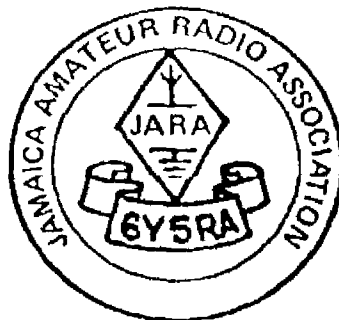**"Documento original en mal estado"**

HEADQUARTERS STATION 6Y5RA
CHAPTER STATION 6Y5MV

RED CROSS BUILDING
76 ARNOLD ROAD
KINGSTON 5
JAMAICA, W. I.

THE JAMAICA AMATEUR RADIO ASSOCIATION

Affiliated With The Radio Society Of Great Britain & The American Radio Relay League.

AMATEUR RADIO OPERATION DURING HURRICANE GILBERT

On Sunday evening, September 11, the Director of the Office of Disaster Preparedness asked the Jamaica Amateur Radio Association (JARA) to begin mobilising in response to the threat of Hurricane Gilbert. Members of JARA were appraised of the situation and emergency response plans were activated including installation at the Office of Disaster Preparedness (ODP) on Monday morning.

JARA monitored the Portsmouth Virginia Coast Guard weather bullitins and relayed this information to the local meteorological service which had lost weather radar tracking capability and HF radio early in the event.

Early on Tuesday Morning VHF networks were established between ODP/Red Cross Headquarters and other selected key locations. Both power and communications were supplied to the Red Cross headquarters.

HF links were established using our station at Red Cross headquarters and five other 6Y stations including 6y5 EPS, a special station operating out of the office of the Prime Minister.

For the first 72 hours after the event, amateur radio was the only means of contact with the outside world. Regular schedules were maintained via amateur radio with Jamaican Diplomatic Mission in Washington D.C., United Nations New York and Bonn in the Federal Republic of Germany. Contacts were also established with the International International Red Cross in Geneva The U.S. State Department, The Salvation Army Headquarters in the United States and multiple other agencies with traffic relating to emergency sitreps relief requests and supplies.

During the eight days of the JARA operation, approximately 1,400 pieces of traffic were handled.

As with all emergency plans, bottlenecks and needs were identified during the operation.
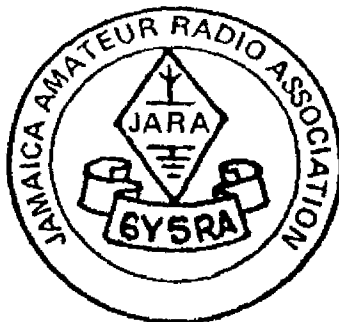
THE JAMAICA AMATEUR RADIO ASSOCIATION
Affiliated With The Radio Society Of Great Britain & The American Radio Relay League.

RADIO COMMUNICATIONS IMPROVEMENT REPORT FOR DISASTER OPERATIONS

Introduction

Resulting from Hurricane 'Gilbert' which devastated Jamaica on September 12, 1988, this Report has been prepared to show the inadequacy in our communications systems and to identify where there is need for improvement.

2-METER REPEATER SYSTEM

1. ### Existing System

   The 2-Meter Repeater System consists of seven Repeater Stations situated on remote mountain-top throughout the mountainous island of Jamaica. (see locations on attached map of Jamaica).

   All Repeaters are interlinked allowing for communications from one Repeater to all other Repeater Stations.

   The sites are provided with electrical power via power lines fed up to the site from the public power supply system.

2. ### POWER SOURCE IMPROVEMENTS

   In times of a disaster if the main supply goes, our Repeater System also goes out of operation. It is important for us during and after a disaster to keep the system operating.

   This can best be done by installing a bank of deep cycle lead calcium batteries, connected to a 13.8 volt D.C. power supply unit which acts as a float charger to the battery.

With the above system installed, the mains operated power
supply inside the Repeaters will be disconnected, the
Repeater and its link radio will now be powered by the
battery bank. In the event of losing the electric company's
power supply, the battery bank will provide power for a
minimum of 48 hours. When the electric company's supply
is returned, a full charge will be returned to the batteries
within a short period of time due to the 20 amp. self LIMITING
lighting capability of the power supply.

Set out below is a list of the equipment required along with
the name of the supplier:

Equipment: Delco "Voyager" Deep Cycle Lead Calcium Batteries

Quantity: 16

Supplier: General Motors Corp.

Equipment: Astron RS-20M DC Power Supply·

Quantity: 0

Supplier: Astron Corporation
               9 Autry
               Irvine
               CA 92718
               U.S.A.

               Telephone: (714) 458 7277

3.   <u>REMOTE CONTROL</u>

If any Repeater malfunctions and needs to be shut down
because it is interfering with the operation of other
Repeaters it is necessary to get in a jeep and travel
to the Repeater site, a journey varying from 10 to 80
miles through very hilly terrain, a portion of which
is along unpaved roads.

Add to this the fact that Amateur Radio being a hobby
it is not always possible for the people responsible for
maintenance to get off time from their regular jobs to go
and correct a fault.   It can in some instances take five days
before personnel can find it convenient to visit the Repeater
site and by then damage which could be avoided has taken
place.

For more efficient operation we see the need for the in-
stallation of Touch-tone remote control Boards in the Re-
peaters to allow for remote control of each Repeater.

Set out below is a list of the equipment required, along
with the name of the supplier:-

Equipment:	Touch Tone Remote Control Board Model Number TTC300
Quantity Required:	9
Equipment to be instal- led in:	Spectrum SCR77 FM Repeater
Supplier:	Spectrum Communications Corp. 1055 W. Germantown Pike, Norristown, PA. 19403-9616 Ph. No. (215)631-1710 Telex: 846-211 Spectrum NTW

4. SUB-AUDIBLE TONE ACCESS

Resulting from new Government Regulations we are now required to operate our Repeater system using sub-audible tone coding for accessing the Repeater. This will require the installation of CTCSS Encoder/Decoder Boards in all Repeaters and Link Radios.

Aside from the fact that this is a new Government Regulation to become effective on Jan. 1st 1989, we have always considered sub-audible tone Repeater accesses to be necessary.

A lot of interference is always generated at Repeater sites because of the large population of Repeaters in one room. This interference despite the use of filters still gets into our system causing it to go into the transmit mode broadcasting bursts of annoying noises which make communication on our Repeater system difficult.

By installing sub-audible tone coding it will prevent this interference from getting through and especially in times of disaster will assist in making our communication that much more efficient.

Set out below is a list of the equipment required along with the name of the supplier:-

Equipment:	Programmable sub-audible Encoder/Decoder Board Model No. TS-32
Quantity:	13
Equipment to be installed in:	ICOM-IC22U Link Radio Spectrum SCR77 FM Repeater
Supplier:	Communications Specialists Inc. 426 West Taft Avenue Orange CA. 92665-4296 Ph. No. 1-800-854-0547 Fax: (714)974-3420

5. ANTENNA REPLACEMENT

Most of the 2-meter Antennas at our 7 Repeater Sites were damaged during Hurricane Gilbert, mainly because they were unable to stand up to the 120 mph. winds.

It is a main priority to replace these with a more rugged Antenna, the details of which are set out below -

Repeater Antenna:	Celwave Fiberglass Omnidirectional Antenna PD 1167 fitted with PL259 UHF Male Connector
Quantity Required:	8
Operating Frequencies:	(1) 147.000 - 147.600 MHz (2) 147.000 - 147.600 " (3) 146.100 - 146.700 " (4) 146.280 - 146.880 " (5) 147.360 - 147.960 " (6) 147.360 - 147.960 " (7) 147.240 - 147.840 " (8) 146.160 - 146.760 "
Additional Mounting Hardware:	PD 237 Universal Cross-over Clamp Assembly
Quantity Required:	16
Coaxial Connector:	PL 258 Dual Female Connector No. 11303
Quantity Required:	24
Supplier:	Celwave Route 79, Marlboro, NJ. 07746, U.S.A. Ph.(201)4621880 Telex.4944313 CEL NJ

6.   REPEATER

If you refer back to the map of Jamaica you will observe
that the site noted as Birch Hill is a proposed site.

Set out below is a list of equipment required for the
site.

| Equipment: | Motorola Radius Table Top VHF FM Repeater for operation in the 2-meter Amateur Band. |

Frequencies to be
programmed in
Repeater:

F1 - Tx   147.960 MHz
     Rx   147.160 "

F2 - Tx   146.760 MHz
     Rx   146.160 "

F3 - Tx   146.880 MHz
     Rx   146.280 "

COAX: Two rolls 100 ft.
                         RG 213U COAX

Antenna: Included in section on
                         replacing Antennas

Honda Generators (portable) 2.5 KV   2

Power cable 300 feet   600 Ft.

H.F. COMMUNICATIONS

AND PACKET RADIO

Introduction

At this time, there is but a single packet station in Jamaica. This utilizes a commodore 64 with disk drive AEA PK-64 TNC Kenwood TS-430S transceiver (modified) and Kenwood TL 922 linear amplifier.

It is obvious then that there is a need for greater exposure of packet radio in Jamaica. The best way for starting this is to equipt the two club stations of the Jamaica Amateur Radio Association (JARA) (located in the capital city of Kingston and the town of Mandeville) with this modality so that members may become familiar with its operations. This will open a more efficient method of speedily and accurately handling information during times of disaster.

It should also be noted that the majority of Hams on the island are situated in Kingston with a group of seven in the town of Mandeville and one in the city of Montego Bay.

From the point of view of disaster communications, especially during the recent hurricane, it became obvious to us that because there are not enough Hams spread throughout the island, we were not able to provide a good disaster communications network particulary with emphasis on packet.

Education of Amateur Radio

There is a need for developing an education programme towards increasing the number of amateur stations throughout the island. This should concentrate mainly on the high schools throughout the island, working through the science teachers.

It is our wish to start such a programme but without the proper tools, we are very limited. In moving towards our goal for starting the programme, we we see the need for two complete stations to be used for demonstrations and education purposes throughout the island. As each school gets a group of licenced operators, a complete station with packet facility can be donated to the school.

Spawning out of this would be their own in-house training programme for the community around.

Training Programme Equiptment Schedule

(1) First year - Four complete amateur stations with packet.

    (A) One station for the club in Kingston

(B) One station for the club in Mandeville.

NOTE: Existing equipment at the club stations is old and not suitable for operating with packet.

(C) Two stations for training programme with schools.

(2) Second year - two complete stations for training programme with schools.

(3) Third year - Two stations for training programme with schools.

(4) Fourth year - Two stations for training programme with schools.

The total number of stations required for the programme is ten.

Set out below is a suggested list of equipment for a typical station:

COMPUTER	Suggest IBM-PC Monochrome Monitor PCU Disk drive Keyboard Dot matrix printer Connector cables Diskettes Power supply Toroid rings
TNC	Packet & Amtor & RTTY and ASCII RTTY & Fax & Morse Code cable configured to computer RS 232 port. Power supply Toroid rings AEA PK-232 TNC suggested with "PC Pakratt with Fax" software support.
TRANSCEIVER	YAESU FT 757 with power supply and connecting cables tp packet equipment.
AMPLIFIER	600 watt YAESU amplifier with tube finals (required for club stations only)

Amateur Radio

What is Amateur Radio?

'Amateur Radio' is a somewhat confusing description of our
activities. When considering whom it attracts and what
the requirements are for participation, it somehow
seems that 'professional radio' would be a more accurate
description. Each country requires that its amateurs pass
examinations in electronic theory, morse code, and national
and international regulations. While this may sound to be
quite difficult, it is not more than can be mastered by any
serious individual who is willing to dedicate himself to
the education that he needs to acquire.

Amateur Radio has been around since the development of radio
itself. There were no names then but when commercial
applications were developed, we became known, quite
naturally, as amateurs. Not surprisingly, many of the
amateurs are 'professionals' as well. One of the members of
our Amateur Radio Club did a PHd thesis on that and in a
survey that he did, he found that about half of the amateurs
at one time had been 'professionals' as well.

The term 'ham' which is also used, was originally used
as a reference to 19th century telegraph operators . Somehow
we picked it up.

The FCC has listed in its regulations several purposes for
Amateur Radio. These are:

1) The fostering of technical interest that can lead to
   professional activities: In these times where the US is
   declining in both scientific education and scientific
   leadership, this is very important.

2) The proven ability of the service to contribute to the
   advancement of the radio art: Over the years Amateur
   Radio has been seriously involved in technical
   innovation, experimentation, and development.
   An example of this is Packet Radio, a computer interface
   communications technique for increasing speed and
   accuracy of communications.

3) The unique ability of amateurs to contribute towards
   international good will: Amateur Radio cuts across
   all political and social boundaries and is an excellent
   means of accomplishing this.

4) The providing of communications in emergency situations:
   When commercial systems go down, there are hams ready
   and able to step in to assist.

Hams are probably best known for their work during disasters.
No part of the world is immune to natural disasters, which
often strike with little or no warning. When disaster does
strike, public safety agencies are often overwhelmed by the
sheer immensity of it all. That is when hams provide their
greatest public service. By providing communications, they
permit officials and relief agencies to concentrate on
helping people in need and on keeping damage from spreading.
When it comes to delivering urgent messaged in the aftermath
of hurricanes, earthquakes, tornados, and even volcanos,
communities across the nation and the world turn to Amateur
Radio.

How can Hams help?

Having a ham as a neighbor can be a definite advantage in
times of crisis. While most hams spend their time on the air
or in their workshops, they are also on call in times of
need. If a town or nation is hit by a hurricane or other
natural disaster, chances are that your neighborhood ham will
be part of an emergency communications team, helping relief
agencies and public safety officials keep in touch with each
other and the outside world.

Jamaican Committee

President:
Selvin Gabriel - Insurance   6Y5SG

Emergency Preparedness Coordinator:
Dr. Eric Monroe, MD   6Y5EE

Operations Committee Chairman:
Gorden Hart - Architect   6Y5GH

Roland Lewis - Small Business   6Y5RL
Meril Lewis   - Retail Business   6Y5VU
Doug Lindo - Systems Engineer - IBM Kingston   6Y5DL

US COMMITTEE

Barbara Sweet - Administration - IBM Poughkeepsie, NY WA2KCL

Schedule of Events

September 21

I received a call from VITA in Arlington, VA. Would I be
willing to go and when would I be able to leave? Yes, I
would be willing to go. Made arrangements at work to be gone
for a week. I also made travel arrangements and purchased a
round trip (open ended) ticket. On his way home from work,
Herbie picked up papers FAX'ed to me from VITA and my tickets
at the travel agency. That evening I packed and got all my
papers together along with tickets and passport. Several
calls were made to VITA during the day and evening.

September 22

We left the house at 5 AM and I said good-bye to Herbie at
the Dutchess County Airport and left for Jamaica at 6:15 AM.
I changed carrier at JFK Airport and again at Miami
International Airport. Air Jamaica flight from Miami had one
stop at Montego Bay and then on to Kingston. I took some
pictures of the destruction and devastation while in flight.
My carry-on bag held two and one half gallons of fresh Hyde
Park water. Upon arrival and getting my passport stamped I
then proceeded to look for my one suitcase. After searching
the entire airport for 3 hours, I finally claimed it as lost
and got papers filled out so that I could come back later and
look for it.

Upon arriving at the Wyndham in Kingston, I checked in and
received the key and a candle. The back-up generator at the
hotel was limited to just a few lights. One light in the
hallway of each floor was all that you had to find your room.
All the phones did work but the restaurant and 12 stories of
rooms were being lighted by candles.

September 23

I called Mr. Allen Lewis (brother of a friend in Poughkeepsie
and Uncle of one of the Hams) who was Deputy Commissioner of
Police. He assigned one of his corporals, Mr. Leonard Gardner
to escort me around that day. My first stop was at the
Office of Disaster Preparedness where I introduced myself to
Lt. Commander John McFarland. I then went over to the Post
Office and applied for my reciprocal license so that I would
be able to operate the radio I carried with me.
Corp. Gardner knew of one of the hams, Dr. Eric Monroe so he
took me to his home so we could meet. Dr. Monroe is the
Emergency Coordinator for the JARA. He allowed me to use his
equipment to say hello to several of the hams and let them
know that I had arrived safe. Later that afternoon I went
and picked up my license so I could legally operate from the

Hotel.

September 24

That afternoon I met. eye to eye, the core group of amateurs who would be working with me on the project.

Those present were:

    Selvin Gabriel - President of JARA
    Dr. Eric Monroe - Emergency Coordinator of JARA
    Gorden Hart - Operations Engineer of JARA
    Doug Lindo
    Roland Lewis
    Meril Lewis

We decided to split the project into three phases.

Phase I - Immediate Goal

Bring all seven repeaters back on the air.
      Antennas
      Back-up Power system
      Touch-tone remote control
      Sub-Audible tone access (New Jamaican Government
                                      Regulation)

Phase II - Short Term Goal

Obtain four Packet Radio Stations for use by the club members.
      IBM PC or PS/2 unit
      Terminal Node Controller and software
      Transceiver to talk world wide
      Transceiver to talk short distance and/or with repeaters
      Power source
      Power amplifier

Locations:

      JARA Headquarters station in Kingston - Red Cross
                                            Building
      JARA Chapter station in Mandiville
      Selvin Gabriel's home (President) - Kingston
      Dr. Monroe's home (Emergency Coordinator) - Kingston

All members will work at one of the four locations to become proficient at operating Packet Radio.