Jan-99 12-Apr-99 12-Jul-99	250 ± 5

Note : Samples of the same type collected at the same location were bulked to make a larger sample for one measurement

Table 63 Comparison of specific activity of measurable artificial radionuclides in samples collected in 1999 and those collected in the Background Radiation Monitoring Programme (1987 - 91)

Radionuclide	Sample Type	Unit	Range of Specific Activity in 1999	Range of Specific Activity in BRMP (1987 - 91)
Caesium-137				
	Pork	Bq kg^{-1}	0.1 ± 0.1 to 0.3 ± 0.1	< 0.4 to 0.9
	Fish	Bq kg^{-1}	0.1 ± 0.1	< 0.1 to 0.2
	Intertidal sediment (upper level)	Bq kg^{-1}	0.3 ± 0.2 to 1.0 ± 0.5	< 0.5 to 2.4
	Intertidal sediment (lower level)	Bq kg^{-1}	0.4 ± 0.2 to 1.0 ± 0.2	< 0.5 to 3.1
	Seabed sediment	Bq kg^{-1}	0.3 ± 0.2 to 1.7 ± 0.2	< 0.5 to 1.9
Tritium				
	Tritiated water vapour	Bq m^{-3}	8 ± 18 to 174 ± 35	< 242
	Wet Deposition	Bq L^{-1}	0.3 ± 1.9 to 6.4 ± 3.8	< 8.0
	Total Deposition	Bq m^{-2}	300 ± 200 to 2200 ± 1400	---
	Meat	Bq kg^{-1}	0.2 ± 1.7 to 4.8 ± 1.2	< 4.0 to 5.3
	Poultry	Bq kg^{-1}	0.1 ± 1.9 to 1.8 ± 0.6	< 2.0 to 3.5
	Leafy vegetables	Bq kg^{-1}	0.4 ± 1.9 to 5.8 ± 2.0	< 6.0 to 7.4
	Fruit	Bq kg^{-1}	0.5 ± 1.0 to 1.8 ± 0.9	< 2.0
	Milk (Pasteurized)	Bq L^{-1}	0.2 ± 3.4 to 2.2 ± 1.7	< 6.0
	Rice	Bq kg^{-1}	0.2 ± 0.2	< 1.0
	Drinking water	Bq L^{-1}	0.2 ± 2.0 to 5.5 ± 2.0	< 6.0
	Underground Water	Bq L^{-1}	0.3 ± 0.2 to 1.0 ± 0.2	< 0.4 to 2.8
	Sea water	Bq L^{-1}	0.5 ± 1.9 to 2.6 ± 2.0	< 6.0
	Fish	Bq kg^{-1}	0.2 ± 0.7 to 1.0 ± 0.5	< 2.0
	Other seafood	Bq kg^{-1}	0.2 ± 0.4 to 2.2 ± 0.8	< 1.0 to 4.9
	Seaweed	Bq kg^{-1}	0.2 ± 0.2 to 0.6 ± 0.3	< 1.0

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Table 63 cont'd

Radionuclide	Sample Type	Unit	Range of Specific Activity in 1999	Range of Specific Activity in BRMP (1987 - 91)
Strontium-90				
	Airborne Particulates	µBq m^{-3}	1.6 ± 0.6 to 4.9 ± 0.6	< 3.0 to 5.0
	Wet Deposition	Bq L^{-1}	0.002 ± 0.001 to 0.024 ± 0.002	< 0.002 to 0.039
	Total Deposition	Bq m^{-2}	1.0 ± 0.2	---
	Poultry	Bq kg^{-1}	0.003 ± 0.001 to 0.006 ± 0.001	< 0.003 to 0.053
	Leafy vegetables	Bq kg^{-1}	0.038 ± 0.003 to 0.185 ± 0.008	< 0.011 to 0.570
	Fruit	Bq kg^{-1}	0.002 ± 0.001 to 0.082 ± 0.004	< 0.005 to 0.084
	Milk (Pasteurized)	Bq L^{-1}	0.006 ± 0.002 to 0.047 ± 0.003	< 0.008 to 0.078
	Rice	Bq kg^{-1}	0.001 ± 0.001 to 0.012 ± 0.001	< 0.005 to 0.056
	Suspended particulate in sea water	Bq L^{-1}	0.003 ± 0.002 to 0.007 ± 0.002	< 0.007
	Fish	Bq kg^{-1}	0.004 ± 0.001 to 0.025 ± 0.003	< 0.004 to 0.094
	Other seafood	Bq kg^{-1}	0.004 ± 0.002 to 0.023 ± 0.006	< 0.007 to 0.105
	Seaweed	Bq kg^{-1}	0.04 ± 0.02 to 0.20 ± 0.04	< 0.20 to 1.44
Plutonium-239				
	Seaweed	Bq kg^{-1}	0.026 ± 0.011 to 0.036 ± 0.015	< 0.027 to 0.066
	Intertidal sediment (upper level)	Bq kg^{-1}	0.2 ± 0.1 to 0.3 ± 0.1	< 0.1 to 0.2
	Intertidal sediment (lower level)	Bq kg^{-1}	0.2 ± 0.1 to 0.2 ± 0.1	< 0.1 to 0.1
	Seabed sediment	Bq kg^{-1}	0.2 ± 0.1 to 0.6 ± 0.3	< 0.1 to 0.6

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Table 63 cont'd

Radionuclide	Sample Type	Unit	Range of Specific Activity in 1999	Range of Specific Activity in BRMP (1987 - 91)
Carbon-14				
	Airborne particulate	Bq kg^{-1} C	269 ± 4	138 to 298
	Carbon dioxide	Bq kg^{-1} C	243 ± 3	184 to 297
	Choi sum	Bq kg^{-1} C	243 ± 4	223 to 292
	Milk	Bq kg^{-1} C	254 ± 4	271 to 291
	Banana	Bq kg^{-1} C	241 ± 3	259 to 283
	Pork	Bq kg^{-1} C	257 ± 4	255 to 275
	Chicken	Bq kg^{-1} C	253 ± 4	255 to 278
	Rice	Bq kg^{-1} C	249 ± 4	259 to 264
	Aristichthys nobilis	Bq kg^{-1} C	239 ± 4	263 to 273
	Trichiurus haumela	Bq kg^{-1} C	252 ± 4	248 to 274
	Metapenaeopsis barbata	Bq kg^{-1} C	249 ± 4	221 to 279
	Tapes philippinarum	Bq kg^{-1} C	250 ± 5	175 to 267
	Loligo edulis	Bq kg^{-1} C	252 ± 4	223 to 296

Note : (1) A sample type is listed only if there is at least one sample with measurable specific activity.
(2) Bq kg^{-1} C is equivalent to Bq/kg carbon

Figure 1 Environmental radiation measurement and sampling locations

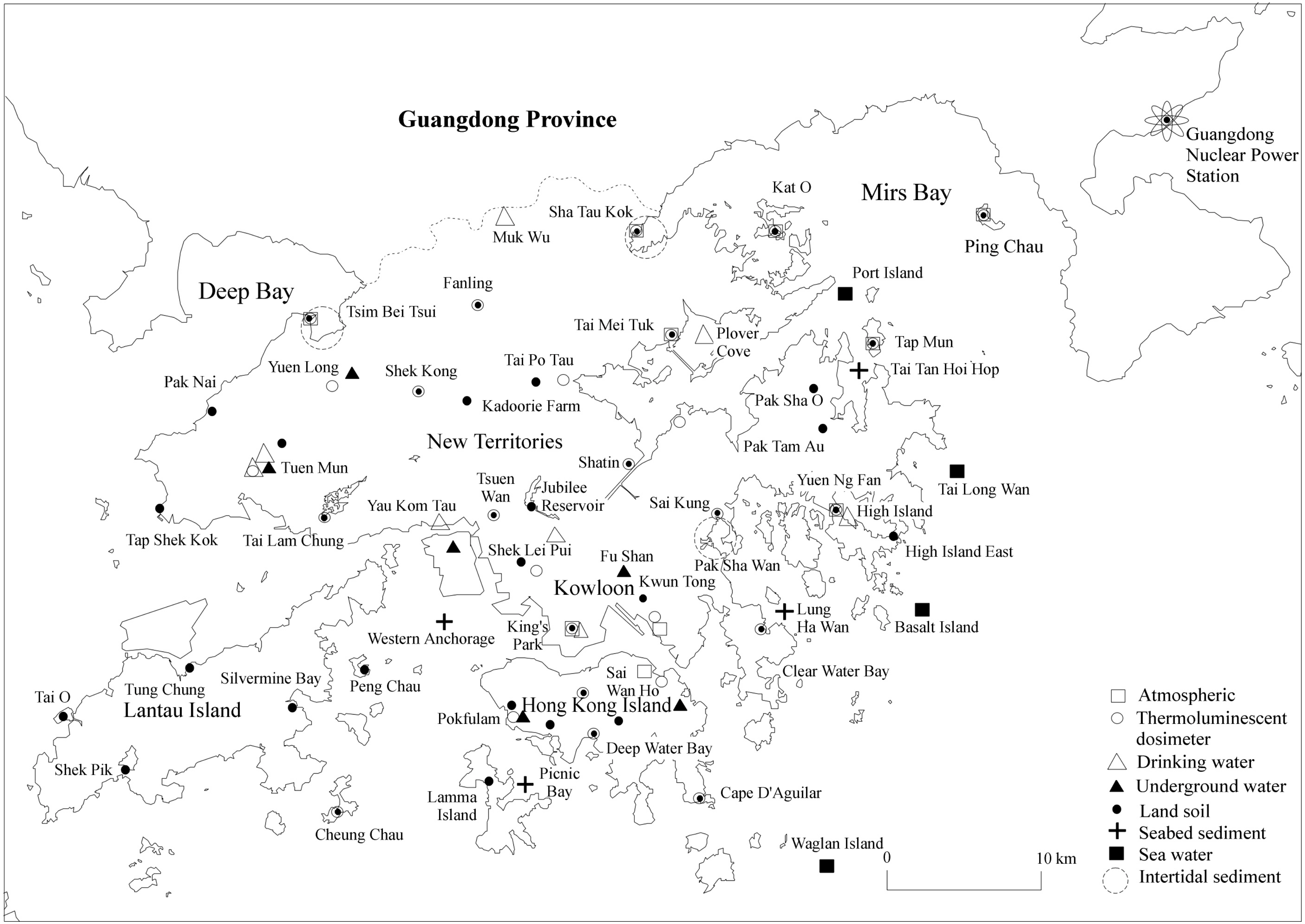

Figure 2 Annual mean ambient gamma dose rates recorded by the Radiation Monitoring Network in 1999

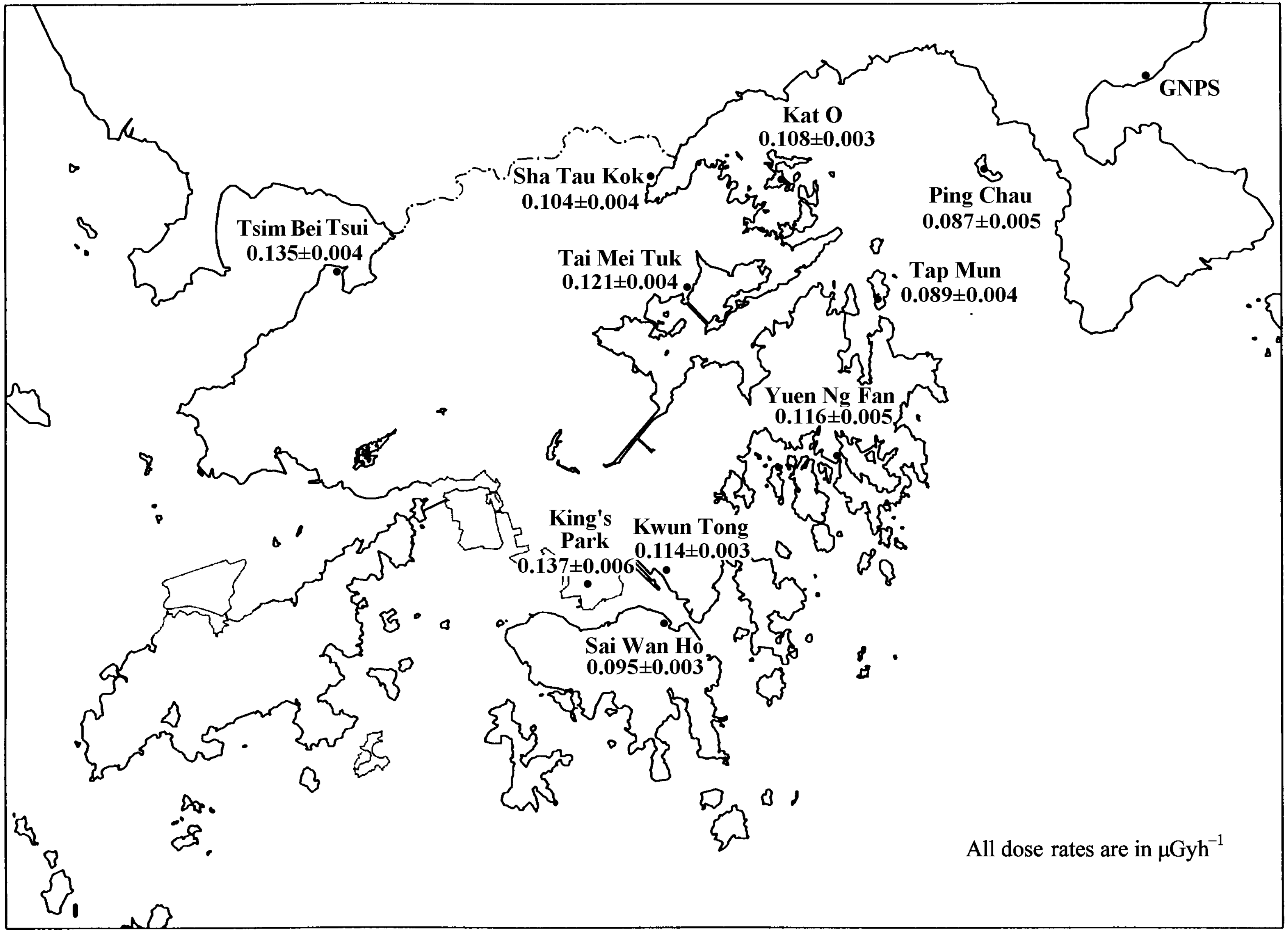

Figure 3 Annual mean ambient gamma dose rates recorded by the TLD Network in 1999

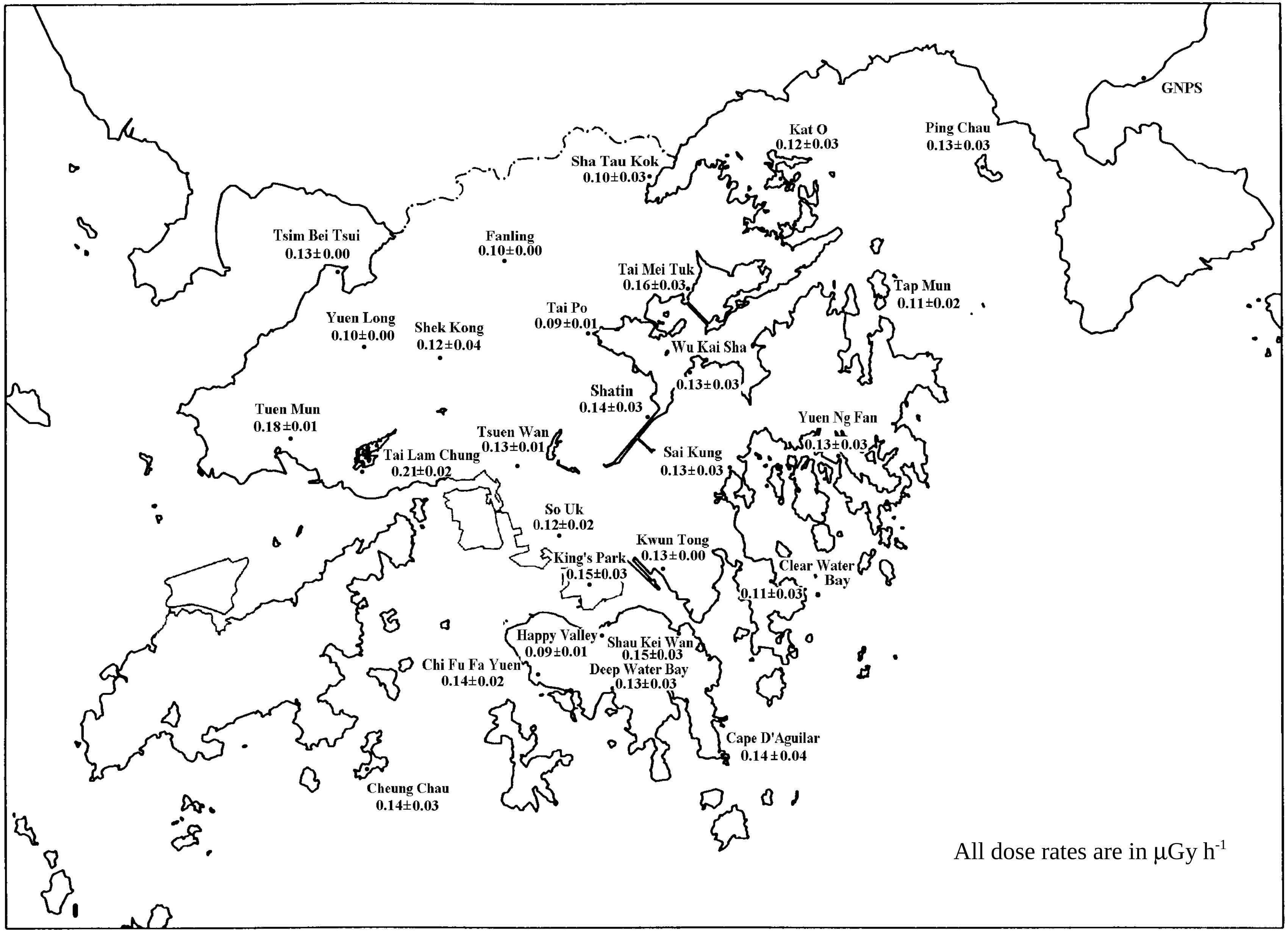

Figure 4 The Mobile Radiation Monitoring Station (MRMS)

Figure 5 Metal storage cabinets inside the Mobile Radiation Monitoring Station

Figure 6 Air inlet of the air samplers mounted on the rooftop of the Mobile Radiation Monitoring Station

Figure 7 Gamma dose rate detector on the rooftop of the Mobile Radiation Monitoring Station

Figure 8 Daily mean ambient gamma dose rates recorded by the Radiation Monitoring Network from January to June 1999

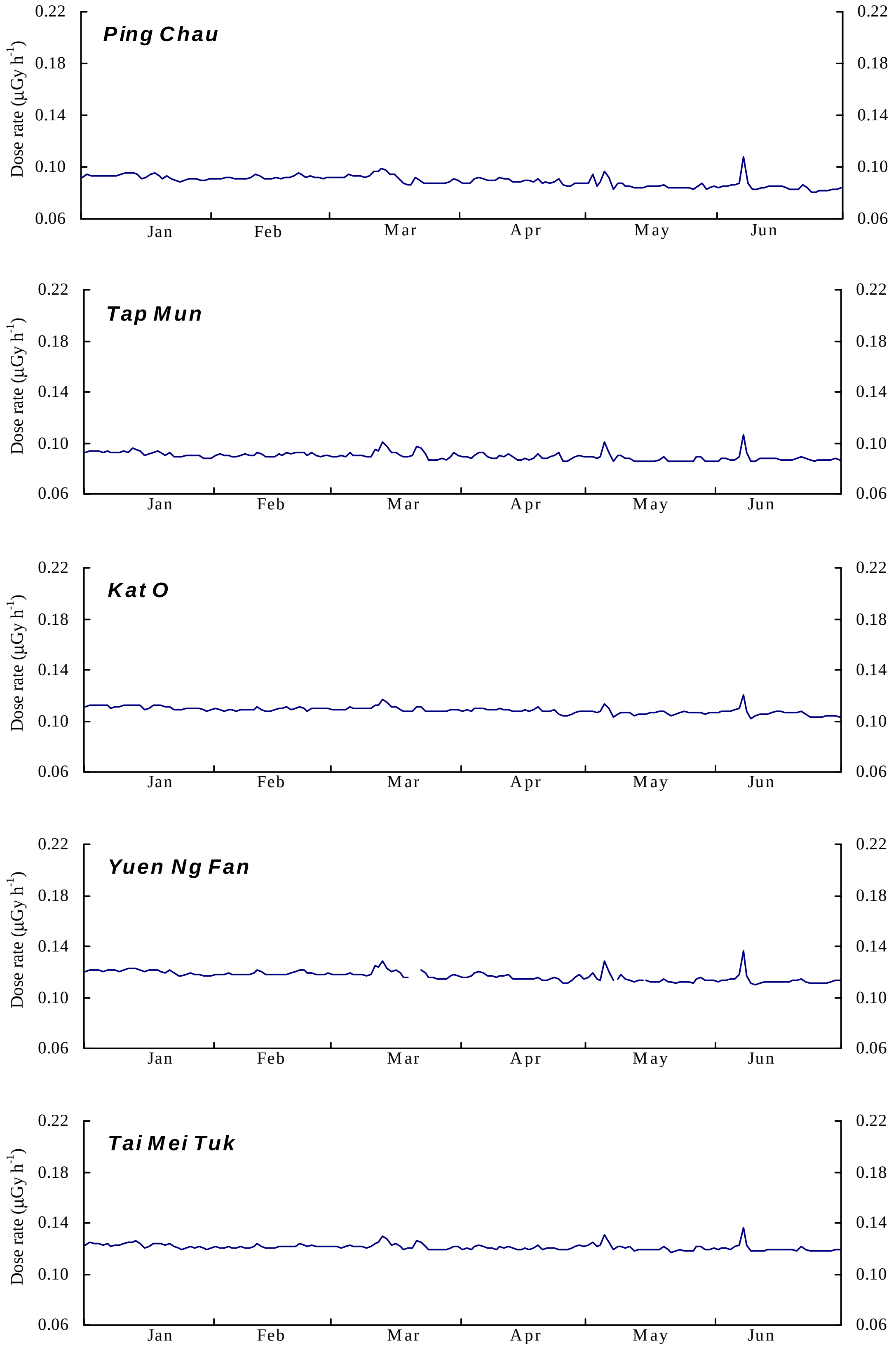

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Figure 8 cont'd

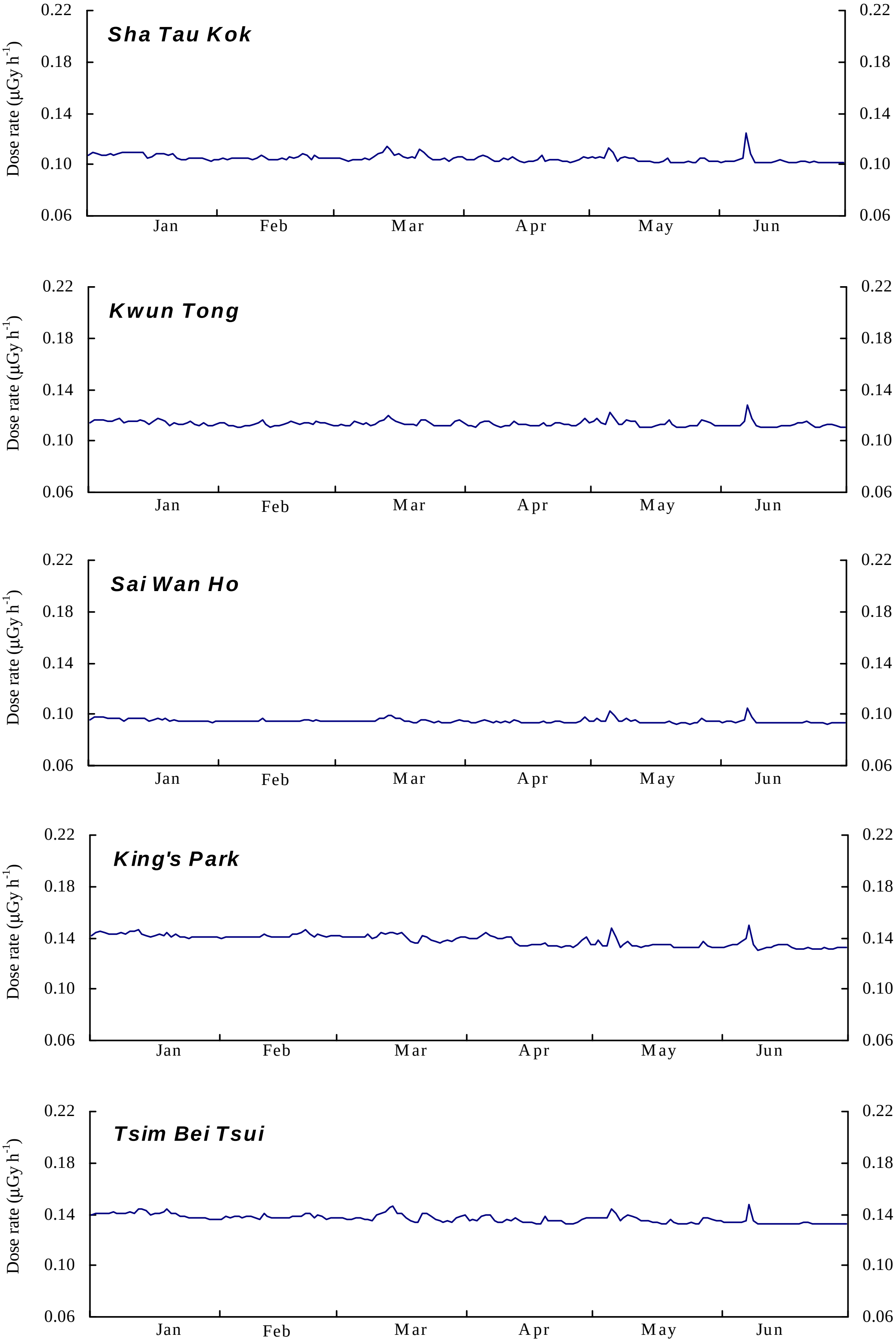

Figure 9 Daily mean ambient gamma dose rates recorded by the Radiation Monitoring Network from July to December 1999

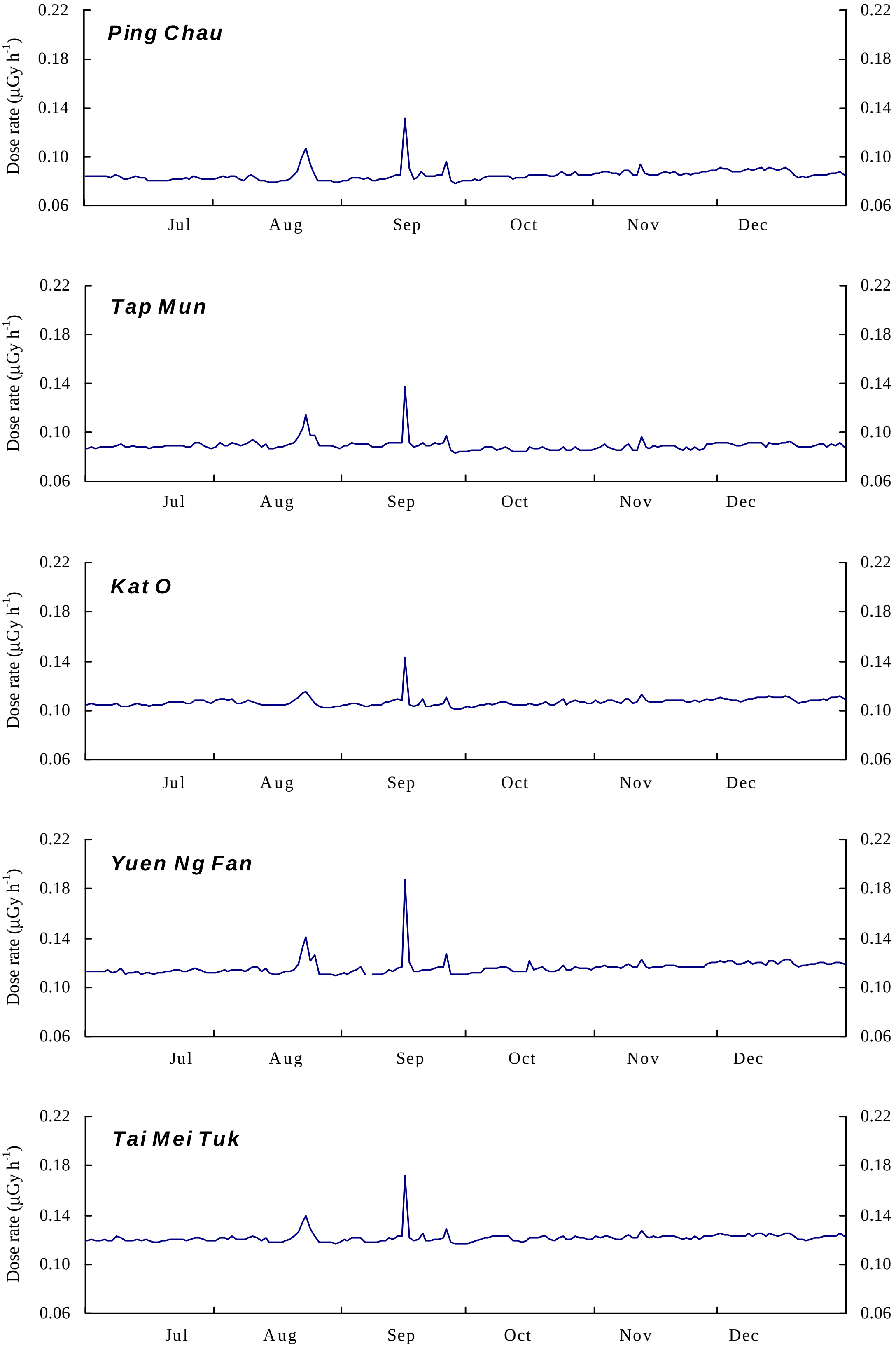

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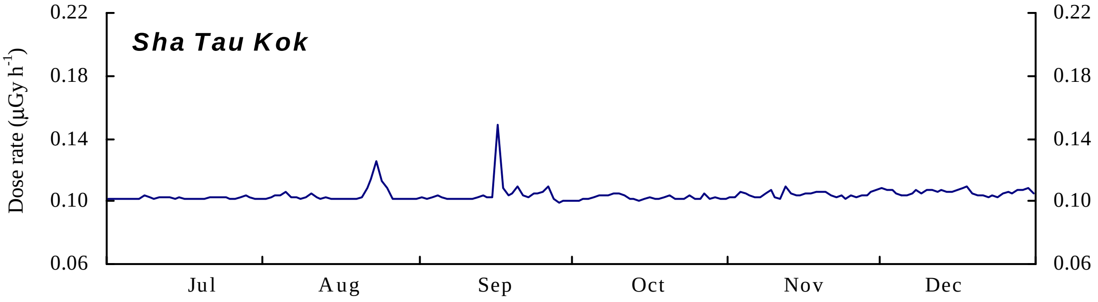
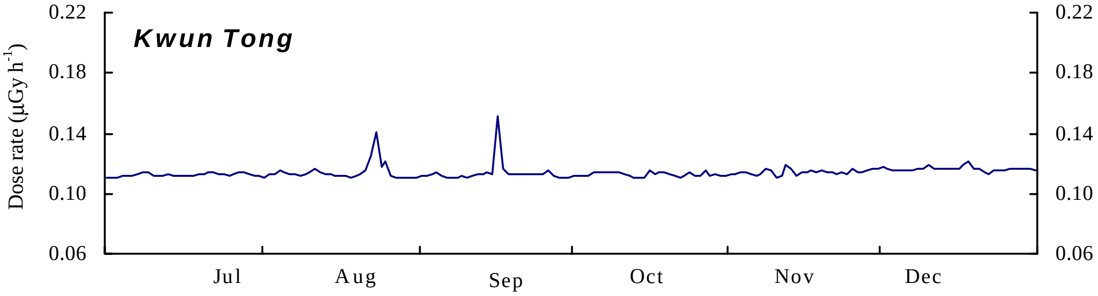
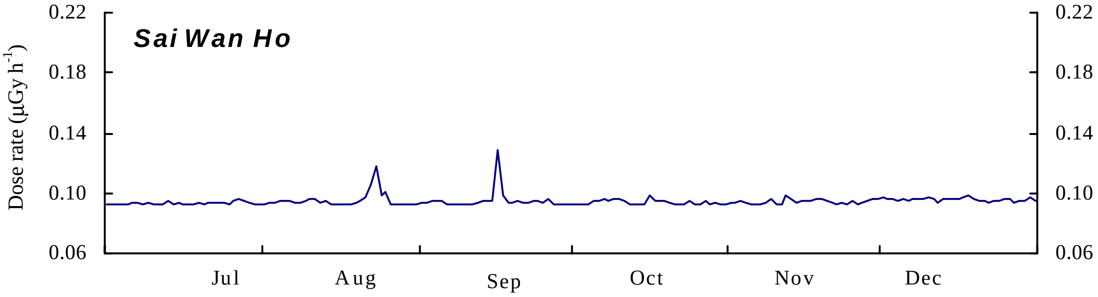
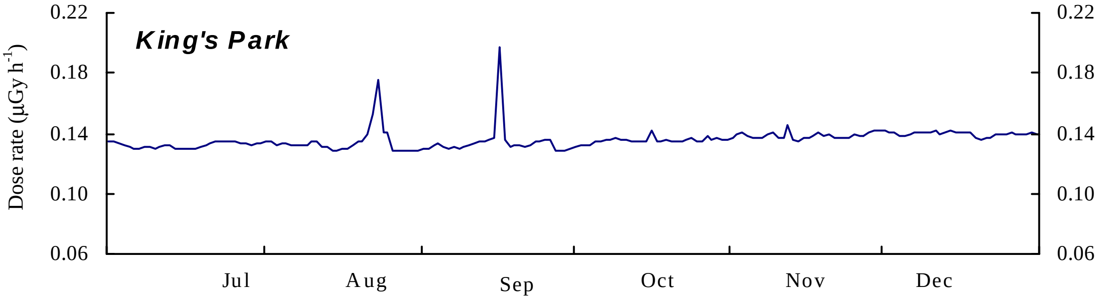
Figure 9 cont'd









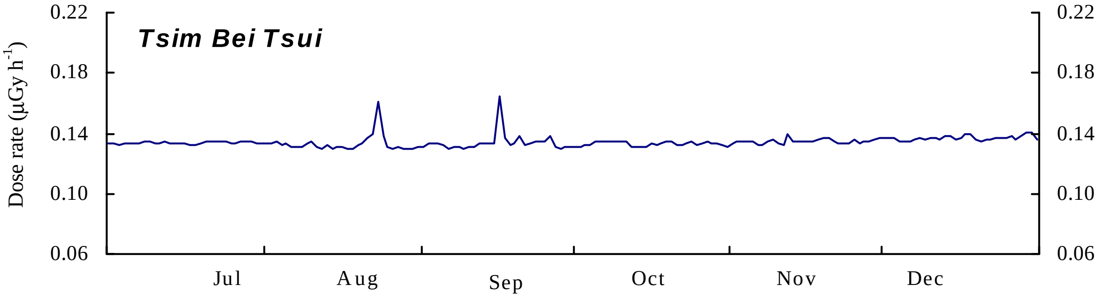


Figure 10 Daily mean ambient gamma dose rates recorded by the Radiation Monitoring Network from 15 to 17 September 1999

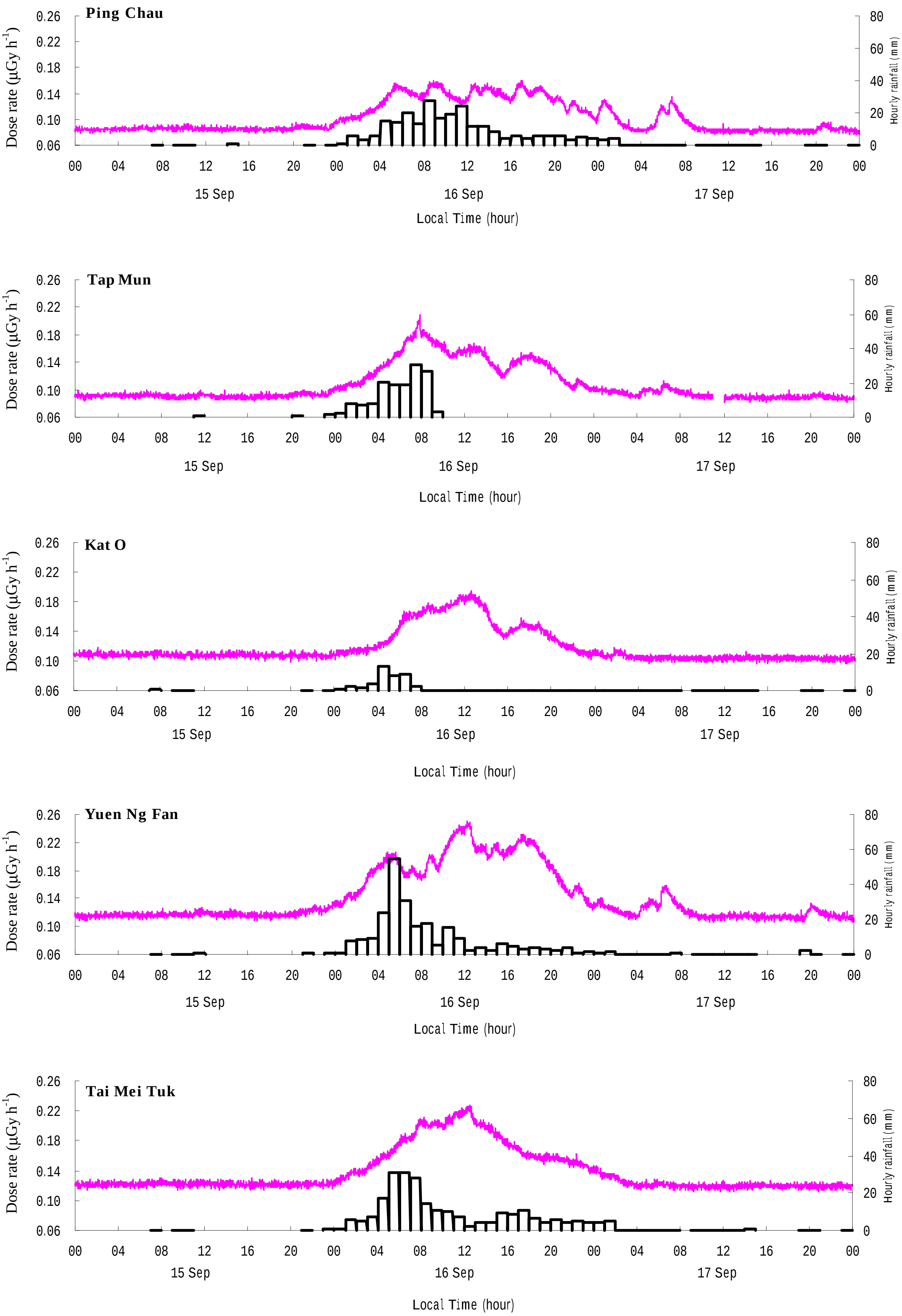


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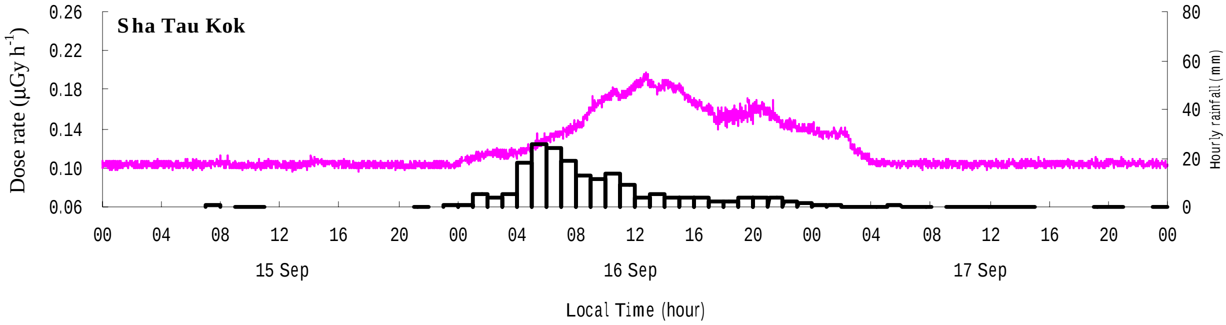
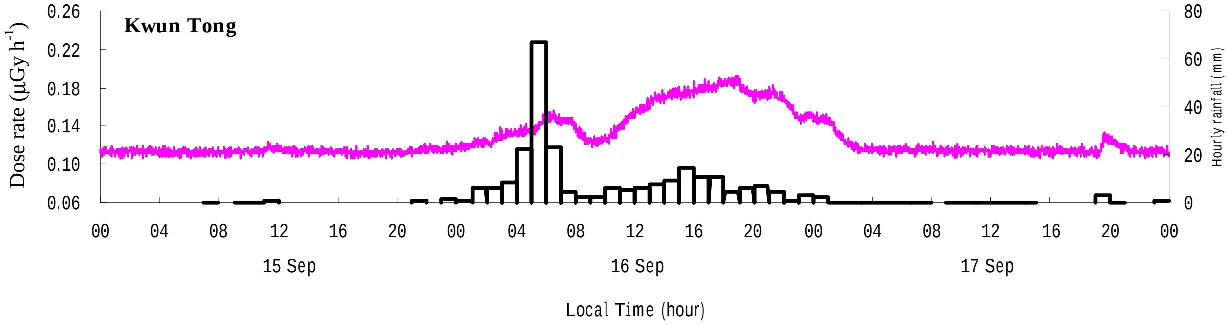
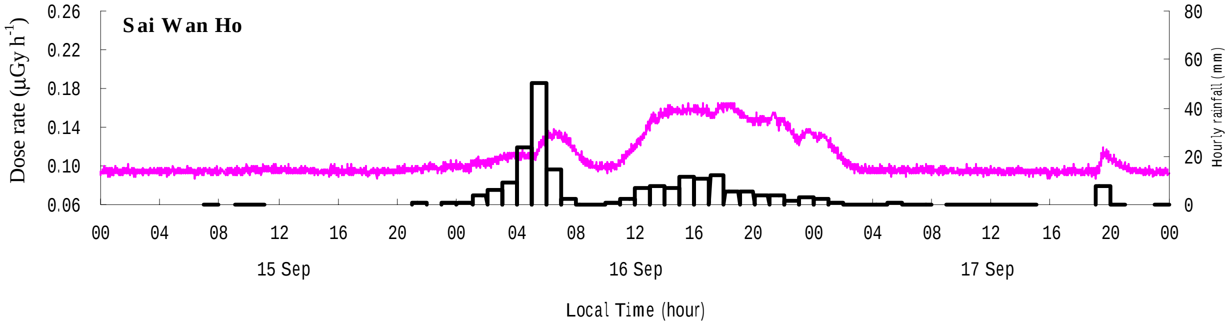
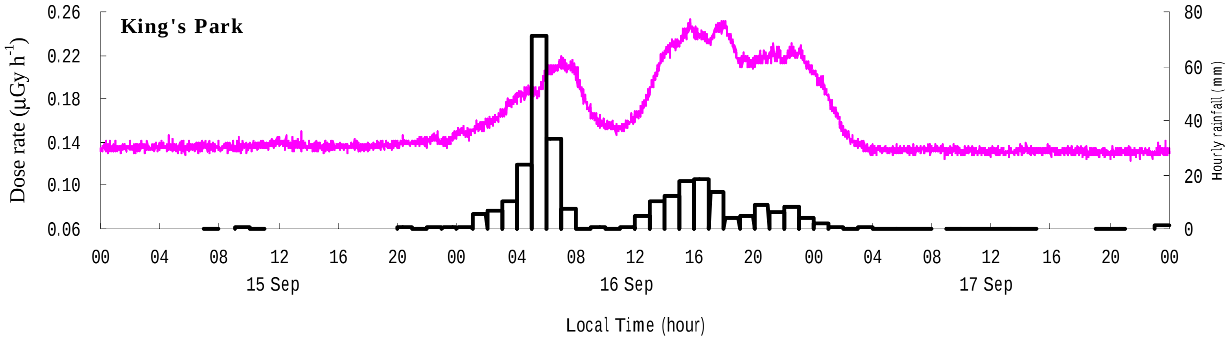
Figure 10 cont'd









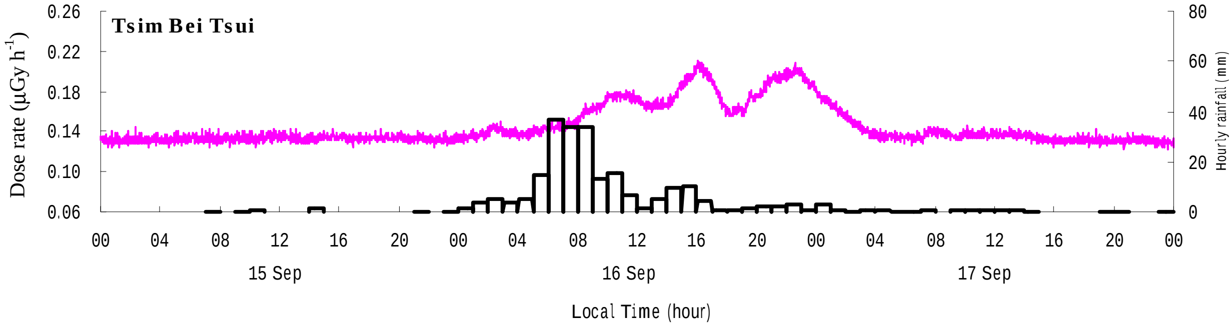
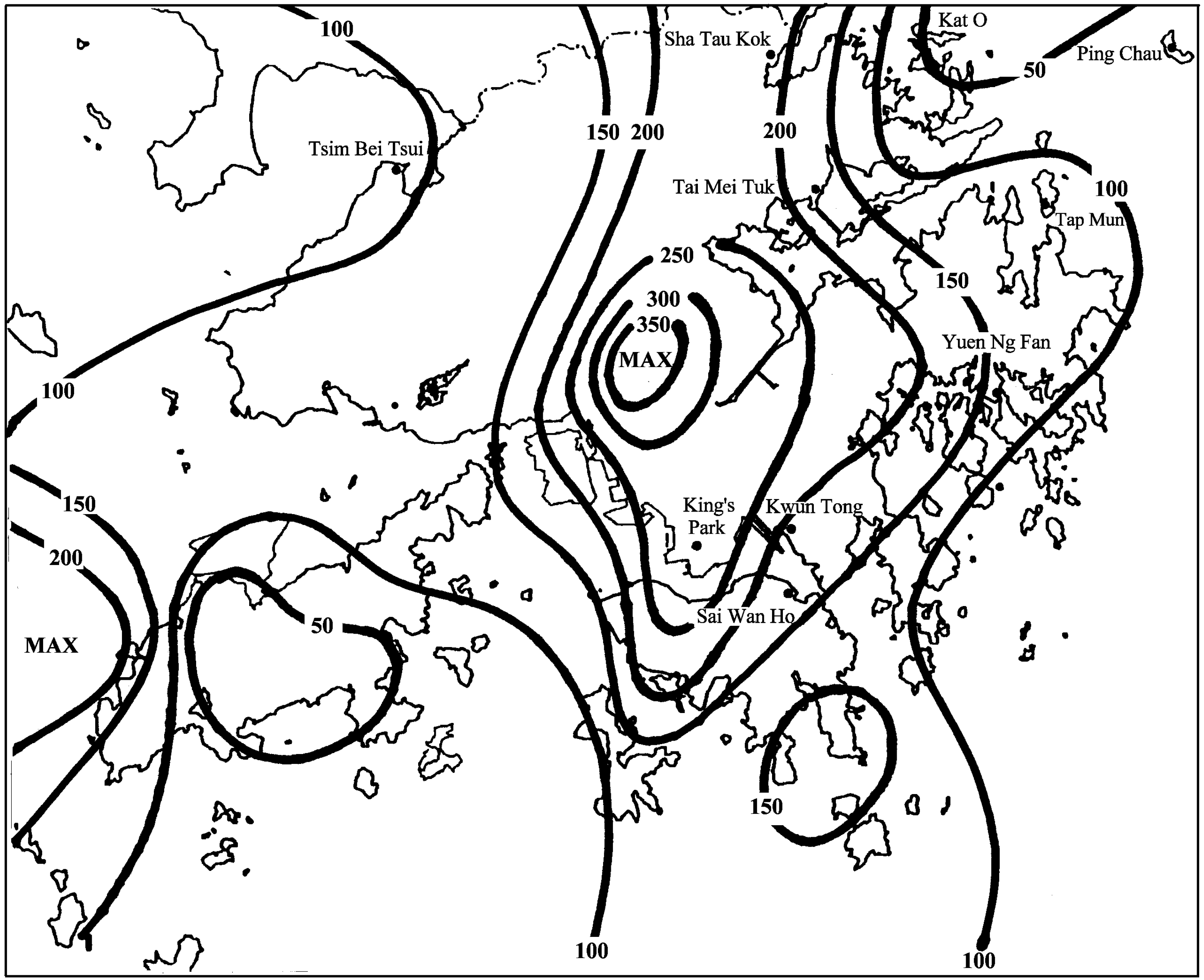


Figure 11 Daily rainfall map on 16 September 1999

(isohyets are in millimetres)



● RMN locations

Figure 12 Environmental gamma radiation levels (in counts per second) in Hong Kong measured by the Aerial Monitoring system at about 600 metres above sea level

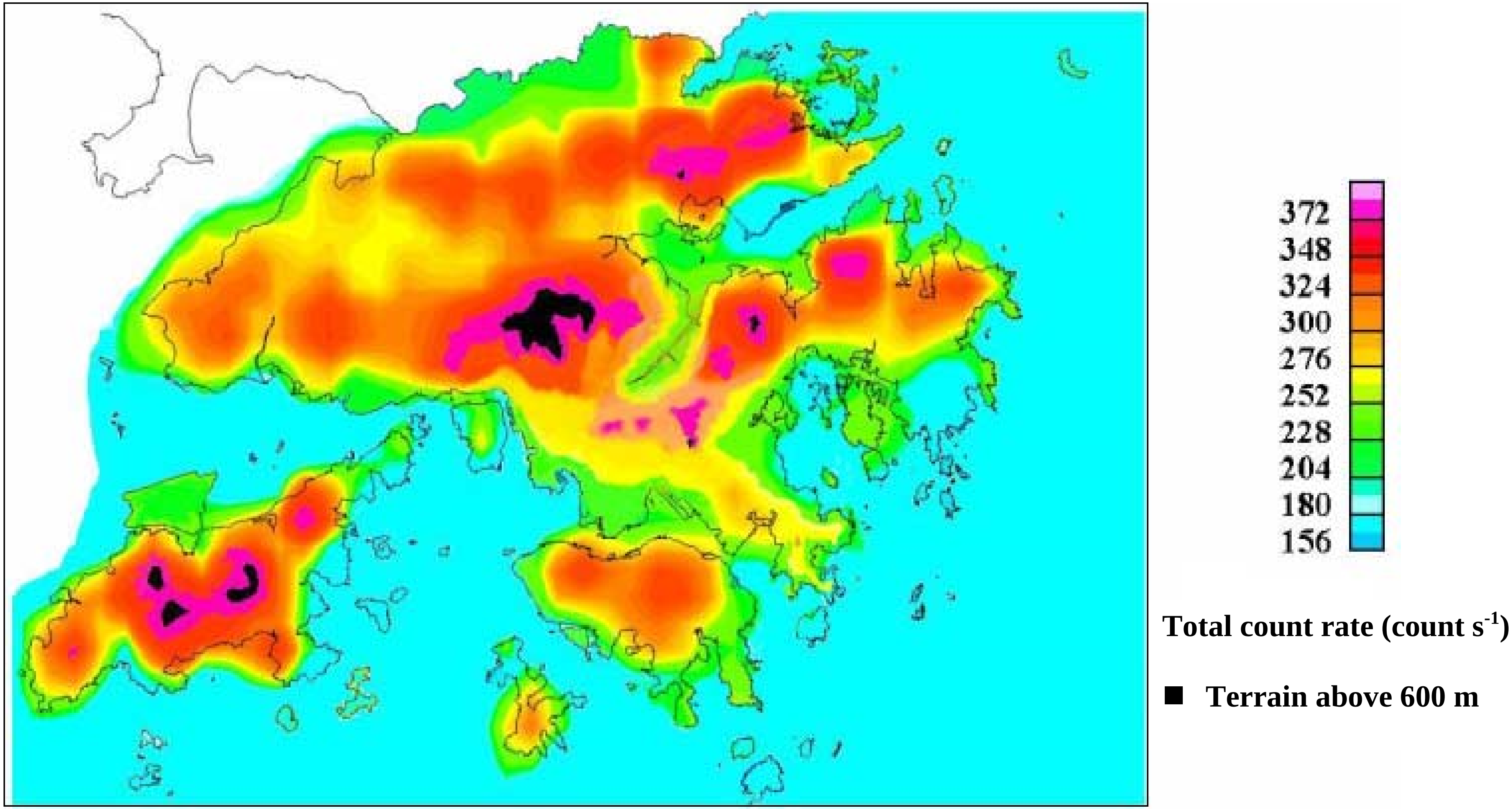


Figure 13 Location of flight lines AB, CD and check sites 1,2

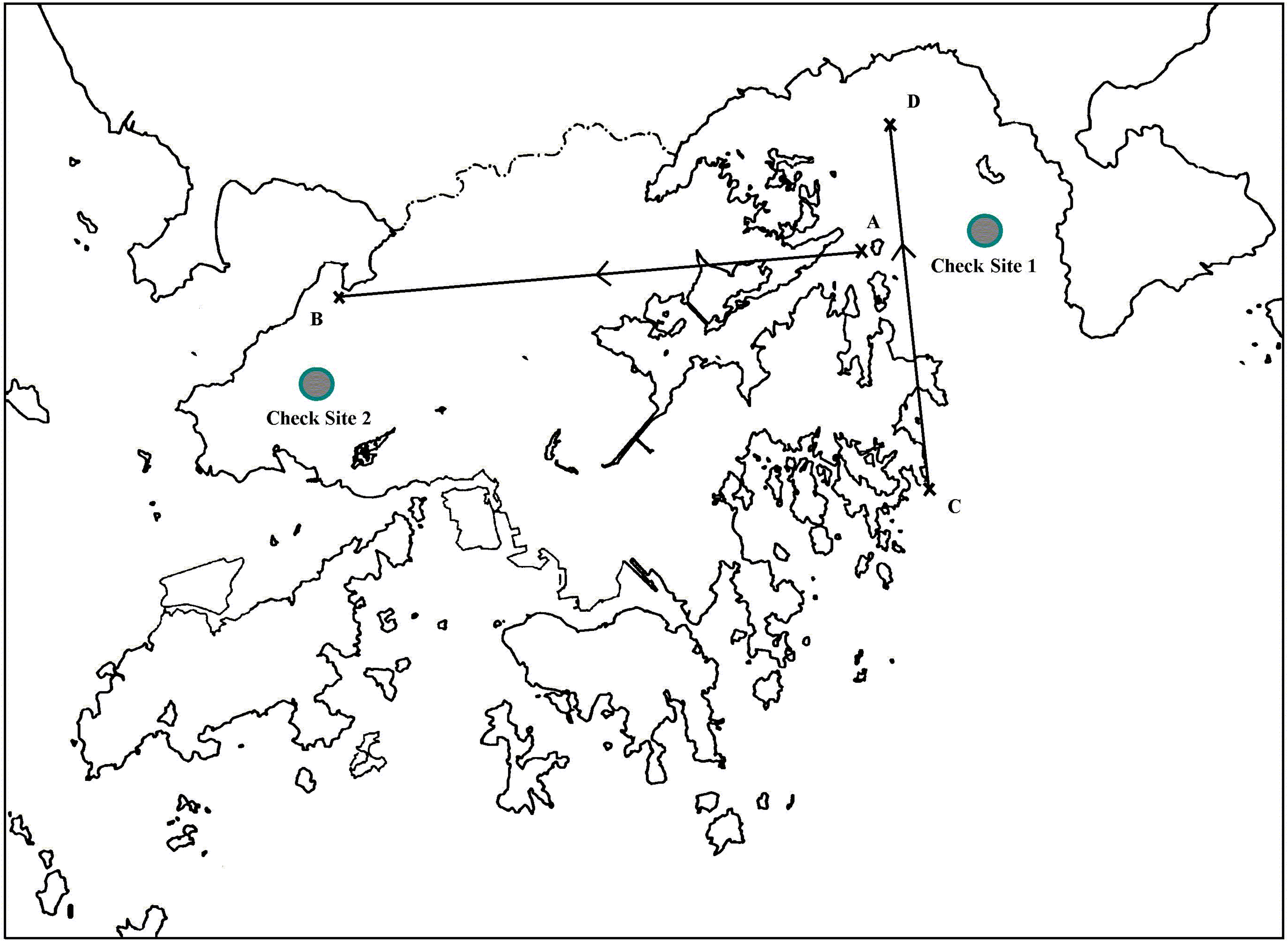


Figure 14 Variation of gamma radiation levels along flight line AB
(flying altitude : 500m above sea level)

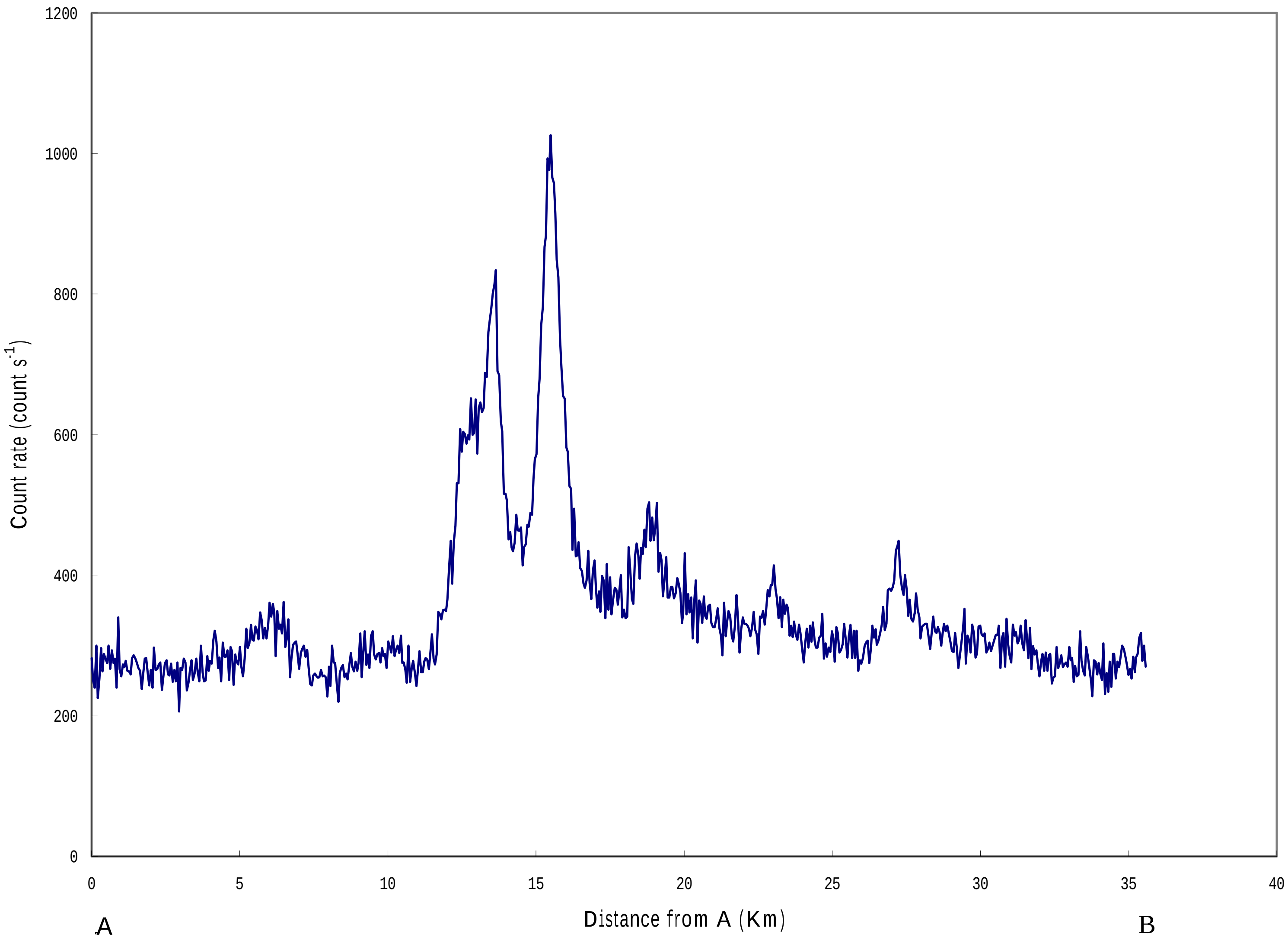


Figure 15 Variation of gamma radiation levels along flight line CD
(flying altitude : 600 m above sea level)

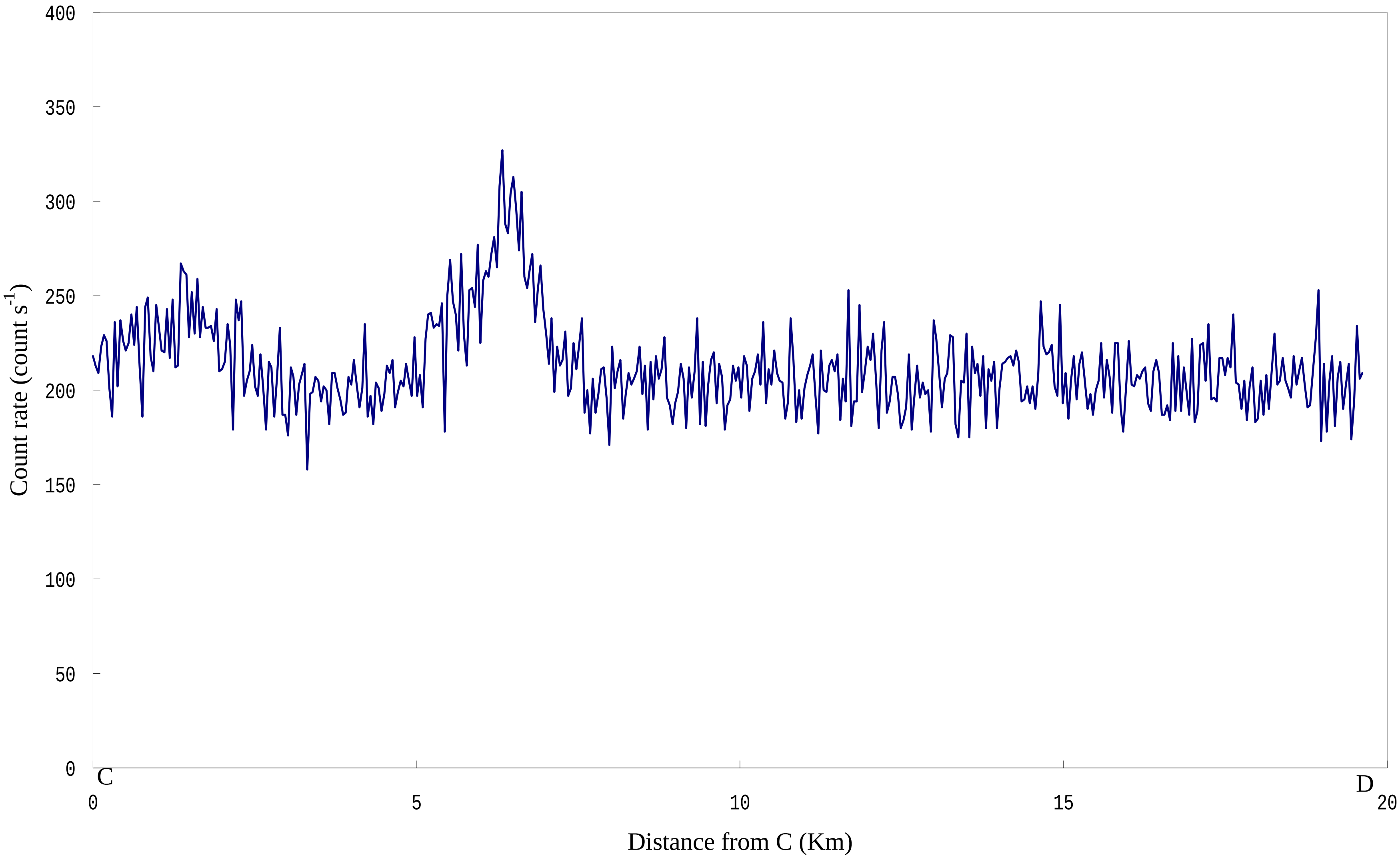


Figure 16 Variation of count-rate with altitude at check site 1

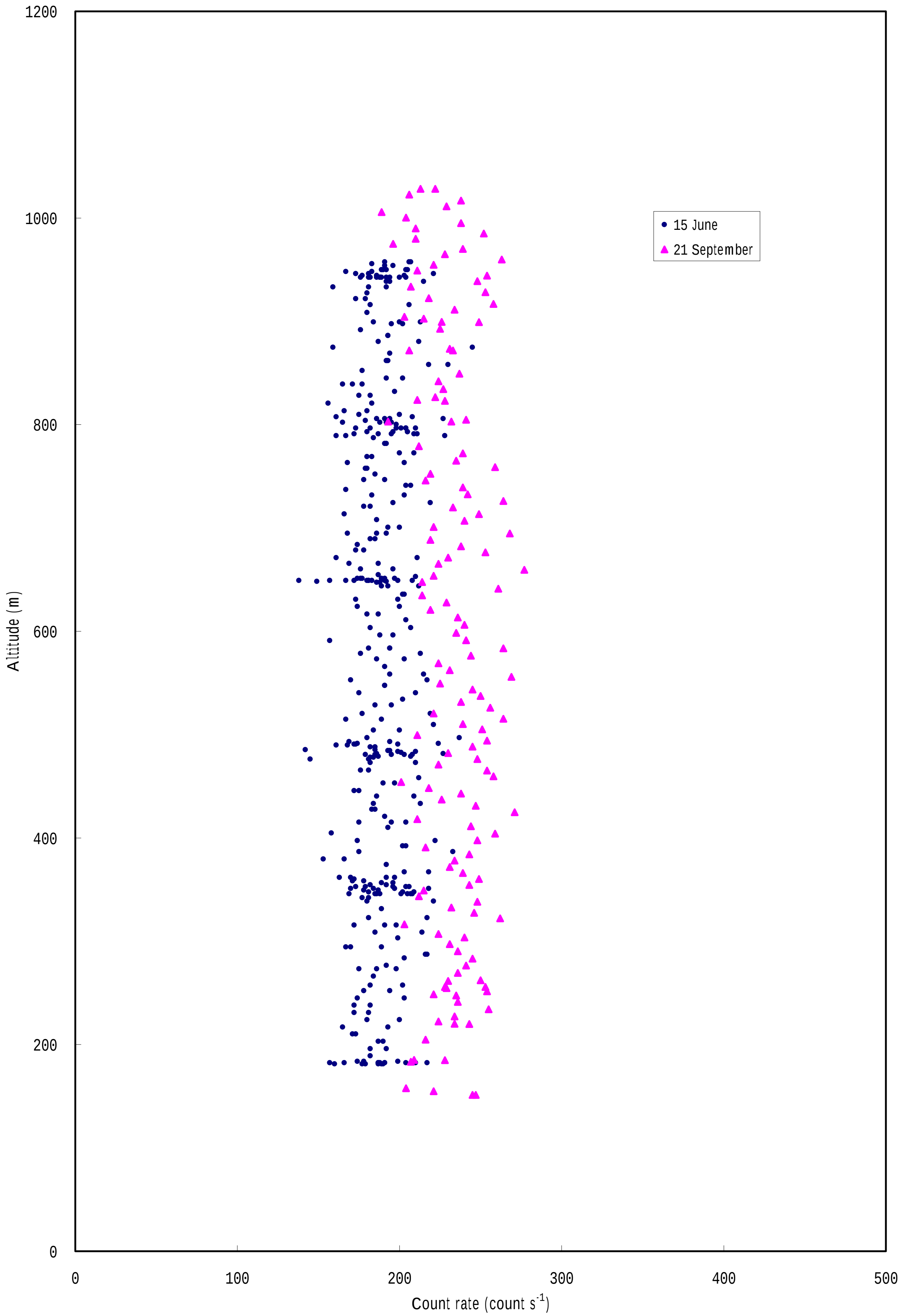


Figure 17 Variation of count-rate with altitude at check site 2

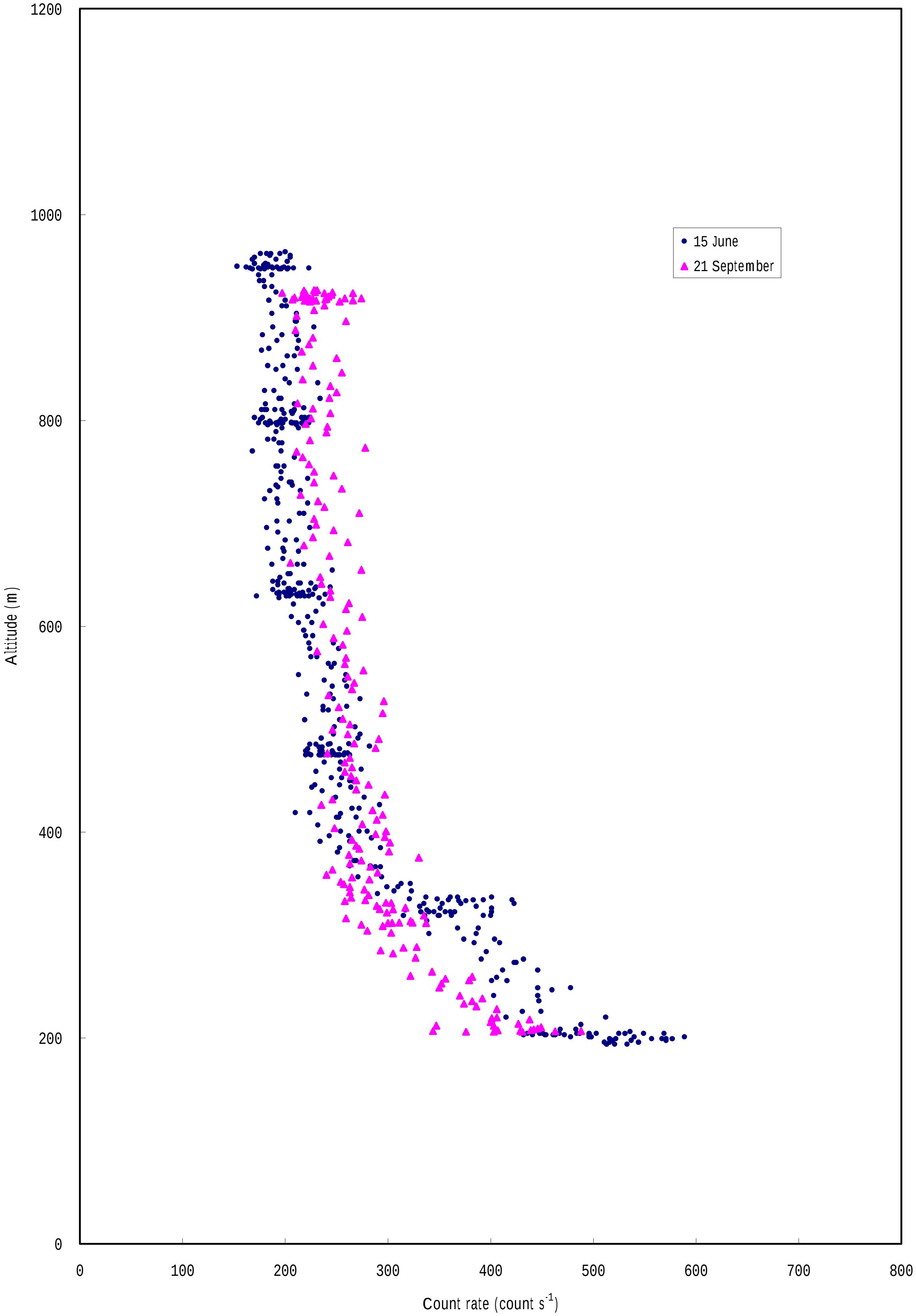


Figure 18 Comparison of daily dose rate recorded by the High Pressure Ionization Chamber and the Automatic Gamma Spectrometry System at Ping Chau

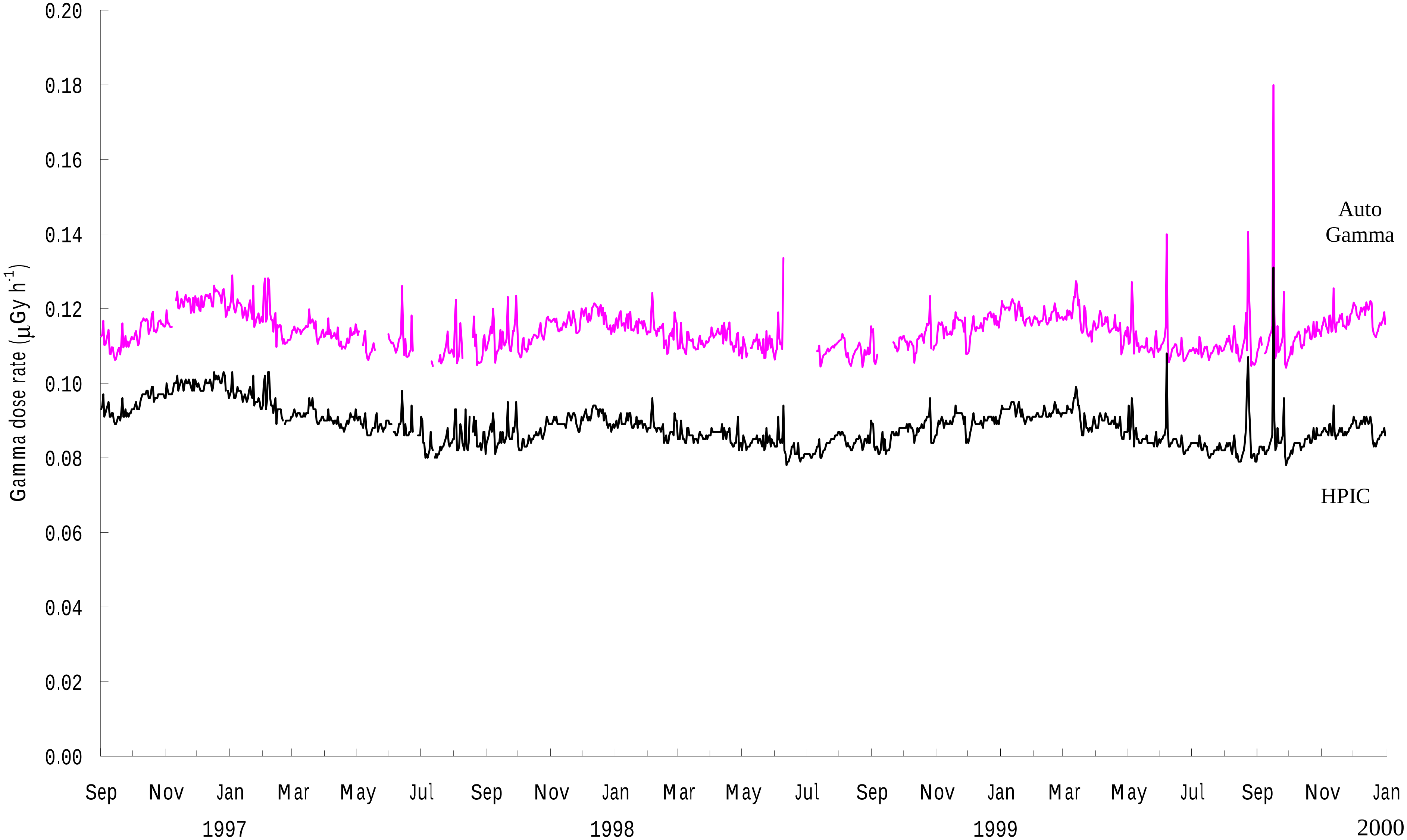


Figure 19 Variation of the alpha and beta activity concentrations in March 1999

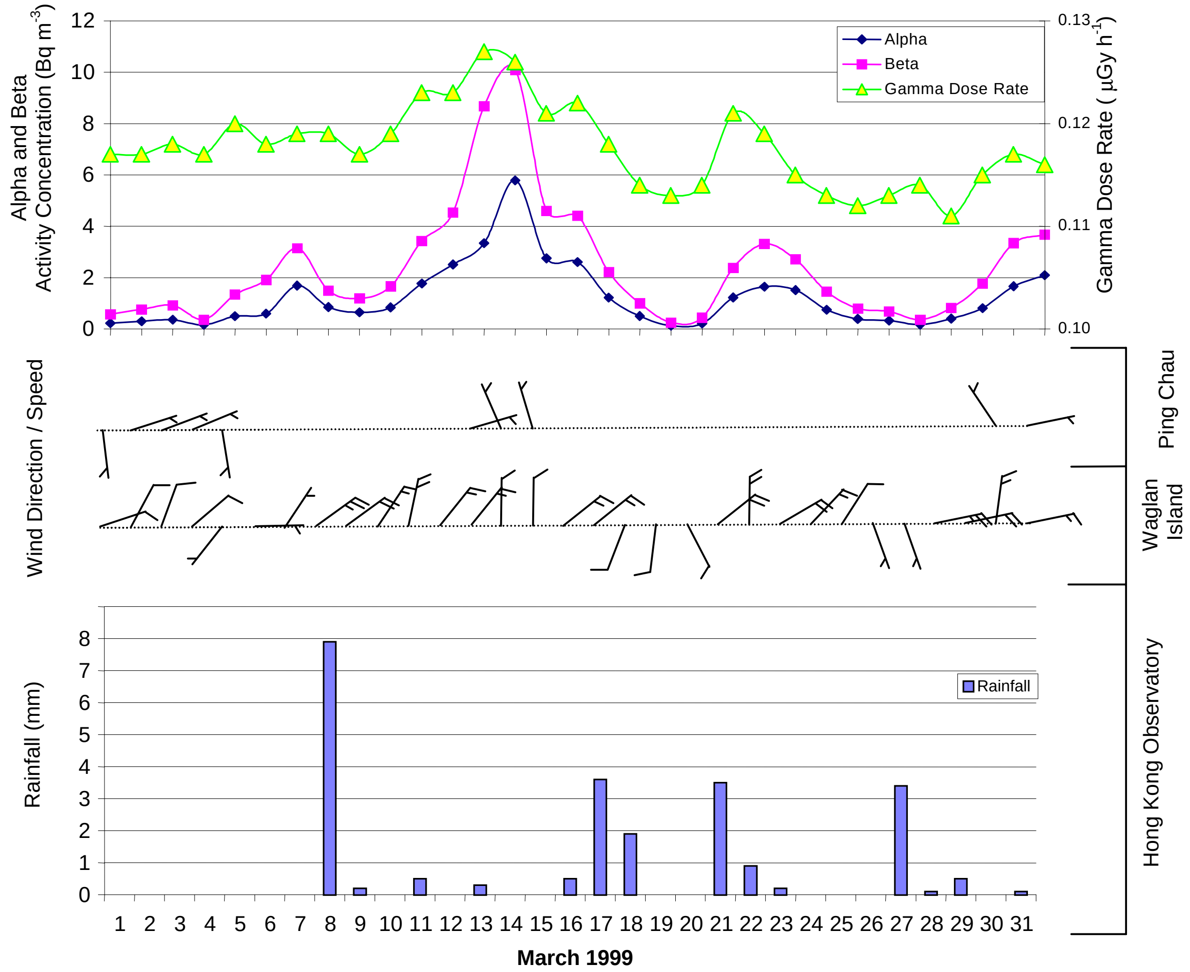


Figure 20 Vertical profiles of gamma only and gamma-beta radiation measured by radioactivity sonde on 3 February 1999

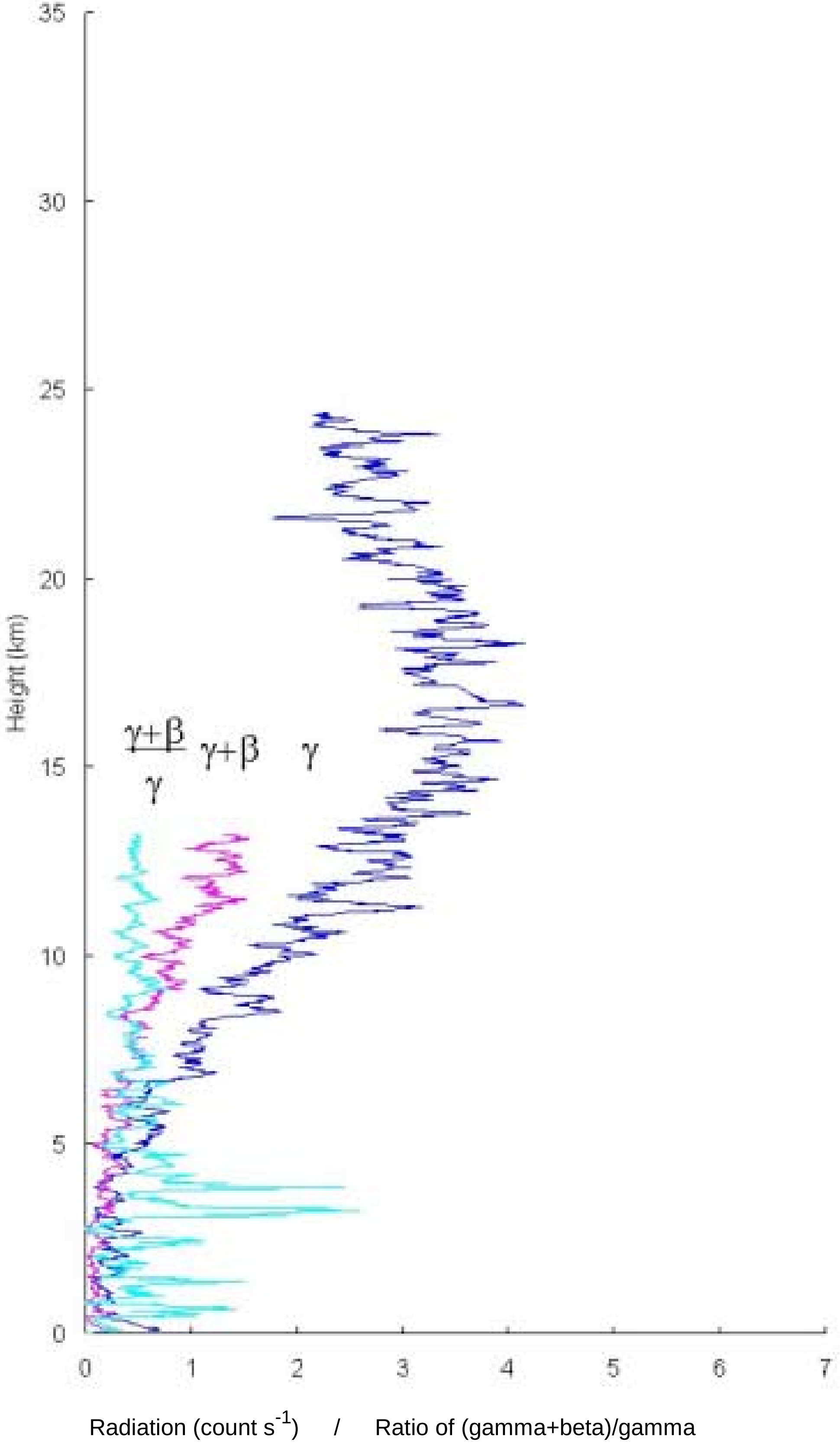


Figure 21 Vertical profiles of gamma only and gamma-beta radiation measured by radioactivity sonde on 5 June 1999

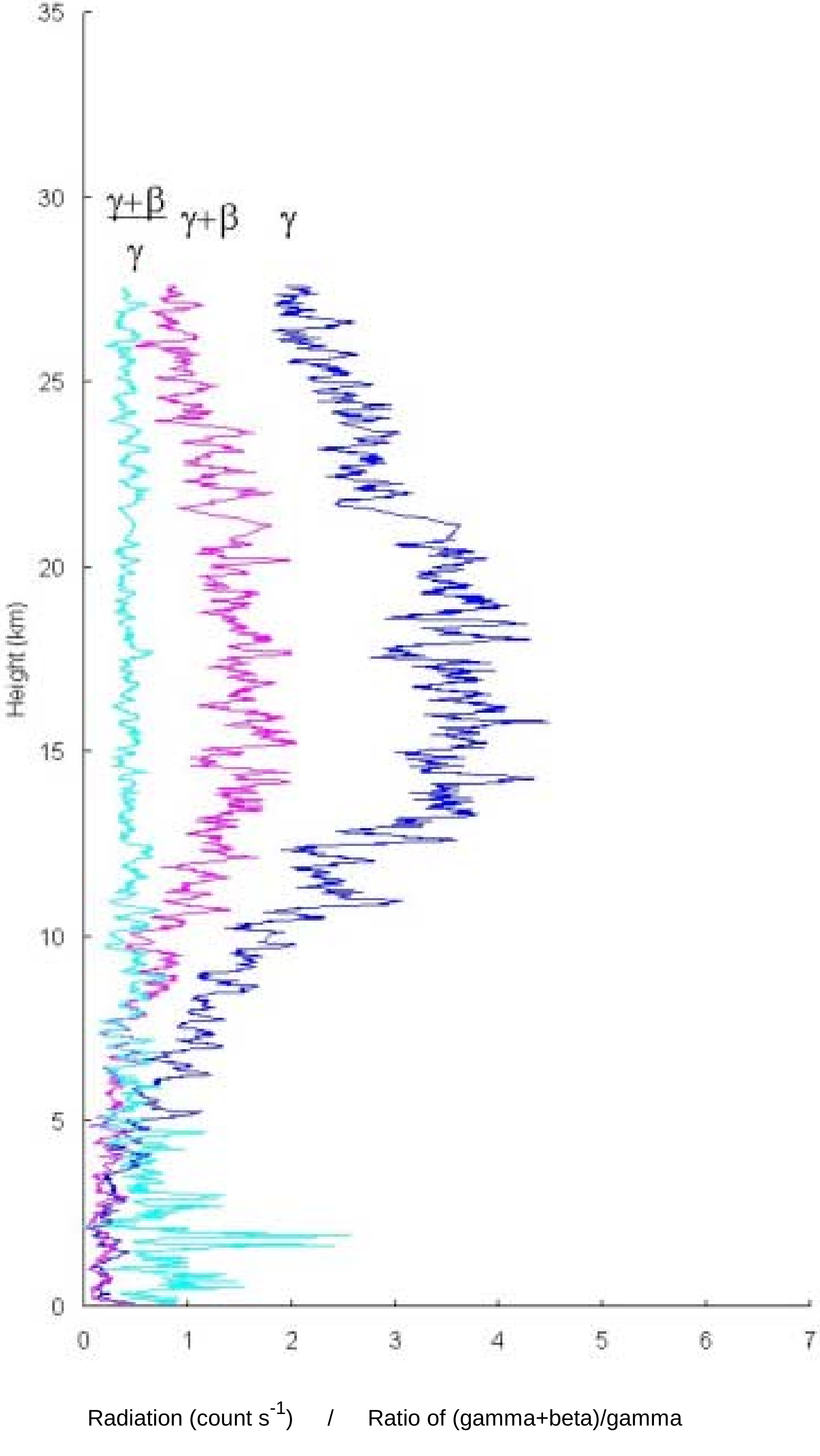
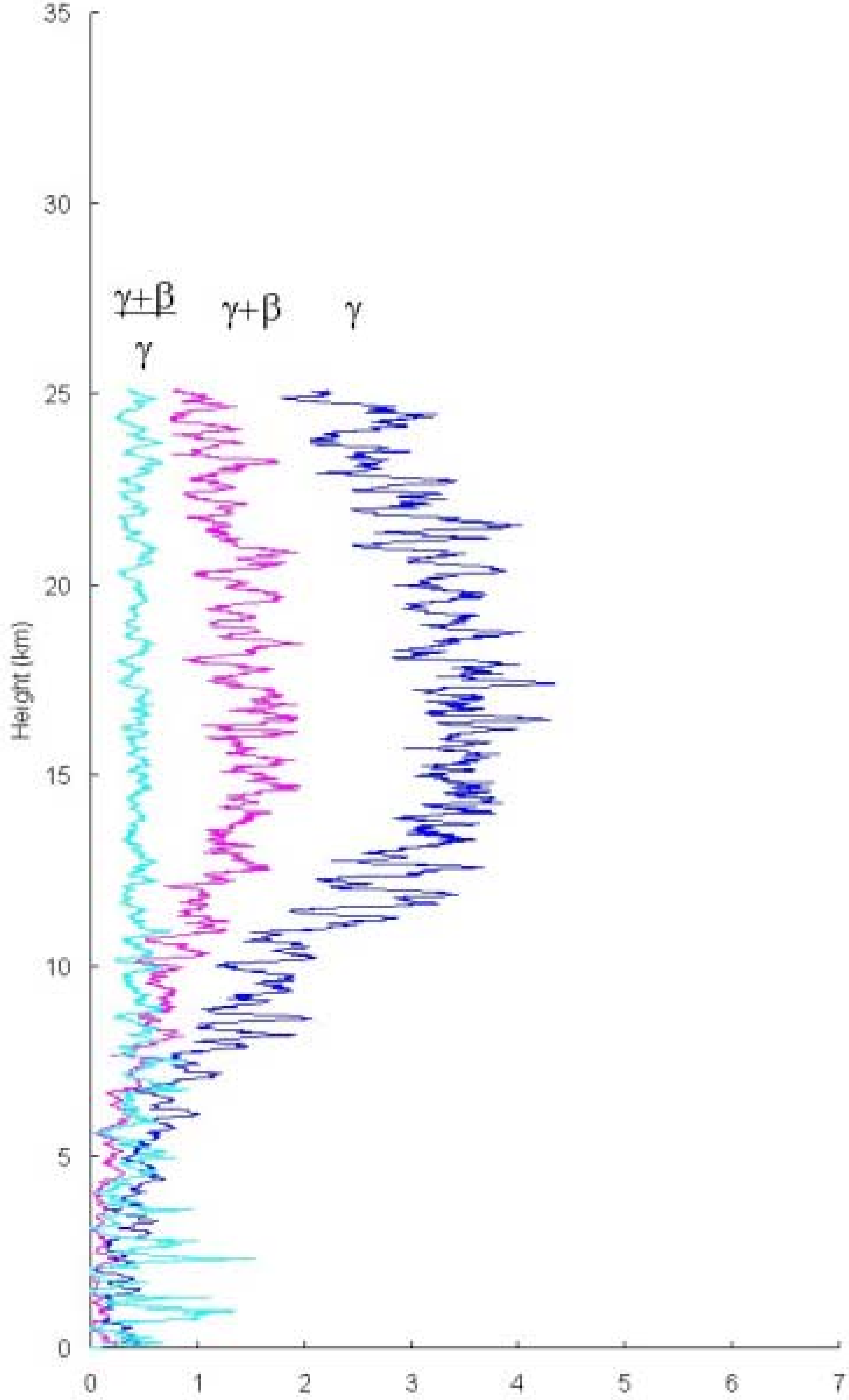
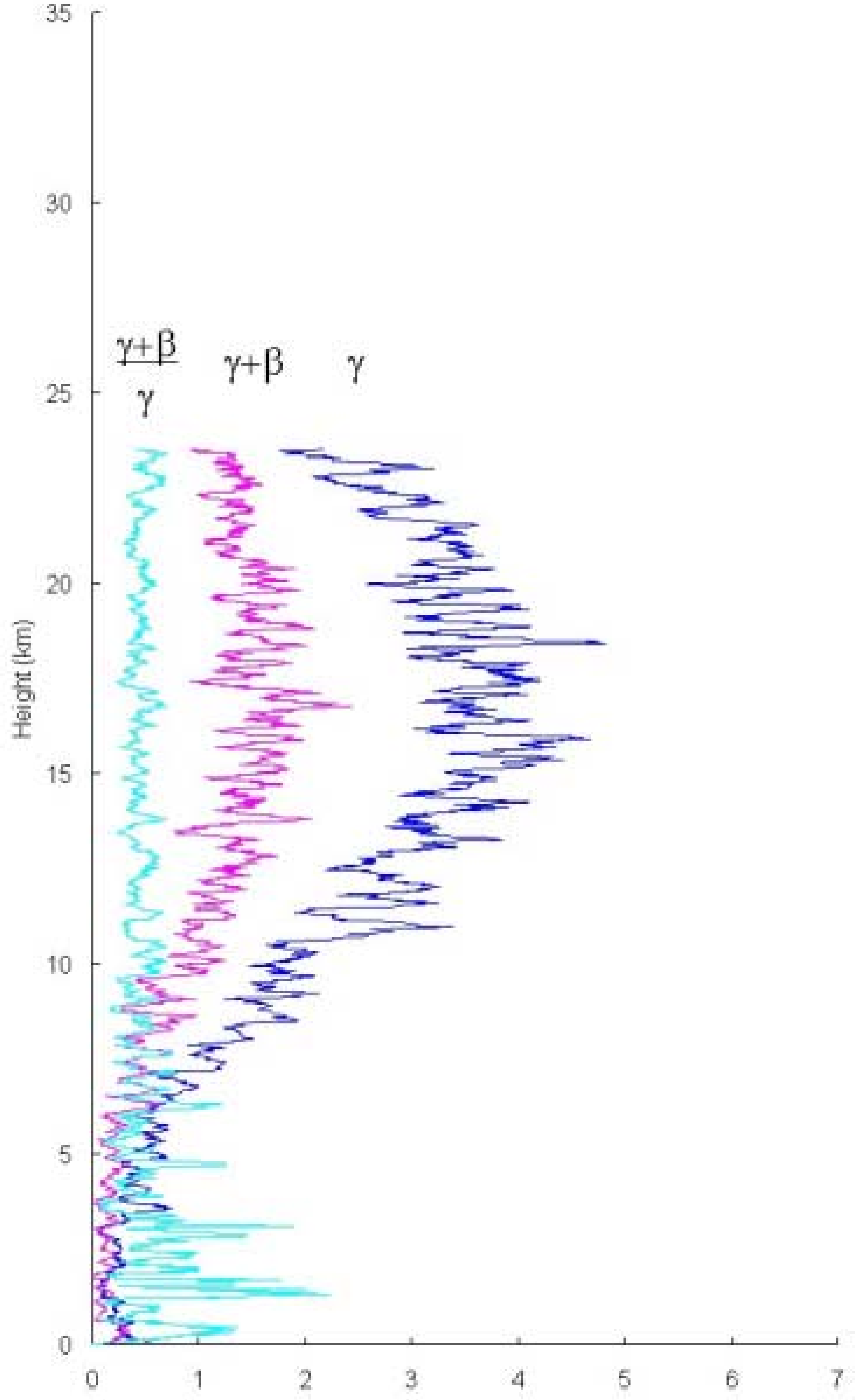


Figure 22 Vertical profiles of gamma only and gamma-beta radiation measured by radioactivity sonde on 24 July 1999



Radiation (count s^{-1}) / Ratio of (gamma+beta)/gamma

Figure 23 Vertical profiles of gamma only and gamma-beta radiation measured by radioactivity sonde on 22 September 1999



Radiation (count s^{-1}) / Ratio of (gamma+beta)/gamma

Figure 24 K-40 specific activity for white cabbage (Shenzhen) from 1987 to 1999

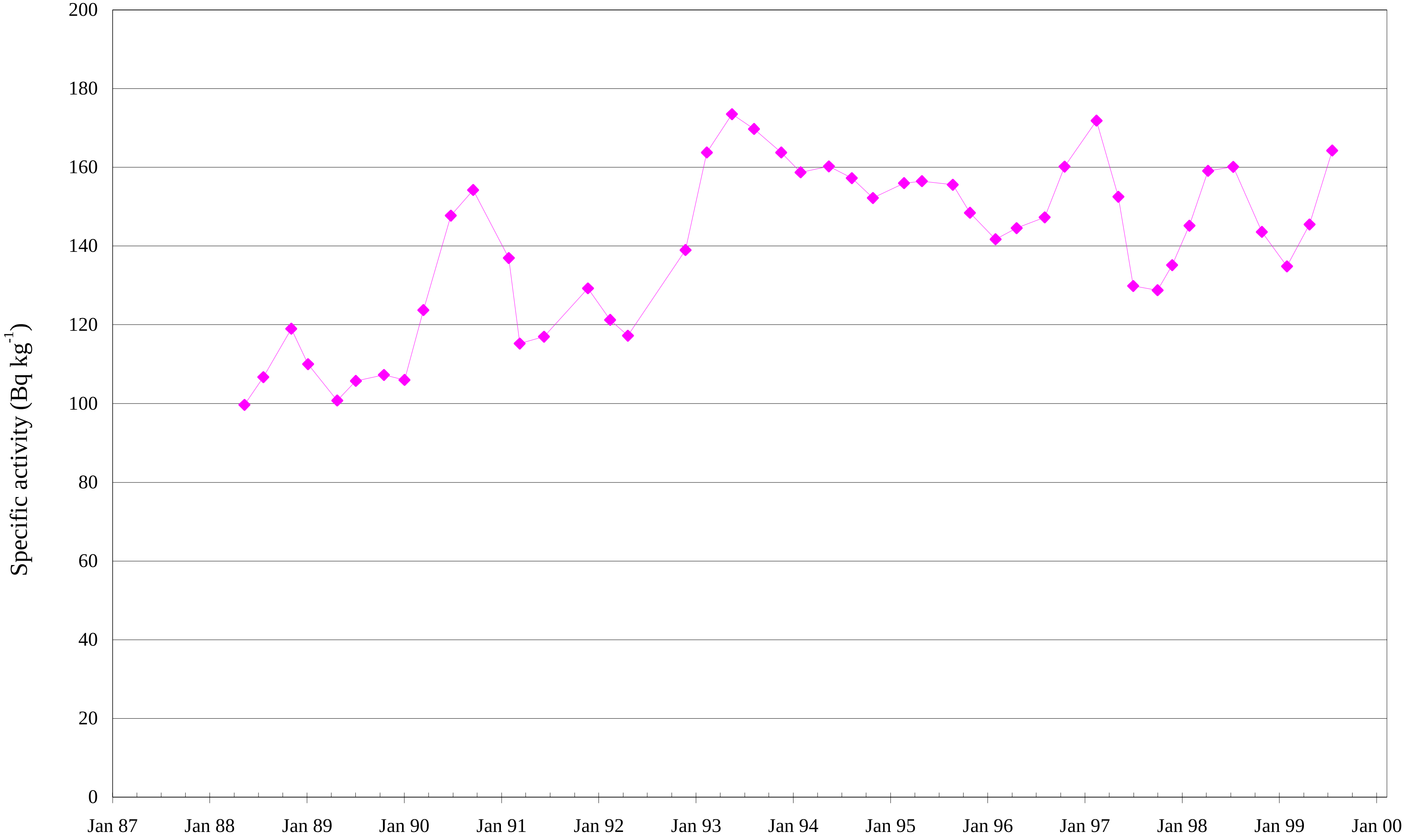


Figure 25 K-40 specific activity for flowering cabbage (Shenzhen) from 1987 to 1999

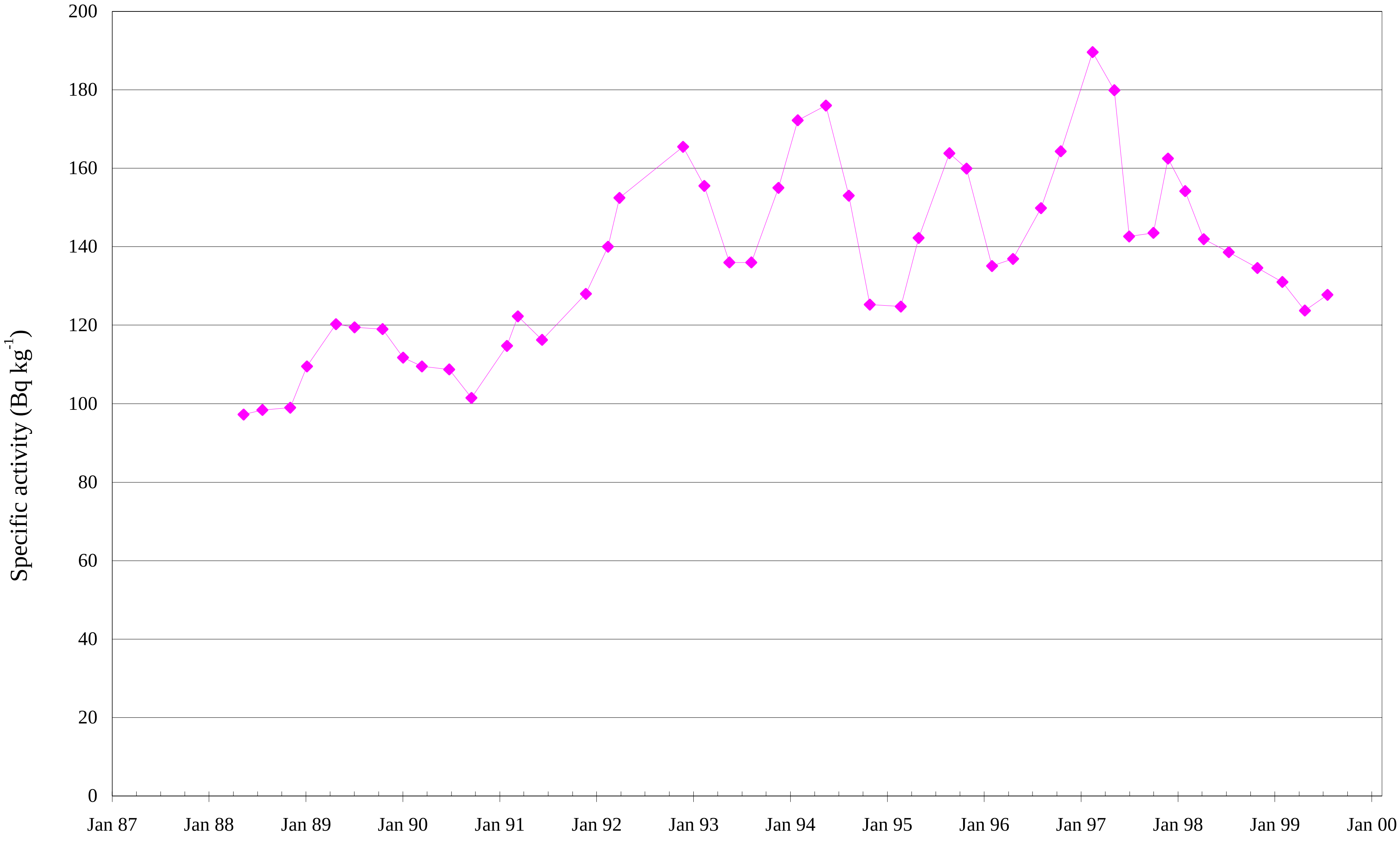


Figure 26 K-40 specific activity for white cabbage (local farm) from 1987 to 1999

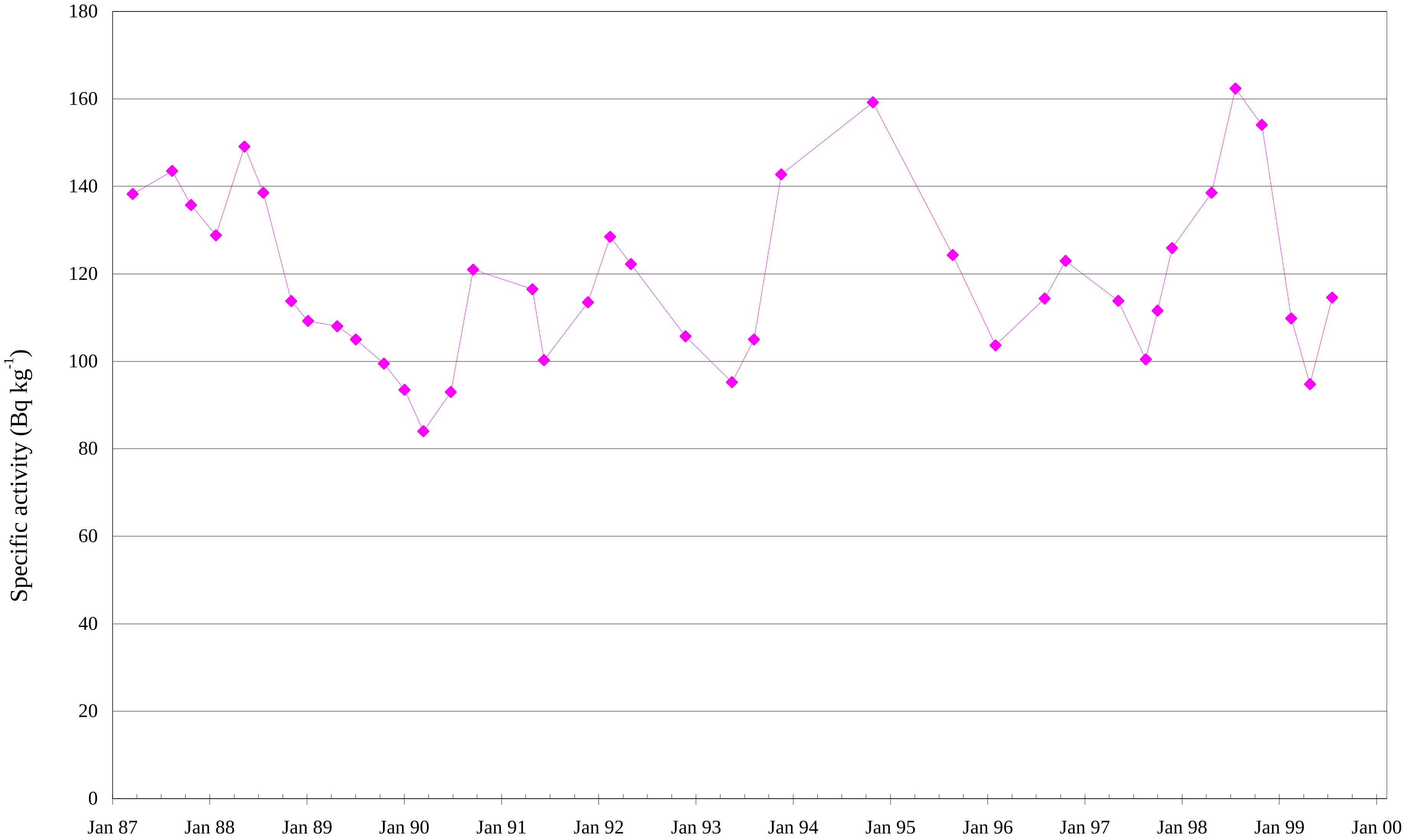


Figure 27 K-40 specific activity for flowering cabbage (local farm) from 1987 to 1999

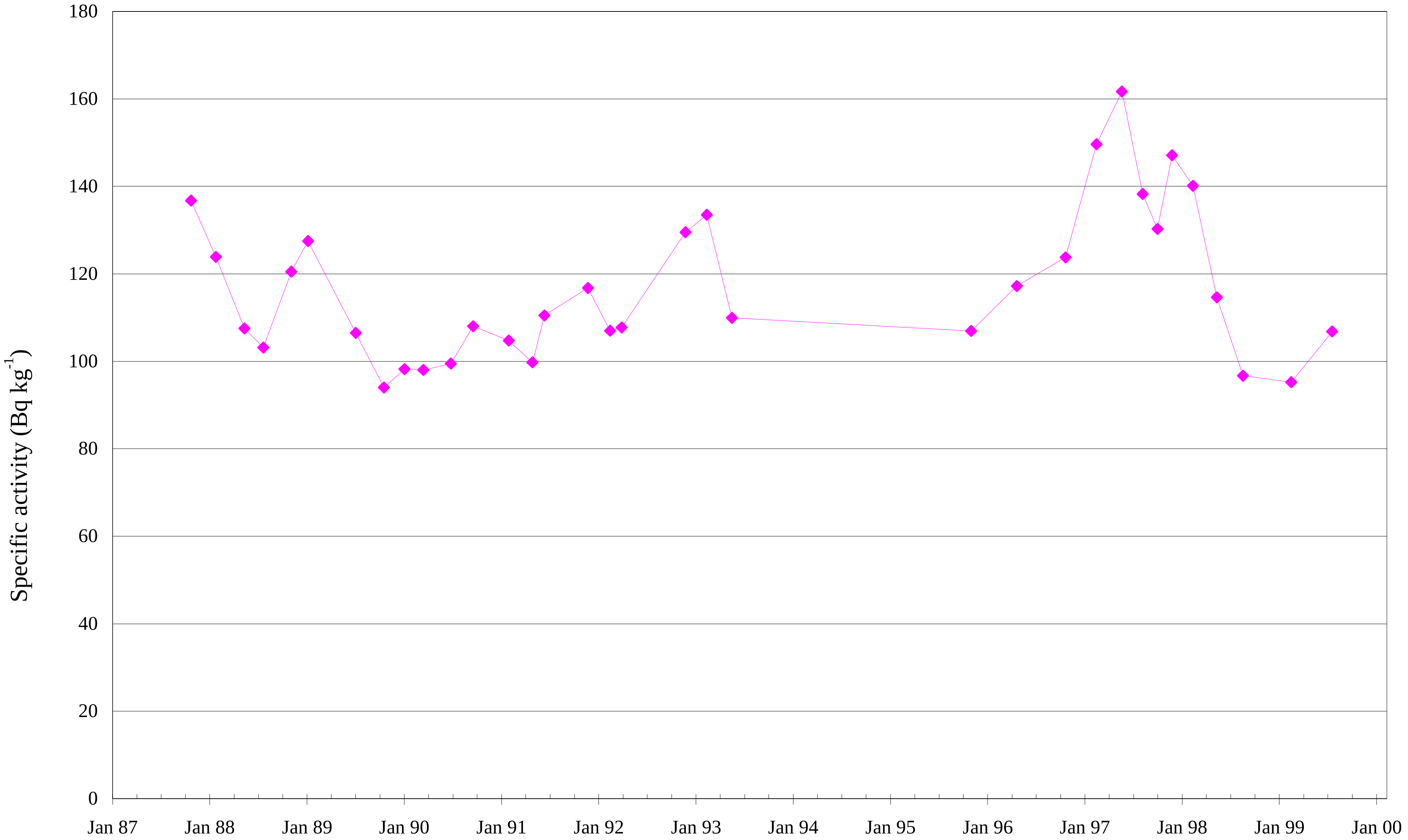


Figure 28 K-40 specific activity for pasteurized milk (Shenzhen) from 1987 to 1999

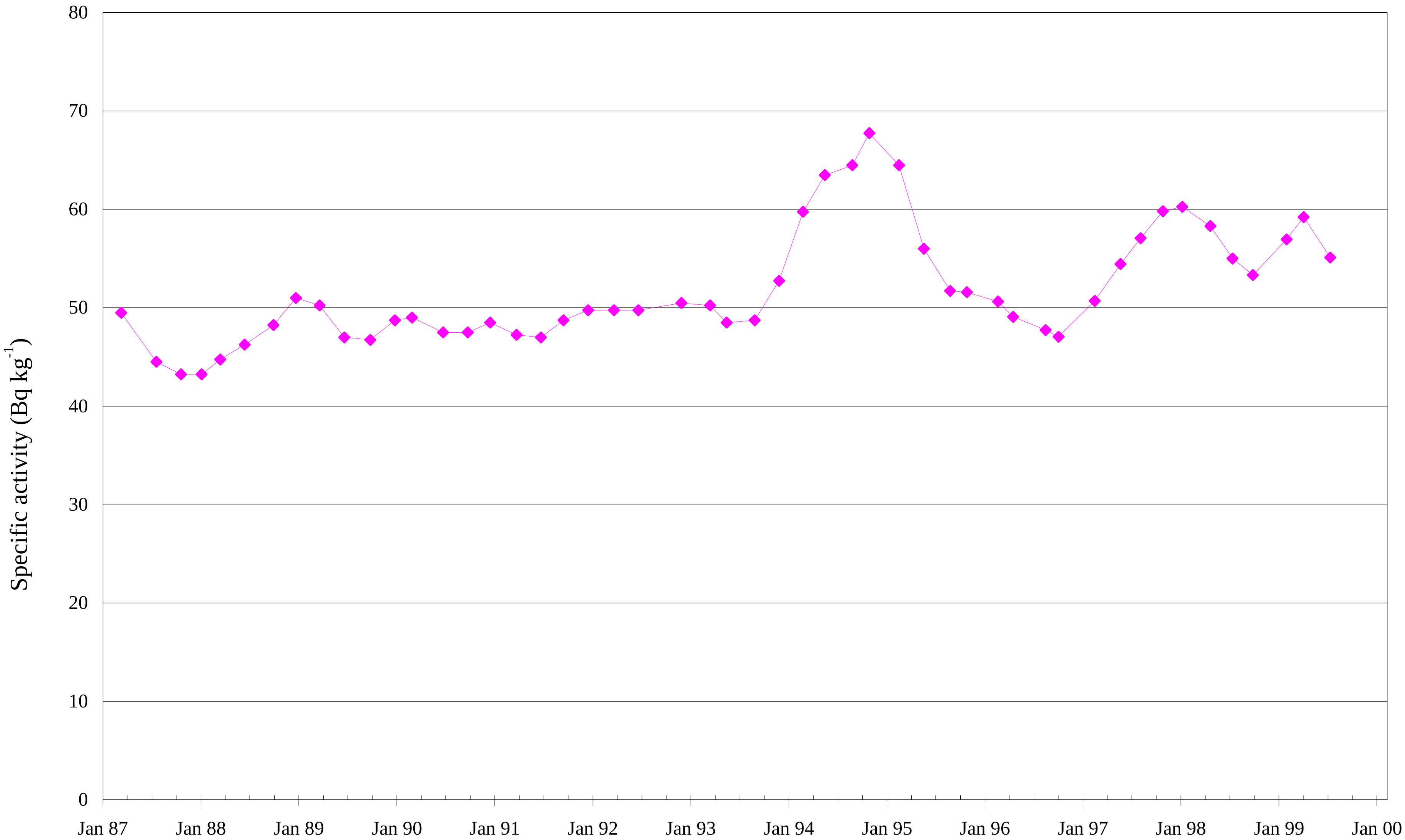


Figure 29 K-40 specific activity for pasteurized milk (Sha Tau Kok) from 1987 to 1999

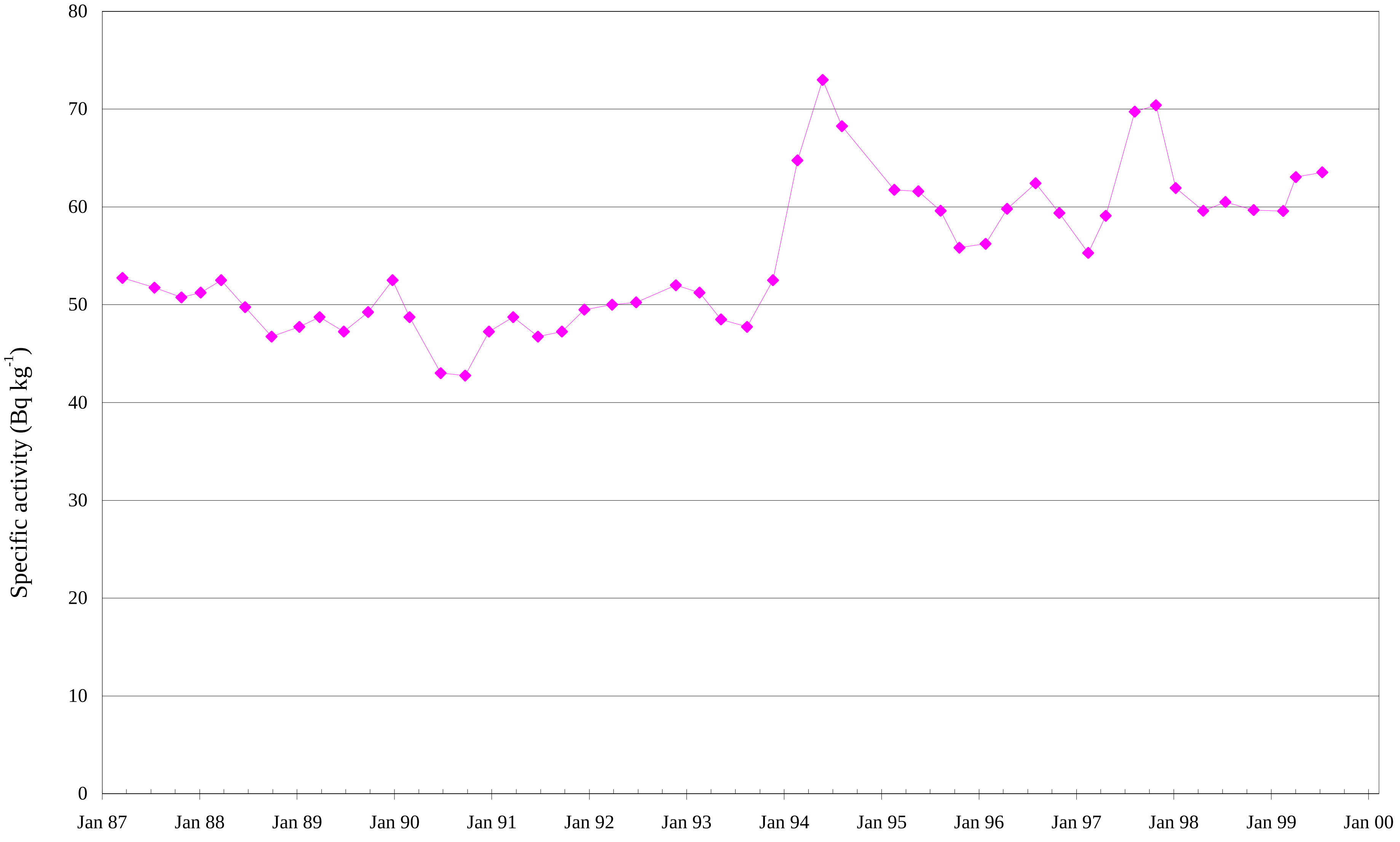


Figure 30 K-40 specific activity for sargassum hemiphyllum (Po Toi O) from 1987 to 1999

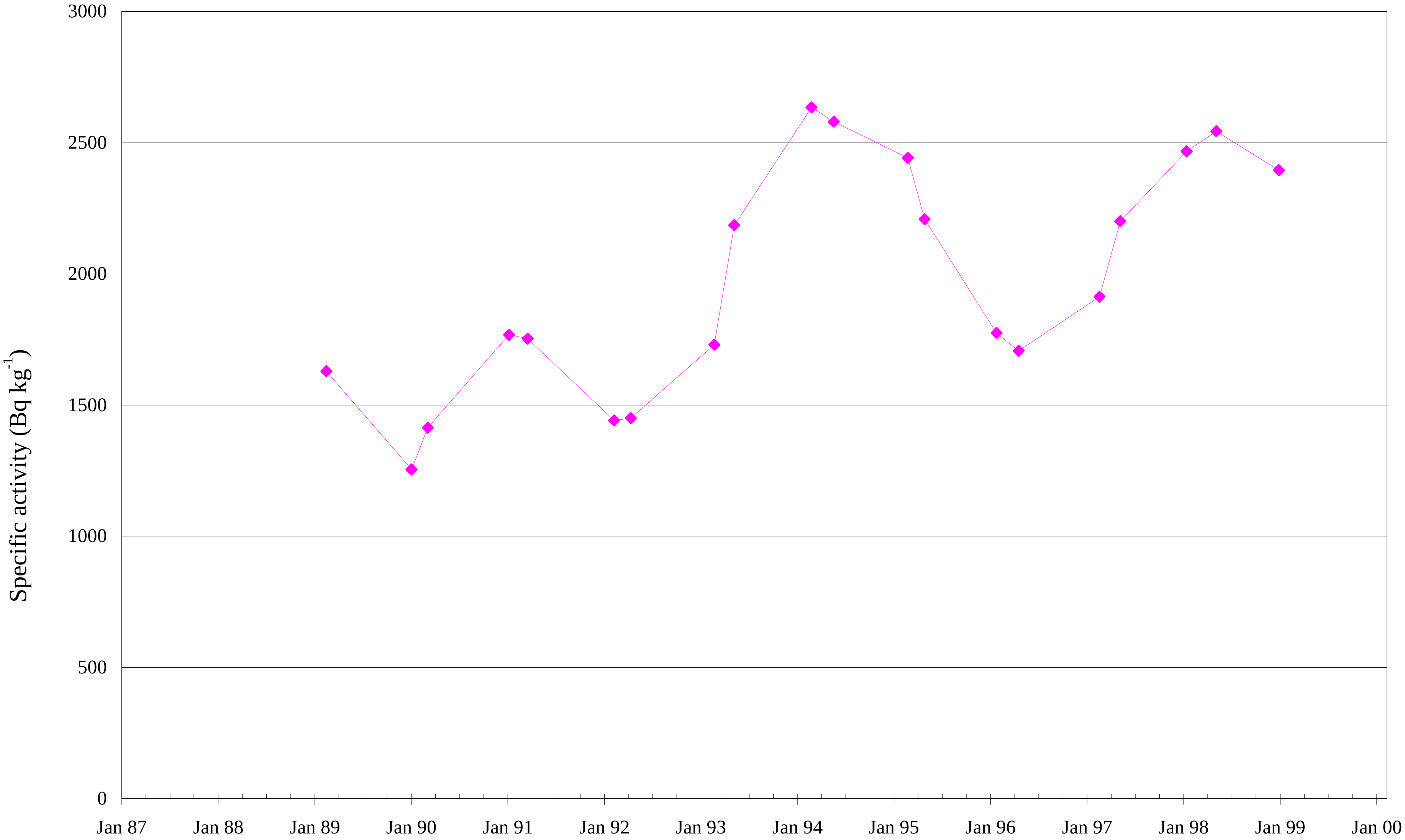


Figure 31 K-40 specific activity for ulva lactuca (Po Toi O) from 1987 to 1999

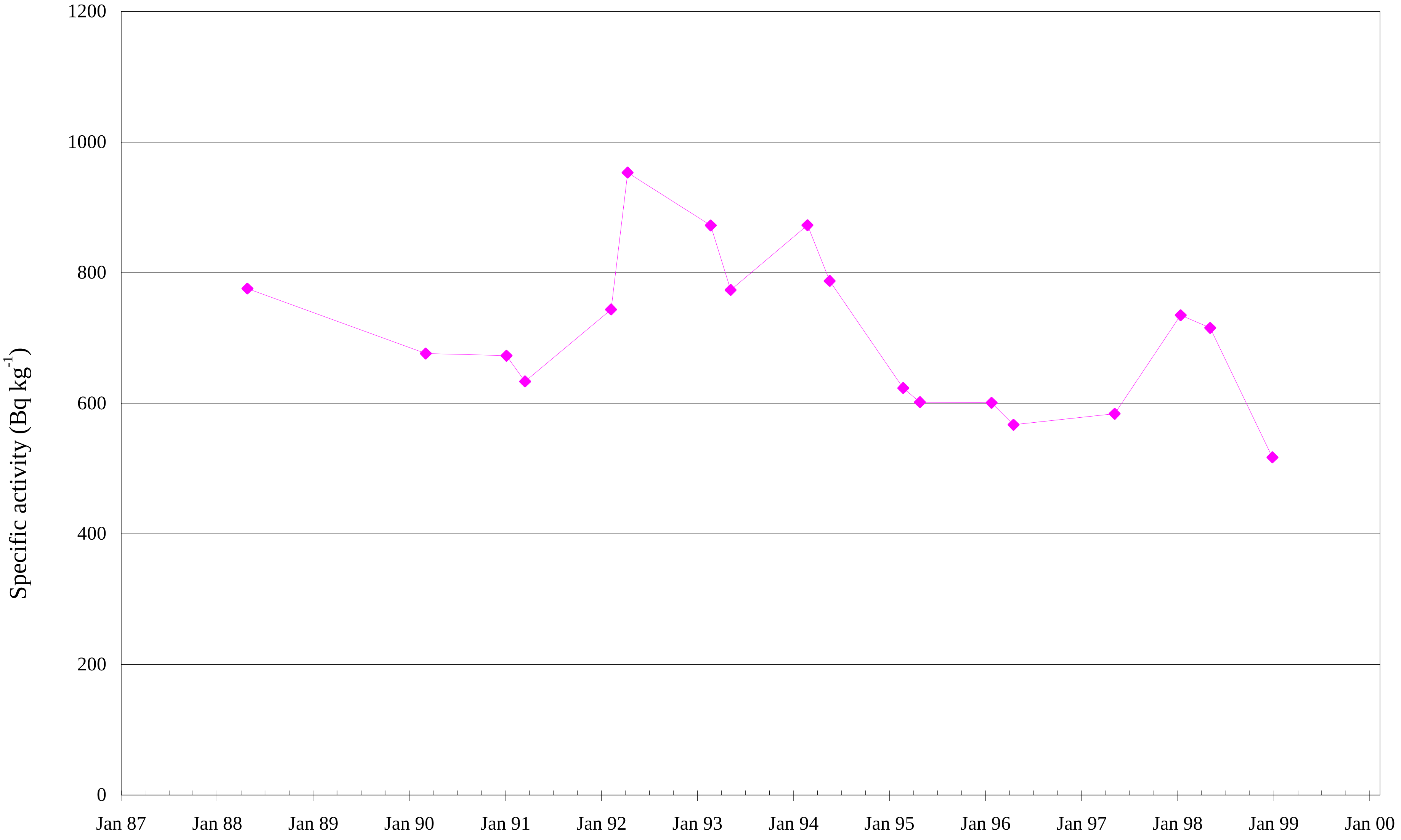


Figure 32 K-40 specific activity for prophyra dentata (Po Toi Island) from 1987 to 1999

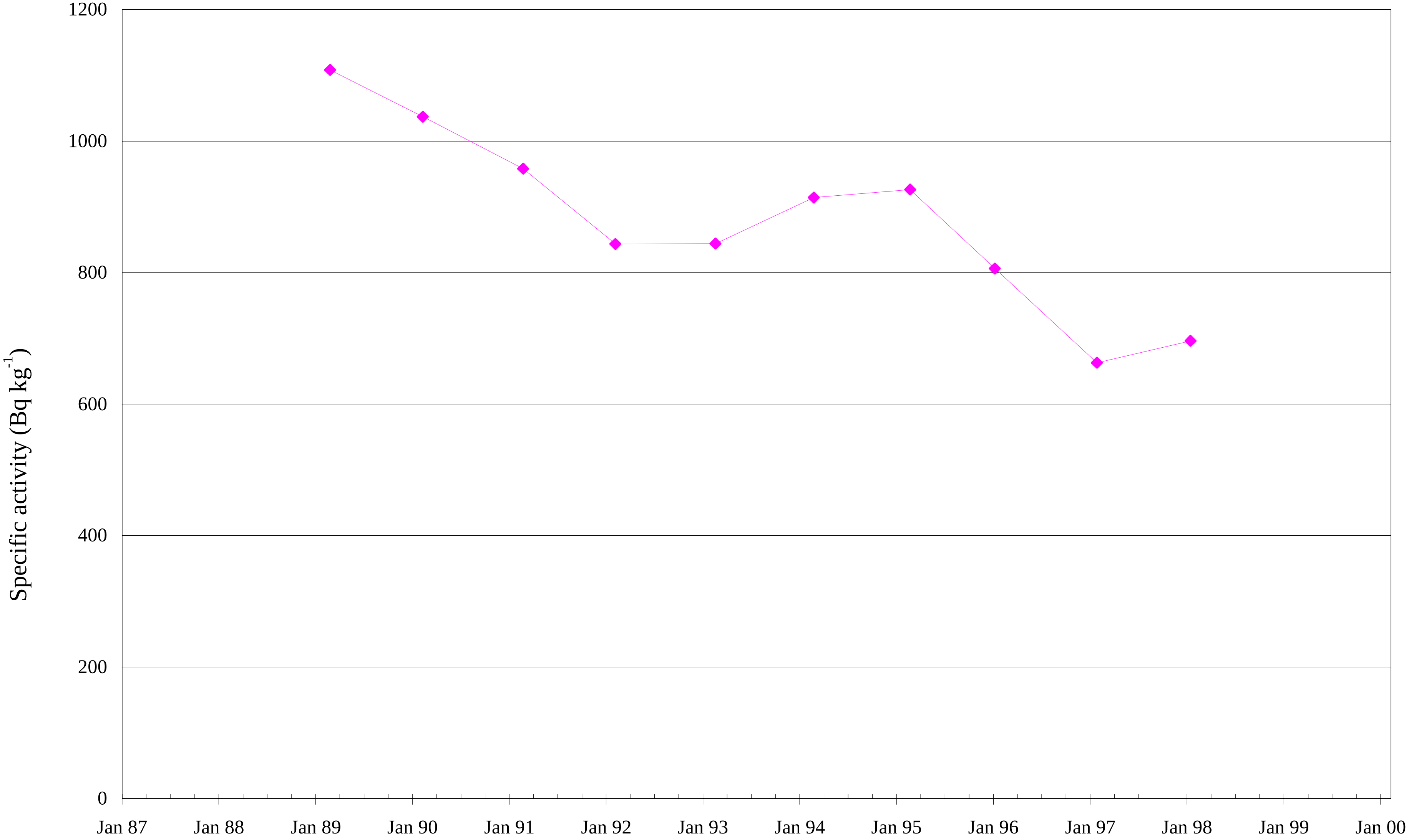


Figure 33 K-40 specific activity for sugar cane (China) from 1987 to 1999