

THE AUCKLAND OUTAGE

In mid-afternoon on Thursday, 19 February, and climaxing the following evening, the central business district of Auckland, New Zealand's largest city, was struck by a complete power failure. Given the unusually hot summer – yet another el Niño effect – a temporary outage would not have been so surprising in that city of 350 000. The heat had led to heavier use of air conditioning and, perhaps, also directly stressed underground cables that were known to be ageing and fragile. Over the next few days the local utility, Mercury Energy, proved unable to restore normal conditions, and a week later supplied the startling news that it might be several more weeks until full service was restored. All four transmission feeding the central city had failed in succession, starting a month earlier, and a new overhead line would have to be installed. Soon came the truly shocking announcement that full service would resume only after five to eight weeks.

For the interim period, generators were flown in from Australia and Singapore to provide about 30 MW of AC, and a ship turbine was linked to the DC grid. Large organisations were warned not to rely too much on their own diesel generators because of the aggravated risk of fire. With an Auckland fire safety official warning that the city was in danger of a towering inferno scenario, business were advised wherever possible to relocate staff outside the central district, which includes a container port, university, and a hospital complex, as well as most business and restaurants, for a total of 170 MW.

Malcolm Stenerson, who operates an intranet and extranet development house out of a computer cafe in the central district, gave [1] an account of what the outages have meant for a small firm. He said that the utility has divided the business district into sections, which each being promised power in either the morning or the afternoon. His business, Knowledge Systems, was promised electricity in the afternoon, but even so there have been outages, leaving the staff to play cards.

Moreover, "We were forced to find [an] alternate server and Internet connection for the time affected because, although we had emergency contingency planning in place, our alternative site was also just within the power-out zone." So, besides a loss in productivity that Stenerson put at about 50 per cent, the small company had to pay the bill for setting up a new server to meet its immediate needs.

Auckland's problems began, by all accounts, in the late 1950s, with the installation of two nitrogen-gas-filled, 110 kV transmission cables, feeding two 50 MVA transformers. Brian Leyland, managing director of an Auckland energy consultancy stated [1] that rigid aluminium sheath-

ing was preferred to steel – a suboptimal choice – because of an eccentric tax rule meant only for distribution lines.

In the mid 1970s a pair of sturdier oil-filled cables feeding 60 MVA transformers were installed, bolstering the system somewhat, but leaving the central district in the unusual situation of getting virtually its entire electricity supply from the outside through underground transmission cables (fed from a hydro complex, a 1 000 MW gas-fired generator, and a 1 200 MM HVDC link with the southern of the country's two islands). Recognising the vulnerability of the older, gas-filled cables to failure, Mercury Energy began planning construction of a tunnel to house two 300 MW, 110 kV cables.

In the events leading to the blackout, first the gas-filled cables failed on 22 January and 9 February. Then, much more mysterious, the oil-filled cables fried as well. Eventually they were being loaded to full capacity, or perhaps beyond, prompting questions as to why Mercury Energy was not quicker to shed load.

Leyland blames the current outage on problems that Mercury Energy encountered in negotiations for a right-of-way for the tunnel, which delayed the project several years. But that is where opinions begin to diverge sharply. Critics of Mercury Energy prefer to blame the company's management structure and the way in which New Zealand privatised its electricity system several years ago.

One complaint is that government did not separate transmission from distribution sufficiently, leaving Mercury Energy a vertically integrated monopoly in the Auckland area; another is that the trust that formally owns the company does not have enough influence on its board.

Like any company in that kind of position, Mercury Energy sought to maximise its short-time profits, complain critics like John Nutt, who teaches electrical engineering at the Auckland Institute of Technology: Nutt said that Mercury Energy cut its staff by half in recent years. Its No. 1 mistake, he stated [1], was "creating a company where the people who run the system are afraid of pointing out problems because they are afraid of being made redundant" (British parlance for losing their jobs).

Since the Auckland outage was the up-shot of eccentric and patently unsatisfactory local conditions, are the lessons also merely local? By no means.

First the crisis shows that, as electricity systems are restructured world-wide, reliability can depend critically on the details of how re-regulation is executed.

Second, if system failures results, both the old and the new players can expect to be held to account. Besides suffering public censure, authorities in New Zealand are preparing to be hit with hundreds of millions of dollars in law suits for business and personal damages.

Third, the Auckland outage was the second major utility catastrophe of 1998 linked to extreme weather, the first being the ice storm that caused hundreds of dollars in damage in north-eastern North America in January. The outages send an alarm that utilities everywhere need to reassess their emergency planning and assumptions about future climatic extremes.

Worst-case assumptions about future weather are based on historic averages. But with data showing that the world is getting warmer - amid lots of disagreements as to why - the standard worst-case scenarios may have to be revised along more pessimistic lines.

Monday, February 09, 1998 12:00 pm

MAJOR CBD CABLE FAULT - POWER REDUCTIONS ESSENTIAL

A major cable fault to Auckland's Central Business District power supply will require people and businesses in the area to make an immediate and ongoing reduction in power use for at least the next three weeks. Two cables supplying electricity to the CBD are affected and the area is now reliant on the only remaining back-up power cable, however this alone cannot withstand the full CBD power load. Mercury Energy General Manager Network Richard Gibbons says power consumption in the Downtown area and the area between the waterfront and Spaghetti Junction, Victoria Park and Albert Street will need to drop by 10%. "If these power reductions aren't achieved immediately we may have to introduce rotating power cuts across the CBD area. These would come without warning and would occur up to three times a day for 30 minutes at a time," says Mr Gibbons. Mercury Energy has redistributed its electricity load to bring the maximum available power to the CBD, is installing temporary generation at Ports of Auckland and is investigating other potential generation sources such as ships and stand-by generation at inner city buildings. Mr Gibbons says the redistribution of electricity load has reduced the overall security of the network and any other incident or fault could cause power problems in the areas adjacent to the CBD. To reduce power consumption those who work and live in the CBD can do a number of things:

- Turn off lighting which is not absolutely essential
- Turn off all computers not being used
- Close all curtains on the sunny side of the building to keep heat out, reducing the impact on air conditioning systems
- Set air conditioning thermostats to a slightly higher, yet safe, level (25 degrees instead of a chilly 19)

- Dress cool for work
- Ensure fridge and freezer doors are shut

Regular updates on power reductions will be released hourly throughout the day tomorrow to Auckland news media and a date for full restoration of power to the area will be announced as soon as it is known.

Tuesday, February 10, 1998 11:00 am

CBD CABLE FAULT UPDATE

Power supply in the CBD area is stable - thanks to a combination of over-cast weather, business co-operation and a general reduction in electricity use. Mercury Energy's General Manager Network Richard Gibbons says the cloudy start to the day has meant the scorching heat of recent weeks hasn't been a problem this morning, with less energy required to power major electricity equipment such as air conditioning systems. "We've also grateful for assistance with generation from Ports of Auckland, Telecom and Air New Zealand. Their stand-by generation reduces the load on the remaining CBD power cable," says Mr Gibbons. Mercury Energy staff have been in contact with major users of air conditioning who have also agreed to reduce their power usage. "If sunshine should break through we'll be looking at a peak electricity demand from about 2 pm to 3 pm, so continuous reductions put in place now will help avoid the need for power reductions," he says. Further updates on electricity usage on the CBD will be distributed throughout the day.

Tuesday, February 10, 1998 12:00 pm

CBD CABLE FAULT UPDATE

Power usage in the part of the Auckland CBD affected by last night's major cable fault is currently within the limits of the remaining electric cable - but the period of peak demand has yet to come. Mercury Energy's General Manager Network, Richard Gibbons, says people arriving at work in the CBD can make changes now to help achieve the 10% power reduction needed to avoid power cuts. "We're asking people who are arriving at work to think twice before turning on unnecessary lights, close blinds on the sunny side of the building to keep out the heat and increase the temperature on air conditioning thermostats so air conditioning systems use less power," says Mr Gibbons. Peak power demand in the central city usually occurs in the afternoon, however the current extreme temperatures mean demand is constantly high throughout the day. This makes power re-

duction measures necessary at all times of the day. Mercury Energy is contacting building managers in the CBD to ensure buildings with stand-by generation have it in place and ready to go. Stand-by generators can help reduce electricity load on the city. Further updates on electricity usage on the CBD will be distributed throughout the day.

Tuesday, February 10, 1998 4:00 pm

CBD CABLE FAULT UPDATE

Auckland's Central Business District has survived today's peak power demand and electricity supply to the area remains stable. Mercury Energy's General Manager Network Richard Gibbons says today's overcast conditions and the strength of co-operation from businesses and workers in the CBD meant the area's remaining supply cable managed throughout the day. Mr Gibbons emphasised that the area affected was the Auckland central city area, and Auckland's outer suburbs were not affected by the cable fault. Staff and overseas specialists will continue to work throughout the night to repair the faults which will take at least three weeks to repair. In preparing for another day of power reductions Mr Gibbons asked city workers to continue the commitment to power reduction they had shown today. "As you leave the office it's important all unnecessary lighting is turned off, computers are turned off, and any air conditioning which isn't absolutely should also be turned off," he says. "Restoring the CBD to full power will take some time, however a continuation of today's power reductions will help us avoid rotating power cuts."

Wednesday, February 11, 1998 9:00 am

CBD CABLE FAULT UPDATE

With a high of 26 degrees forecast for Auckland City today Mercury Energy is calling for a repeat effort of the power reductions which kept the electricity supply running yesterday. General Manager Network Richard Gibbons said without yesterday's combined inner-city business generation and general power reductions the CBD would definitely have lost power supply. "A review of power consumption in the CBD yesterday shows we just managed to stay within breaking levels. With today expected to be a hotter day continuing power reductions are critical if we are to avoid rotating power cuts," he says. Those working in the area between the waterfront and Spaghetti junction, Victoria Park and Auckland University would be affected by any outages. Mercury Energy will continue to make system changes within its network to re-route more power into the city and lessen stress on the remaining CBD power cable. Staff are also looking at

back-up generation options both here and overseas, with the possibility of a ship or land based generation units being fully explored.

Wednesday, February 11, 1998 2:30 pm

CBD CABLE FAULT UPDATE

The CBD power supply remains stable during today's peak electricity demand period (2-3 pm) thanks to lower than forecast temperatures, ongoing use of stand-by generation and power saving measures. Mercury Energy General Manager Network Richard Gibbons says today's forecast high of 26 degrees should have been reached by now, but the high so far was just 21 degrees with overcast skies. "A five degree change makes a great deal of difference to the electrical network in the CBD. The support of Auckland businesses running on stand-by generation rather than drawing power from the network, along with general city-wide power conservation, is of great help," says Mr Gibbons. Mercury Energy staff are continuing with their international search for generators which will further reduce the load on the remaining CBD cable while engineers focus on ways to draw more support power for the area by reconfiguring the network. Mr Gibbons stressed that the need for power reductions was necessary only in the CBD area between the waterfront and Spaghetti junction, Auckland University and Victoria Park.

Thursday, February 12, 1998 8:30 am

CBD CABLE FAULT UPDATE

As work continues on the cable fault to restore 110 kV power supply to the CBD Aucklanders are being asked to continue their power reduction measures and prepare for this week's warmest day yet. Mercury Energy General Manager Network Richard Gibbons says the forecast high is 24 degrees, and with clear skies over the central city it looks like we'll get there. "Hot weather plays a large part in the draw on the electricity needed to power air conditioning systems, so small things like closing curtains on the sunny side of the building can prove very effective," he says. "Today's peak will be longer than yesterday's because we don't have the cloud cover and lower temperatures. It will last from 10 am to 4 pm, so reductions need to start immediately and last all day." Further modifications to the central city network structure mean the CBD's power system has been strengthened, and with the continuation of stand-by generation from inner city businesses and individual power reductions the peak demand period should be manageable. "We'll be monitoring usage very closely throughout the morning, and if it looks like we're getting close to exceeding system

limits we'll notify the Auckland news media," he says. Mr Gibbons said the level of commitment from people in the CBD was humbling, with the stand-by generation assistance from large companies being matched by the tolerance of their staff "We know how tough it's been for people and we're extremely grateful. For example, Clear Communications have reduced power consumption to the stage where 800 people share the use of one lift," he says. Mercury Energy engineers will continue monitored patrols of the cables running from Mt Roskill and Kingsland to the CBD to ensure the safety of support power flowing into the area.

Thursday, February 12, 1998 5:30 pm

CBD CABLE FAULT UPDATE

Despite conditions which were far more challenging than in previous days, reductions in power usage meant the remaining Auckland CBD cable was able to supply power throughout the day. For several hours temperatures exceeded 26 degrees, however the ongoing assistance of stand-by generation and power reductions meant the network was not under undue stress. Mercury Energy General Manager Richard Gibbons says today's efforts were just what the doctor ordered, and his message considering tomorrow's forecast high of 25 degrees; "More of the same please". "We've been really encouraged by the extra effort Aucklanders have put in when faced with temperatures considerably higher than in the past few days," he says. While Mercury Energy had suggested power reduction measures such as closing curtains on the sunny side of the building and turning off unnecessary lights and computers Mr Gibbons said there must be other ideas creative Aucklanders have come up with. "If people have introduced innovative ways to reduce power consumption we'd love to hear them. The more ideas we share the better our chances of avoiding the need for rotating power cuts," he says.

Friday, February 13, 1998 9:30 am

CBD CABLE FAULT UPDATE

Today's cloudy conditions and lower temperatures should provide welcome relief to the strain on the Auckland CBD's remaining power cable. Mercury Energy General Manager Network Richard Gibbons says the ongoing focus on power reductions by inner city workers, and continuing use of stand-by generation will still be needed. Businesses using stand-by generation will today be contacted and advised to turn their generators off over the weekend as the draw on the Mercury Energy network is reduced. Mr Gibbons says the weekend will be an extremely busy time for Mercury

Energy staff. "With less power use in the CBD and reduced traffic flows we'll be focusing on technical and operational improvements to the network. If switchgear and cabling need to be moved through city streets this will be the least inconvenient time to do it," he says. Mr Gibbons says any ideas on power reduction can be shared with other Aucklanders by faxing Mercury Energy.

Friday, February 13, 1998 4:00 pm

CBD CABLE FAULT UPDATE

Mercury Energy is developing a new CBD power source which will remove the need for power reductions and stand-by generation in the area earlier than expected. A new 22 kV circuit will connect the Liverpool St and Quay St substations. The two kilometre circuit will be an overhead line, running via newly erected power poles between the two substations. Mercury Energy General Manager Network Richard Gibbons says the overhead line is a temporary measure which means power supply should be restored to normal several days earlier than expected. "Thanks to co-operation from the Auckland City Council and Transit New Zealand we'll be able avoid the need for stand-by generation and possible power cuts sooner than we'd hoped. We'll also have enough supply should one of the 110 kV cables still be found to have problems when repaired," says Mr Gibbons. "Work on the overhead line begins Tuesday, with Mercury Energy engineers and consultants finalising the design and arranging delivery of equipment over the next three days. With two gangs starting from each substation we expect them to meet in the middle and provide the new supply by February 27." The new cable will run from the Liverpool Street substation, across Symonds St, down Whitaker Place, across the Grafton gully and motorway, then down the side of the motorway, along Stanley St, Beach Rd, into the Tinley St extension and be connected to the Quay St substation. Mr Gibbons says stand-by generation from CBD businesses would not be needed once the cable was in place and people living and working in the area could be "cautious but comfortable" with the electricity use. The overhead line will resemble a standard domestic power pole arrangement and has been chosen over other options because it is the least inconvenient to people in the CBD, will cause little damage to the environment and is quicker to install than underground cabling. "We considered laying the line in a trench between the two substations, however many of Auckland's inner city roads have a concrete base, and cutting through them would have taken too long," he says. "The highly technical nature of cable repair means they sometimes fail when tested after gas and oil pres-

surisation. With this cable we'll have normal supply to the CBD either way."

Sunday, February 15, 1998 5:30 pm

CBD CABLE FAULT UPDATE

Mercury Energy engineers today completed all network realignments to bring extra power into the CBD, with tomorrow 'test time' in light of a forecast 27 degree high. With stand-by generators from inner-city businesses ready to go as the city returns to work tomorrow Mercury Energy General Manager Network Richard Gibbons says he is cautiously optimistic power supply will remain stable over the coming week. "As Aucklanders arrive at their CBD offices tomorrow our message is to continue to do the little things which help reduce power consumption. Keeping air conditioning at 25 degrees, close blinds on the sunny side of the building and switch off unnecessary lighting and computers - it really makes a difference," says Mr Gibbons. Tomorrow's weather forecast for the CBD shows clear skies and a 27 degree high, with variable conditions and generally warm weather for the rest of the week. "With a warm day expected tomorrow we'll be able to test the impact of the network realignment, which has hopefully increased the network's resistance to a fault in the remaining supply cable," he says. "Last week we saw the network come close to breaking point on Wednesday, which was a cloudy, overcast day. The message would seem to be that power reductions are important at all times, not just when it looks sunny outside."

Monday, February 16, 1998 6:00 pm

CBD CABLE FAULT UPDATE

Aucklanders can look forward to a cooler day in CBD offices tomorrow - power reduction measures and increased supply to the city mean air conditioning systems will be able to run at lower temperatures. Mercury Energy General Manager Network Richard Gibbons says today's testing of power realignment on the network found there was now room for some extra load. "On a warm day when power consumption around the region was higher than usual, people in the CBD continued with power reductions. Their efforts have been so substantial that air conditioning systems in the area can now be turned down from 25 degrees to 22 degrees," says Mr Gibbons. "While we can afford a slight increase in the power consumption on air conditioning systems we still need people to turn off unnecessary lighting and computers, and close blinds on the sunny side of the building." Mr Gibbons says Mercury Energy engineers will monitor power use

closely during tomorrow's forecast 26 degree high, and it is hoped the increased load from air conditioning will be able to continue until a normal level power supply returns in about two weeks. Some of the inner-city businesses supplying stand-by generation were now able to turn their generators off, although they have agreed to switch them on again if needed. Construction begins tomorrow on the 22 kV overhead circuit connecting the Liverpool and Quay St substations following final design work over the weekend. Four gangs are working from each substation and are expected to meet in the middle on February 27. The circuit will provide support until the two main 110 kV supply cables are repaired, tested and working.

Tuesday, February 17, 1998 6:00 pm

CBD CABLE FAULT UPDATE

Auckland's remaining power supply cable has handled the slight increase in power use as a result of cooler offices in the CBD today. Mercury Energy General Manager Network Richard Gibbons says yesterday's recommendation that air conditioning system temperatures be reduced from 25 degrees to 22 degrees seems to have been greeted with universal action. "Aucklanders have really cooled off today, with power usage throughout the CBD higher than in previous days, which was to be expected. The good news is that power reduction techniques appear to be continuing," says Mr Gibbons. "These ongoing reductions are important as our circuits were at full load during much of the day, even with the assistance of CBD generation. Should anything further happen, such as a rise in temperature, we may need to reinstate the call for extra reductions." Mr Gibbons says construction work on the new 22 kV supply circuit linking the Liverpool and Quay St substations is right on schedule, with several holes for power poles already excavated. And the outlook for tomorrow: "We can expect another day of relative comfort if power reduction measures continue as they did today."

Wednesday, February 18, 1998 6:00 pm

CBD CABLE FAULT UPDATE

Mercury Energy's remaining CBD power supply cable enjoyed less stress during today's peak electricity demand thanks to rain and overcast skies. The weather, however, did nothing to stop progress on the construction of the new 22 kV back-up circuit which will link the Liverpool and Quay St substations. Mercury Energy General Manager Richard Gibbons says crews have been working through every ounce of daylight to erect power poles

between the two substations. "Work on the new circuit is going very well, and thanks to extra crews we've brought in the power poles have been erected at about three times the normal speed," says Mr Gibbons. "Tomorrow we expect to start hanging cable from the poles and have the lines in place by the weekend. While the circuit will appear to be complete we'll still have to carry out extensive switching and testing next week." Mr Gibbons says the work is on schedule to finish by February 27, and is proceeding as fast as is safely possible. "Our main concern is that power reductions continue over the next week and a half and that people don't assume that a cooler day and a bit of rain means the problem's over," says Mr Gibbons. "Although people can't see our transformers and electrical circuits they really are under pressure. We've even installed additional sprinkler systems to keep transformers cool if demand increases suddenly."

Thursday, February 19, 1998 8:30 pm

CBD CABLE FAULT UPDATE

Power supply has been restored to the Auckland CBD following this afternoon's 3.15 pm power cut - but power reductions are more essential than ever if cuts are to be avoided tomorrow. Mercury Energy General Manager Network Richard Gibbons says the fault occurred on a major cable outside the central city, however it was transmitting power to the CBD. "While we believe we can supply power to the CBD tomorrow we'll need every ounce of assistance from people in the area if we are to avoid another power cut," says Mr Gibbons. "Engineers will manage the CBD's power load tomorrow by moving electricity from one substation to another. This means people could experience power cuts of several minutes duration as the transfers are made." Mr Gibbons says all inner-city standby generators will be operating tomorrow to help reduce demand on the network. "We've managed to locate the fault and will be working on it 24 hours a day until it is repaired. At this stage we're unsure when that will be, but we'll keep Aucklanders up to date as developments occur," says Mr Gibbons. Today's power cut occurred on a 110 kV line outside the CBD area which was being used to bring power from Mt Roskill to Mercury Energy's Liverpool substation. The previous faults have affected lines from Penrose to Quay St substations. Mr Gibbons says while the exact cause of the fault is not yet known, it was not a result of overloading. "Power reduction measures have been working well and there was no indication that this cable would suffer damage. While it is not based in the CBD and is not part of the network area we've been so concerned about over the past week, it was bringing power into the area and its failure caused tripping of switches which led to the loss of power throughout the

CBD," he says. Mr Gibbons says people in the CBD would need to reintroduce the full power reduction measures they adopted last week - including turning air conditioning temperatures up to 25 degrees, turning off unnecessary lighting and computers, and closing blinds on the sunny side of the building.

Friday, February 20, 1998 11:00 am

CBD CABLE FAULT UPDATE

The Auckland CBD is likely to sustain two-hour long rotating power cuts throughout today, with power reductions remaining critical to ease pressure on the network. Mercury Energy General Manager Network Richard Gibbons says the central city's power supply is on a knife's edge, and had already suffered one cut this morning. "At 9.24 am we cut power supply to the Karangahape Road area to avoid damage the cables supplying that area. We're likely to have to do the same for other areas without notice throughout the rest of the day," says Mr Gibbons. "While we do all we can to move power load to match the city's needs it's crucial people put in place any extra power reductions they can think of." Mr Gibbons says engineers have changed protection settings on all circuits so that cables can run at maximum capacity, but it's simply not enough to handle normal load. "People in the CBD should adopt automatic back-up for computer files, keep up with the air conditioning and lighting reductions and be prepared for power cuts," he says. "As power cuts may last up to two hours people should also avoid the use of lifts in case power is lost during transit."

Friday, February 20, 1998 2:30 pm

CBD CABLE FAULT UPDATE

There have been two interruptions to the Auckland CBD power supply, although both were restored within 20 minutes. The first, at 9.24 am affected the Karangahape Road area and involved switching power off to avoid damage to cables. The other cut, at 12.30 pm, was unrelated to the current problems and was caused by accidental cutting of a cable by a contractor on an inner city building site. Power in the Victoria St area was affected. Mercury Energy General Manager Richard Gibbons says thermographic cameras and foot patrols are being used to monitor the city's stressed network as it operates at emergency levels. "Thermographic cameras allow us to see just how warm transformers are getting so we can avoid overheating. Foot patrols between the city and main substation are there to ensure cables are not damaged," he says. Mr Gibbons says power

cuts are still a possibility this afternoon and could last as long as two hours. "To help reduce the likelihood of cuts CBD workers should maintain their power reductions, avoid using lifts and ensure computer files are automatically backed up on a regular basis."

Saturday, February 21, 1998 10:30 am

MERCURY ENERGY WELCOMES REVIEW, ACCEPTS CABLE FAILURES ARE ITS RESPONSIBILITY

Mercury Energy chief executive Wayne Gilbert says the company will welcome any independent review of the failure of four main cables feeding Auckland's Central Business District. "I will be suggesting that the president of the Institution of Professional Engineers of New Zealand nominate a person to carry out this review", he said. Mr Gilbert said that Mercury Energy accepted responsibility for the failure of the cables. However, Mercury Energy's design standard for the CBD network was the same as for similar sized cities in Europe. "Industry experience is that the loss of four cables within a few weeks is unprecedented", he said. In his statement today, Mr Gilbert also dealt with the issues of compensation to customers, and refuted claims of negligence. He said the immediate needs and priorities were to: Restore power by fixing the faults on the two Roskill-Liverpool cables; complete the repair on the Penrose-Quay cable; and fill and return the cables to service as possible Stabilise the situation by co-operating with emergency and civil services to make optimum use of facilities and supplies; helping to protect health and safety; protecting the one remaining cable Communicate with affected customers with advice on progress to restoration, with regular briefings over the coming week their rights in respect of compensation Mercury Energy will absolutely honour its contractual agreement with customers. Customer care programme payments will be made, with no attempt to invoke force majeure, he said. Mr Gilbert said that Mercury Energy would waive line charges for the period affected customers were not served power. Dealing with claims of company negligence, Mr Gilbert said it was false to say the company had been preoccupied with corporate matters. The \$120 million CBD supply tunnel project, the largest of its type for any power company in New Zealand, is and has been progressed without delay from the outset. The tunnel makes redundant gas-filled cables and is due for completion by the end of 1999, about one month late. "The project was initiated with board approval in 1994 and by 1995 was scoped and estimated," said Mr Gilbert. "The environmental consents, other approvals and leases took until 1997 and concurrently tenders were invited and accepted, with work starting last year." It has always had priority and has never been held back

by board or management. Mr Gilbert said claims of failure to maintain the CBD network were also false. The failures have occurred in buried cables. Once in place they stay there, with regular checking. All protection and switchgear and transformers have performed properly.

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- Restore power by fixing the faults on the two Roskill-Liverpool cables; complete the repair on the Penrose-Quay cable; and fill and return the cables to service as soon as possible
- Stabilise the situation by co-operating with emergency and civil services to make optimum use of facilities and supplies; helping to protect health and safety; protecting the one remaining cable
- Communicate with affected customers with advice on -- progress to restoration, with regular briefings over the coming week -- their rights in respect of compensation

"Mercury Energy will absolutely honour its contractual agreement with customers. Customer care programme payments will be made, with no attempt to invoke force majeure," he said. Mr Gilbert said that Mercury Energy would waive line charges for the period affected customers were not served power. Dealing with claims of company negligence, Mr Gilbert said it was false to say the company had been preoccupied with corporate matters. "The \$120 million CBD supply tunnel project, the largest of its type for any power company in New Zealand, is and has been progressed without delay from the outset." The tunnel makes redundant gas-filled cables and is due for completion by the end of 1999, about one month late.

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Saturday, February 21, 1998 12:15 pm

URGENT NOTICE: CBD POWER SUPPLY

Aucklanders are being asked not to visit Auckland's central business district following power cuts to most of the area. Areas without power for the next seven days are bordered by Stanley St, Beach Rd, Quay St to the Viaduct basin, most of Fanshaw St, the western side of the city bounded by Nelson St and up to Spaghetti Junction along with the Karangahape Road area and most of its side streets. Upper Queen St including the western side streets and a section of Eden Tce is also affected. People who currently have power in this area may not have continuous supply - and everyone should treat all wires as live at all times. The limited amount of electricity available has been allocated to the needs of emergency services so health and safety are given top priority. Electricity is not guaranteed to any other customer in the CBD for the next seven days. A combined meeting between Mercury Energy and emergency services was held this morning and Aucklanders are being advised to adopt the following measures as the area faces a loss of power for seven days: People living in an apartment building should check their neighbours to ensure they are OK. Building owners should come in to the city and check their buildings and lifts to make sure people have not been trapped in lifts If you live in the

central city and you have no power please seek alternative accommodation outside the area. Auckland Hospital and the Starship Hospital are currently providing services as usual. Contingency plans have been put in place to ensure essential services are maintained under all circumstances. Food premises without continuous power supply should not serve perishable foods. Where possible do not operate food premises affected by power cuts. We advise all businesses affected to remain closed over the next week, or relocate if possible for that time. GPs in the CBD will continue to operate as usual. The Hero Parade will go ahead, but people are being asked not to move into the city afterwards. If you are in an area where a blackout has occurred please make efforts to conserve water.

Sunday, February 22, 1998 11:15 am

FURTHER PUBLIC SAFETY ANNOUNCEMENT FROM AUCKLAND'S EMERGENCY SERVICES

All available staff worked throughout the night on cable repairs to the Auckland central city's power supply. While good progress was made and repairs are running to schedule there is no change to the timetable for restoration. Due to the low weekend power demand most street and security lighting continued to operate last night, however as demand increases throughout the day this will change. Those who currently have power in the CBD are likely to lose it and if those who don't have power, shouldn't expect it to return until next weekend. Businesses and building owners who have not checked their premises and made early decisions about closing down their operations for next week, should do so today. Emergency services advise people not to visit the CBD unless their visit is essential. Areas without power until next weekend are bordered by Stanley St, Beach Rd, Quay St to the Viaduct basin, most of Fanshaw St, the western side of the city bounded by Nelson St and up to Spaghetti Junction along with the Karangahape Road area and most of its side streets. Upper Queen St including the western side streets and a section of Eden Tce is also affected. Emergency services agree health and safety issues are paramount and all thawed food should be discarded immediately. Auckland City is arranging special refuse collections from Monday. A record should be kept of any food disposed of and people should advise their insurance company. Householders who suffer loss or damage as a result of the power breakdown should contact their insurance company as soon as possible. Health officials will be visiting all food premises in the affected area from tomorrow morning to ensure that all required health and hygiene standards are being met. Residents in city high rise buildings without power and the possibility of losing water and sewerage systems in their building should make

arrangements to relocate out of the CBD area. If in doubt contact your manager. Those in the CBD should continue to adopt the following measures: People living in an apartment building should check their neighbours to ensure they are OK. Auckland Hospital and the Starship Hospital are operating normally. Contingency plans have been put in place to ensure essential services are maintained under all circumstances. Food premises affected by power cuts should not open.

Sunday, February 22, 1998 5:15 pm

FURTHER PUBLIC SAFETY ANNOUNCEMENT FROM AUCKLAND'S EMERGENCY SERVICES

Auckland's CBD power situation should not become a Civil Defence emergency if people follow the advice of emergency services. Information issued early yesterday has not changed and those who currently have power in the CBD are likely to lose it. Those who don't have power, shouldn't expect it to return. Emergency services advise building owners and businesses not to open until further advice as any power available will only be sufficient for hospitals and emergency services. Auckland and Starship Hospitals are operating normally and back-up generation systems are in place. Emergency services and other key operations such as the EFTPOS system have also been supplied with back-up generators. Many traffic lights will not be operating and there will be severe congestion in the CBD if large numbers of vehicles attempt to access the inner city during the working week. Areas without power until next weekend are bordered by Stanley St, Beach Rd, Quay St to the Viaduct basin, most of Fanshaw St, the western side of the city bounded by Nelson St and up to Spaghetti Junction along with the Karangahape Road area and most of its side streets. Upper Queen St including the western side streets and a section of Eden Tce is also affected. Visits to food premises in the area by health officials began today to ensure all required health and hygiene standards are being met. Food kept in refrigerators and freezers affected by power cuts must be disposed of and records should be kept for insurance purposes. Auckland City will arrange special refuse collections where necessary.

Monday, February 23, 1998 1:15 am

FURTHER NEWS UPDATE FROM AUCKLAND'S EMERGENCY SERVICES

Auckland's CBD power situation should not become a Civil Defence emergency as people appear to have followed the advice of emergency services. On the first day of the working week Police advise that traffic

volumes varied from relatively normal to 40% below a usual Monday morning. Many workers who came into the CBD collected files and other office material and left again. While many traffic lights were off, inner city traffic flows were manageable throughout the normal morning peak. Weekend warnings concerning the limited power were accurate. While some buildings had power earlier this morning between 7 am and 9.30 am 18 supply feeders were cut to manage the limited supply. Those without power should not expect it to return until the end of the week at the earliest. People living in inner city apartments who can no longer cope because of power cuts should contact family and friends or arrange alternative accommodation. Police have praised the behaviour of residents and visitors in the inner city, they have had no reports of increased crime or vandalism. Auckland and Starship Hospitals continue to operate. Should the final CBD power cable fail hospitals now have sufficient generator capacity to continue normal operations. The areas without power until next weekend continue to be those bordered by Stanley St, Beach Rd, Quay St to the Viaduct basin, most of Fanshaw St, the western side of the city bounded by Nelson St and up to Spaghetti Junction along with the Karangahape Road area and most of its side streets. Upper Queen St including the western side streets and a section of Eden Tce is also affected. Visits to food premises by health officials continue. They want to ensure all required health and hygiene standards are being met. Food kept in refrigerators and freezers affected by power cuts must be disposed of and records should be kept for insurance purposes. Auckland City will arrange special refuse collections where necessary.

Monday, February 23, 1998 2:00 pm

CBD CABLE FAULT UPDATE

Mercury Energy is on schedule with repairs to its four disrupted CBD power cables and has arranged generation units to ensure power supply to emergency services and essential city operations. Richard Gibbons, Mercury Energy's General Manager Network, says a reduced level of power supply is still planned for Saturday. This morning's power demand began to rise at 7 am, and by 9.30 am 18 city feeders had been cut to avoid further damage the remaining city power supply. Mr Gibbons says power demand from the inner city was down 70 MW on the usual demand, a reflection on the number of businesses which had chosen not to open today. Over the weekend Mercury Energy staff sourced generation units from around New Zealand to ensure emergency services and essential city operations maintained supply. Generation has now been installed at the Auckland Hospital, Starship Hospital and NZ Fire Control Centre. Gen-

eration has also been installed at Radio New Zealand to ensure communications are maintained, Ports of Auckland, and a number of city hotels which will act as emergency shelters should the need arise. All generation placement is in accordance with Civil Defence advice. Repairs on the four cables are progressing well, with the second Penrose to Quay 110 kV cable ready to be re-pressurised following the completion of jointing earlier today. Testing will follow and the line is on target to be re-energised on Friday. Repairs on the other Penrose to Quay cable began this morning and should be complete in five days, followed by re-pressurisation and testing. It is expected to go live from Wednesday next week. The first Roskill to Liverpool cable which faulted last week is proceeding well with jointing ready to begin, while the other cable, which is set into the side of a bank, is providing a challenge because a 4 metre chamber must be created around it to provide a safe working area for engineers.

Tuesday, February 24, 1998 12:30 pm

CBD CABLE FAULT UPDATE

Mercury Energy is on track for the repair of the Penrose to Quay St gas-filled power cable by this Sunday. Richard Gibbons, General Manager Network, says the CBD will have about 50% of its normal power supply for the next working week, which means rotating power cuts will be in place. The timing and duration of these power cuts will be advised before the end of the week. Work on the remaining cables is also proceeding as planned, and Mr Gibbons says normal power supply for the CBD is scheduled for Monday March 9 - a date which could be affected by poor weather or problems in re-gassing of the cables. To assist with the power needs of the central city Mercury Energy engineers have introduced hot water load management throughout the day in the suburbs surrounding the CBD. "These cuts to hot water heating only affect residential customers and our advice to people in the areas affected is to shower before 7 am when cuts take place. There may be a shortage of hot water in the evenings as a result of the load management," says Mr Gibbons. A series of localised power outages in other parts of Auckland is unrelated to the problems faced in the CBD, with last night's storm affecting some areas. Power supply to the suburbs is from a different set of cables used to supply the CBD. Mr Gibbons says a number of businesses in the central city have asked why their power has remained on despite warnings of cuts, and he advises all CBD power supplies are erratic. "Our first priority is to supply power for emergency needs. Any extra capacity is rotated round the city as fairly as possible so security alarms and other back-up electrical devices in buildings can recharge," he says. "Some businesses nearer a substation may

have power for longer periods than others simply because they are close to the power source."

Tuesday, February 24, 1998 1:30 pm

MERCURY ENERGY STATEMENT ON DOMAIN CONCERT

Schweppes Showtime will still proceed this Saturday (February 28) in the Auckland Domain, however Mercury Energy will not be supplying the power. "Our prime objective at this time is to restore power to the central business district" said Mike Cahill, Mercury Energy's General Manager of Marketing. "Although the Auckland Domain is outside the supply area affected, Mercury Energy's focus, energy, and resources are fully deployed into the restoration of power as quickly as possible, including generators to provide emergency services. We are therefore unable to supply power to the show". Mr Cahill said "Mercury Energy has been a sponsor of the Domain concerts since they first began in 1993, and we are disappointed we cannot supply power for this event, however at this time our priorities lie with restoring power as quickly as possible."

Tuesday, February 24, 1998 8:30 pm

CABLE OUTAGE UPDATE

Mercury Energy is flying seven 1250 kVA generators from Australia tomorrow to further strengthen its generator support of the Auckland CBD's emergency and essential services. The units will provide a 9 MW boost to the 22 MW of generation Mercury Energy has rushed into the city over recent days. They are due to arrive from Brisbane aboard a Russian Antonov 124, with installation set to begin from tomorrow afternoon. Mercury Energy General Manager Network Richard Gibbons says the 14 day generator rental will cost between \$1.5 and \$2 million. They will be located in accordance with Civil Defence advice. "The generators will provide a significant improvement to the city's ability to cope in the event of a further cable failure," he says. "We will configure them so that, wherever possible, the effect of rotating power cuts on the CBD will be lessened." The importation of generators completes Mercury Energy's programme to meet the needs of Civil Defence sites which began immediately following the loss of the remaining 110 kV CBD power cable on Friday evening. The generators will provide uninterruptable power supply for the Civil Defence sites which range from Hospitals through to radio and television stations and hotels, which would be used as emergency shelters if needed. Mr Gibbons stressed that Mercury Energy was not charging any customer for generators, although he was aware of the high rentals being

asked by some private operators. "All generation supplied by Mercury Energy is at our cost and is allocated in accordance with Civil Defence guidelines. The allegedly excessive rentals being charged by some companies have not been arranged or endorsed by us."

Wednesday, February 25, 1998 11:00 am

MORNING NEWS UPDATE FROM AUCKLAND'S EMERGENCY SERVICES

Mercury Energy has advised that power cuts to those buildings in the city which have had an intermittent supply since the weekend are following similar patterns to those which applied over the last two days. Slightly fewer feeders have been cut this morning and the number of independent generators now operating in the CBD has helped the overall supply situation. Health Officials are becoming concerned about food storage in premises which have power only from time to time. During the down time, temperatures in refrigerators and freezers are rising and perishable food is at risk. Food premises are being continuously monitored and in cases where hygiene standards become unacceptable some outlets may be required to close in the interest of public health. To assist restaurants and food outlets with frozen food storage, Auckland City has arranged for a refrigerated trailer unit to be parked in Queen Elizabeth Square from 2 pm today (Wednesday). This will be available for any business wishing to store food requiring refrigeration. It should be contained in clearly marked boxes. There will be 24 hour access to the unit which will be under 24 hour security. For further information phone 379-2020. Emergency services agreed that reopening Auckland University and AIT from next Monday was realistic and students coming into the inner city would not adversely affect the situation. Auckland Police are advising people wishing to come into the CBD to telephone the restaurant, hotel, professional office, or retail store they wish to visit to ensure they're open and that the service being sought is available. As a number of businesses are now operating generators and are able to supply basic services, they are in a position to look after customers. Fire service and health and safety officials are still concerned over the operation of emergency generators. The fire service attended two more generator fires yesterday and also had to cope with petrol and diesel spills. They stress the need for generators to be operated within their capacity in well ventilated open areas. Building owners should check with reputable hire companies and ensure they are professionally installed. The fire service recommends a check of building fire alarms which are generally battery operated. In buildings which have power for part of the day the supply batteries should recharge but in some cases this has

failed and the alarm system does not work. Auckland City parking officers are still on duty in the CBD and while sympathetic to the needs of motorists during the power crisis, they still need to ensure that roads are safe and on-street parking is managed. Illegal parking on broken yellow lines and bus stops will be policed, as vehicles illegally parked on broken yellow lines near traffic lights obstruct traffic flows.

Wednesday, February 25, 1998 12:00 pm

CABLE OUTAGE UPDATE

Mercury Energy is pleased to report repairs to its four damaged cables are proceeding on schedule. Mercury Energy General Manager Network Richard Gibbons says they expect to have the first Penrose to Quay Street cable completed by Sunday. Work on the two oil filled cables from Roskill to Liverpool Street is also going according to plan. Jointing is expected to be completed on the first cable on Friday night and the second cable on Saturday night. They will then have to be oiled, pressurised and tested before going into service. Mercury Energy has flown in 11 jointers from Sydney, Melbourne and Brisbane and also additional oil mechanics from Christchurch. The staff are working around the clock in an effort to ensure the repairs are completed on schedule. The freight plane bringing in seven generators from Australia is expected to arrive at Auckland International Airport between 4 pm and 5.30 pm. Mercury Energy will advise the media as soon as the plane's arrival time is confirmed. An additional five tonnes of related equipment, such as cabling, is arriving from Sydney on Qantas flight 43 at 4.20 pm today. The generators on board the plane are being located in accordance with Civil Defence advice and will be deployed in key areas of the CBD. These additional generators will satisfy Civil Defence requirements, and they will reduce the load on the network as those sites no longer require main supply. The generators will increase the power load Mercury Energy has installed to 31 MW from the 22 MW it has rushed into the city over recent days.

Wednesday, February 25, 1998 4:15 pm

AFTERNOON NEWS UPDATE FROM AUCKLAND'S EMERGENCY SERVICES

Mercury Energy has advised that power cuts to those buildings in the city which have had an intermittent supply since the weekend are following similar patterns to those which applied over the last two days. Slightly fewer feeders have been cut today and the number of independent generators now operating in the CBD has helped the overall supply situation.

Health Officials have concerns about food storage in premises which have power only from time to time. During the down time, temperatures in refrigerators and freezers are rising and perishable food is at risk. Food premises are being continuously monitored and in cases where hygiene standards become unacceptable some outlets may be required to close in the interest of public health. To assist restaurants and food outlets with bulk frozen food storage, Auckland City has arranged for a refrigerated trailer unit suitable for the storage of frozen food to be available in the CBD. Previously advised arrangements for this service have changed. The unit will now be parked in Galway Street behind Novotel and will be operating from 10.00 am tomorrow (Thursday). This will be available for any business wishing to store food requiring refrigeration until their normal operations resume. Frozen food for this storage arrangement should be contained in clearly marked boxes. There will be 24 hour security in place. Fire service and health and safety officials report a good response to problems with the operation of emergency generators. No generator fires or problems with petrol and diesel spills have been reported today. However they stress the need for generators to be operated within their capacity in well ventilated open areas. Building owners should check with reputable hire companies and ensure they are professionally installed. The fire service recommends a check of building fire alarms which are generally battery operated. In buildings which have power for part of the day the supply batteries should recharge but in some cases this has failed and the alarm system does not work.

Wednesday, February 25, 1998 5:15 pm

REPAIRS ON TRACK FOR PARTIAL POWER BY BEGINNING OF WORKING WEEK

Mercury Energy says work is proceeding to schedule and the restoration of the first 110 kV power cable bringing limited supply to the city should be complete in time for the working week. General Manager Network Richard Gibbons says rotating power cuts will still be necessary, with the length and duration of these to be determined by the end of the week. Repairs to other cables are progressing well and should see a restored power supply to the CBD by Monday March 9. Mr Gibbons says the Antonov 124 carrying generators and connection equipment is now in the air and heading towards Auckland Airport, following intense interest in Australia. "The co-ordination of the six generators has been a logistical marathon. One generator being transported via truck from Melbourne to Sydney received such strong media interest that a Police escort was required," says Mr Gibbons. Delays to the flight's departure means the Antonov is

now due to arrive this evening about 8.45 pm. (Media will be updated should this situation change). Mr Gibbons says there will now be six, rather than seven generators imported following difficulties with the Antonov's load limit. The loss of one generator will not affect the uninterrupted supply needed by the CBD's emergency and essential services. "The seventh generator could not be carried by the plane because of its maximum loading and the fact that the runway at Brisbane airport was too short to accommodate the extra run required." Generators will be located in accordance with the Civil Defence emergency and essential sites list, and are headed to the Ports of Auckland (for essential port services), Air New Zealand (for essential air transport services), TVNZ (for broadcast communications), the Hyatt Hotel (emergency shelter if required) and two will be injected into the Quay St substation to support the inner-city network.

Wednesday, February 25, 1998 11:30 pm

MAJOR OVERHEAD CBD LINK PROPOSED BY MERCURY ENERGY AS INTERIM SOLUTION

Mercury Energy announced tonight that it is investigating the feasibility of a major new temporary transmission link following the railway lines between TransPower's Penrose substation and the CBD. Tranz Rail has agreed to investigate Mercury Energy's initiative. Mercury Energy said it was on target with its repairs to the current system, which would enable it to meet CBD demands during the week beginning 9 March. But while the repairs will restore the system to full service, Mercury Energy will be operating the repaired cables at significantly reduced loads until the cause of the failures has been identified. It has also been working around the clock to find ways to reinforce the supply to the CBD so as to restore the security of supply to maximum protection levels. The temporary transmission link is one of several options under development, but is the most advanced. The others include new, smaller interconnections between the CBD and neighbouring substations; and new generation within the CBD. All would lower the loading on the existing cables. Mercury Energy emphasised that the project was not yet totally certain. While solutions have been identified to most of the difficult construction problems found to date, it's possible that there are hidden problem, and work is also continuing on the other options. The projected overhead link would be 9 kilometres long, and follow the railway line along most of its route. It would consist of two independent circuits on the same poles. The lines would completely replace the older Penrose - Quay gas insulated cables which initiated the current failures. These cables will remain in the ground, but unconnected. Mercury Energy said the construction time could

be less than 10 weeks. The new line would actually strengthen the CBD supply as its capacity will be 120 MW whereas the existing gas cables have been operating at a combined strength of only 46 MW prior to the failures. The overhead link project is not a long term option for the CBD supply. The new tunnel, presently under construction, would provide ultimate security for the CBD. The temporary line would be removed after the tunnel connection is completed at the end of 1999. The approvals for the project would be sought under the emergency works provisions of the Resource Management Act 1991. It would be impossible to get consents to build a permanent overhead line, which is why Mercury Energy is constructing the tunnel. But a temporary overhead line is a different matter. The advantage of the proposed new link is that it is quick to construct, and even the most major line fault could be repaired within a matter of hours. There is no buried cable, no oil and no gas.

Thursday, February 26, 1998 11:00 am

MORNING NEWS UPDATE FROM AUCKLAND'S EMERGENCY SERVICES

Emergency Services reported no overnight problems and with a large number of generators now supplying power to many buildings in the CBD more businesses are in operation than was the case early in the week. There is now no need for people to stay away from the CBD as many retail outlets are open for business. Health Officials have continuing concerns about food storage in premises which have irregular power supplies and no access to generators. During the down time, temperatures in refrigerators and freezers are rising and perishable food can be at risk. Food premises are being continuously monitored and in cases where hygiene standards become unacceptable some outlets may be required to close in the interest of public health. To assist restaurants and food outlets with bulk frozen food storage, Auckland City has arranged for a trailer unit to be available in the CBD. This is now operational in Galway Street behind Novotel, and is available for any business wishing to store bulk frozen food until their normal operations resume. Frozen food for this storage arrangement should be contained in clearly marked boxes. There will be 24 hour security in place.

Thursday, February 26, 1998 12:00 pm

JOINT STATEMENT FROM THE AUCKLAND ENERGY CONSUMER TRUST AND MERCURY ENERGY

The Chairman of the Auckland Energy Consumer Trust, Stan Lawson, and Chairman of Mercury Energy, Jim Macaulay, today (February 26th 1998) announced that the Trust and Company are co-operating urgently on all options to establish the means to address hardship needs. The Trust proposes to establish a fund to assist small businesses which are unable to absorb the losses caused by the power crisis. The Trust has kick-started the 'relief fund' with \$1 million which is an advance on the dividend due from Mercury Energy in March. Mercury Energy has matched this with \$1 million so the fund can speedily provide financial relief to those most in need. At a meeting between the Trust and Mercury Energy chairmen and the Mayor, Les Mills, the mayor offered Council assistance. The Council will co-ordinate this relief package. The Terms of Reference and basis on which the applications will be considered will be announced shortly. The Trustees have, with Mercury Energy's assistance, agreed to bring forward the dividend distribution to all customers to mid-March instead of the end of March. It cannot be sooner because of the complications in programming the computer to action this. Stan Lawson says, "I am delighted to be able to start to offer some assistance to those people who have been critically affected by the power crisis". Jim Macaulay says, "Every effort is being taken by Mercury Energy to ensure that full power is restored to the CBD. It is satisfying to see the Trust and Mercury Energy working together and taking some steps to help alleviate the hardship of those customers worst affected"

Friday, February 27, 1998 11:00 am

MORNING NEWS UPDATE FROM AUCKLAND'S EMERGENCY SERVICES

More people have come into the CBD this morning than on any other day during the week Mercury Energy has advised Emergency Services that the load on existing power supplies increased sharply between 7.00 am and 9.00 am and more feeders have had to be cut to maintain the limited supply. People in buildings with power in the CBD should reduce the usage as far as possible by turning off air-conditioning systems, and not using lifts. It is essential that effective conservation measures are taken quickly. Emergency Services generally reported no overnight problems but the fire service has had inquires from suburban residents asking if fire coverage outside the CBD is affected by their service commitments to the power cri-

sis area. The fire service has given assurances that its coverage of the remainder of the city has not been affected and normal fire coverage has been maintained. To assist restaurants and food outlets with bulk frozen food storage, Auckland City has arranged for a trailer unit to be available in the CBD. This is now operational in Galway Street behind Novotel, and is available for any business wishing to store bulk frozen food until their normal operations resume. Frozen food for this storage arrangement should be contained in clearly marked boxes. There will be 24 hour security in place. Auckland City advises that full service is now operating on its ground and first floors in the Greys Avenue Civic Building and it is now able to handle all building inquires there. Previous advice that people would need to visit Auckland City Environments in Manukau Road for these transactions is now cancelled.

Friday, February 27, 1998 11:00 am

CABLE OUTAGE UPDATE

Increased power to the Auckland CBD in time for the working week is now unlikely following a delay in the repair to the 110 kV Penrose to Quay gas cable. Mercury Energy General Manager Network Richard Gibbons says re-gassing of the cable has been hampered by a blockage in the line which engineers are attempting to remove. "At this stage we do not believe we'll have the cable restored in time for Monday, and are watching engineers' progress closely to determine exactly when the cable will be able to be tested and made live," says Mr Gibbons. "The blockage has been caused by oil in the cable which has seeped into the gas pipe and formed a temporary obstruction. Oil blockages always occur when re-gassing and the time for them to clear is not controllable." "We believe we had allowed sufficient time for blockages to clear." "To remove it we're applying gas pressure to one end of the cable and edging it along the line towards a valve where it can be removed. The blockage must be removed or the cable will fail when tested." "The process of moving the obstruction has to be done properly and any attempt to hasten it could rupture the cable, setting repairs back even further," he says. Mr Gibbons says the half day on, half day off rotating power cuts arranged following consultation with business leaders will continue, however there may be less power in the areas supplied for that half of the day. "The more power that people turn off the more likely it will be that they avoid power cuts. Turn off any unnecessary lights, advertising signs and equipment and remember not to use lifts," says Mr Gibbons. Mr Gibbons says repairs to the other gas cable are on schedule, although similar problems with its re-gassing are possible. Repairs to the Roskill to Liverpool oil cables are also on schedule for

Monday March 9 and do not face the same blockage problems. Updates on the repair's progress will be releases as soon as they come to hand.

Friday, February 27, 1998 5:00 pm

CABLE OUTAGE UPDATE

Mercury Energy regrets to announce the CBD will not have the partial increase in power planned for next Monday. The delay follows problems encountered during repairs to the 110 kV Penrose to Quay gas cable. Power supply to essential services - including Auckland University and AIT - will be maintained, but it is not guaranteed elsewhere in the affected area. Mercury Energy General Manager Network Richard Gibbons says engineers are changing the switching to ensure when there is power supplied to the CBD on Monday, it will be supplied according to the zones advertised in the New Zealand Herald. But he warns, "Because of the limited power availability, all that can be guaranteed is when you're not going to get power. In other words, if you're in the zone that gets power in the afternoon, you will not get it in the morning and you may have additional cuts in the afternoon. And there are likely to be power cuts of one to two hours between 6 pm and 7 am". Mr Gibbons is keen to stress the continued need for conservation of electricity in the CBD. He says this means not using lifts, air conditioning or fans, turning off any heating, using as little hot water as possible, switching off neon signs and some internal shop lights. "People should switch off all equipment they're not using - such as photocopiers and computers - instead of leaving them in standby mode and just wherever possible, minimise their use of power". "The more electrical equipment that is turned off, the fewer cuts there are likely to be". Mercury Energy engineers are working flat out in an effort to restore the gas filled cable and bring it back up to its normal operating pressure. It's complicated by the fact there's a blockage in the cable, which engineers are attempting to locate and remove. During the repair period there is no gas pressure within the cable, and in this time oil can seep into the gas duct from the oil impregnated paper tapes. To clear the blockage, gas has to be applied under pressure at each reservoir point and oil has to be removed at drain points. This can be a lengthy process because of the small diameter of the gas duct and the thick nature of the oil. Mr Gibbons says, "There are blockages in some sections of the cable which have been located and are gradually easing. These are the reason for the delay in restoring additional power to the CBD, but as soon as they are cleared and we have an estimation of when we will be able to increase the power supply, we will publicise the news as widely as possible". On a positive note, engineers today successfully completed the installation of installed the six additional

generators flown in from Australia on Wednesday night. They add an extra 8 MW to the power available to the CBD.

Saturday, February 28, 1998 11:00 am

MORNING NEWS UPDATE FROM AUCKLAND'S EMERGENCY SERVICES

The CBD is operating relatively normally for a Saturday with low power demand and no feeders being cut so far today. People in CBD buildings seem to have responded well to requests to turn off air-conditioning systems and lifts to conserve what electricity is available. The fire service dealt with two emergency situations overnight and this morning. They were called out to a Diagnostic Laboratory last night after the Laboratory's computer system was damaged as a result of an emergency generator being incorrectly wired to the power system in the building. The fire service was also called out at 9.30 this morning to a switchboard fire at the Auckland Medical School. Smoke from this blaze travelled along to access tunnels and affected two other buildings including a floor of Auckland Hospital which was evacuated for a short time. The cause of the fire is being investigated. Auckland Police reported a quiet Friday night in the CBD and have dealt with relatively few problems during the power crisis. To assist restaurants and food outlets with bulk frozen food storage, Auckland City has arranged for a trailer unit to be available in the CBD. This is now operational in Galway Street behind Novotel, and is available for any business wishing to store bulk frozen food until their normal operations resume. Frozen food for this storage arrangement should be contained in clearly marked boxes. There will be 24 hour security in place. Auckland City has closed its civil defence headquarters as the requirement to keep it open has substantially lessened. However staff are on standby in case they are required but the city's customer call centre is handling the volume of inquiries being received this morning. Tale Piece Not everyone it seems is aware of the key players in the power crisis. Mercury Energy's Richard Gibbons who has had a high media profile for at least a week was enjoying a delicious Indian curry in a restaurant accompanied by his wife last night. He was aware of pointed looks and whispered comments which indicated that most other diners had recognised him. Not so the waiter! At the end of the meal as he paid the bill Richard was asked whether he had been affected by the power crisis in the CBD. Another bulletin from Auckland's Emergency Services will be distributed on Sunday 1 March 1998.

Saturday, February 28, 1998 12:00 pm

CABLE OUTAGE UPDATE

Mercury Energy is flying in an additional four generators over the next 48 hours to help restore power supply to the CBD. Mercury Energy General Manager Richard Gibbons says, "We have chartered a Russian Ilyushin cargo plane from Singapore and it will be making two trips to Australia to bring the generators from Brisbane and Sydney". The Aggreko generators will provide an extra 4 MW of supply to the 30 MW already available. The first two generators from Brisbane will arrive at 5 am tomorrow, the second two from Sydney will be flown in at 3 am on Monday. Mr Gibbons says, "All going according to plan, the four generators will have been installed and will be in operation in time for the start of the working week on Monday". "They will be used to supplement our Quay Street substation and help us secure the supply of more power to the affected areas of the central city". Work on locating the blockages in the first Quay Street cable is going slowly, but the blockages are clearing. The repairs to the other three faulty cables are all going according to schedule, and there is no change to the power supply conditions for next week that were announced yesterday.

Sunday, March 01, 1998 12:00 pm

CABLE OUTAGE UPDATE

Jointing work to the four damaged CBD power cables is now complete, with each now undergoing gas or oil re-pressurisation. Mercury Energy General Manager Network Richard Gibbons says the blockage in the Penrose to Quay gas cable has not yet cleared, although progress is being made. "With most of the gas cable back to normal pressure the blockage is confined to one section. It's still a case of applying gentle but constant pressure to move the obstruction towards a valve where it can be removed," says Mr Gibbons. "The job cannot be hurried for fear of damaging the cable, and it could take hours or days before the blockage is cleared. The cable will still need to be tested once this has happened." Mr Gibbons says oil re-pressurisation on the Roskill to Liverpool oil cables is more promising, with engineers on site reporting steady increase in oil quality through the cable as it is circulated. The other Penrose to Quay gas cable continues on schedule. Two generators arrived from Australia this morning with one already installed in the Hobson Street substation and the other due to be installed later today. Two more are scheduled to arrive tomorrow and will be installed at the Quay St substation. Mr Gibbons says the generators will add an extra 4 MW to the 31 MW of generation already installed in the CBD and will benefit all customers in the area. "By injecting

the generators into our substations they'll reduce the load placed on the remaining cable and help avoid extra stress on gas or oil cables as they're restored. The effect of these generators is to support the network whereas those installed last week were to ensure uninterrupted supply for emergency and essential services." Mr Gibbons says power will be supplied as advised in the half-on, half-off advertisements published over recent days and available on the Mercury Energy web site. "Those that have power for the morning or afternoon will need to reduce consumption as much as possible to minimise rotating power cuts in that area."

Monday, March 02, 1998 11:30 am

MORNING NEWS UPDATE FROM EMERGENCY SERVICES

The city's emergency services reported a relatively quiet weekend with no major incidents this morning the CBD seems busier than it was last week and Mercury Energy reports slightly higher power demand. However this is difficult to assess, as today marks the first day of the "half and half" power share arrangement. Health officials have supplied guidelines to restaurants and food outlets who will have power either in the mornings or afternoons only. They recommend food should be purchased in small quantities for each days trading. Because refrigerators and freezers could be without power for significant periods, bulk storage in freezers is not an option. Preparation of food should not occur outside of the periods when power is on, unless alternate means of keeping perishable foods cold are available. The use of ice or chilly bins is acceptable only for short periods. Prepared foods including sandwiches should not be kept for more than two hours after a power cut. To assist restaurants and food outlets with bulk frozen food storage, Auckland City has arranged for a trailer unit to be available in the CBD. This is operating in Galway Street behind Novotel, and is available for any business wishing to store bulk frozen food until their normal operations resume. Frozen food for this storage arrangement should be contained in clearly marked boxes. There will be 24 hour security in place. Auckland City is now handling applications for grants from the \$2 million emergency fund established by Mercury Energy and the Auckland Energy Consumers Trust. The fund is to help small businesses who had to remain in the CBD last week.

Monday, March 02, 1998 12:00 pm

CABLE OUTAGE UPDATE

Mercury Energy has introduced its half-on, half-off power zones in the CBD this morning. It has managed to supply power to all the zones that are in the designated 7 am-12 midday zone. Mercury Energy General

Manager Network Richard Gibbons says, "As we warned, some areas in the morning zone have had power cuts of up to two hours long. This is because demand has increased in the CBD and we've needed to switch feeders off to meet that demand. But they are rotational cuts and so once premises have had that one cut, they will not have another during the morning". He says the same applies to consumers in the afternoon zone from 12.30 pm until 6 pm. Mr Gibbons says, "Also, some areas which may have had power all last week because of their proximity to an essential supply service could well suffer power cuts this week as the power supply is re-routed". Consumers in the CBD fringe areas around the two zones could continue to experience rotational power cuts of up to two hours long. Affected areas this morning were Grey's Avenue, Vincent Street, the top part of Hobson Street, the top of Ponsonby Road, the top of Newton Road, part of Karangahape Road, Beresford and Howe Streets. Mr Gibbons says, "We're continually assessing the demand throughout the day and should later in the day be able to make an announcement as to when the load is heaviest and therefore when it is most crucial for people to save power to avoid the possibility of the rotational cuts". Two generators flown in from Brisbane yesterday have been successfully installed, another two are due to arrive from Sydney at midday. All the preparations for them have been completed and they should be in operation by 3 pm this afternoon. These generators are being used to add extra supply to the Quay Street substation and help Mercury Energy provide more power to the affected areas of the central city. All repair work on the four affected cables is proceeding to schedule - a power supply progress report is attached.

Monday, March 02, 1998 5:15 pm

CABLE OUTAGE UPDATE

Today's CBD power demand increased by 10-15% on last week's average daily load, resulting in rotating power cuts throughout the central city. Mercury Energy general manager network Richard Gibbons says the half-on half-off split for CBD power went ahead as planned, although rotating cuts meant power was available for less than half the day for most businesses. "The pattern we've seen today, including rotating power cuts, will be reality until the first cable is made live," he says. Mr Gibbons says the blockage which caused a delay to the return to service of the Penrose to Quay gas cable had now cleared, although re-pressurising and electrical testing are still to be carried out before it is made live. "With the blockage now cleared we can look forward to having the cable back in service later this week. We're reluctant to set a date just yet as the process of re-pressurising and electrical testing could still be held up if a further blockage is found." Mr Gibbons says the two generators which arrived from

Australia this morning have been successfully installed at the Quay St sub-station, providing further support for the CBD network. Cable repairs to the other Penrose to Quay gas cable and to the Roskill to Liverpool oil cables are progressing well, with normal power restoration still set for Monday March 9.

Tuesday, March 03, 1998 11:00 am

MORNING NEWS UPDATE FROM AUCKLAND'S EMERGENCY SERVICES

Business this morning in the CBD is operating at about the same level as yesterday and Mercury Energy reports similar power demand. The "half and half" power share arrangement continues, but demand is at a level where rolling cuts of up to two hours duration are likely. Inner city businesses have generally responded well to requests to turn off non-essential electrical appliances and lighting. This should include lifts, as the fire service had to deal with a lift stranding during one of yesterdays rolling cuts. During the emergency, lifts and air-conditioning should be treated as non-essential appliances. Auckland City is processing applications made to the \$2 million emergency fund established by Mercury Energy and the Auckland Energy Consumers Trust. The fund aims to provide immediate assistance to help threatened small businesses to survive through the power crisis. Eligible businesses must be a Mercury Energy customer, have an annual turnover of up to \$400,000 and have had to remain in the CBD during the power crisis. Receiving a payment from the fund does not preclude any business from seeking compensation at a later date. Health officials have supplied guidelines to restaurants and food outlets who will have power only for part of the day. Food should be purchased in small quantities for each days trading. Because refrigerators and freezers could be without power for significant periods, bulk storage in freezers is not an option. Preparation of food should not occur outside of the periods when power is on, unless alternate means of keeping perishable foods cold are available. The use of ice or chilly bins is acceptable only for short periods. Prepared foods including sandwiches should not be kept for more than two hours after a power cut. To assist restaurants and food outlets with bulk frozen food storage, Auckland City has a trailer unit in Galway Street behind Novotel. This is available for any business wishing to store bulk frozen food until their normal operations resume. With the likelihood of normal power supplies in the CBD by next Monday March 9, health officials have issued advice to property owners and tenants. As many residential apartments and office buildings have been empty for more than 10 days, the following precautions should be taken before people move back:

- a) Run water through the plumbing system to flush any water lying in the pipes.
- b) Flush all toilets and thoroughly ventilate bathrooms and sewage collection tanks.
- c) Clean shower heads and flush through with hot water.
- d) Check that air-conditioning systems are working properly and that all filters are clean.
- e) Ensure that refrigerators and freezers reach their recommended operating conditions before storing food.

Tuesday, March 03, 1998 2:00 pm

BACKGROUND: MERCURY ENERGY'S 1996 TUNNEL APPLICATION

This information follows the report in this morning's New Zealand Herald concerning a Mercury Energy 1996 report to the Auckland City Council. The report was submitted under the Resource Management Act for the tunnel project and is public information:

- 1) The report was based on a high load growth scenario. This is how all planning is done - plan for the most adverse outcome. In reality load growth has been moderate because various large projects, including Britomart and Quay Park, have not been completed.
- 2) Much has been made of the word risk. Engineers consider a system at risk if one cable is lost. In this case we have four cables lost, which can be described as catastrophic rather than risky. We never envisaged we could get to this situation, and if we had we'd have rung the alarm bells immediately.
- 3) To explain this further; the CBD is supplied with power in five ways; the four cables into the city and numerous feeders and lines which now support the city. If one cable is lost power supply is transferred to the other cables automatically and customers don't even notice a light flicker. If one is out and a second is lost there may be a cut of an hour or so while loads are rearranged, although the city can run as normal most days. Savings may be required if it is a particularly warm day. This two-down situation is what engineers call 'extremely risky'. To lose a third cable, then a fourth as we have now is three steps beyond risk.

- 4) Our lines are our lifeblood and we have no interest in taking unacceptable risk. Apart from our customers the most seriously affected business will be us.
- 5) As you'll have seen from our Sunday media release we don't believe forecasting and planning has been the issue. The focus which has arisen from our preliminary investigations is the effects of Auckland's extremely hot and dry summer on the soil.

Wednesday, March 04, 1998 1:00 pm

CABLE OUTAGE UPDATE

"Mercury Energy's first Penrose to Quay gas cable will be back in service today, meaning the AM and PM zones stand a good chance of regular power supply if reductions continue. General Manager Network Richard Gibbons says testing late last night found the repair had been successful and the cable would now supply power to the zones as advertised. "While we'll still supply power to half the CBD at a time, we're hoping to avoid the rolling power cuts in the on zone," says Mr Gibbons. Mr Gibbons says power reductions from people in the CBD will play a big part in the amount of power available today, and there will still be a CBD-wide power cut from 12-12.30 as power is switched from zone to zone. "Our main concern is that people do not interpret the return of one cable as a complete return of power to the city. It means there's more power, but still not enough to use as we normally do." "Rotating cuts are now less likely, but still possible if power use climbs much further, so turning off unnecessary lighting and keeping air conditioning units off, or at 25 degrees is essential." Mr Gibbons says the Penrose to Quay gas cable had re-pressurised well after an initial blockage caused a delay to its completion, with testing overnight showing it was ready for service today. "We were only sure the cable would return to service at 6 am, so could not advise people any earlier," he says. This morning's meeting with representatives of CBD business and residents agreed it was time for shoppers to come back to the central city, but critical that retailers and all businesses did everything possible to use less power. A message for corporates and high rise businesses on how and when to go about returning to the CBD will be issued later this week when progress on the remaining cables is known. The number four Roskill to Liverpool oil cable is undergoing electrical tests, however a glitch has occurred. It's not yet known how serious this is. Mercury Energy will also have more power from this morning's delivery of another three 1 MW generators, adding to the 10 already installed in the last week. Mr Gibbons says the generators arrived aboard an American Evergreen 747-200 at 4 am and installation started immediately, providing further

support for the CBD network from tomorrow. "With two of the generators to be injected into the network at the Liverpool substation and one at Hobson Mercury Energy will have installed more than 280 tonnes of equipment in less than a week - equivalent to a small power station."

Thursday, March 05, 1998 1:45 am

POWER RESTORATION PLAN SUFFERS SERIOUS SETBACK

The cable repair programme for the CBD power supply has suffered a serious setback this evening with the unexpected failure of two oil filled cables during the final stages of testing. The current AM/PM arrangement will be enhanced next week, however this is dependent on there not being a widespread return of businesses to the CBD. Full service will not be returned until the Mercury Energy overhead link from Penrose to the city is energised - several weeks away. Mercury Energy Chief Executive Wayne Gilbert says the company is not relying on having the oil cables back in service, and is sparing no effort to provide short and medium term power reinforcement. "We deeply regret this situation. There is no apology great enough and I realise this will be absolutely devastating for our customers, as it is for us," says Mr Gilbert "Our first step to help Aucklanders get through the extremely challenging time ahead will be to reinforce the city's power supply with whatever means are available to us." The possibilities include further generation, further system reinforcement and other overhead options in addition to the Mercury Energy overhead link presently being built. "We are meeting as soon as possible tomorrow with the Auckland CBD business representatives and the mayor to update them and obtain their input." The failures occurred during testing when the third conductor in each cable failed to hold power. "The glitch in one of the cables reported this morning has proven, as testing was completed, to be a serious problem," says Mr Gilbert.

Thursday, March 05, 1998 1:00 pm

CABLE OUTAGE UPDATE

Mercury Energy will have the overhead link from Penrose to the Liverpool St substation in Auckland's CBD up and running in about a month. Urgent overnight discussions between Mercury Energy, Tranz Rail, the Minister of Energy, the Rt. Hon Max Bradford and contractor GEC Alstom have resulted in an agreement by Tranz Rail to provide full access to the line while the overhead link is completed. Mercury Energy chief executive Wayne Gilbert says the acceleration of the construction period has only been possible because of the emergency situation the oil ca-

bles failures have led to. "The overhead link is no longer a back-up line, it's what's required to bring full power back to the city. It's importance is such that all agencies involved in making the project happen have given its construction emergency status and allowed a radical shift forward in its completion date," says Mr Gilbert. Mercury Energy is still fast tracking the options to bring added power supply to the city until the line is connected. "With the amount of generation we currently have in place throughout the CBD it won't be easy to inject more, but we will do it." "We're looking at bringing a minimum of 15 MW more generation into the city in time for the beginning of the following week (Monday March 16), and these units will be staggered so slight improvements in power supply should occur before then." Mr Gilbert says there is also a need to ensure a diversity of power supply to the CBD because the overhead link and gas cables rely on power from one Transpower substation at Penrose. "We'll be looking at ways of bringing power from other Transpower substations and the role the oil cables will play in them. We doubt the oil cables are beyond repair, but just what it will take to modify them or make them useful is unclear." "In any case, they won't make a contribution within the next month."

Friday, March 06, 1998 11:30 am

CABLE OUTAGE UPDATE

Mercury Energy advised the Prime Minister today that through a combination of power supply reinforcement measures and the co-operation of companies, many businesses may be able to return to the Auckland CBD from early next week. Mercury Energy Chief Executive Wayne Gilbert said "The company will be working together with businesses and the CBD community in developing initiatives on how we can restore daily city life." "We were greatly encouraged today by the Prime Minister in pursuing this approach. The view that we expressed to her is that with the huge success of the temporary generation programme, continued reconfiguration and optimisation of the inner city network, we will be able to support the city with power from Monday", said Mr Gilbert. "It is not full supply. It will almost definitely involve outages given the continuing warm weather but they will be shorter. If we cannot get proactive demand-side help the outages will be more extreme." "But by Auckland pulling together - and by that I mean Mercury Energy, CBD businesses and the wider community - we believe we will be able to restore some normality to the city area". "While we must remain cautious, these developments will be extremely good news for the CBD area," he said.

Friday, March 06, 1998 4:30 pm

CABLE OUTAGE UPDATE

Mercury Energy is flying in an additional seven generators this weekend to supplement the power supply in the CBD. Mercury Energy General Manager Future Patrick Strange says an Antonov freight plane is bringing the Aggreko generators in from Singapore and Perth. These are in addition to another three New Zealand-sourced generators which have become available and are being freighted to Auckland from project sites in both islands. They are expected to arrive in the city this weekend. "We are creating three power sites at our substations at Liverpool Street, Grafton Street and Hobson Streets and these will provide an extra 13.2 MW of energy to the CBD's power supply". The plane is due to arrive on Monday night. Mercury Energy engineers are already beginning preparatory work to ensure the speediest possible installation and all the generators are scheduled to be in operation by Tuesday afternoon. "These additional generators will help increase the reliability of the power supply to the CBD, which is especially crucial in light of the expected extra demand if businesses start returning to the central city next week," says Dr Strange.

Friday, March 06, 1998 9:30 pm

CABLE OUTAGE UPDATE

Mercury Energy plans to supply an increased level of power to the CBD from Monday and has developed a plan in conjunction with business leaders which should allow all businesses to return to the area. Power will continue to be supplied in line with the AM/PM zone system which has worked well this week. One zone will have power on, the other will have cuts. Large corporates are planning longer lunchtimes from 11.30 am to 2 pm and to turn off power as they leave so shops can stay open over the lunch break. Businesses returning to the central city from Monday should be ruthless in their electricity reductions. "The central business district needs to go back to business. People have done an exceptional job when it comes to saving power. If everyone comes back to the CBD we'll need even more to avoid rotating cuts," says Mercury Energy chief executive Wayne Gilbert. "We realise that people aren't sure what more they can do, so we'll be producing power reduction tips which tell businesses and residents the different things they can do each day to make power last longer." The continuation of the AM/PM zones follows a decision at a meeting held earlier today with retail and corporate representatives from the CBD. The details of how each area is affected from Monday March 9 to March 14 will be published in tomorrow's New Zealand Herald. The call for a re-

turn to the CBD has been made possible thanks to the arrival of the Union Rotorua, completion of urgent optimisation and reconfiguration of the network, along with the addition of further large scale generators. Preparatory work on the Mercury Energy overhead line from Penrose to the CBD continued today, with poles delivered along parts of the route. Contractor GEC Alstom is setting up equipment in preparation for Tranz Rail's shutdown of the Penrose-Newmarket section of the railway line, which starts on Sunday. Teams of workers will then spread out along the line and begin the round the clock digging of holes, attachment of insulators to the poles and erection and concreting of the poles.

Saturday, March 07, 1998 12:30 pm

CABLE OUTAGE UPDATE

Mercury Energy's website which gives full information on the power crisis is getting up to 18,000 hits a day. More than half of those visiting the site are from New Zealand, but 24.5 percent of the visitors on Thursday were from U.S. and eight per cent from Australia. As of late Friday, 675 people or organisations had registered as subscribers to Mercury Energy's email news release service, they include the BBC, CNN and other international media. The website is also giving a boost to Auckland's international image following the power cuts. People in the U.S. have been contacting the web site to ask if they should believe their local media reports saying the entire city is blacked out and cancel planned holidays to New Zealand. Mercury Energy has been able to reply saying the affected area is less than two square kilometres in the heart of the central city and all major hotels are continuing to operate and are using generators if necessary.

Sunday, March 08, 1998 1:00 pm

CABLE OUTAGE UPDATE

Mercury Energy will this week initiate a boosted power saving campaign designed to achieve peak load reductions and, at the same time, help restore normal business activity in Auckland's Central Business District. "We have been working over the weekend with the team provided by the Prime Minister, Jenny Shipley, and are now almost ready to bring into play the key ideas that have come from that effort," said Mercury Energy chief executive Wayne Gilbert today. "The details of the programme will be rolled out on Tuesday." "Over the past few weeks, Mercury Energy's customers have responded exceptionally to calls for power savings. Now, as people return to the city, we are introducing an incentive for people to keep saving until the overhead link along the rail line is in place." Mercury Energy

will engage a project manager skilled in energy conservation issues to focus totally on the campaign. The key components of the power saving measures, known as demand-side management, are: - An incentive scheme under which Mercury Energy will "buy back" power that is not used by customers during peak times; and - A more comprehensive awareness, advice and information programme on how to maintain business activity using less power than normal. " The first element will augment the power saving messages already relayed during the CBD crisis by Mercury Energy and will be targeted at creating a balance of electricity conservation and near-to-normal business", said Mr Gilbert. "The buy back scheme which will provide financial incentives for customers to lower their peak loads in a comparison with what they were using prior to the crisis, will be targeted at major customers with half-hour measurement meters and multi-register meters. Between them, these groups, comprising some 240 key customers, account for about 70% of the CBD load." Mr Gilbert said there would be other incentives for smaller customers, once ideas that could be applied to this group could be formulated. "With the bigger customers it is easier to measure the difference between their peak loads this year and before the crisis," he explained. "While we have to date boosted the available power through temporary generation and reinforcement of the existing supply, this places more emphasis on managing the peak load while we continue to work on restoring and securing the supply." "We believe that while existing supply remains vulnerable until the temporary overhead link is established, a co-operative effort all round from Mercury Energy, businesses and other services, under this campaign, will greatly help to get the CBD back on its feet." Mr Gilbert said the company was very grateful to the Prime Minister for providing the leadership and direction which resulted in the task force being brought in to work with the company's own executives.

Monday, March 09, 1998 9:30 am

CBD CABLE FAULT UPDATE

Mercury Energy has had a double-dose of good news - the Union Rotorua and the second Penrose to Quay gas cable began powering the city in time for business this morning. The gas filled cable completed electrical testing overnight and was brought back on line this morning. As with the first cable, it will operate at derated levels to guard against further failures. Mercury Energy general manager future Dr Patrick Strange says the Union Rotorua also completed testing and will be operating at full capacity, generating power into the central city network today. "When the megawatts from Union Rotorua and second gas cable are added to reconfiguration and

optimisation of the CBD network over the weekend, they give a significant boost to the CBD power supply," says Dr Strange. "Even so, power supply is still well short of optimum. We probably have 90% of the capacity needed to just meet the load on a normal summer day - normally we have at least double that capacity." "Significant power reductions continue to be necessary if we are to avoid outages, particularly on hot days. Even then we have absolutely no back up, with one failure likely to cause immediate cuts." Construction on the Mercury Energy overhead link began yesterday, with the first poles now in place. The link will restore security to the CBD and remain in place until the tunnel is completed by the end of next year.

Monday, March 09, 1998 8:45 pm

OPERATION POWERSAVE

Details of a financial incentive scheme to encourage businesses to conserve power and help restore normal activity to Auckland's Central Business District have been launched tonight by Mercury Energy. Business leaders have been briefed tonight on Operation PowerSave which is designed to achieve peak load reductions. Under Operation PowerSave, business and residential customers in the CBD will be financially rewarded for reducing their power consumption. They will also be provided with information on how to most effectively save energy in the CBD. Mercury Energy spokesperson, Patrick Strange, says the logistics involved in getting all businesses onto the financial scheme are significant. "The scheme will be immediately available for larger businesses which account for around 70% of the CBD load, with smaller businesses and residential customers sent out information on how to participate within the week." Businesses can make savings of up to 50% on their power bills if they achieve 30% energy savings. This is based on an initial set rate of \$25 per kVA per week on savings above 15%. "We recognise that savings are already being made and we're looking to boost that even further " says Dr Strange. "Taking an actual example of one of our larger customers with a weekly power bill of \$8080, if they achieve a 20% savings on energy, then they would receive a cheque from Mercury Energy for \$1800," he says. The rate will be reviewed on a weekly basis. "Our objective is to achieve overall savings of at least 30% on the hottest days so that the possibility of power outages in the CBD can be minimised." "If we can all pull together and make the savings, it's another step closer to restoring normality to the CBD." An information pack on how to make savings is being made available to business and residential customers. The following are indicative examples of how the payments may work: Restaurant - weekly bill of \$345, achieve savings of 20%, receive cheque from Mercury Energy of \$120. Hotel -

weekly bill of \$8080, achieve savings of 20%, receive cheque from Mercury Energy of \$1800. Office Building - weekly bill of \$6402, achieve savings of 20%, receive cheque from Mercury Energy of \$2500.

Wednesday, March 11, 1998 4:45 pm

STATEMENT BY THE BOARD OF MERCURY ENERGY LIMITED

Mercury Energy expects to announce in the next few days a system for quickly handling customer claims. A statement issued by the Mercury Energy board today says the company is aware that many of its customers have suffered significant inconvenience and expense as a result of recent disruptions to the power supply to Auckland's CBD. The directors say they deeply regret the situation and all the board is absolutely committed to finding the best way of looking after the interests of the company's customers as urgently as possible. "We do not want to see our customers subjected to an expensive drawn out process, and we will devise a system that is quick, simple and fair", says the statement." "We are still involved in discussions with our insurers, and need their agreement before we can move forward." The board meeting is continuing over the next few days, and the board expects to be in a position to make a further announcement by the end of the week. "The directors have agreed there will be no further comment on this subject until a formal announcement is made on how Mercury Energy will resolve customer claims." "In the meantime directors are concerned at the slow uptake of the special relief fund for small businesses set up by Mercury Energy and the Trust, and administered by the Auckland City Council." "We urge small business owners with immediate financial problems to apply to the Council for help." "The directors are delighted with the initiative of the Mayor, Mr Les Mills, to set up a fund for a campaign to promote the inner city." "Mercury Energy is happy to allocate funds to such a fund, but we will seek further discussion with the Council on the structure and objectives of the campaign to ensure that the initiative is capable of producing the necessary results within a short space of time."

Wednesday, March 11, 1998 5:15 pm

MERCURY ENERGY DIRECTORS BACK MANAGEMENT ACTIONS ON POWER CRISIS

Mercury Energy's directors have today re-endorsed their support of management's efforts to resolve the inner city power crisis. In a statement issued today the directors said the total focus of the board and the management continues to be looking after customers needs. "Every effort is being

made to get the central city moving again, to give responsible advice to our customers, and set up a system for resolving customer claims." "Management and staff are working around the clock. We recognise and support that commitment. We will support them on initiatives that help our customers, and they will be given the resources to take appropriate action." "We do not want management time disrupted by issues which do not contribute to resolving the CBD situation and which can be readily dealt with at a later date." "All Aucklanders want the company's total energies to be devoted to getting the CBD power problem resolved as rapidly as possible and getting the city's heart beating properly again" "As directors, we are committed to ensuring that the company deals with its present situation in a commercial manner recognising the importance of our service to customers and the value of our overall relationship with them."

Wednesday, March 11, 1998 8:00 pm

CABLE OUTAGE UPDATE

Central city businesses boosted power savings in the area today by a further 5%, with total power savings in the CBD nearing 20%. Mercury Energy General Manager Future Patrick Strange says there was a one minute planned outage this morning, with enough time to notify major power users in the area affected. The outage was needed while a part of the network was reconfigured. "With evidence of more people returning to the city and warm weather likely it's essential the power savings effort continues," says Dr Strange. "Tomorrow we need a minimum of 20% to keep power supplied, and we're hoping to reach savings of 30% to further reduce the chances of power outages." Work on Mercury Energy Overhead link continued throughout the day and was not delayed by this morning's torrential rain. At 7 pm this evening 42 poles were erected and cable stringing was planned for tomorrow morning. The disused Parnell railway tunnel adjacent to the rail line was cleared before midnight last night. There will be traffic delays of 10 minutes tomorrow as stringing passes across overbridges between Penrose and Newmarket. "While there is a high level of interest in the pole erection Aucklanders should remember there is still a lot of behind the scenes work to do. Altering substations and testing will need to be carried out before the circuit can be made live," says Dr Strange. The first Mercury Energy and EECA (Energy Efficiency and Conservation Authority) seminar for large building owners and managers takes place tomorrow morning. These will offer advice on power saving techniques such as load management to avoid peaks and general power reduction advice. Smaller businesses and residential customers will receive advice on how they can reduce power by the beginning of next week.

Monday, March 16, 1998 9:00 am

CABLE OUTAGE UPDATE

An initial review of the loading of the four main Auckland CBD supply cables since shortly before the first cable failed has been completed by Mercury Energy. The company has also undertaken a broad review of the loading of the cables in recent years. The review was performed to help establish conservative, derated load levels for the cables when they were returned to service. In reporting this today, Mercury Energy's general manager future Dr Patrick Strange says the company has tracked the cable loads in detail from January 20 through to the failure of the second oil filled cable on February 20. The work also included a general review of records for the last three years to identify the highest sustained loads the cables had safely withstood previously. Dr Strange says cables have one rating (allowable load) for continuous operation, while higher ratings apply for short term loads, such as the daily CBD peaks. The continuous load rating for each gas filled cable was 60 MVA, while the continuous rating for each oil filled cable was 70 MVA, which reduced to 60 MVA when both cables were operating. Finally, the cables are protected against high 'spikes' by overload relays. The Mercury Energy policy has been to ensure the cables were not loaded in excess of these ratings. The sequence detailed in the tracking is as follows: January 20: A forced outage of one Roskill-Liverpool oil filled cable occurs due to an incident at a substation. This results in a short term increase in load on the gas filled cables to about 53 MVA, which is within their continuous rating of 60 MVA (although a higher rating would apply for this short term load). January 22: First Penrose Quay gas filled cable fails under a load of 30 MVA, resulting in very short term loading on the other gas cable of 58 MVA. The continuous loading on this second cable was then reduced to 41 MVA. February 9: Second gas filled cable fails at a load of 42 MVA, having been as high as 45 MVA in the afternoon. The oil cables stay within their calculated ratings. Contingency plans are put in place, in part to ensure the oil cables stayed within their rated load, but also to protect against failure of the Liverpool-Quay tie line, which is identified as the most likely contingency. These plans include calling on stand-by generation to run in the Quay area, reconfiguration and strengthening of the system, and a call for a 10% reduction from CBD customers. Extra load on transformers is eased with water-cooling and further stand-by generation is organised. February 13: Mercury Energy announces construction of a temporary 22 kV overhead line from Liverpool to Quay substations under emergency regulations. This was to protect against the failure of the existing tie line between the two substations. February 19: First Roskill-Liverpool oil filled

cable fails at 51 MVA, versus its rating of 60 MVA (two cables operating). The remaining oil filled cable spikes briefly to approximately 70 MVA, which is well within its short term rating. Mercury Energy engineers confirm the continuous rating for this remaining cable is 70 MVA (as a single line) and direct that all loading, including short-term loading, be maintained below this. February 20: During the day, some cuts are necessary to keep the remaining cable below 70 MVA, and to reduce loads on the Liverpool-Quay tie line. The second oil filled cable fails at the end of the working day, at a load of 61 MVA. The maximum load it reached during the day is 68 MVA. All four cables failed at loads within their calculated ratings. The broad review of the last three years' loads showed the relatively new oil-filled cables had previously been run at levels close to their ratings without incident. The ratings referred to above were determined using standard Auckland Electric Power Board (and now Mercury Energy) practice, based on the design conditions for the cables. This was based on the installation practice being such that no derating was required to take into account ground conditions. Subsequent investigation indicates that the extremely hot and dry ground conditions which prevailed this summer limited the soil's ability to conduct heat away from the cables. Further, there is evidence that the cables experienced high temperatures in local areas near the failures, supporting the conjecture that this was a major factor in their failure. Dr Strange stressed that this information was being provided for information only. A fuller analysis and the drawing of any conclusions would properly be the subject of the technical inquiry announced by the government. Mercury Energy has undertaken to fully support the inquiry.

Monday, March 16, 1998 7:00 pm

CABLE OUTAGE UPDATE

The Auckland CBD enjoyed an uninterrupted power supply today, thanks to a combination of cooler weather and savings from those working in the area. Mercury Energy general manager future Patrick Strange says a 'green' traffic light signal was posted this morning and hadn't been changed all day. 'Today's power situation was more comfortable than we'd expected, with the cooler weather something of a bonus,' says Dr Strange. 'The outlook for tomorrow suggests warmer weather is on the way, and that's when the savings efforts of people in the area will be truly tested.' Power demand peaked at 130 MVA of the available 155 MVA, with almost 15% savings achieved and 20% required for tomorrow. Dr Strange says Mercury Energy staff and contractors will distribute 30,000 flyers in the CBD tomorrow, featuring details of how the traffic light system works

and what people need to do if conditions change. To gain a better understanding of the number of businesses which have returned to the area, a profile of the 70 largest electricity users is being undertaken tomorrow. The results of floor-by-floor visits throughout CBD office buildings will determine how many people usually work in each building, how many have returned and when the remaining workers are due back. "Comments from building owners in the central city imply an increase in patronage today, however the weather meant the limited supply wasn't threatened. Savings from everyone in the CBD are still important," he says. At 6 pm there were 81 poles erected on the Mercury Energy overhead link from Penrose to the city. Once all poles are erected the process of stringing, tensioning and clamping lines into place must be completed. This is followed by a series of switching and technical operations which lead to the circuit being made live.

Tuesday, March 17, 1998 7:15 pm

CABLE OUTAGE UPDATE

Auckland's CBD had another day of uninterrupted power today, with demand peaking at 130 MVA and a 14% saving achieved. Mercury Energy general manager future Patrick Strange says the second day of uninterrupted power and lower than expected use has been a direct benefit of cooler weather. "We've managed to comfortably avoid outages despite lower than expected savings. Considering our usual summer daily peak is between 150 MVA and 160 MVA, a warmer day will be a real test on the central city's ability to save power. That test has still to come," says Dr Strange. Floor-by-floor visits to the CBD's 70 largest electricity users were completed today, with results on who's back, where they are and when the remaining work force will return, likely to be available in the next couple of days. Delivery of 30,000 flyers explaining the traffic light system also took place. Dr Strange says the 'green' traffic light posted this morning did not need to be changed all day, and the 130 MVA peak demand meant the limited power supply was not threatened. At 6 pm there were 83 poles erected, with conductor now complete from Penrose to the Newmarket viaduct and partially strung from the viaduct to the Parnell railway tunnel. Work continues tomorrow on foundations for poles in the disused Parnell railway tunnel.

Wednesday, March 18, 1998 8:00 pm

CABLE OUTAGE UPDATE

Auckland's CBD had another day of uninterrupted power today, with demand peaking at 130 MVA and a 14% saving achieved. "We've managed to comfortably avoid outages because of cooler weather," says Dr Patrick Strange, Mercury Energy general manager, future. He stresses that higher savings will be essential to avoid outages if the temperature rises. On the emergency overhead link 95 poles have now been erected. Most of the remaining poles require special construction involving concrete above-ground foundations to be poured such as those either side of the Newmarket flyover. Construction work has begun on the overhead spur which will feed power into the Liverpool Street substation at the top of the CBD.

Thursday, March 19, 1998 6:30 pm

MEDIA STATEMENT: MERCURY ENERGY WILL GIVE CBD CUSTOMERS FAST-TRACK CASH COMPENSATION OPTIONS

Mercury Energy today announced compensation options for its CBD customers affected by the power supply crisis. Mercury Energy Chairman Jim Macaulay said today: "We believe the package fairly reflects the inconvenience our customers have suffered, and it enables them to choose the compensation option which suits them best. For those seeking urgent compensation or an early resolution of their claims, we have introduced fast-track options. "As the Board announced last week, we have been keen to deal with the issue of compensation for some time and, following lengthy discussions with our insurers, we have now decided to offer this package", said Mr Macaulay. "These compensation payments are not an admission of liability by the company. They simply reflect the depth of our commitment to our customers and our wish to compensate them for their difficulties during the power crisis." The offer, which will be available until the end of April, is additional to payments to every affected customer under the company's "No Worries" customer service guarantee. And affected CBD customers will not be billed for line charges between February 19 and March 29 inclusive. "However, we also recognise there may be some customers who do not wish to take one of the fast-track options because they have significantly larger claims than the maximum available through those options," said Mr Macaulay. "Such customers should lodge claims with us as soon as possible for review by our panel of assessors. We will then endeavour to reach agreement with these customers promptly to settle their claims. "Our firm intention is to deal fairly with all of our customers without them having to resort to expensive, drawn-out and uncertain legal

action." Customers not taking any of these options will retain all their existing legal rights. Key elements of the fast-track options announced following today's meeting of the Board of Mercury Energy, are: Affected Residential Customers can choose between: Cash Equivalent of Six Months' Electricity Bills, OR A "Loss Payback" option giving up to \$5,000 in cash with claims to be backed up with evidence of losses Affected Business Customers can choose between: Cash Equivalent of Six Months' Electricity Bills, OR A "Loss Payback" option giving up to \$10,000 in cash with claims to be backed up with evidence of losses Fast-Track Features . Acceptance of payment under either fast-track option is on the basis that payment is full and final settlement for compensation from Mercury Energy. . Payments under the fast-track compensation offers will be made within five working days of claims being received and accepted by Mercury Energy. The cut off date for receiving claims is April 30. Additional Benefits for Affected CBD Customers Every affected residential customer will also receive a \$400 credit under the company's "No Worries" customer service guarantee scheme, regardless of which compensation option they choose. Business customers will receive an \$800 credit. Affected residential and business CBD customers will not be billed line charges from February 19 to March 29 inclusive. "We believe that the various compensation options will be attractive to many customers because the procedures will be simple and quick. They avoid customers having to pay legal and accounting fees and go through a long, drawn-out claims process," said Mr Macaulay. Mr Macaulay said he wished to emphasise that Mercury Energy's financial situation is strong. "We have a healthy balance sheet, and good profitability and cash flows. The Board would not be making this offer to customers if the total sum placed the company at risk. "We believe the programme is fair, flexible and equitable, and gives our customers options which suit their particular circumstances. "However, it is up to our customers to study the offer carefully when they receive it and seek appropriate advice, if they wish, before making up their minds." Mercury Energy will make special arrangements for any customers having difficulty in paying electricity bills. Mercury Energy has also announced it will pay the costs of continuing running large company generators to keep maximum power available in the CBD area until the new overhead link begins feeding electricity into the system.

PAYMENT SCENARIOS

Depending on which of the compensation offers is selected, the complete package announced by Mercury Energy would result in typical payments as follows: . An apartment dweller paying around \$1,000 in electricity bills a year could receive between \$900 and \$5,400 depending on their circumstances. . For small business paying around \$2,800 in electricity bills a

year, the range could be between \$2,200 and \$10,800 depending on their circumstances. . The company's largest customers who choose the Cash Equivalent to Six Months Electricity Bills option would receive substantial payments. "All in all, we are making every effort to ensure that customers are speedily and fairly compensated," said Mr Macaulay. "It is in everyone's interest to get the heart of Auckland beating strongly again."

MERCURY ENERGY FAST-TRACK COMPENSATION PACKAGE HOW IT WILL WORK AN OFFER WILL BE MAILED TO AFFECTED CUSTOMERS NEXT WEEK

The written offer of the fast-track options will be mailed to all the company's 9,000 residential and business customers in the affected parts of the CBD in the coming week. Customers will be able to choose whichever of the compensation options offers the highest dollar value to them. Simple claim forms, which will include an agreement by each customer that payouts under either compensation option chosen represents full and final settlement, will be included with the offer. The offer is open only to Mercury Energy's affected CBD account holders. Mercury Energy will be establishing claim booths in the CBD area next week. Staff in the booths will be able to answer questions from customers. Claim forms can be handed in there or mailed back to the company.

CASH EQUIVALENT TO SIX MONTHS' ELECTRICITY BILLS OPTION

The offer of Cash Equivalent to Six Months' Electricity Bills will be based on half of the customer's total electricity bills (line and energy charges) for the 1997 calendar year. If the customer has not been with Mercury Energy that long, an assessment will be made based on recent usage. Customers choosing this compensation option will need only to indicate this choice on the claims form.

LOSS PAYBACK OPTION

Customers who choose the Loss Payback compensation option must provide evidence of their losses, such as invoices and receipts, and return them with the simple claims form which will be mailed to them. Mercury Energy will make a prompt decision on the validity of each claim and pay out a maximum of \$5,000 per residential customer and \$10,000 per business customer.

ALL AFFECTED CBD CUSTOMERS WILL ALSO GET AUTOMATIC REBATES

Customers next electricity bills will include automatic rebates paid out under the company's No Worries customer service guarantee, regardless of

whether either of the fast-track compensation options is selected by customers. These rebates will total \$400 for each affected residential customer, mainly apartment dwellers, and \$800 per business customer. For most of the affected customers in the CBD this will mean they will not have to pay an electricity bill for several months. In addition, affected customers will not be billed for line charges from February 19 to March 29. Customers who have incurred generator costs can include these costs in any overall claim for compensation.

CUSTOMERS NOT CHOOSING A FAST-TRACK COMPENSATION OPTION

Customers who do not choose a fast-track option should obtain a claim form and send it to Mercury Energy as soon as possible. The claim will then be reviewed by the company's panel of assessors and Mercury Energy will then endeavour to negotiate a settlement of the claim.

Friday, March 20, 1998 7:00 pm

CABLE OUTAGE UPDATE

Auckland's CBD has enjoyed a working week without a single power outage, thanks in a large part to the savings efforts of people who work in the area. Savings today reached 17% with peak power demand down to 126 MVA of the 155 MVA available. With reduced demand over the weekend the next savings target will be announced Sunday afternoon. Mercury Energy general manager future Patrick Strange says the sudden slump in daily temperatures has been a blessing for the CBD power supply. "Power supply has been constant and savings have been exceptional, however it's easy to forget that a bout of warmer weather could affect the limited available supply," says Dr Strange. Following last night's announcement of the Mercury Energy compensation offer a number of people have called Mercury Energy for claim forms. "Forms are due to arrive from Tuesday and will contain all the information customers need to make a claim," says Dr Strange. As of 6 pm there were 100 poles erected on the Mercury Energy overhead link. The next stage for the link is the completion of stringing, then clamping of conductors to insulators.

Sunday, March 22, 1998 8:00 pm

CABLE OUTAGE UPDATE

The Mercury Energy overhead link now runs almost all the way from Penrose to the Quay St substation, with an extension providing power supply to the upper CBD well underway. A portion of the line which will traverse the Newmarket viaduct has still to be strung, with a section of the southern

motorway closed from 2 am-4 am tomorrow for this operation. Mercury Energy general manager future Patrick Strange says the overhead link made excellent progress this weekend. The erection of poles extending the overhead link to the Liverpool St substation began over the weekend and continues tomorrow. "The Liverpool spur-the section of the line which connects to the Liverpool St substation-is well underway," says Dr Strange. "The spur was included into the overhead link's design after the project began. It means the overhead link forks at the entrance to Carlaw Park and delivers power to both the Quay St and Liverpool St substations." Despite extending the length of the line it won't delay the project, but has clear added benefits- the CBD gains a more even distribution of power. Dr Strange says tensioning of conductors and work on transformers will follow. Both substations were designed for underground power cables and need extensive modification to take the overhead supply. The CBD has enjoyed uninterrupted power for more than a week. Warmer weather will pose a challenge and the excellent savings efforts of those in the area need to continue. Tomorrow's savings target is 19%, with 17% achieved on Friday.

Monday, March 23, 1998 8:00 pm

CABLE OUTAGE UPDATE

Today's Auckland CBD power consumption was up on last week's peak daily demand - reflecting the warmer weather and an increase in the number of people working in the area. Mercury Energy general manager future Patrick Strange says the peak demand of 132 MVA was within the available supply of 155 MVA, but a forecast high of 24 degrees tomorrow could reduce that margin. "The CBD is maintaining its excellent savings, with 15% achieved today. Tomorrow's target is 19% and by the looks of things we may need it," says Dr Strange. A review of peak demands over last week shows a 130 MVA high for the first three working days, with 27 MVA and 126 MVA for Thursday and Friday respectively. "What the figures tell us is that we're prone to weather changes. The end of last week was cooler and meant, with the help of consistent power savings, we had room to move." "With anecdotal evidence that some larger businesses returned to work today, and expected temperature increases, that margin becomes tighter." Conductor stringing on the Liverpool spur section of the Mercury Energy overhead link began today. This is expected to continue over the next few days and will be followed by transformer modifications before the link is made live next week.

Tuesday, March 24, 1998 7:30 pm

CABLE OUTAGE UPDATE

Today's higher temperatures saw Aucklanders pull out all the stops and achieve the highest savings to date - 19%. As a result, peak demand reached, but didn't exceed, yesterday's maximum. Mercury Energy general manager Patrick Strange says today provided a real challenge to the savings effort of people and businesses in the CBD, and with even warmer weather predicted for Wednesday savings of 20% are needed. "Today was the biggest test we've had to date, and the CBD passed with flying colours. While it's likely the weather will get hotter still, today's peak of 132 MW suggests people know what it takes to save power," says Dr Strange. Dr Strange says the types of power savings introduced by large CBD businesses meant equipment such as air conditioners was switched off or cut back as the day warmed up. This stopped power use climbing as temperatures rose, keeping demand to a manageable level. Work on the Mercury Energy temporary overhead link continued today with nylon strung along the Liverpool spur and conductor due to be strung tomorrow. Security fencing around the disused Parnell railway tunnel is being constructed, with conductor being run across Quay St to the substation overnight.

Wednesday, March 25, 1998 7:30 pm

CABLE OUTAGE UPDATE

Today's CBD peak demand reached 133MV - slightly higher than yesterday, but lower than expected thanks to cooler than forecast afternoon temperatures. Mercury Energy general manager Patrick Strange says today's power saving was 16.5% and 18% will be needed tomorrow. "It's close to two weeks since we've had a power cut, and it's only natural people will feel tempted to ease off on power saving. It's still important, however, that the excellent savings efforts continue so we minimise the chance of cuts," says Dr Strange. "Those wanting the latest on the city's available power supply should keep an ear on their radio and listen for the hourly power updates between 9 am and 6 pm." With all poles in place and stringing of conductor on the Mercury Energy overhead link complete, tomorrow's effort involves final clamping of conductor. Security fencing around the disused Parnell railway tunnel and preparation work at the Penrose, Quay St. and Liverpool St substations is also underway.

Thursday, March 26, 1998 5:00 pm

MERCURY ENERGY OVERHEAD LINK TAKES MAJOR LEAP FORWARD

The major construction phase of the Mercury Energy overhead link has been completed ahead of even the most optimistic time estimates, with normal power for the CBD now almost certainly assured by next Monday (March 30), and very possibly earlier. Mercury Energy general manager future Patrick Strange says the construction phase of the 120 MW overhead link from Penrose to the Quay St substation is complete, with pre-commissioning and delicate transformer connection work underway today. "GEC Alstom's best estimate for the physical completion of the overhead link was this weekend. We thought they were bullish, but they've managed to knock a couple of days off their most optimistic construction period, despite the challenging deadline. It's a real credit to Geoff Hunt and his team," says Dr Strange. "We'd considered April 5 a realistic date for normal power, but we'll now beat this by at least a week." Dr Strange says the overhead link was initially designed to connect to the Quay St substation alone, but now extends to the Liverpool St substation. "This addition has been completed within the original time frame, allowing us to increase the security of power supply to the CBD by injecting into two points instead of one," he says. Dr Strange says GEC Alstom workers have had to overcome significant design challenges in the construction of the overhead link, many of which weren't apparent when the project began. "For example, the design for the disused Parnell railway tunnel is an example of an innovative solution on the run. It was harder than we had thought, yet time was still gained overall," he says. While a number of the GEC Alstom staff return to their homes throughout New Zealand this week, a core group will remain in Auckland to complete the final, challenging connection work. Now the line's construction is complete, cable boxes will be lifted off each transformer and held aloft by crane. New bushings have been fitted to allow connection of the overhead link. The transformer is due to be filled with oil, connected and made live for initial testing tonight. Dr Strange says the Liverpool St and Quay St transformers must be worked on at separate times to ensure one transformer remains in action and supplying power to the CBD. The Liverpool St substation transformer has been modified first. The Mercury Energy - GEC Alstom team is racing to have the line enlivened as early as sometime tomorrow - but Monday next week now seems a certainty. Dr Strange also paid special credit to Tranz Rail, without whose support the Mercury Energy - GEC Alstom team could never have completed the line early. "And others, in-

cluding the Auckland City Council, Auckland Rugby League, Telecom, Clear Communications, Transpower also gave key support."

Thursday, March 26, 1998 5:15 pm

CABLE OUTAGE UPDATE

Mercury Energy said today that the first of the two oil-filled cables supplying the Auckland CBD had passed its key electrical test and was likely to return to service next week. "This confirms our experts' analysis that the damage to the oil-filled cables was limited and repairable, and we are confident that the other oil-filled cable will also be repaired shortly," Dr Patrick Strange, general manager future, said today. "The success of this test, together with the early completion of the overhead link, also announced today, means we should have ample power in the CBD from Monday and city life will be back to normal." Dr Strange said the importance of all four underground cables coming back into service was that, together with the overhead link, they provided security and diversity of supply while the CBD power supply tunnel was being constructed. It is due for completion before the end of next year. The two gas-filled cables which failed were brought back into service earlier this month - the first on March 5 and the second on March 9. But the two oil-filled cables failed their electrical tests and have since been undergoing further repair. All four of the underground cables which failed will initially operate at lower loadings after preliminary investigative tests. This will guard against any further failure until remedial actions are implemented. Mercury Energy is carrying out ground X-rays and further soil tests which may lead to treatment of the soil surrounding the underground supply cables in certain areas. This follows analysis of ground temperature and soil resistivity testing. In a further progress report on this aspect of possible causes of the cable failures, Mercury Energy said today that testing, while not totally definitive, indicated that in a few critical regions ground temperatures were 5-10°C higher than the operating assumption and soil resistivity as also higher. At the time the cables were laid, Auckland Electric Power Board cable laying practice was to place cables in trenches 1.2 metres to 1.5 metres deep and to surround the cables with approximately 300 mm of sand. Concrete slabs were placed on top of the sand as protection and then clean backfill was used to reinstate the ground. The objective of this cable-laying practice was to ensure that cables could be operated up to their nominal manufacturers' ratings regardless of environmental conditions, and this has always been the Auckland Electric Power Board's and Mercury Energy's operating assumption. The tests now show that, in some areas, this has not been

achieved in Auckland's exceptionally hot and dry summer of 1998, and this was the most obvious cause of failure.

Friday, March 27, 1998 1:00 pm

CABLE OUTAGE UPDATE

The power cut currently affecting about a quarter of the CBD has been caused by teething problems with the transition to the new 100 kV overhead link. Those businesses with generators should turn them on to reduce load on the central city network, and power reductions from all people in the CBD are needed. Use of lifts should be avoided in case outages occur in other areas. The exact cause of the outage is not yet known, although a team is patrolling the overhead link to ensure the line is not damaged. A time for complete power restoration is not known, but will be confirmed as soon as it can be determined. In the interim, power reductions are essential.

Friday, March 27, 1998 3:45 pm

CABLE OUTAGE UPDATE

A sensor which tripped out the new overhead link caused a partial power outage in Auckland's CBD today. Power was progressively restored, with the outage varying from a few minutes to 1_ hours. Less than a quarter of the CBD was affected. "The Translay equipment is designed to trip out the circuit if it senses any power variation, but it was too finely tuned in this case," said Mercury Energy's Dr Patrick Strange. "Unfortunately, this is one of the teething problems that can arise when new equipment is commissioned." Dr Strange said that, as previously announced, normal power supply with full security will be in place by Monday.

Friday, March 27, 1998 5:15 pm

CABLE OUTAGE UPDATE

A sensor which tripped out the new overhead link caused a partial power outage in Auckland's CBD today. Power was progressively restored, with the outage varying from a few minutes to one and a half hours. Less than a quarter of the CBD was affected. "The Translay equipment is designed to trip out the circuit if it senses any power variation, but it was too finely tuned in this case," said Mercury Energy's Dr Patrick Strange. "Unfortunately, this is one of the teething problems that can arise when new equipment is commissioned." Dr Strange said that, as previously an-

nounced, normal power supply with full security will be in place by Monday.

Sunday, March 29, 1998 7:00 pm

CABLE OUTAGE UPDATE

Auckland's CBD should have normal power supply tomorrow following the energising of one of the oil-filled cables and the planned connection of the overhead link to the Quay St substation today. But there will not be the full back-up expected, following disappointing teething problems with the overhead link connection at Liverpool substation. "Late on Saturday night the failure of a transformer bushing at the Liverpool St substation resulted in a five minute outage to half of the CBD. Our contractors are now changing all three bushings which connect the transformer to the overhead link. This work will be completed before Tuesday afternoon, restoring back-up supply to the CBD," says Mercury Energy general manager Patrick Strange. Dr Strange says meanwhile, the connection of the overhead link to Quay substation and the re-commissioning of the oil-filled cable have boosted supply to the central city. He says because of the lack of back-up, should a system failure occur, a power cut would follow until switching restores supply. "As a result, those who have generators should keep them as a back up in the unlikely event of a system failure," he says.

Tuesday, March 31, 1998 1:45 pm

CABLE OUTAGE UPDATE

The connection of the overhead link to the Liverpool substation will not be re-livened for at least two weeks, because testing overnight has revealed Saturday's damage is more extensive than first thought. This means the current power supply - more than enough to meet the central city's needs - will remain in place, however back-up supply in case of a system failure will not be available as soon as expected. Mercury Energy general manager Patrick Strange says the failure of a bushing at the Liverpool St substation on Saturday night was thought to be an isolated incident, but it has emerged that there is further damage within the transformer. "Over the next 36 hours the contractors will disassemble the transformer to determine the full scale of the problem. An exact repair time is not yet known, although it will take a minimum of two weeks," says Dr Strange. Dr Strange says the CBD's power supply is certainly in better shape than it was last week, with the addition of the overhead link to the Quay St substation and the connection of an oil-filled cable to the Liverpool St substation. Because this is a back-up issue there is no present need for power

savings. "Until we've solved this problem we're advising customers to use power as they see fit, but be ready to save power if there is an outage." "We're not expecting power outages, but problems our contractors have faced in the commissioning of this new line and the lack of required back-up mean they are a possibility," he says.

Friday, April 03, 1998 5:00 pm

COMPENSATION CASH ON WAY FROM MERCURY ENERGY

The first fast-track compensation cheques are on their way to Mercury Energy's customers affected by the Auckland CBD power crisis. "Around a third of the 7500 customers offered the company's fast-track compensation package have already filed their claims, and we are processing them as quickly as possible," said Mercury Energy spokesman Mathew Bolland today. "For most of them, the cheques are already on their way." Mercury Energy has two options available under its fast-track offer - the cash equivalent of six months' electricity bills, or a loss payback option for actual losses up to \$5000 for residential customers or \$10,000 for business customers - plus an assessment process for larger claims. "The majority so far have gone for the cash equivalent of six months' electricity," said Mr Bolland. "All the options were designed to provide simple, speedy payouts, but the cash equivalent, option A on the claim form, is for most people the fastest and most simple." "Some of our customers said to us that they won't be looking for compensation at all. This may be a reflection of the fact that they automatically get a credit on their accounts of \$400 for residential customers and \$800 for business customers under our No Worries service guarantee and they consider this is sufficient compensation." Under the fast-track options, Mercury Energy will pay out within five working days of acceptance of the claim. The company has two mobile claims booths in the central city where, during the week, claimants can drop in their completed forms - one in Queen Elizabeth Square, the other in Aotea Square.

Wednesday, April 15, 1998 12:30 pm

NEW PHASE IN CBD POWER SUPPLY

Mercury Energy is bringing forward investment in major equipment planned for its CBD supply tunnel, marking the beginning of a new phase in power supply management for the Auckland CBD. The company is importing three new ABB 110/22 kV transformers and high voltage switchgear. Mercury Energy general manager future Patrick Strange says by fast-forwarding the installation of this equipment the company will be able to

better operate our subtransmission system - the supply cables and overhead link which bring power from the national grid substations on the outskirts of the city into the CBD. "Our first priority has been to restore total capacity into the CBD, to ensure we have more than enough power available in the city to meet demand, even with one or two links out. With both circuits of the overhead link back in service, and three of the four damaged underground cables repaired, we now have that," he says. "The final leg will be completion of repairs on the last oil cable, which will be the signal for us to remove the last of our networked generation in the city," he says. Before the crisis there were five cables providing only 260 MVA, and all were underground. With the repair of the oil-filled cable Mercury Energy will have a total of seven underground and overhead lines capable of providing more than 275 MVA in to the CBD, even assuming the underground cables continue to run at their heavily reduced ratings to minimise any possibility of further failure. Installation of the new transformers will further boost total capacity from the seven lines to more than 300 MVA. "This is one benefit of the new equipment. A second major benefit is the further enhancement of continuity of supply, even in the normally rare event of a failure of one element of the subtransmission system," said Dr. Strange. "At present, should a failure occur in the subtransmission system - the major high voltage cables which bring supply from the national grid into the CBD - we may have a short outage until operators can switch the load around." "During office hours this would at present involve a few minutes in most cases, and up to 30 minutes in the worst case." The new equipment will in future eliminate the need for these outages in most cases. In the worst cases automatic switching should restore power within a few seconds. The reinforcements will be done progressively, starting immediately. "Our philosophy will be to treat our assets in a more than prudent manner to ensure the integrity of the system and CBD power supply. These reinforcements allow us to do that and enhance continuity of supply." Dr Strange emphasised that outages on the subtransmission system are normally very rare, occurring less than once a year, and had to be distinguished from localised outages which can always occur in any power system and affect a relatively small number of customers. "These localised outages occurred from time to time before the CBD crisis, and will always occur, however we try to minimise them. What we are concerned with here are major failures with the potential to affect larger blocks of customers," he says.

Wednesday, April 15, 1998 12:45 pm

CABLE OUTAGE UPDATE

Normal back-up power supply for the Auckland CBD is now in place following the repair of a fault in a transformer at the Liverpool St substation. With the livening of the transformer at Liverpool the CBD now has as much power supply available as before the crisis, even allowing for the current derating of the underground cables. This will improve further when the final oil-filled cable returns to service, even allowing for the removal of Mercury Energy's generation. The failure of the Liverpool transformer on March 28 meant the Mercury Energy overhead link could only supply power to the Quay St substation, leaving the central city short of much needed back up. Its repair allows overhead transmission to both the Quay and Liverpool substations. Mercury Energy general manager future Patrick Strange says the repair was expected to take a minimum two weeks, and possibly much longer. However, damage to the transformer was not as extreme as first believed. "While we've had plenty of power supply over the past couple of weeks to meet demand with no conservation, we ran the risk of power outages of up to 90 minutes in the unlikely event a system failure had occurred." Dr Strange says alternative options had been put in place in case the Liverpool transformer had been found to require major repair. "Getting the Liverpool transformer repaired and back in action was so important we conducted a world-wide search for another 110/22 kV transformer, eventually finding a new one in South East Asia. We put heavy lifting equipment and an Antonov aircraft on stand-by in Bangkok, and were all set to fly the 60 tonne unit to New Zealand if that was necessary," says Dr Strange. Damage to the Liverpool transformer had been initiated by failure of a bushing installed by the contractor to connect the overhead link. Fortunately, the damage was able to be repaired earlier than originally expected.

Power outage hits Auckland hours after crisis declared over

In This Story:

A fourth of downtown was blacked out. Just when they thought the five-week blackout was over in Auckland, the power went out again in part of the city. A new emergency cable that was supposed to restore power to New Zealand's largest city failed Friday, trapping people in elevators and snarling traffic. City utility, Mercury Energy, brought the new cable on line and declared the electricity shortage over. Hours later, the lights went out. A faulty sensor on the new cable that was "too finely tuned" tripped a circuit breaker and shut off the line, Mercury Energy said. By the end of

the afternoon it had been fixed and the line was back in service. "It is what you hate to happen," said Mercury Energy's planning director, Patrick Strange, admitting the power company was deeply embarrassed by the failure. A fourth of downtown was blacked out. About a fourth of downtown, including the University of Auckland and high-rise office buildings near it, were blacked out much of the day. Along the city's Queen Street, there was the sight of darkened shops and the sound of generators kicking back to life. "It was like the world had changed, instantaneously," said Bernard Griffen, who was in a downtown shop when the power failed. "People looked stunned. The lights went out, there were no computers, no tills, no scanners, no lights. It was really weird. The music went off and people started talking really quietly." Traffic lights stopped working, and police quickly went to intersections to direct traffic. Electricity crisis plaguing city since February

A map showing the parts of downtown Auckland affected by the blackout

The new emergency cable was supposed to end the power crisis plaguing Auckland since February 20. Repair crews checked the line as the blackout persisted downtown, where more than 8,500 businesses employ almost 74,000 people, and some 6,000 people live in apartments. Mercury Energy spokesman Matthew Bolland said Mercury Energy asked businesses with generators to turn them back on, and asked everyone in the inner city to save power. Bolland said when the overhead line tripped out, it took with it several Mercury Energy generators. Within an hour, some generators had been revived, leaving about 15% of the city without power. A second emergency cable, also strung from a suburban power substation, was to come on line Monday. Downtown businesses estimated the power crisis cost them \$60 million a week in its early weeks, a figure that doesn't include losses in tourism or international investment and trade. The first cable feeding into the commercial heart of Auckland failed on January 22, the second on February 9, and the last two on February 19 and 20. It is not known what caused the power cables to fail, and experts say it may take up to a year to find out. The government is investigating and expected to have a report out by the end of June. Mercury Energy has suggested the cables broke down as a result of record-breaking summer heat and huge power demand. The company says the dry soil could not carry heat away from the cables, contributing to the failure. In the initial three weeks of the crisis, outages forced an estimated 60,000 central city workers to work elsewhere -- in Auckland's suburbs, other cities in New Zealand and in Australia.

Sunday, May 10, 1998 9:00pm

AUCKLAND CBD CABLE FAULT - SUFFICIENT POWER REMAINS TO MEET CITY'S NEEDS

Power has been fully restored to Auckland's CBD following an outage this evening which affected about 25% cent of the central city. Mercury Energy general manager future Patrick Strange says power was lost to the area around the Victoria St substation, central Queen St and the Upper Queen St and Karangahape Rd areas. The outage occurred at 5.41 pm and all power was restored by 6.29 pm. Dr Strange says a Roskill-Liverpool 110 kV oil cable faulted. Power was restored by switching to the other lines which supply the Liverpool substation. The loss of the oil cable reduces the total power supply to the CBD, but enough remains in place to meet peak loads. "The city still has more than enough power to meet its needs, but it does reduce our back up margin," says Dr Strange. The cause of the cable fault is not yet known. A small fire was extinguished after the fault had occurred. "The fault occurred at the section of the cable which has been unearthed during the recent outages. This fire is almost certainly a result of the electrical short igniting oil at the joint. Normally a fault occurs underground and therefore no fire results," says Dr Strange.

110kV Overhead Line to CBD

A \$5 million overhead line project to supply Auckland's CBD is due for completion as soon as practicable. The double circuit overhead line was initiated after existing underground cables failed and it will replace these cables until new live cables are commissioned as part of the tunnel project. The 8.5 km overhead line was initiated on 21 February 1998 with a team of GEC Alstom staff, who have experience in building transmission lines. Suitable materials such as poles, insulators and conductors are being sourced from throughout the country. Design of the line is being carried out by Beca Carter. The line will be in place for 1.5 - 2 years (or until the tunnel project has been completed). The line starts at Transpower's substation at Penrose, along the Tranz Rail corridor to Parnell where the line runs along road reserve terminating at the Mercury Energy substation in Quay Street. The line requires a minimum clearance of 6.5 m from the ground or any structures along the route. This will require 18 to 24 m wood and concrete poles.

Oil and Gas Filled High Voltage Cables

Cables containing large conductors are used to carry electricity at high voltage to sub-stations. (22,000kV to 110,000kV). The conductors are kept close together with special insulating material, e.g.: oil impregnated paper tape. Inside high voltage cables such as those supplying the Auckland Central Business District, these paper tapes are surrounded by either free flowing oil, or nitrogen gas under approximately 200 p.s.i. Of the four affected cables two - from Penrose to Quay St - are gas filled, the other two - from Mt Roskill to Liverpool Street - are oil filled. They are buried approximately 1.5 metres beneath the ground. For Auckland's Central Business District, electricity is normally supplied by four major 110kV cables. The two Penrose to Quay cables are rated at 50MW each, and the two Roskill to Liverpool cables are rated at 60MW each. Auckland's Central Business District needs approximately 150MW daily to conduct its business.

References

- [1] Sweet, W. (ed.): "The Auckland Outage", IEEE Spectrum, vol. 35, no. 4, pp. 72, April 1998.