
Office of Utilities Regulation

Electricity Disaster Fund

Rules of Procedure
for
Operation and Administration



OFFICE OF UTILITIES REGULATION

July 31, 2008

Electricity Disaster Fund:
Rules of Procedure for Operation and Administration
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2. **DOCUMENT TITLE:**

Disaster Fund: Rules of Procedure for Operation and Administration

3. **PURPOSE OF DOCUMENT**

To outline the Objectives of the Electricity Disaster Fund and establish the Rules which govern its Administration and Operation.

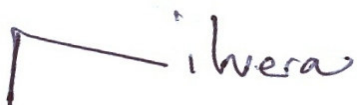
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5. **APPROVAL**

This Document is approved by the Office of Utilities Regulation and the Decisions therein become effective on **August 1, 2008.**

By Order of the Office:



Raymond A. Silvera
Deputy Director General
Date: July 31, 2008

Table of Contents

DEFINITIONS	4
RESPONSE TO CONSULTATION	7
BACKGROUND	11
OBJECTIVES	11
PART I - THE ELECTRICITY DISASTER FUND	13
1.1 PURPOSE AND OBJECTIVE OF THE FUND	13
1.2 APPLICATION OF FUND	14
1.3 ROLE OF THE UTILITY	14
1.4 ROLE OF THE REGULATOR	15
1.5 FUND FINANCING AND ADJUSTMENTS	15
1.6 BAD DEBT ADJUSTMENT FACTOR	15
1.7 LODGEMENTS TO THE FUND	16
1.8 ACCRUAL RATE	16
1.9 FUND LIMITS	16
1.10 ADJUSTMENT MECHANISM	16
1.11 FUND REVIEWS	17
1.12 TYPES OF REVIEWS	17
1.13 REVIEW CONSIDERATIONS	17
1.14 REIMBURSEMENT	18
1.14.1 Z-factor Application	18
1.14.2 Loan Repayment Application	18
1.14.4 Z-Factor Considerations	19
1.15 CASH ADVANCES	20
1.16 INTERIM FINANCING	20
PART 2 - DISASTER FUNDS RECORDS	21
2.1 RECORD KEEPING	21
2.2 T&D MAINTENANCE RECORDS	21
2.3 DISASTER PREPARATION EXERCISE	22
2.4 POST DISASTER RECORDS	22
PART 3 - DISASTER EVENTS AND THE PROCESSING OF CLAIMS	24
3.1 FORCE MAJEURE EVENTS	24
3.2 SYSTEM RESTORATION AFTER DISASTER	24
3.3 CLAIM PREPARATION AND SUBMISSION	24
3.4 AUDITOR CERTIFICATION	25
3.5 PROCESSING AND VERIFICATION	26
3.6 DETERMINATION AND APPROVALS	27
3.7 APPEALS OF OFFICE DECISIONS REGARDING THE FUND	28
PART 4 - MANAGEMENT OF FUND	29
4.1 INVESTMENT MANAGER	29
4.2 INVESTMENT PLAN	29
4.3 INVESTMENT GUIDELINES	30
4.4 US\$: J\$ ALLOCATION OF THE FUND	30
4.5 FUND SECURITY	30

4.6 INVESTMENT INSTRUMENTS	31
4.7 DEPOSITS AND WITHDRAWALS	31
4.8 REPORTING REQUIREMENTS	32
4.9 MONITORING	33
4.10 AUDIT OF THE FUND	33
4.11 PUBLIC INFORMATION ON THE FUND	33
APPENDICES	35
APPENDIX 1 - THE ESTABLISHMENT OF THE FUND	36
APPENDIX 2 - METHODOLOGY FOR CLAIMING COMPENSATION	38
APPENDIX 3 - THE APPEALS PROCESS	39
APPENDIX 4 - JPS DAMAGE REPORT	42
APPENDIX 5 - DERIVED TROPICAL CYCLONE STATISTICS	43
APPENDIX 6 - TROPICAL CYCLONES IN THE CARIBBEAN	44

DEFINITIONS

“Appeal Tribunal, The” means the appellate body appointed by the Minister to settle issues raised by Jamaica Public Service Company Limited (JPS) in the event that JPS is aggrieved by a decision of, or failure to act by, the Office of Utilities Regulation (OUR) under the *All-Island Electricity Licence, 2001*.

“Deductible” means the amount by which an approved claim submitted by JPS in relation to compensation for damages sustained in a disaster shall be reduced when payments are being made to settle the claim. The applicable deductible is expressed as a percentage of the T&D net assets and is computed on the basis of the valuation of the Company’s latest financial audit.

“Disaster” means events such as acts of God including, earthquake, lightning, drought, tsunami, flood, torrential rains, storm, cyclone, typhoon, tornado or other natural catastrophes that may be classified as Force Majeure events.

“Force Majeure” means as stated in the *All-Island Electricity Licence, 2001* “any event or circumstance or combination of such events or circumstances that (i) occurs inside Jamaica, except as provided in clause (h) below; (ii) is outside the reasonable control of the Licensee; (iii) cannot be prevented or overcome by the exercise of reasonable diligence; and (iv) materially and adversely affects the performance by the Licensee of its obligations under this Licence, to the extent that such event(s) or circumstance(s) meet the foregoing requirements (i) through (iv), including: (a) acts of God, fire, explosion, chemical contamination, earthquakes, flood, lightning, drought, tsunami, torrential rain, storm, cyclone, typhoon, or tornado, pestilence or other natural catastrophes, epidemics or plague, or any strikes, work-to-rule, go-slows or other labour disturbances that directly affect the *Assets* of the Licensee, (b) any failure or inability by the Licensee to obtain or renew any licences (other than this Licence), concessions or permits or other *Governmental Requirements* that are necessary for the Licensee to conduct its business on terms and conditions at least as favourable as those contained in the original licence (and not this Licence), concession or permit after the submission of an application that fulfils all the applicable requirements of the relevant *Government Requirements* and the exercise of due diligence to obtain such licence (other than this Licence), concession or permit, (c) any strikes, work-to-rule, go-slows or other labour disturbances that extend beyond the *Assets* of the Licensee, are widespread or nation-wide or are of a political nature, including labour actions associated with or directed against a ruling political party, or those that are directed against the Licensee (or its contractors or suppliers) as part of a broader pattern of labour actions against companies or facilities with foreign ownership or management, (d) expropriation, requisition, confiscation, nationalization or compulsory acquisition by a *Governmental Authority* of the Licensee or any substantial portion of the *Assets*,

(e) acts of war (whether or not declared), invasion, blockade or embargo, (f) acts of threats of terrorism or threat from terrorists, widespread riot, widespread violent demonstrations, widespread armed insurrection, widespread rebellion or revolution, (g) the closing or drastic reduction in capacity of public harbours, ports, docks, canals, roads, airports or other infrastructure, the rationing thereof or any import or export restrictions, or (h) to the extent that they result in disruption of the Licensee's ability to receive shipments of fuel, major equipment or critical spare parts, any strikes, work to rule, go-slows or other labour disturbances that occur outside of Jamaica”.

“**Fund**” means the Self-Insurance Fund established to provide compensation to JPS for damages to its Transmission and Distribution System that may be reasonably attributed to natural disasters.

“**Investment Manager**” means either the Chief Financial Officer or Treasurer of JPS who has been assigned the responsibility of managing the Self-Insurance Fund.

“**Jamaica Public Service Company Limited (JPS)**” means the Licensee under the *All-Island Electricity Licence, 2001* which has been granted the right and privilege to generate, transmit, distribute and supply electricity for public and private purposes in all parts of the Island of Jamaica.

“**kWh**” means Kilowatt-hours, which is the unit of energy used to measure electricity consumption.

“**Licence**” means the *All-Island Electricity Licence, 2001* which authorizes JPS to generate, transmit, distribute and supply electricity in Jamaica.

“**Loss Adjuster**” means an Insurance Claims Specialist (or agency) contracted to impartially investigate a claim against the Self-Insurance Fund for damages sustained in a disaster.

“**Office, The**” means the policy and decision-making body within the Office of Utilities Regulation and is comprised of the Director General and the Deputy Directors General.

“**OUR, The**” means the Office of Utilities Regulation as created and defined by the OUR Act, 1995, as amended.

“**OUR Act**” means the Office of Utilities Regulation Act, 1995 and amendments thereto.

“O&M” means the Operation and Maintenance of the utility plant as a part of the process of generating, transmitting, distributing and supplying electricity.

“Opportunity cost” means the interest given up by JPS, at the prevailing market rate, because it uses its own monies (or monies borrowed) to effect restoration of the T&D system after a disaster.

“Precautionary provision” means the charge expressed in \$/kWh embedded in the tariff and designated for the Fund described herein.

“Restoration cost” means expenditure made by JPS to restore its T&D system to the state it was in immediately before a disaster, provided such expenditures were made in the most efficient manner. All restoration costs may not be approved for compensation as it is subject to deductibles and an incremental cost treatment¹.

“Transmission and Distribution (T&D) system” means poles, lines, transformers, insulators, substations along with protective devices and monitoring equipment, for overhead and underground installations, owned by the utility company and are actively engaged in the movement of electric power from generating stations to consumers. The transmission and distribution system does not include equipment or plant employed in power generation, general administration or customer service.

“Z-factor” means the rate applicable under the tariff regime, as delineated by the Licence, to compensate JPS for cost incurred, through no action or inaction on the part of the Company’s management, which cannot be recovered under the price-cap.

¹ Described in Appendix 2

RESPONSE TO CONSULTATION

Four organizations submitted responses to the Notice of Proposed Rule-making through the consultation initiated in January 2008. The companies are:

- Jamaica Public Service Company
- Consumer Advisory Committee on Utility (CACU)
- Ministry of Energy, Mining and Telecommunications (MEMT)
- Jamaica Association of Insurance and Financial Advisors Limited (JAIFA)

In this section the main issues raised by these stakeholders are summarized and the positions taken by the OUR with respect to these matters are outlined.

I. Leveraging of Fund

JPS recommended that the language in Section 1.14.2 should be modified to include the leveraging of the revenue streams to the Fund as a basis for accessing loans.

Response

Given the present size of the Fund and increasing threat of disasters, particularly as it relates to tropical cyclones, there is the distinct possibility of the Fund being unable to cover restoration cost. Pragmatism therefore suggests that the Rules recognize that a loan might be required under certain circumstances to deal the gap between the balance in the Fund and compensation cost. Consequently, the Rules address loan repayment in Section 1.14.2. In addition, Section 4.1 requires that JPS should submit an annual Investment Plan for the Fund, which does not preclude the leveraging of the Fund.

The OUR therefore sees no need to specifically identify the specific method of securing the loan, excepting that the Office must approve of any loan facility negotiated by JPS that involves the Fund.

II. Loan Repayment Schedule

JPS expressed discomfort with the idea that the Rules require that the OUR must approve the loan repayment schedule it negotiates in relation to the Fund. The company argues that “there may be administrative issues or conflict with the financiers” given the OUR’s role. In fact, JPS suggested that either the Regulator accepts its “ability and interest in negotiating the best terms or the OUR be a party to the final negotiations.”

Response

The OUR interprets its role as independent regulator in a way that precludes it from being co-partner with the utility in its financial negotiations. Furthermore, under Section 3 of the OUR Act the regulator is given a mandate to “protect the interests of consumers in relation to the supply of a prescribed utility service”. In this regard the OUR would be forfeiting its responsibility if it fails to ensure that the interest rate and tenor of the loans negotiated by JPS is in the best interest of the consumer. Therefore, the conditions stated in Section 1.14.2 of the draft Rules remain.

III. Z-Factor Consideration

According to JPS, clarification is required with regard to whether the recovery rate that was capped at “0.5% of the prevailing average tariff” relates to the overall tariff or the non-fuel portion of the tariff.

In addition, the company assumed that the 0.5% recovery rate was connected to the non-fuel tariff and argued that it was too small. A range of 2 - 5% was suggested as being more realistic.

Response

For purposes of clarity it should be noted that:

1. the recovery rate is one that would only be required if the Fund is unable to cover the restoration cost and the option to apply the Z-factor Clause has to be invoked. Therefore, this recovery rate would be a temporary payment in addition to the precautionary provision embedded in the tariff;
2. the cap of 0.5% was intended to be calculated on the overall average tariff (i.e. average fuel rate plus the average non-fuel & IPP rate).

Notwithstanding, there is merit to JPS’ argument that the overall tariff is not a stable reference point for anchoring the recovery rate. The OUR has also taken on board the suggestion of increasing the 0.5% overall tariff rate (which currently translates to 1.5% of the non-fuel rate) to 2.0% of the non-fuel rate. Based on the present annual sales of approximately 3,000 GWh per year and a non-tariff fuel rate of roughly US10 cents per kWh , this translates to US\$6 million per year.

IV. Claim Preparation and Submission

JPS has suggested that the 60 days after the disaster allowed for submission of the final claim for compensation is too short.

Response

After reviewing the events of Hurricane Ivan (2004) and Hurricane Dean (2006) the Office is of the view that the comment is fair. Against this background, it was determined that the final claim should be submitted no later than 60 days after JPS has reported restoring service to 95% of the customers on the database.

V. Deductible

The draft Rules stipulate a deductible on compensation payments of 0.5% of the net book value of JPS' T&D assets. To this JPS has asked for clarity with respect to its purpose.

Response

Deductible is a component of the claim settlement formula aimed at reducing the Funds' exposure to moral hazards.

Moral hazard arises when an institution or individual behaves in a manner that is less careful than would have been the case if it (or he) were required to bear the full consequences of its (his) actions. As such, in the case of insurance there is the tendency for the insured, with more information than the insurer, to behave in a manner that increases the degree of their vulnerability to disaster. This in turn increases the cost of payments for damages to the insurer.

It should be pointed out that CACU expressed a desire for the *"quality of installations of T&D system be included as part of how damages suffered can be offset in disaster events"*. A deductible addresses CACU's concern for proper installations while avoiding the need for the costly administrative procedures for monitoring maintenance practices.

Establishing a deductible component to compensation payments is consistent with the practice in the insurance industry. The 0.5% of the net book value stipulated is substantially below the 5% -10% that is generally accepted in the industry.

VI. Lodgements of Funds

The issue of whether the period allowed for lodgement of the monthly inflows to the Fund was 14 days or 30 days was raised by JPS, CACU and the Ministry of Mining. The conflicting time periods could be found in Section 1.3 and Section 1.7 of the draft Rules.

Response

The correct time period should have been 14 days in the draft Rules. However, a request was made by JPS subsequent to the submission of their comments requesting that the 14-day period be changed to 15 days. The OUR saw no significant difference in changing it by one day and as such acceded to the adjustment.

VII. Auditor Certification

JPS indicated that a number of the things identified for the JPS' auditors' scrutiny and certification are outside of the scope of an audit exercise of that nature (i.e. Section 3.4 – 1, 2 and 3).

Response

The OUR considers this argument to be reasonable since it involves judgement related to the disaster and the appropriateness of associated expenditures rather than issues that are strictly accounts related. Against this background, some of the tasks assigned to the auditor in the draft Rules, which in fact was a duplication of those belonging to the loss adjuster, were removed.

VIII. Replacement cost versus Enhancement cost

JPS contends that the way in which replacement and enhancement costs are used, are open to diverse interpretation.

Response

The treatment of the JPS disaster claim of 2004 offers precedence for the treatment of these costs and as such any interpretation of them must be made in reference to that Determination.

IX. System Restoration after Disaster

The Ministry of Mining contends that “reasonable timelines (targets) for restoration must be pre-determined.”

Response

The OUR sees no need for establishing such timelines since the Fund does not compensate the utility for the revenue it loses when the system is down. From this perspective the economic incentive for restoring the system is strong enough and therefore obviates the need for any administrative controls to ensure speedy restoration.

X. Public Information on the Fund

CACU was of the view that JPS should be required to provide information on the Fund to its customers by way semi-annual reports.

Response

Transparency is one of the central pillars of regulations and the OUR supports CACU in this respect. However, in light of the fact that the OUR has oversight responsibility for the Fund, the duty of reporting to the public may be interpreted as a part of the regulator's role. As such the OUR shall provide reports on the status of the Fund at a frequency of no less than once per year.

BACKGROUND

These Rules for the administration of the Electricity Disaster Fund have been established pursuant to **Conditions 6 (paragraph 4), 8, and 32** as well as **Schedule 3, Exhibit 1** of the **Jamaica Public Service Company Limited All-Island Electricity Licence (2001)** and **Section 4 (1), (2) and (3)** of the OUR Act, by virtue of which the functions of the Office are to, inter alia, regulate the provision of prescribed utility services by licensees or specified organizations, to give directions to licensees so as to afford customers economical and reliable service and to undertake measures to protect the interests of consumers.

The Office of Utilities Regulation (OUR) gave approval for the establishment of the Fund arising out of the Jamaica Public Service Company Limited's (JPS') 2004 Tariff Submission which was implemented in June of that year.

OBJECTIVES

These Rules of Procedure are:

1. to ensure the proper administration of the Fund and facilitate the efficient restoration of electricity in the event of a disaster;

2. to provide a clear understanding of the principles, parameters and processes of the fund by all stakeholders;
3. to ensure that the Fund is transparently administered, prudently invested and;
4. to ensure that when claims are made against it, they are settled in a fair and consistent manner.

These Rules of Procedure set out the:

- scope and purpose of the Fund
- circumstances under which the Fund may be applied
- utility record-keeping and data requirement for claim verification
- procedure for the submission of claims
- process for investigating claims
- principles for settling claims
- principles for the investment of the Fund
- Procedures for approvals and withdrawals from the Fund

PART I - THE ELECTRICITY DISASTER FUND

1.1 Purpose and Objective of the Fund

The Fund was established in 2004 as a part of the tariff structure approved by the Office in accordance with its regulatory mandate to:

1. determine the rates which may be charged in respect of the provision of electricity service;
2. protect the interest of consumers in relation to the supply of electricity service pursuant to Section 4 (3) (b) of the OUR Act and particularly to ensure that JPS provides, as required by Condition 2 (3) of the All-Island Electricity Licence, 2001, “adequate, safe and efficient service based on modern standards, to all parts of the island at reasonable rates so as to meet the demands of the island and contribute to economic development”.

As such the primary aim of the Fund is to provide funds for the restoration of operations of JPS within the context of damages inflicted on its T&D assets by natural disasters, in the absence of traditional insurance coverage from firms that specialise in this business.

The Fund represents the total amount of money that has been set aside out of JPS' monthly revenues and the accrued interest, in special financial accounts. This money is held and managed independent of JPS' own Funds, by an Investment Manager approved by the Office to provide funding exclusively for the restoration of the T&D system in the aftermath of natural disasters.

The objectives of the Fund are to:

- reduce uncertainty with respect to the funding of restoration activities in the event of a natural disaster;
- facilitate a framework within which restoration activities may be effected efficiently and in the shortest possible time;
- minimise the financial impact on rate-payers since they may be required to pay higher rates in the aftermath of a natural disaster.

Implicit in these objectives is awareness that the electricity sector is vital to the national economy. Consequently, the capacity of the sector to recover quickly after a disaster is critical to the resilience and long-term stability of the economy.

1.2 Application of Fund

- a) The Electricity Disaster Fund shall only be employed to make compensation for damages to JPS' T&D system caused by natural disasters.
- b) T&D system referred to in these Rules encompasses utility poles with attachments including conductors, transformers, insulators, substations along with protective devices and monitoring equipment, for overhead and underground installations, owned by the utility and are actively engaged in the movement of electric power from generating stations to consumers. The transmission and distribution system does not include equipment or plant employed in power generation, general administration or customer service.
- c) The Fund does not cover damages arising from an event of an amount less than or equal to 0.5% of the value of the net book value of the T&D assets as per the most recent audited financial statements prior to the event.
- d) Compensation payable on claims shall be made on the basis of deductible valued at 0.5% of the net book value of T&D assets as per the most recent audited financial statements of JPS prior to the event.

1.3 Role of the Utility

In the administration of the Fund JPS shall be responsible and held accountable for:

- a) Setting aside the monthly precautionary provision designated in the tariff for the Fund and depositing these sums within 15 days of the end of each month.
- b) Appoint the investment manager who will be responsible and accountable for administration of the Fund.
- c) Developing the annual investment plan for the Fund and submitting to the OUR each year.
- d) Implementing the annual investment plan approved by the Office for the Fund.
- e) Notifying the OUR at the earliest possible date, if there are changes with respect to the management of the Fund, the condition of the financial

markets, the financial regulatory environment or any other factor that will materially impact the Fund.

1.4 Role of the Regulator

In the administration of the fund the OUR shall be responsible for:

- a) approving and adjusting the level of the precautionary provision made in the tariff to be applied to the Fund;
- b) setting the broad investment criteria and/or limitations on instruments in which the Fund may be invested;
- c) Reviewing and approving JPS' annual investment plan for the Fund.
- d) monitoring the levels of accruals to the Fund and timeliness with which monthly precautionary provision is transferred to the Fund;
- e) monitoring by way of quarterly and annual reports from the Investment Manager, the activities (deposits, withdrawals and returns) within the Fund;
- f) providing approvals for all withdrawals to be made on the Fund by the utility;
- g) ensuring that proper transitional arrangements are in place to guarantee the integrity of the Fund in moving the Fund from one institution to another;
- h) providing timely updates on the status of the Fund to electricity consumers.

1.5 Fund Financing and Adjustments

The Fund shall be financed through a precautionary provision approved and embedded in the tariff for this purpose. This precautionary provision shall be a part of the energy rate expressed in terms of \$/kWh.

1.6 Bad Debt Adjustment Factor

The bad debt adjustment factor gives recognition to the fact that all of JPS' billed revenues will not be collected owing to customers' delinquency. This adjustment

factor shall be 97.5%² and shall be used to multiply the monthly proceeds from the precautionary provision.

1.7 Lodgements to the Fund

JPS shall lodge the monthly proceeds from the precautionary provision to the Fund no later than 15 days after the end of each month. The monthly lodgement shall be equal to the product of the bill sales of the given month and the precautionary provision after the bad debt adjustment factor is applied.

In the event that JPS fails to lodge the monthly proceeds from the precautionary provision within the stipulated period it shall be charged interest on the outstanding sums equal to the prevailing prime lending rates. Interest shall be computed daily.

1.8 Accrual Rate

The accrual rate of the Fund is the product of JPS' annual sales in kWh and the precautionary provision plus any accrued interest on the Fund balance shall be at a level that will ensure that the maximum limit of the Fund is achieved within seven (7) years, using the latest review month as a point of reference. In determining the required accrual rate it should be assumed that there was no withdrawal from the Fund over the period.

1.9 Fund Limits

- a) The Fund shall normally be capped at fifteen (15) percent of the net book value of JPS' T&D assets. Notwithstanding, the Office has the right to increase this 15% ceiling if it determines that JPS' T&D system is, for whatever reason, over-exposed. The actual amount in US\$ terms shall be determined by the Office and is subject to periodic and post-disaster reviews.
- b) The lower limit of the Fund shall be twenty (20) percent of the upper limit (i.e. 3% of the net book value of JPS' T&D assets). Under special circumstances, such as a series of disasters within a single year or consecutive years with disaster, the Office may chose to waive this limit.

1.10 Adjustment Mechanism

The precautionary provision in the tariff shall be adjusted under the following conditions:

² Bad debt is set at a benchmark of 2.5% of revenues.

- a) **Automatic adjustments:** these changes shall be made annually in keeping with JPS' price cap adjustment mechanism. This is to keep the provision, more or less, constant in real terms.
- b) **Special Regulatory adjustments:** these changes may be made to the precautionary provision, from time to time, by the Office in an effort to align the level and the growth of the Fund with the perceived risks of disaster. The adjustments may be made at either a periodic or an annual tariff review (see Section 1.12).

1.11 Fund Reviews

The Office shall in consultation with JPS and with the assistance of experts as deemed necessary conduct reviews of the Fund in order to determine the appropriate levels of the Fund and the associated accrual rate consistent with the objectives delineated in these Rules.

1.12 Types of Reviews

Reviews shall be conducted based on one of two modalities:

- a) **Periodic review:** this refers to a programmed assessment which shall be performed as a part of the scheduled periodic Rate Review exercise as specified in the Licence.
- b) **Post-disaster review:** this refers to an assessment that shall be conducted within three (3) months after receiving JPS' final claim in relation to a natural disaster. Changes to the precautionary provision in the tariff based on a determination made by the Office in this review may take effect in the implementation of the next annual tariff review.

1.13 Review Considerations

All reviews shall, at a minimum, take the following into consideration:

- a) The updated statistical data (including information on the most recent events) on disaster.
- b) Cost data on the impact of the disaster on JPS' T&D infrastructure.
- c) The current size and accrual rate of the Fund.
- d) The impact of changes to the precautionary provision in the tariff.

1.14 Reimbursement

Once the Office has made a determination on the precise sum of money payable with respect to a claim the process will be activated for the settlement of the claim. If the entire sum payable can be covered through the Fund within the ambit specified in these Rules then full compensation of the amount payable shall be effected within 30 days of the determination.

1.14.1 Z-factor Application

In light of the fact that partial or full compensation for a natural catastrophe may not be available from the Fund and pursuant to Schedule 3 of the *All-Island Electricity License, 2001* the Office may invoke the Z-Factor provision to cover a part or the entire cost of the compensation depending on the amount available in the Fund.

According to the Licence the “Z-factor is the allowed percentage increase in the price cap index due to events that:

- a) *affect the Licensee’s costs;*
- b) *are not due to the Licensee’s managerial decisions; and*
- c) *are not captured by other elements of the price cap mechanism.*

1.14.2 Loan Repayment Application

Notwithstanding the Z-factor provision in the *All-Island Electricity License, 2001*, in the event that the Fund cannot completely cover the compensation to be paid to JPS, the Office has the right, if it is deemed prudent, to forgo the Z-factor application and instead use a Loan Repayment Application.

The Loan Repayment approach allows for the repayments of loans, in part or full, secured by JPS for the restoration of service from future contributions made by customers to the Fund.

Under this arrangement the full payment schedules associated with the loan repayments must meet the approval of the Office before payments from the Fund can commence.

1.14.3 Compensation Modalities

Compensation for cost incurred in a restoration exercise shall be recovered through one of the following three modalities:

- a) ***The Exclusive Fund Approach:*** if compensation required is less than the difference between total accrual in the Fund and the stipulated minimum then there shall be no need to invoke the Z-factor provision. The full compensation shall be taken from the Fund.
- b) ***The Exclusive Z-Factor Approach:*** if at a point in time the Fund is not at the level of the stipulated minimum balance to allow for the full payment of the compensation approved by the Office then the difference required to complete the payment may be made through the Z-factor provision. Notwithstanding, the Office, depending on the nature of the situation may choose under extraordinary circumstances to waive the minimum balance limit and allow compensation to be paid below this threshold before invoking the Z-factor provision.
- c) ***The Mixed Approach:*** if the total compensation is more than the amount accrued in the Fund, then the excess may be paid for through the Z-factor provision.
- d) ***The Loan Repayment Approach:*** In lieu of direct payments from the Fund or Z-factor, the Office may allow JPS to repay outstanding loans associated with the restoration exercise from future contributions to the Fund from customers.

1.14.4 Z-Factor Considerations

In setting the rate in the tariff for the recovery of the designated sums reimbursable to JPS based on the Z-factor provision the Office shall take the following factors into consideration:

- a) Except under extraordinary circumstances the recovery period associated with the events in any given year should not be more than 5 years.
- b) Every effort should be made to keep the recovery rate at a minimum. Except under extraordinary circumstances such as consecutive years of catastrophes or a complete wipe-out of the Fund, the recovery rate should not be in excess of 2.0% of the prevailing average non-fuel tariff.
- c) The recovery rate should not be indexed to the inflation factor in the price-cap mechanism. However, it may be pre-set at different levels over consecutive 12-month periods.
- d) At the end of the recovery period an assessment of the revenues recovered should be done and to the extent that an under-recovery or over-recovery exists, it should be set-off against the Fund.

1.15 Cash Advances

In the immediate aftermath of a disaster JPS may be allowed, at the discretion of the Office, a cash advance from the Fund, against its claim before it is fully processed. The cash advance can be up to fifty percent (50%) of the estimated restoration cost associated with the event, provided that:

- a) the claim is for damages sustained by its T&D assets;
- b) the damage is estimated to be in excess of 0.5% of the net book value of the T&D assets as established in the most recent financial audit; and
- c) the scale of the estimated restoration cost and the reported damages to the T&D system are deemed to be reasonable by the Office.

In addition, JPS will be required to present:

- I. actual financials for the six -month (6) period leading up to the disaster;
- II. projected financials for the period covering at least six (6) months based on the assumption that the disaster had not occurred;
- III. projected financials for the period covering at least twelve (12) months after the disaster.

This is in order for the OUR to assess whether the cash advance requested is in fact necessary.

1.16 Interim Financing

In order to facilitate the speedy restoration of service in the aftermath of a natural disaster JPS will be allowed, at the discretion of the Office, short term loans from the Fund spanning a period of no more than 12 months. This loan is to allow the Company time to secure commercial loans at competitive interest rates so that it may meet the increased financial demands caused by the disaster.

The interest rate on the loan to JPS from the Fund shall be at least one percentage point above that earned on the overall invested pool of funds.

PART 2 - DISASTER FUNDS RECORDS

2.1 Record Keeping

Critical to the assessment of the Company's claim for damages is proper record keeping. Records of this sort may be classified in three categories:

- a) Utility T&D records
- b) Disaster Preparation Exercise
- c) Post-disaster records

These records will be employed by the OUR to establish and verify the legitimacy and quantum of the amount redeemable by JPS.

2.2 T&D Maintenance Records

JPS shall file its planned T&D maintenance schedule with the OUR no later than March 31 of each year. This maintenance schedule shall be prepared in accordance with the relevant Codes of Practice or relevant Directive issued by the Office.

The main purpose of these filings as they relate to the Fund is associated with the OUR's ability to ensure that sections of the T&D system identified for maintenance are not counted in claims submitted by JPS arising from a disaster.

The Plan shall provide the following details:

- a) Specifics of the substations as well the T&D lines targeted for maintenance and upgrading.
- b) The expected cost of the maintenance and upgrading exercise broken down by:
 - Location
 - Material
 - Labour
 - Third party
- c) The expenditure assigned for hurricane preparation activities.

2.3 Disaster Preparation Exercise

JPS shall carry out adequate disaster preparation exercises which should include:

- a) Staff drills, training and disaster simulation exercises.
- b) A plan of action which involves the coordination of restoration activities between key government agencies, disaster preparedness organisations, independent power producers and other critical institutions.

The OUR should be informed of these exercises by March 30 each year in order that it may be satisfied that the utility has done what is required to mitigate the effects of a potential disaster.

2.4 Post Disaster Records

JPS shall maintain post-disaster records which should cover all information required to facilitate verification of the claims submitted. This information should include, among other things, data on the T&D assets affected, the nature, extent and components of restoration work carried out, inventory records and pricing data.

In the aftermath of a disaster the records required by the OUR shall include, but not restricted to:

- a) Restoration reports at regular intervals, not exceeding 7 days, identifying:
 - the percentage of customers relative to its overall customer base whose service has been restored;
 - the areas in which electricity service has been restored;
 - a projection with respect to when service will be restored to all customers.

These reports must be submitted until 95% of JPS customers have received service.

- b) Damage reports (see Appendix 4) which where possible should specify the asset register number of the damaged plant as well as details on the location and scale of damage.

- c) Any documentary or photographic evidence of the damage to plant.
- d) Job title and names of personnel involved in direct restoration activities on a location by location basis.
- e) Details of material used at each location.
- f) Unit cost of all material used.
- g) Details of all third-party service which should include:
 - Contractor names
 - Assignments
 - Contractor rates (local and foreign)
- h) Overtime rates and allowances by worker category for JPS personnel directly involved in restoration activities.
- i) Details of travelling and accommodation expenses for JPS personnel directly involved in the restoration exercise.
- j) Interest expense associated with funds raised for restoration activities.
- k) Monthly financial statements spanning the six-month period commencing two months before and ending three (3) month after the month in which the disaster occurred.

PART 3 - DISASTER EVENTS AND THE PROCESSING OF CLAIMS

3.1 Force Majeure Events

Natural disasters are catastrophes that owe their origin to the force of nature and are completely outside the control of the management of the utility. It is however recognized that while these events are not within management's control, the extent of the damages suffered can be mitigated by strategic capital investments, the quality and structure of the utility's maintenance programme and the training of staff.

Force Majeure occurrences precipitated by natural disasters tend to inflict damages on the national electricity grid and cause disruption of services which may require the suspension of JPS' normal obligation as required under the Licence for a specified period. Provided certain minimum criteria are satisfied Force Majeure events triggered by natural disasters qualify the utility for compensation under the Electricity Disaster Fund.

In addition, suspension of certain obligations of the Licensee in such circumstances may be given by the Office upon request. Once Force Majeure status is granted, the Office shall publish its determination with immediate effect through the print or electronic media, or by such other medium of communication that is available given the circumstances which exist in the aftermath of the disaster.

3.2 System Restoration after Disaster

In the event of a natural disaster JPS must move with alacrity to restore service to all affected areas. However, the utility shall pay attention to the keeping of records and evidence which will be required to substantiate its claim for compensation for the damages suffered.

3.3 Claim Preparation and Submission

As established in the Determination on "*Jamaica Public Service Company Limited Z-Factor adjustment for Hurricane Ivan Recovery Cost*" (Document No. 2005/05), the Office shall only recognise T&D expenditures related to the following components of cost in any claim for damages:

- a) Restoration costs to bring the asset back to the state before the event.

- b) Opportunity costs directly associated with the restoration of service.

Claim must be submitted by JPS to the OUR no later than sixty (60) days after the company has formally indicated to the Office that it has restored 95% of its customers after the disaster. In the event JPS fails to do so, the Office shall be under no obligation to accept a claim beyond that date. Evidence of actual repairs to damages tends to be more difficult to establish as time progresses.

Claims submitted should clearly identify all items of restoration cost and the associated opportunity costs in order to facilitate proper auditing and analysis of the claim.

A claim for any given event shall only be considered if it is in excess of 0.5% of the value of the net T&D asset reflected in the last audited statement. Additionally, compensations will be paid on the basis of the claim approved by the Office subject to a deductible valued at 0.5% of the T&D asset.

3.4 Auditor Certification

On receiving a claim the OUR may determine, among other things, based on the monetary value of the compensation being sought and the scale of catastrophe form its judgement on the basis of certification of the claim by JPS' auditors.

In such an event the auditors shall be required to provide certification of the following with respect to the T&D facility, the:

- a) precise expenditure for total restoration costs;
- b) amount of the restoration costs associated with returning the facility to its pre-disaster state disaggregated on the basis of capital and O&M expenditures;
- c) capital expenditure incurred in excess of the book value of the assets lost in the disaster;
- d) amount of the restoration costs in respect:
 - I. Overtime expenditure associated with JPS personnel
 - II. Third-Party cost

3.5 Processing and Verification

The OUR may engage the services of a loss adjuster to impartially investigate a claim against the Fund for damages sustained in a disaster. The loss adjuster shall provide independent verification of the costs legitimately and prudently incurred by JPS in the restoration exercise. Among other things the loss adjuster would be required to:

- examine the causes of loss or damage;
- confirm whether the items claimed are covered by the Fund; and
- assess the validity of the claim.

In order to arrive at a Determination on the amount of restoration costs for which the utility should receive compensation, the Office must be satisfied that:

- a) restoration costs represent expenditure genuinely incurred to return supply after the event;
- b) replacement costs are clearly isolated from enhancement costs³ in the utility's claim;
- c) the restoration exercises were efficiently executed and did not result in any extra costs above and beyond that which was absolutely required to return customer service to its pre-disaster condition;
- d) the claim submitted excludes all O&M costs and capital expenditure that would have arisen in the Company's normal daily operation, regardless of whether the activities carried out were performed by the utility's workers or contractors;
- e) JPS' inventory record was kept in a manner that allowed for the clear identification of supplies taken in and out of its stores in relation to the disaster;
- f) inventory records reflect the destination of each item taken from the stores in order that proper reconciliation of the supplies with its use may be performed by the auditors appointed by the Office;
- g) evidence whether photographic or actual exhibits has been presented by the utility in order that its claim for damages can be verified.

³ Enhancement costs are expenditures incurred that will extend the useful life of the asset or improve the facility beyond that which obtained immediately before to the hurricane.

3.6 Determination and Approvals

The OUR has the responsibility of ensuring that claims submitted by JPS are thoroughly assessed and compensation for claims are done in a manner that is fair and consistent with the rules established within this document.

The accounting principle that shall be employed in the determination of the precise level of compensation to be paid shall be based on the *Incremental Cost Approach*.

In the process of restoring electricity service to, more or less, the state that existed immediately before the catastrophe the incremental cost approach has a distinct treatment for operating and maintenance costs as opposed to capital costs. Under this approach, only the operating and maintenance costs in excess of what would be incurred during normal operation plus costs required to bring back the asset to its state before the event, is compensated. Capital costs which represent enhancements to the assets or will extend the useful life of the replaced plant beyond the state it was in immediately before the natural disasters are booked and as such are not included in the compensation.

Specifically, the *Incremental Cost Approach* involves the following:

- a) the actual compensation for O&M restoration cost must be reduced by non-incremental expense. For instance, although linesmen effort after a hurricane is completely engaged in the restoration service only over-time expenses associated with the activity is claimable under the Fund.
- b) the incremental capital cost associated with restoration of assets shall be recorded as a part of its fixed assets and not be deemed as a part of the amount claimable. This requires that actual restoration cost of the assets should be determined and any additional cost associated with the improvement of the asset deducted. If, for instance, a concrete pole is used to replace a wooden pole, then only the cost for the depreciated wooden pole is claimable. Hence the incremental cost associated with the concrete pole would be considered an enhancement to capital and should be booked. This incremental capital cost would correctly form a part of the rate base which is recoverable through the tariff.
- c) The capital cost of replacing the same asset damaged in the disaster is further reduced by the amount to which the asset has been depreciated in order to determine the precise compensation value of the asset.

3.7 Appeals of Office Decisions regarding the Fund

In the event that JPS is aggrieved by a decision of the Office regarding claims made against the Fund and its use under the provisions as set out in these Rules, JPS may request a review of the decision by the Office within thirty days of its receipt of the decision.

The Office is obligated to review the decision in keeping with JPS' request and declare its position within thirty days of receiving the request.

In the event that JPS is dissatisfied with the Office's position after the review, the Company has the right to appeal to the Appeals Tribunal as provided for under **Condition 32** of the Licence (see Appendix 3).

PART 4 - MANAGEMENT OF FUND

4.1 Investment Manager

JPS shall appoint either its Chief Financial Officer or its Treasurer as the Investment Manager of the Fund. The officer appointed must satisfy all the conditions required for such managers within the Jamaican banking and financial regulatory framework.

The OUR shall be notified by JPS within seven (7) days when a new Investment Manager is appointed and when the services of the manager are terminated.

The Investment Manager shall be responsible for:

- a) the prudent investment of the Fund and shall strictly comply with the directions specified in these Rules as well as any other directive issued by the Office;
- b) the transparent and efficient administration of the Fund;
- c) the provision of monthly reports to JPS and quarterly reports to the OUR on the status of the Fund;
- d) the provision of ad-hoc reports at the request of JPS and the OUR;
- e) reporting immediately to JPS senior management and the OUR anything he/her perceives within the company or the external environment that may have an adverse impact on the Fund; and
- f) facilitating the conduct of annual and special audits by independent auditors.

4.2 Investment Plan

JPS shall prepare detailed annual plans of how the funds will be invested during the course of the specified year bearing in mind the objectives of (i) reasonable returns; (ii) risk optimization; and (iii) liquidity. In this regard consideration shall be given, among other things, to the following:

- the types and maturity of financial instruments;
- the proportion of funds that should be held in US dollars as opposed to Jamaican dollars;

- the share of the funds to be held within and outside Jamaica.
- Accessibility to the funds in the event of a catastrophe man-made or otherwise at the locale in which the Fund is held.

The Plan submitted by JPS shall be done each year by November 30 and shall delineate how the Fund will be handled in the next calendar year.

The Office shall assess the investment Plan to determine its soundness and consistency with the rules herein. In the event that the Office does not approve the Plan it will either offer an alternative plan or request JPS reconsider its proposals in response to the specific objections raised by the Office.

JPS shall not implement the Plan without the approval of the Office.

4.3 Investment Guidelines

The primary objective of investing the Fund is to maintain it at level of growth at least equal to the rate of inflation and to insulate it from the effects of the depreciation of the Jamaican dollar against its US counterpart. A large proportion of JPS' T&D assets has a foreign component, therefore in the event of a disaster the proceeds from the Fund would be required for US\$ denominated goods and services. The secondary objective is to ensure that funds are sufficiently liquid and easily accessible when disaster strikes.

As such, investment decisions shall be guided by three primary principles:

1. the achievement of a reasonable rate of return;
2. the avoidance of unnecessary risk; and
3. the maintenance of liquidity.

4.4 US\$: J\$ Allocation of the Fund

In determining the proportion of funds to be assigned local and foreign instruments, consideration should be given to the issue of currency stability, convertibility and liquidity. In this regard no more than 15% of the funds should be held in Jamaican dollars (J\$).

4.5 Fund Security

In order to avoid investments that put the Fund at unnecessary risk:

1. the Fund or any part thereof shall not be invested, without the approval of the Office, in any other investment instruments save those specified in the approved investment plan.
2. the Fund or any portion thereof shall not be used as guarantee for debts undertaken by JPS or be subject to any lien on behalf of JPS;
3. all financial instruments acquired on behalf of the Fund must be registered in the name of the Fund.

For the integrity of the Fund investments in the following are prohibited:

1. Foreign securities outside the stipulation of the Bank of Jamaica.
2. Derivatives, options and futures contracts.
3. Non-marketable securities.
4. Fiduciary participation in any real estate deal.
5. Commodities
6. Short sales

Transfer of funds to offshore investments must conform to Jamaica banking and financial regulations. Transfer of funds to offshore investments shall not be done without the approval of the OUR.

4.6 Investment Instruments

JPS has no authority to invest the Fund in other instruments or institutions except those listed in the latest approved investment plan.

4.7 Deposits and Withdrawals

Withdrawals from the Fund are clearly connected to the whole integrity and stability of the Fund. As such, the Office must grant approval to JPS before it can make any withdrawals from the Fund.

The Fund shall only be used for the settlement of claims arising from expenditure approved by the Office in relation to a natural disaster. Withdrawals from the Fund shall not be permitted except under the following conditions:

- a) To pay, in part or full, for damages associated with the utility's T&D assets;
- b) To make interim payment to the utility for damages being assessed by the Office.
- c) To settle the difference under-recovered at the end of a Z-factor recovery period.
- d) To provide bridge-financing to JPS in the after-math of a natural disaster.
- e) To service loan payments approved by the Office and taken by JPS to meet restoration costs in the aftermath of a natural disaster.

Withdrawals from the Fund shall be authenticated by the signature of the Director General or his designee.

4.8 Reporting Requirements

The institution(s) in which the Fund is held shall be required to submit to JPS:

- a) Monthly reports, no later than *ten (10) business days* after the end of each month.
- b) Detailed quarterly reports, showing details of the Fund within *ten (10) business days* after the end of each quarter (Mar, Jun, Sep and Dec).
- c) An annual review of the Fund *within 30 calendar days* of the end of the accounting year.
- d) Immediate report or communication on unusual, notable or extraordinary events that are in anyway related to the management of, or the returns on the Fund. These include, among other things:
 - resignation, dismissal or extended leave of absence of the portfolio manager or any other key personnel associated with the Fund;
 - Changes in the firm's organization structure.

The institution(s) in which the Fund is held shall be required to submit quarterly and annual reports directly to the OUR within the timeframe specified for same reports above.

4.9 Monitoring

Monitoring of investments shall be a disciplined and regular exercise. The Investment Manager shall monitor the activities and performance of the investment portfolio to which it is entrusted. The rules therefore require the submission of timely, periodic reports which provide information on the status of the Fund to JPS and the OUR.

In addition, the Investment Manager may be asked from time to time to submit ad hoc reports to clarify issues raised by either the company or the OUR.

Information on the quarterly accrual rate and the accumulated balance in the Fund shall be posted on a quarterly basis on the OUR website.

4.10 Audit of the Fund

The Fund shall be subject to annual audits as a part of JPS' annual audit exercise.

The Audit shall consist of two (2) components:

1. An audit of JPS' books to certify whether the Company has accurately determined the accrual to the Fund based on the precautionary provision, the annual sales in kWh and the bad debt adjustment factor. The audit shall also verify whether JPS during the year consistently lodged the funds in the designated institution(s) in a timely manner consistent with the requirements delineated in these Rules. The audit shall also establish whether the appropriate interest rates were applied to outstanding balances in instances where lodgments were not made within the stipulated period.
2. An Audit of the statements and reports issued from the institution(s) holding the Fund in order to establish whether they are relevant, accurate, complete and fairly presented.

All audits and other investigations of the Fund, which may be from time to time commissioned by the Office, shall be paid for out of the Fund.

4.11 Public Information on the Fund

The OUR shall be required to provide information to JPS customers with respect to the activities of, and balances in the Fund at least on an annually basis. This information shall be posted on the OUR's website (www.our.org.jm) and shall

reflect balances and activities in the Fund for the first and second half of the calendar year respectively.

APPENDICES

APPENDIX 1 - The Establishment of the Fund

In 1988 Jamaica was hit by Gilbert, a category 3 hurricane, which inflicted heavy damage to the Jamaica Public Service Company (JPS) T&D system. This was the first direct hit by a hurricane in 37 years. Subsequently, some insurance companies have exhibited a reluctance to insure the network and those willing to do so, have offered coverage at very high premiums and elevated deductible thresholds.

As a result of this, JPS in its 2004 Tariff Submission requested approval for establishing a self-insurance fund. JPS indicated in the submission that where insurance was available in the Northern Caribbean, annual premiums ranged from 15% to 20% of the net book value of the assets to be insured with deductibles spanning 5% to 10%. In addition, JPS ruled out any consideration of partial insurance since the application of “the average clause” would not make good economic sense given the extent of the damage a severe tropical cyclone is likely to cause to the system.

JPS proposed that the Fund should be:

1. Based on an incremental rate on each kWh consumed by its customers;
2. set at 25% (US\$10 million) of the net book value of its T&D assets;
3. allowed an annual accrual rate of 5% (US\$2 million) of the net book value of its T&D assets.

Based on the accrual rate of the Fund it would take approximately five years to reach what was considered the desired accumulation level of 25% of the net book value or US\$10 million, assuming no disaster over the period. JPS was of the view that US\$10 million should be adequate to cover a single disaster in one year, since Hurricane Gilbert (1988) the largest catastrophe in Jamaica in the latter half of the 20th Century inflicted an estimated US\$9 million worth of damage to the electricity grid.

In addition, it may argued that the establishment of the Fund would obviate the need to invoke the Z-factor clause in the event of a disaster arising from a tropical cyclone. Under the All-Island Electricity Licence, 2001 which JPS operates, the Company is allowed to increase its rates beyond what is permitted under the price-cap index via the Z-factor. For this factor to be applicable the utility must experience an event that satisfies the following conditions:

- a) affects the Company’s cost;

- b) not due to the Company's managerial decision; and
- c) the resultant costs are not captured by other elements of the price-cap mechanism.

After reviewing JPS' submission the OUR approved the utility's proposal and the Fund was implemented in July 2004.

APPENDIX 2 - Methodology for Claiming Compensation

The accounting principle employed to determine the treatment of restoration cost under the Self-insurance Fund is important because it has implications for the allocation of compensation over the short and long term.

The Office has established that compensation shall be based on the Incremental Cost Approach. This methodology requires that actual O&M and capital cost directly related to the restoration exercise is reduced by non-incremental expense.

For instance, although linesmen effort after a hurricane is completely engaged in the restoration service only over-time expenses associated with the activity is claimable under the Fund for O&M expenditure.

With respect to capital component, the cost that is permitted to be booked is equivalent to the amount spent replacing the assets and is reduced by the amount required to restore the facility to its pre-hurricane condition. In other words capital cost is reduced by the value of the depreciated value of the asset substituted. As such capital cost associated with the enhancement or the extension of the life of assets is capitalized.

It is evident that although the Incremental Approach is more complex than the method that simply treats all restoration cost as one-off expense it is fair and gives appropriate attention to the nature and lifespan of resources employed in the restoration effort. In addition, the methodology ensures that consumers are not charged twice for the resources the utility uses for the provision of service.

APPENDIX 3 - The Appeals Process

Below is the Appeals Process as outlined under Condition 32 of the All Island Electricity Licence, 2001:

1. (i) If the Licensee is aggrieved by a decision of, or failure to act, by *the Office*, under this Licence, the Licensee may appeal to the Appeal Tribunal (hereinafter called "the Tribunal") -
 - (a) in the case of a decision of *the Office*, within thirty (30) days after notification to the Licensee of that decision;
 - (b) in the case of a failure of *the Office* to act, within twenty-one (21) days after the date on which *the Office* was required to act.
- (ii) On hearing an appeal under this Licence the Appeal Tribunal shall have regard to the legality, rationality and procedural propriety of the Office in arriving at its decision and may:
 - (a) confirm, modify or reverse the decision of *the Office* or any part thereof; or
 - (b) by a direction in writing, refer the decision back to *the Office* for reconsideration by it, either generally or in relation to any matter specified in the direction, and the Tribunal shall, at the same time, state the reasons for so doing.
- (iii) The Tribunal may, on application by the Licensee, order that the decision of *the Office* to which an appeal relates shall not have effect until the appeal is determined.
- (iv) The Appeal Tribunal may dismiss an appeal if it is of the opinion that the appeal is frivolous or vexatious or not made in good faith.
- (v) Where the Appeal Tribunal dismisses an appeal, it shall inform the Licensee and *the Office* in writing stating the reasons therefor.
- (vi) In making a decision the Appeal Tribunal shall observe reasonable standards of procedural fairness and the rules of natural justice and act in a timely fashion.

2. (i) The Appeal Tribunal shall consist of three members appointed by the *Minister* as follows:
- (a) one member shall be a former Judge of the Supreme Court or the Court of Appeal and shall be the Chairman of the Tribunal;
 - (b) one member shall be appointed on the recommendation of the Licensee; and
 - (c) one member shall be appointed on the recommendation of *the Office*.
- (ii) The members of the Tribunal shall hold office for such period not exceeding two years as the *Minister* may determine and shall be eligible for reappointment.
- (iii) The *Minister* may appoint any person to act in the place of the chairman or any other member of the Tribunal in the case of the absence or inability to act of the chairman or other member.
- (iv) (a) Any member of the Tribunal other than the Chairman may at any time resign his office by instrument in writing, addressed to the *Minister* and transmitted through the Chairman, and from the date of the receipt by the *Minister* of such instrument that member shall cease to be a member of the Tribunal.
- (b) The Chairman may at any time resign his office by instrument in writing addressed to the *Minister* and such resignation shall take effect as from the date of receipt by the Minister of that instrument.
- (v) The *Minister* may at any time revoke the appointment of any member of the Tribunal if such member -
- (a) becomes of unsound mind or becomes permanently unable to perform his functions by reasons of ill health;
 - (b) is convicted and sentenced to a term of imprisonment;
 - (c) fails without reasonable excuse to carry out any of the functions conferred or imposed on him under this Licence;
 - (d) engages in such activities as are reasonably considered prejudicial to the interest of the Tribunal.

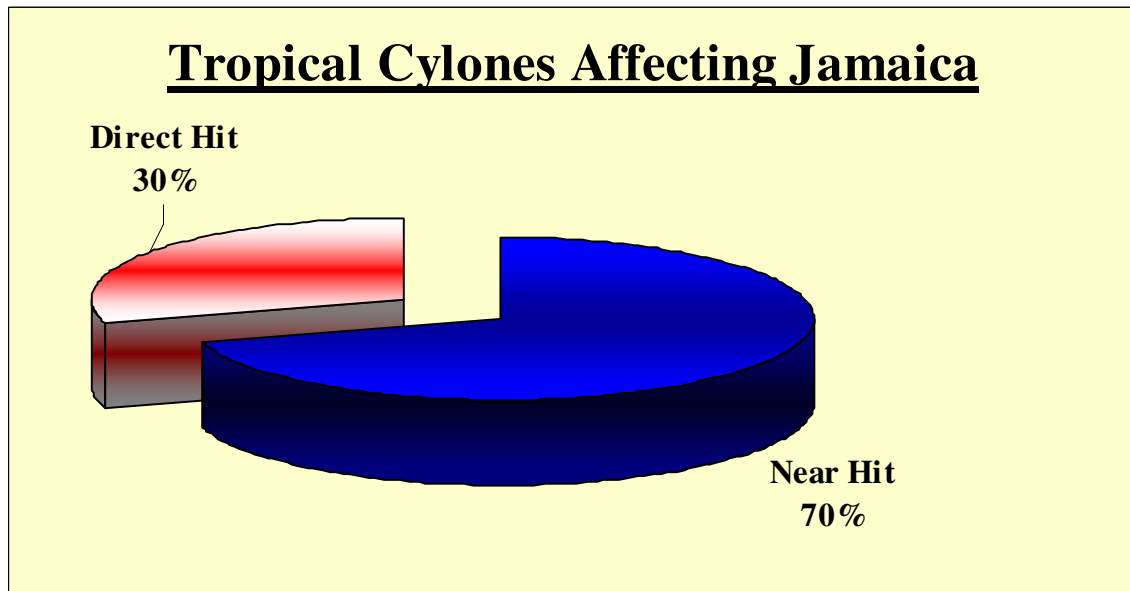
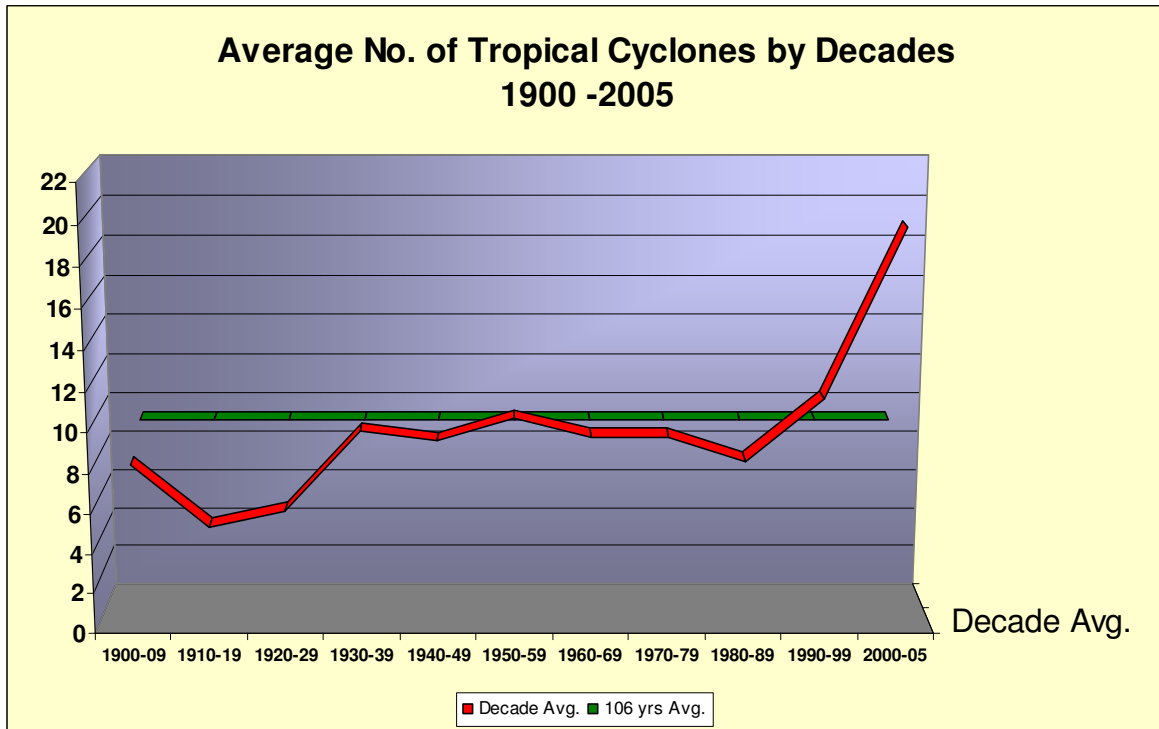
- (vi) If any vacancy occurs in the membership of the Tribunal, such vacancy shall be filled by the appointment of another member thereof by the *Minister*.
- (vii) The names of all members of the Tribunal as first constituted and every change in the membership thereof shall be published in the Gazette.
- (viii) There shall be paid to the Chairman and other members of the Tribunal in respect of each appeal, such remuneration, whether by way of honorarium, salary or fees, and such allowances as the *Minister* may determine.
- (ix) The decisions of the Tribunal shall be by a majority of votes of the members.
- (x) The Tribunal shall regulate its own proceedings.”

APPENDIX 4 - JPS Damage Report

Report No. _____

Name of Employee	
Division/Department	
Date of Report	Date Damage Was Discovered
Nature of Damage: <ul style="list-style-type: none"> <input type="checkbox"/> Building <input type="checkbox"/> Equipment <input type="checkbox"/> Substation <input type="checkbox"/> Transmission Line <input type="checkbox"/> Distribution Line <input type="checkbox"/> Equipment <input type="checkbox"/> Other, Specify _____ 	
Report on Damage	
Action Taken	
Estimated Cost of Damage	
Location of Damage	
Severity of Damage	
Signature of Employee	
Signature of HOD/Line Manager	Date

APPENDIX 5 - Derived Tropical Cyclone Statistics



APPENDIX 6 - Tropical Cyclones in the Caribbean

TROPICAL CYCLONES IN CARIBBEAN & THEIR EFFECTS ON JAMAICA (19971 – 2005)

YEAR	No. of Trop. Cyclone	No. Affected Jamaica	Average Dist. (km)	No. of Direct Hits	No. of Near Hits	Trop. Cycl with Severe effects on Ja	
						No.	Probability
2005	31	4	184	0	3	3	0.10
2004	17	2	65	0	2	2	0.12
2003	21	2	352	0	0	0	0.00
2002	14	2	55	0	2	2	0.14
2001	17	5	366	0	1	1	0.06
2000	18	1	145	0	1	1	0.06
1999	16	1	145	0	1	1	0.06
1998	14	2	233	0	0	0	0.00
1997	8	0	N/A	0	0	0	0.00
1996	13	1	771	0	0	0	0.00
1995	19	0	N/A	0	0	0	0.00
1994	7	1	0	1	0	1	0.14
1993	8	0	N/A	0	0	0	0.00
1992	7	0	N/A	0	0	0	0.00
1991	8	0	N/A	0	0	0	0.00
1990	14	0	N/A	0	0	0	0.00
1989	11	0	N/A	0	0	0	0.00
1988	2	1	0	1	0	1	0.50
1987	7	0	N/A	0	0	0	0.00
1986	6	0	N/A	0	0	0	0.00
1985	11	0	N/A	0	0	0	0.00
1984	13	0	N/A	0	0	0	0.00
1983	4	0	N/A	0	0	0	0.00
1982	6	0	N/A	0	0	0	0.00
1981	12	1	0	1	0	1	0.08
1980	11	1	56	1	0	1	0.09
1979	9	1	204	0	0	0	0.00
1978	12	0	N/A	0	0	0	0.00
1977	6	0	N/A	0	0	0	0.00
1976	10	0	N/A	0	0	0	0.00
1975	9	2	213	0	0	0	0.00
1974	11	1	241	0	0	0	0.00
1973	8	1	195	0	1	1	0.13
1972	7	0	N/A	0	0	0	0.00
1971	13	0	N/A	0	0	0	0.00

**TROPICAL CYCLONES IN CARIBBEAN & THEIR EFFECTS ON JAMAICA
(1931 – 1970)**

YEAR	No. of Trop. Cyclone	No. Affected Jamaica	Average Dist. (km)	No. of Direct Hits	No. of Near Hits	Trop. Cycl with Severe effects on Ja	
						No.	Probability
1970	10	1	195	0	1	1	0.10
1969	18	1	232	0	0	0	0.00
1968	8	0	N/A	0	0	0	0.00
1967	8	1	84	0	1	1	0.13
1966	11	1	232	0	0	0	0.00
1965	6	0	N/A	0	0	0	0.00
1964	12	1	93	0	1	1	0.08
1963	9	1	278	0	0	0	0.00
1962	5	0	N/A	0	0	0	0.00
1961	11	1	0	1	0	1	0.09
1960	7	0	N/A	0	0	0	0.00
1959	11	0	N/A	0	0	0	0.00
1958	10	2	139	0	2	2	0.20
1957	8	0	N/A	0	0	0	0.00
1956	8	1	93	0	1	1	0.13
1955	12	3	207	0	1	1	0.08
1954	11	1	185	0	1	1	0.09
1953	14	2	84	0	2	2	0.14
1952	7	0	N/A	0	0	0	0.00
1951	10	2	116	1	0	1	0.10
1950	13	1	93	0	1	1	0.08
1949	13	1	0	1	0	1	0.08
1948	9	1	0	1	0	1	0.11
1947	9	1	0	1	0	1	0.11
1946	6	0	N/A	0	0	0	0.00
1945	11	1	232	0	0	0	0.00
1944	11	3	139	1	1	2	0.18
1943	10	0	N/A	0	0	0	0.00
1942	10	2	139	0	1	1	0.10
1941	6	0	N/A	0	0	0	0.00
1940	8	0	N/A	0	0	0	0.00
1939	5	1	93	0	1	1	0.20
1938	8	2	163	0	1	1	0.13
1937	9	0	N/A	0	0	0	0.00
1936	16	0	N/A	0	0	0	0.00
1935	6	2	93	0	2	2	0.33
1934	11	1	0	1	0	1	0.09
1933	21	5	93	2	2	4	0.19
1932	11	2	121	1	0	1	0.09
1931	9	3	124	1	1	2	0.22

**TROPICAL CYCLONES IN CARIBBEAN & THEIR EFFECTS ON
JAMAICA (1900 – 1930)**

YEAR	No. of Trop. Cyclone	No. Affected Jamaica	Average Dist. (km)	No. of Direct Hits	No. of Near Hits	Trop. Cycl with Severe effects on Ja	
						No.	Probability
1930	2	1	278	0	0	0	0.00
1929	3	0	N/A	0	0	0	0.00
1928	6	2	93	1	1	2	0.33
1927	7	1	138	0	1	1	0.14
1926	11	0	N/A	0	0	0	0.00
1925	2	0	N/A	0	0	0	0.00
1924	8	1	0	1	0	1	0.13
1923	7	1	232	0	0	0	0.00
1922	4	0	N/A	0	0	0	0.00
1921	6	0	N/A	0	0	0	0.00
1920	4	0	N/A	0	0	0	0.00
1919	3	0	N/A	0	0	0	0.00
1918	5	1	93	0	1	1	0.20
1917	3	1	47	0	1	1	0.33
1916	14	3	114	1	1	2	0.14
1915	5	3	108	1	2	3	0.60
1914	1	0	N/A	0	0	0	0.00
1913	4	0	N/A	0	0	0	0.00
1912	6	2	116	1	0	1	0.17
1911	4	1	93	0	1	1	0.25
1910	5	2	104	0	2	2	0.40
1909	11	6	143	0	5	5	0.45
1908	10	1	278	0	0	0	0.00
1907	5	1	222	0	0	0	0.00
1906	11	2	139	0	2	2	0.18
1905	5	1	37	0	1	1	0.20
1904	5	2	69	1	1	2	0.40
1903	10	1	0	1	0	1	0.10
1902	5	0	N/A	0	0	0	0.00
1901	12	2	232	0	1	1	0.08
1900	7	1	185	0	1	1	0.14

TROPICAL CYCLONES & JAMAICA: 1900 -1912

Year	Dates of passages over or when closest to island	Type of weather system	Name	Section of island most affected	Nearest distance to island
1900	August 3	Hurricane		St Mary, Portland, St. Thomas and St. Ann	115 miles
1901	July 5-6	Tropical Storm		South Coast	173 miles
1901	September 13-14	Tropical Storm		North Coast	115 miles
1903	August 10-11	Hurricane		Manchester, Clarendon, St. Elizabeth & Westmoreland	Hit S-W
1904	June 12-13	Tropical Storm		Westmoreland and Hanover	Hit W
1904	October 13-14	Tropical Storm		Western Jamaica	86 miles
1905	October 4-5	Hurricane		Eastern Jamaica	23 miles
1906	October 14	Hurricane		South Coast	115 miles
1906	November 6-7	Tropical Storm		Western Jamaica	58 miles
1907	June 24-25	Tropical Storm		South Coast	138 miles
1908	September 29	Tropical Storm		Portland, St. Thomas and St Mary	173 miles
1909	July 16-17	Tropical Storm		South Coast	29 miles
1909	August 6	Tropical Storm		South Coast	86 miles
1909	August 23-24	Hurricane		Portland, St. Thomas,, St. Mary and St. Ann	46 miles
1909	September 15-16	Tropical Storm		Westmoreland and St. Elizabeth	115 miles
1909	October 08	Hurricane		Westmoreland and St. Elizabeth	115 miles
1909	November 11-12	Tropical Storm		St. Thomas and St. Andrew	144 miles
1910	August 24-25	Tropical Storm		Manchester, St. Elizabeth and Clarendon	Hit S
1910	September 8-9	Hurricane		Portland, St. Mary, St. Ann and Trelawny	29 miles
1911	October 24	Tropical Storm		Portland and St. Mary	58 miles
1912	October 11	Tropical Storm		Hanover and Westmoreland	144 miles
1912	November 18	Hurricane		Hanover and Westmoreland	Hit W

TROPICAL CYCLONES & JAMAICA: 1915 -1932

Year	Dates of passages over or when closest to island	Type of weather system	Name	Section of island most affected	Nearest distance to island
1915	August 12-13	Hurricane		St. Ann	Hit N
1915	September 01	Hurricane		Westmoreland	86 miles
1915	September 25	Hurricane		St. Elizabeth and Clarendon	115 miles
1916	August 15-16	Hurricane		Clarendon, St. Elizabeth, Manchester, and Hanover	Hit S-W
1916	August 30-31	Hurricane		South Coast	69 miles
1916	October 13	Hurricane		South Coast	144 miles
1917	September 23	Hurricane		St. Mary	29 miles
1918	August 3-4	Tropical Storm		South Coast	58 miles
1923	October 18	Tropical Storm		Western Jamaica	144 miles
1924	November 7-8	Tropical Storm		Clarendon and St. Ann	Hit S-N
1927	October 18	Tropical Storm		Hanover	86 miles
1928	August 10-11	Hurricane		Portland, St. Mary and St. Thomas	115 miles
1928	September 2-3	Tropical Storm		St. Catherine, Clarendon and Manchester	Hit E-W along S Coast
1930	September 4-5	Tropical Storm		North east Coast	173 miles
1931	August 13-14	Tropical Storm		South Coast	173 miles
1931	September 8-9	Tropical Storm		South Coast	58 miles
1931	September 12-13	Tropical Storm		St. Thomas, St. Catherine, Manchester, Clarendon and St. Elizabeth	Hit E-W
1932	September 28-29	Tropical Storm		St. Thomas, St. Catherine, Manchester and Clarendon	Hit E-W
1932	November 8-9	Hurricane		Hanover and Westmoreland	150 miles

TROPICAL CYCLONES & JAMAICA: 1933 -1951

Year	Dates of passages over or when closest to island	Type of weather system	Name	Section of island most affected	Nearest distance to island
1933	July 1-2	Hurricane		South western Coast	173 miles
1933	July 16-17	Tropical Storm		St. Mary and St. Ann	Hit N
1933	August 16	Tropical Storm		St. Elizabeth and Westmoreland	58 miles
1933	September 19-20	Hurricane		South Coast	81 miles
1933	October 29-30	Hurricane		Westmoreland, Hanover and St. James	Hit SW-N
1934	October 20-21	Tropical Storm		St. Catherine, St. Ann and Trelawny	Hit SE-NW
1935	September 24	Hurricane		Hanover and Westmoreland	58 miles
1935	October 21-23	Hurricane		East-north-west Coast	58 miles
1938	August 11-12	Hurricane		South Coast	58 miles
1938	August 23-24	Hurricane		South Coast	144 miles
1939	November 1-3	Hurricane		North-west Coast	58 miles
1942	August 24-25	Hurricane		North Coast	144 miles
1942	September 18-19	Tropical Storm		North Coast	29 miles
1944	July 26-27	Tropical Storm		South Coast	115 miles
1944	August 20-21	Hurricane		St. Thomas to Negril	Hit E-W
1944	October 13-14	Hurricane		West Coast	144 miles
1945	October 11	Hurricane		West Coast	144 miles
1947	August 11	Tropical Storm		South-west Coast	173 miles
1947	September 20	Tropical Storm		St. James and Hanover	Hit NW
1948	September 18	Tropical Storm		Hanover	Hit west
1949	October 12-13	Tropical Storm		Westmoreland, Hanover and St. James	Hit SW-NW
1950	October 15-16	Hurricane	King	Westmoreland and Hanover	58 miles
1951	August 17-18	Hurricane	Charlie	St. Andrew, St. Catherine, Manchester and Clarendon	Hit SE-SW

TROPICAL CYCLONES & JAMAICA: 1953-1988

Year	Dates of passages over or when closest to island	Type of weather system	Name	Section of island most affected	Nearest distance to island
1953	September 23-24	Tropical Storm	Florence	South Coast	46 miles
1953	October 3-4	Tropical Storm		North-west Coast	58 miles
1954	October 11-12	Hurricane	Hazel	Eastern Coast	115 miles
1955	August 23	Trop. Depress		South-western Coast	115 miles
1955	September 14	Tropical Storm	Hilda	North Coast	127 miles
1955	September 26-27	Hurricane	Janet	South Coast	144 miles
1956	October 30-31	Trop. Depress	Greta	East Coast	58 miles
1958	September 1-2	Hurricane	Ella	North-east Coast	115 miles
1958	September 15	Tropical Storm	Gerda	North Coast	58 miles
1961	October 15-16	Trop. Depress	Gerda	Kingston, St. Andrew, St. Catherine and St. Ann	Direct hit S-N
1963	October 4-6	Hurricane	Flora	Eastern half	173 miles
1964	August 24-25	Hurricane	Cleo	St. Ann, St. Mary and Portland	58 miles
1966	September 29-30	Hurricane	Inez	St. Mary and Portland	144 miles
1967	September 12-13	Tropical Storm	Beulah	St. Thomas	52 miles
1969	August 31	Tropical Storm	Francelia	South Coast	144 miles
1970	May 20-22	Tropical Storm	Alma	Hanover and Westmoreland	121 miles
1973	October 17	Tropical Storm	Gilda	Hanover, Westmoreland and St. James	121 miles
1974	August 31	Hurricane	Carmen	South Coast	46 miles
1974	September 15	Tropical Storm	Fifi	South Coast	52 miles
1975	August 25	Trop. Depress	Caroline	North Coast	150 miles
1975	September 18	Tropical Storm	Eloise	North Coast	115 miles
1979	June 12	Trop. Depress		St. James, Hanover, St. Elizabeth and Westmoreland	86 miles
1979	September 02	Hurricane	David	Eastern half	173 miles
1979	September 11-13	Hurricane	Frederic	South-eastern section	127 miles
1980	August 5-6	Hurricane	Allen	East and North Coasts	35 miles
1981	August 7-21	Trop. Depress	Dennis	South western Jamaica	Hit SW
1988	September 8-19	Hurricane	Gilbert	The entire island. E-W	Hit E-W

TROPICAL CYCLONES & JAMAICA: 1994 -2002

Year	Dates of passages over or when closest to island	Type of weather system	Name	Section of island most affected	Nearest distance to island
1994	November 8-21	Tropical Storm	Gordon	Central Jamaica	Hit S-E
1996	November 18-26	Hurricane	Marco	Southern Jamaica	479 miles
1998	September 15 - October 1	Hurricane	Georges	Northern and Eastern Jamaica	151 miles
1998	October 22 - November 5	Hurricane	Mitch	Southern and Western Jamaica	138 miles
1999	November 13-15	Hurricane	Lenny	Southern Jamaica	90 miles
2000	August 22-25	Hurricane	Debby	Eastern Jamaica	90 miles
2000	September 19-20	Trop Depress 10		Kingston, St. Andrew, St. Thom, St. Cath & Clarendon	
2001	August 19-21	Tropical Storm	Chantal	Southern parishes of Jamaica, and Pedro Banks.	320km
2001	October 7-8	Hurricane	Iris	Southern parishes of Jamaica, and Pedro Banks.	60km
2001	9-Oct	Tropical Wave, Remnants of Tropical Storm	Jerry		
2001	Oct 30 -31 October 31-November 6	Trop Depress 15/ Hurricane	Michelle	Indirect affect on entire Island, especially north eastern parishes.	>400km west of Ja.
2001	26-Nov	Hurricane	Olga		
2002	Sep 17-18	Trop Depress 10. Trop Wave, Remnants of T.D. 10 / Bands from Hurricane Isidore	Isidore	Northern and south eastern parishes, Gale force winds over South eastern sections.	50 km
2002	Sep 27 – Sep 29	Hurricane	Lili	All parishes and some offshore areas	60 km
2002	Oct 14 – 16	Trop Depress 14		Southern and western parishes	

TROPICAL CYCLONES & JAMAICA: 2003 -2005

Year	Dates of passages over or when closest to island	Type of weather system	Name	Section of island most affected	Nearest distance to island
2003	Jul 8-9	Tropical Storm	Claudette	Most parishes	216 km
2003	23-Jul	Trop. Wave, Remnants of Trop. Depress 6		St. Mary, Portland, St. Thomas, St Ann, Trelawny	
2003	29-Aug	Trop. Wave, Remnants of Trop. Depress 9		Most parishes	
2003	4-Dec	Tropical Depression 20 Tropical Storm	Odette	North –Central and north eastern parishes, sections of southern parishes.	488 km
2004	August 11-12	Hurricane	Charley	Mainly sections of south western parishes.	80 km
2004	Sept 10-12	Hurricane	Ivan	Southern parishes were affected the most.	50 km
2005	July 5-8	Hurricane	Dennis	Northern parishes were affected the most.	50 km NE of Port Antonio
2005	July 13-17	Hurricane	Emily	Southern parishes were affected the most.	150 km SSW of Negril Point
2005	October 14 -20	Low Press, Trop. Depress, Hurricane	Wilma	North eastern and north central parishes were affected the most.	90 km SW of Negril Point
2005	October 26-31	Trough associated with Low Press, Trop. Depress/Trop. Storm/ Hurricane	Beta	All parishes	444 km SW of Black River