

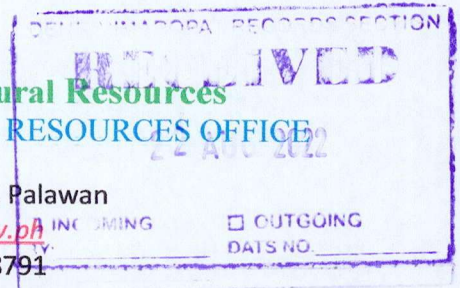


Republic of the Philippines  
**Department of Environment and Natural Resources**  
**PROVINCIAL ENVIRONMENT AND NATURAL RESOURCES OFFICE**  
PROVINCE OF PALAWAN

Bgy. Sta. Monica, Puerto Princesa City, Palawan

EMAIL : [penropalawan@denr.gov.ph](mailto:penropalawan@denr.gov.ph)

TelFax No. (048) 433-5638/ 434-8791



August 17, 2022

**MEMORANDUM**

FOR : The Regional Executive Director  
DENR-R4, MIMAROPA

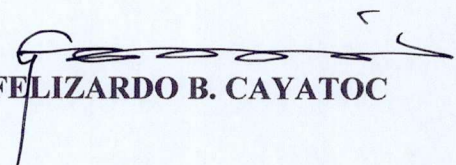
FROM : The Provincial Environment and  
Natural Resources Officer

SUBJECT : **INDIVIDUAL LEARNING REPORT OF PERSONNEL OF  
CENRO-QUEZON, PALAWAN**

Respectfully forwarded is the memorandum dated August 11, 2022 from CENRO-Quezon, Palawan relative to the attendance of the following personnel to the learning event entitled "Webinar on Mainstreaming Philippine Disaster Resilience" conducted on July 21, 2022.

1. PMF Anita S. Llorca
2. AA VI Marilyn M. Amaro

For her information and record.

  
**FELIZARDO B. CAYATOC**

DENR-PALAWAN  
PENRO-RECORDS  
**RELEASED**  
By \_\_\_\_\_  
Date: **19 AUG 2022** CN **22-244**





Republic of the Philippines  
Department of Environment and Natural Resources  
MIMAROPA Region  
**COMMUNITY ENVIRONMENT AND NATURAL RESOURCES OFFICE**  
National Highway, Bgy. Alfonso XIII, Quezon, Palawan  
Email: cenroquezon@denr.gov.ph

August 11, 2022

**MEMORANDUM**

FOR : Provincial Environment and  
Natural Resources Officer  
Sta. Monica, Puerto Princesa City

FROM : The Community Environment and  
Natural Resources Officer  
Quezon, Palawan

SUBJECT : **TRANSMISSION OF (ILR) INDIVIDUAL LEARNING REPORT  
OF PMF, ANITA S. LLORCA AND ADMIN AIDE VI, MARILYN  
M. AMARO RE: WEBINAR ON MAINSTREAMING PHILIPPINE  
DISASTER RESILIENCE**

DENR PENRO  
PALAWAN RECORDS  
**RECEIVED**  
BY: *[Signature]*  
DATE: 0818-2022 22-7409

Respectfully transmitting herewith the Individual Learning report of PMF, Anita S. Llorca and Admin Aide, Marilyn M. Amaro re: their attendance to Mainstreaming Philippine Disaster Resilience via Zoom, on July 21, 2022 at 1:00 to 4:00 pm in this office.

They reported learnings they acquired through the webinar and their proposed learning action plan-on the topic, the Basics of Radio Commination.

They recommended face to face Training/Workshop for better understanding and personal contact to speakers and the trainees.

For his information and record.

FOR THE CENRO:

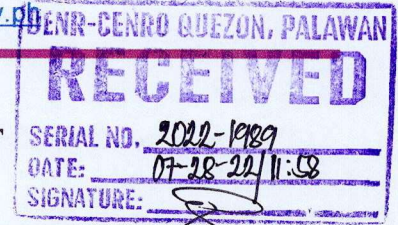
*[Signature]*  
ENGR. ROSITA F. CASTULO







Republic of the Philippines  
Department of Environment and Natural Resources  
MIMAROPA Region  
**COMMUNITY ENVIRONMENT AND NATURAL RESOURCES OFFICE**  
National Highway, Brgy. Alfonso XIII, Quezon, Palawan  
Contact No.: 0917-160-4920  
Email: [cenroquezon@denr.gov.ph](mailto:cenroquezon@denr.gov.ph)



**INDIVIDUAL LEARNING REPORT**

**Part 1 (To be prepared by the participant)**

<b>Name of Participants:</b>	<b>ANITA S. LLORCA</b>
<b>Office/Service:</b>	<b>Planning &amp; Support Unit (PSU)</b>
<b>Training Title:</b>	<b>WEBINAR ON MAINSTREAMING PHILIPPINES DISASTER RESILIENCE</b>
<b>Learning Providers:</b>	<b>DEPARTMENT OF INFORMATION AND COMMUNICATION TECHNOLOGY (DICT) REGION IV</b>
<b>Inclusive Dates:</b>	<b>JULY 21, 2022 @ 1:00 to 4:00 P.M.</b>
<b>Venue:</b>	<b>DENR-CENRO QUEZON, PALAWAN OFFICE</b>

**I.EVALUATION OF THE COURSE:**

**Technical Content:** The topics discussed during the Webinar on Mainstreaming Philippines Disaster Resilience.

Mainstreaming Disaster Risk Reduction to Development:

The objectives of mainstreaming DRR into local government are:

1. Empower the local governments to undertake effective measures to reduce disaster risk within the existing legal framework by formulating and implementing appropriate strategies, action plans and programs to reduce disaster risks.

Course Outline:

1. Introduction to Radio Communications Principles:
  - a. What is Communication?
  - b. What is Radio Wave?
  - c. What is propagation?
2. Basic Radio Theory:
  - a. Describe the components of a Radio System
  - b. Describe Antenna Characteristics
3. Understanding Radio Frequency:
  - a. Basic understanding of the uses of each frequency range
  - b. Advantages and disadvantages of Various Frequency Range





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4. Radio Communication Systems:
  - a. Important Factors for Radio Communications.
  - b. Different type of Radios
  - c. Understanding Radio signal range
  - d. How to repeater system work?
  - e. Understanding HF Radio propagation
5. SWR and Troubleshooting:
  - a. Troubleshooting methods
  - b. Using SWR meter
6. Overview on how to deploy Radio equipment in the field
  - a. Knowing the basic tools needed during deployment
  - b. Describe various types of RF Cable and Connectors
  - c. Proper Cable splicing and terminating guide
7. Professional Conduct on the Radio Network:
  - a. Importance of using the correct radio procedures
  - b. Be able to know the Phonetic Alphabet
  - c. Be able to use pro-words and radio check procedures
  - d. Benefits of having Call sign structure

#### **RADIO COMMUNICATIONS PRINCIPLES:**

##### Session Objectives:

1. To know what is communication
2. To understand Radio Waves
3. To have a basic understanding of propagation

##### What is Communication?

Communication is the act of giving, receiving and sharing information.  
Communication is transmission or means of sending or receiving information,  
Such as phone line or computers. "satellite communications".

#### **RADIO PROPAGATION:**

- Radio propagation is the behavior of Radio Waves as they travel.
- Skywave – refers to the propagation of radio waves reflected and back toward Earth from ionosphere.





## BASIC RADIO THEORY:

### Session Objectives:

- To describe the components of a Radio System
- To know the characteristics of an Antenna

### Basic components of a Radio System:

- Power
- Power cable
- Radio
- Antenna Cable
- Antenna

## ANTENNA (DIRECTIVITY)”

Omni-directional - Antennas receive and transmit at a 360 degrees radius, radiating power uniformly in all directions on one plane.

Directional - Antennas primarily receive and transmit energy from one direction.  
The most common type of directional antenna is the YAGI, it's usually  
Used as a TV aerial and promotes energy in one direction.

### Common Types of Antenna:

- Whip/Monopole Antenna: - Works best for narrow range and can be collapsible. Used on small radios and vehicles.
- Dipole Antenna – Two Monopoles facing away from each other.  
Used to create a powerful signal in a restricted space.
- Yagi Antenna – Ideal for long distance range and directional applications.  
Can reach multiples frequencies.
- Helical Antenna – An antenna consisting of one or more conducting wire  
Wound in the form of a helix (spiral).

## RADIO FREQUENCY:

### Session Objectives:

- Basic understanding of the uses of each frequency range.
- Advantages and disadvantages of Various Frequency Range.





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Output power/Wattages:

- VHF/UHF handheld radio = 5 W
- Mobile or base radio = 25 W
- Repeater = 50W
- HF base/mobile radio = 125 W

Session objectives:

- To describe the Important Factors for Radio Communications
- Be able to know the Different type of Radios
- To understand Radio signal ranges
- Discuss how a repeater system work?
- To have a basic understanding on HF Radio propagation

SOME IMPORTANT FACTORS FOR RADIO COMMUNICATION SYSTEM:

- Frequency
- Output power
- Terrain/Surroundings/LoS Repeater (mainly for VHF, UHF)

Range of Radio:

The key considerations that affect range are: Signal type, Antenna, obstructions, and signal strength (Wattage).

One of those important factor in determining the distance a radio can communicate is it's signal strength. The stronger the signal strength, the more it can withstand weakening when it passes through obstacles. Signal strength is mainly a result of a radios power output measured in watts.

Simplex Operation:

Radios communicate directly with each other.

Duplex operation – Repeater

- A repeater is able to receive a weak incoming signal and re-transmit on A different frequency and higher power.
- A repeater station improves the operational range of a radio network.





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**Key Points:**

- The key factors affecting communication range are antenna. Obstructions. Signal strength (wattage), and signal type.
- The higher your antenna, the farther your signal can reach, therefore the longer your Communication range.
- For mounted antennas, mount your antenna standing straight-up on the highest point Possible.
- For handheld radios, instead of a stubby antenna, get a ship antenna
- Radio waves generally won't pass through metal or hills at all.
- Each successive object a radio signal passes through reduces its range.

**Sky Wave:**

Skywave refers to the propagation of radio waves reflected or refracted back toward Earth from the ionosphere.

**Ionosphere:**

The ionosphere contains a high proportion of free electrons which influence radio propagation. High Frequency (HF) radio waves hitting the free electrons in the ionosphere cause them to vibrate and re-radiate the energy back down at the same frequency, effectively bouncing the radio wave back towards the Earth. One good solution for many HF System requirements is a ground mounted vertical. These and a number of other radio antenna systems require the use of an efficient earth or ground system for it to operate satisfactorily. As the ground system is key to the operation of the radio antenna it is necessary to ensure that the ground system is satisfactory.

- **Impression/Comment:**

**Basic Principles of Radio Communication:**

Radio is most popular means of communication = Owing to its low cost and Easier accessibility, radio is recognized as one of the most popular and effective means of communication. As such, it is preferred by an overwhelming majority of the people living in developing countries.

**Comparison Table for Advantages of Radio:**

**Advantages** = It covers a huge population. Easy way of spreading the news and information.





**Disadvantages** = It has limited research data and frequency bandwidth due to bad weather, the radio is not audible properly.

What is radio communication advantage and disadvantages?

Compared to other media used by advertiser, radio offers affordability, wide reach, target audience selectivity and timely message delivery. However, poor attentiveness and fragmentation, a lack of visual appeal and complex national buying processes are common challenges.

## **I. RELEVANCE OF THE LEARNING EVENT TO PARTICIPANTS WORK/FUNCTION:**

### **Characteristics of Radio:**

It is instant. As things happen in a studio or outside, messages can be sent or broadcast. These messages can be picked up by anyone who has a radio set or receiver which is tuned into a radio station. Simplicity of radio: It needs very simple equipment and technology.

- Radio makes pictures: While listening to the commentary of a cricket match or republic day period in radio, you visualize all those scenes in your mind.
- The speed of the radio: Radio is the fastest medium.
- Simplicity of radio: It needs very simple equipment and technology.

## **II. RECOMMENDATIONS:**

Recommendations for new radio communication and broadcasting technologies applications.

The recommendations for new radio communication and broadcasting technologies introduction in Russia include: terrestrial mobile communication (cellular, trunk and paging communication systems, wireless access systems); digital audio and TV broadcasting; fixed communication including the radio relay high-density system MMDS, LMDS and MVDS; satellite communication and broadcasting. The satellite systems should include such technologies as digital TV, VSAT-Technologies, satellite Internet. Some conclusions are given

MMDS= Multichannel Multipoint Distribution Service.

LMDS = Local Multipoint Distribution System

MVDS = Microwave Integrated TeleRadio Information System





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One of the main problem here in our place is our electricity that there's no good electric power and cell site. The cell site tower are not enough to coup up all user's. I highly recommend that the electric power should be more high to minimized brown out in our place that destroy many appliances specially the internet connection.

### III. POST LEARNING ACTION PLAN/PROPOSAL:

Proposal action plan:

In project management, an action plan is a document that lists the action steps needed to achieve project goals and objective.

Therefore, an action plan clarifies what resources you'll need to reach those goals, makes timeline for the tasks or action items and determines what team members you'll need to do it all.

To developing a communication plan can help focus you message and reach your target audience. A plan can also influence the efficiency and simplicity of you communication methods, This section looks at what a communication plan entails, how and when to create one, and how to use a communication plan to raise awareness about your issue or project.

Submit report and re-echo what transpired during the webinar.

### Part 2 (To be accomplished by Supervisor)

How will you support the post Learning Action Plan/Proposal?

*provide them with the needed assistance to accomplish their proposed plan as well as to give them insights/corrections for the improvement and realization of their proposed activity.*

Have you discussed any concerns/resources needed by your subordinate so that he/she can effectively transfer/apply the skills and knowledge gained from the training?

*yes. Any proposed activities of this office needs to be discussed between the Head of Office and the subordinates so that issues and concerns will be raised and be addressed for the betterment of the proposed activity.*





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Contact No.: 0917-160-4920  
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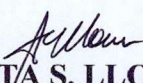
Would you be willing to send him/her again to other training/seminar/conference?

Yes ☒ No ☐ Others ☐

If yes, please specify courses

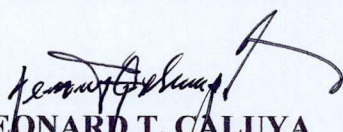
1. Training on Actual use of Basic Radio Communication Equipment.
2. Training on Basic Response in Disasters using Radio Communication

Submitted

  
**ANITA S. LLORCA**  
Park Maintenance Foreman

July 27, 2022  
Date

NOTED/Confirmed by:

  
**LEONARD T. CALUYA**  
CENRO



# CERTIFICATE OF ATTENDANCE

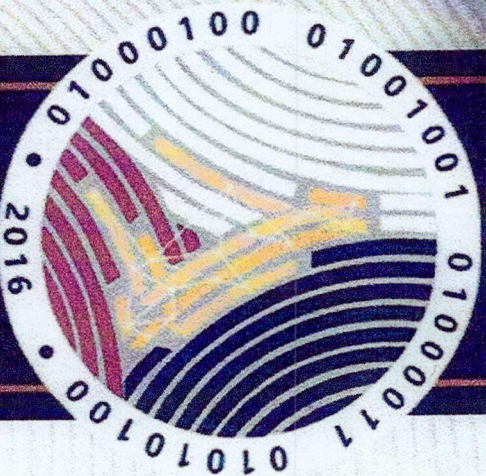
is presented to

**ANITA S. LLORCA**

for attending the *"The Basics of Radio Communications"* under *Disaster Risk Reduction and Management/Emergency Communications System* project of the Department of Information and Communications Technology - Region IV-B conducted on July 21, 2022 via Zoom.

**CHERYL C. ORTEGA**  
Regional Director  
DICT - Regions IV-A and IV-B

**DICT**



R4B: 2022 W-BORC-01  
DRRM\_202205413

This certificate is valid as evidenced by the attached QR Code.





### DOCUMENT ACTION INFORMATION FORM

Doc. Ref. No.: 2022-1909

Date and Time received:

07/20/2022 09:49:16 AM

From: FELIZARDO B. CAYATOC

Document Type: Memorandums

OFFICE OF THE PENRO

Subject: INVITATION OF MAINSTREAMING PHILIPPINE RESILIENCE WEBINAR (JUL 19, 2022 @ 1:00PM-4:00PM/JUL 21, 2022 @ 1:00PM-4:00PM & JUL 26, 2022 @ 1:00PM-4:00PM)

Attachment(s): EMAIL CORRESPONDENCE DTD JUL 19, 2022 FROM JEANETTE RIPALD

Earmarked As :

Date: 7/20/22	From: CENRO	To: RMP B. 2. Lopez, M. A.
<b>Action Recommended/Required:</b> <input type="checkbox"/> For Action <input type="checkbox"/> For Approval <input type="checkbox"/> For Disbursement/ Payment <input type="checkbox"/> For Official Release <input type="checkbox"/> For Signature <input type="checkbox"/> For Review/ Recommendation <input type="checkbox"/> For Information, Record and File <input type="checkbox"/> For Indorsement to concerned Party(ies) <input type="checkbox"/> Return to Payee/Sender		<b>Processing Time:</b> <input type="checkbox"/> Urgent (w/in the day) <input type="checkbox"/> Priority (w/in 3 days) <input type="checkbox"/> Complex w/in 7 days w/in 20 days or shorter W/in ___ days or shorter
<b>Other Instruction(s):</b> As. attend. P.		
Date:	From:	To:
<b>Action Recommended/Required:</b> <input type="checkbox"/> For Action <input type="checkbox"/> For Approval <input type="checkbox"/> For Disbursement/ Payment <input type="checkbox"/> For Official Release <input type="checkbox"/> For Signature <input type="checkbox"/> For Review/ Recommendation <input type="checkbox"/> For Information, Record and File <input type="checkbox"/> For Indorsement to concerned Party(ies) <input type="checkbox"/> Return to Payee/Sender		<b>Processing Time:</b> <input type="checkbox"/> Urgent (w/in the day) <input type="checkbox"/> Priority (w/in 3 days) <input type="checkbox"/> Complex w/in 7 days w/in 20 days or shorter W/in ___ days or shorter
<b>Other Instruction(s):</b>		
Date:	From:	To:
<b>Action Recommended/Required:</b> <input type="checkbox"/> For Action <input type="checkbox"/> For Approval <input type="checkbox"/> For Disbursement/ Payment <input type="checkbox"/> For Official Release <input type="checkbox"/> For Signature <input type="checkbox"/> For Review/ Recommendation <input type="checkbox"/> For Information, Record and File <input type="checkbox"/> For Indorsement to concerned Party(ies) <input type="checkbox"/> Return to Payee/Sender		<b>Processing Time:</b> <input type="checkbox"/> Urgent (w/in the day) <input type="checkbox"/> Priority (w/in 3 days) <input type="checkbox"/> Complex w/in 7 days w/in 20 days or shorter W/in ___ days or shorter
<b>Other Instruction(s):</b>		
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<b>Action Recommended/Required:</b> <input type="checkbox"/> For Action <input type="checkbox"/> For Approval <input type="checkbox"/> For Disbursement/ Payment <input type="checkbox"/> For Official Release <input type="checkbox"/> For Signature <input type="checkbox"/> For Review/ Recommendation <input type="checkbox"/> For Information, Record and File <input type="checkbox"/> For Indorsement to concerned Party(ies) <input type="checkbox"/> Return to Payee/Sender		<b>Processing Time:</b> <input type="checkbox"/> Urgent (w/in the day) <input type="checkbox"/> Priority (w/in 3 days) <input type="checkbox"/> Complex w/in 7 days w/in 20 days or shorter W/in ___ days or shorter
<b>Other Instruction(s):</b>		





Republic of the Philippines  
**Department of Environment and Natural Resources**  
MIMAROPA Region  
PROVINCIAL ENVIRONMENT AND NATURAL RESOURCES OFFICE  
Bgy. Sta. Monica, Puerto Princesa City, Palawan  
Telfax No. (048) 434 - 8791  
Email Add: [penropalawan@denr.gov.ph](mailto:penropalawan@denr.gov.ph)

July 19, 2022

**MEMORANDUM**

TO : All CENROs  
DENR Palawan

FROM : The Provincial Environment and Natural Resources Officer

SUBJECT : **INVITATION FOR MAINSTREAMING PHILIPPINE  
RESILIENCE WEBINAR (JULY 19, 2022 @ 1:00PM -  
4:00PM/JULY 21, 2022 @ 1:00PM - 4:00PM AND JULY 26,  
2022 @ 1:00PM - 4:00PM)**



Furnished is the letter of invitation dated July 19, 2022 from Department of Information and Communications Technology (DICT) Region IV relative the above subject.

In view hereof, you are instructed to join the above-mentioned zoom activities starting today July 19, 2022 and July 21 and 26, 2022.

For information and strict compliance.

**FELIZARDO B. CAYATOC**

Copy Furnished:  
All CENROs of DENR Palawan  
The RED, DENR MIMAROPA [mimaroparegion@denr.gov.ph](mailto:mimaroparegion@denr.gov.ph)  
The Enforcement Division, DENR MIMAROPA [enforcement.mimaropa@gmail.com](mailto:enforcement.mimaropa@gmail.com)  
File/2022-014ACG/MES Doc. Ref. No. 2022-6548



**Invitation for Mainstreaming Philippine Disaster Resilience Webinars**

Jeanette Ripalda &lt;jeanette.ripalda@dict.gov.ph&gt;

Tue, Jul 19, 2022 at 8:22 AM

To: omm.lguaborlan@gmail.com, agutayapalawan@yahoo.com, cudillasue@gmail.com, municipalityofbalabac@gmail.com, icebataraza@gmail.com, Mayorsofficebrookesspoint@gmail.com, mayorsofficebusuanga@gmail.com, Yaken Cagayanen <lgucagayancillo1810@gmail.com>, mayorsoffice.lgucuyo@gmail.com, tanggaparingpunongbayancoron@gmail.com, banuadumaran@gmail.com, mmoelnido@gmail.com, linapacanmayor@gmail.com, rommeldeborra@gmail.com, cmooofficial13@gmail.com, mayordanao@gmail.com, mayorsoffice\_quezonpalawan@yahoo.com, roxaspalawanlg@gmail.com, mabuhay@sanvicentepalawan.gov.ph, CVRtaytay@gmail.com, lgukalayaanofficial@gmail.com, culion.municipality16@gmail.com, norneo023@gmail.com, espanola.mayorsoffice@gmail.com, edna\_g\_lim@yahoo.com, jon4aborlan@yahoo.com, joenelguarin@gmail.com, mdrmmaracelipal@gmail.com, dilgabalabac@yahoo.com, mdrmm\_bataraza@yahoo.com, apodan\_16@yahoo.com, billyparco@gmail.com, rg\_bndac@yahoo.com, coronmdrrmo@gmail.com, joflagrosa@gmail.com, mdrmmocuyo@gmail.com, engrglendagingacasacabildo@gmail.com, rabilos25@gmail.com, mdrmmgukalayaan@gmail.com, mdrmmolinapacan@gmail.com, raymunddrrs12@gmail.com, mdrmm\_quezon2011@yahoo.com, bojielorenzo@gmail.com, mdrmmoroxas@yahoo.com, svmdrrmo@gmail.com, s.espanola9513@gmail.com, enopia.elanor@gmail.com, cdrrmo.ppscity@gmail.com, Pdrrmo Palawan <palawanpdrrmo@gmail.com>, ou8@gmail.com, psapal@yahoo.com, rivbpuertoprincesa@gmail.com, roquedelapena@gmail.com, cmisd@puertoprincesa.ph, cityinformation@puertoprincesa.ph, penropalawan@denr.gov.ph, R4B CENRO Coron <cenrocoron@denr.gov.ph>, cenrotaytay@denr.gov.ph, R4B CENRO Roxas Palawan <cenroroxaspalawan@denr.gov.ph>, cenrobrookesspoint@denr.gov.ph, cenropuertoprincesa@denr.gov.ph, rrebote29@gmail.com  
Cc: Virgo Pinangay <virgo.pinangay@dict.gov.ph>

Dear Sir/Ma'am,

Warm Greetings!

**DICT Region IV invites everyone to the month-long celebration of the National Disaster Resilience Month through our webinar offering called 'Mainstreaming Philippine Disaster Resilience' happening every Tuesday and Thursday of July 2022.**

**Tuesday:** During this rainy season, let us be prepared and learn how to properly prepare for typhoons. This webinar session on Project **#MAGHANDA**: How to Properly Prepare for Typhoon will be conducted on July 19, 2022 at 1:00 pm to 4:00 pm. Participants may register through this link: <https://bit.ly/MaghandaPH> or scan the QR Code.

**Thursday:** Two-way radio communications have been one of the most robust and effective means of communication in times of calamities or disasters. How important are these types of communication technologies? Come and join us as we discuss more about the **Basics of Radio Communication** in partnership with the World Food Programme happening on July 21, 2022 at 1:00 pm to 4:00 pm. Participants may register through this link: <https://bit.ly/RadComms> or scan the QR Code.

And on **July 26, 2022: Beyond the Earth: Using VSAT Technology**, Tuesday next week at 1:00 pm to 4:00 pm. Participants may register through this link: <https://bit.ly/RadComms>.

First 500 participants will be accommodated in our Zoom Platform while others may join through our Facebook Live Feed.

#DRRM #DisasterResilientPH #MainstreamingPhilDisasterResilience #BeResilient #DICTRegionIVA

See you online with:

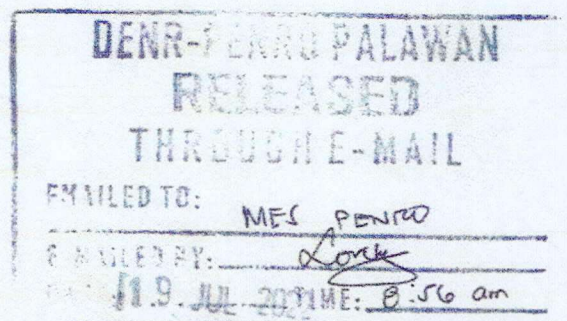
DICT Region IVB - Occidental Mindoro

DICT Region IVB - Oriental Mindoro

DICT Region IVB - Marinduque

DICT Region IVB - Romblon

DICT Region IVB - Palawan



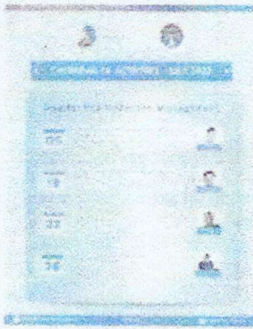


Thank you,  
Jeanette Ripalda  
DICT Palawan  
09617283770

2 attachments



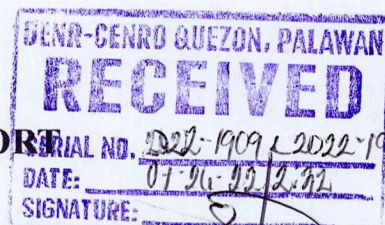
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528K



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1186K



# INDIVIDUAL LEARNING REPORT



Part 1 (To be prepared by participant)

<b>Name of Participant:</b>	<b>MERILYN M. AMARO</b>
<b>Office/Service:</b>	<b>DENR-CENRO QUEZON, PALAWAN</b>
<b>Training Title:</b>	<b>WEBINAR ON MAINSTREAMING PHILIPPINE DISASTER RESILIENCE</b>
<b>Learning Providers:</b>	<b>DEPARTMENT OF INFORMATION AND COMMUNICATIONS TECHNOLOGY (DICT) REGION IV</b>
<b>Inclusive Dates:</b>	<b>JULY 21, 2022</b>
<b>Venue:</b>	<b>DENR-CENRO QUEZON, PALAWAN OFFICE</b>

## I. EVALUATION OF THE COURSE:

### • Course Outline

1. Introduction to Radio Communications Principles
  - a. What is Communications?
  - b. What is Radio Wave?
  - c. What is Propagation?
2. Basic Radio Theory
  - a. Describe the components of a Radio System
  - b. Describe Antenna Characteristics
3. Understanding Radio Frequency
  - a. Basic understanding of the uses of each frequency range
  - b. Advantages and disadvantages of various Frequency Range
4. Radio Communication Systems
  - a. Important factors for Radio Communications
  - b. Different type of Radios
  - c. Understanding Radio signal range
  - d. How do Repeater System work?
  - e. Understanding HF Radio propagation
5. SWR and Troubleshooting
  - a. Troubleshooting methods
  - b. Using SWR meter
6. Overview on how to deploy Radio equipment in the field
  - a. Knowing the basic tools needed during deployment
  - b. Describe various types of RF cable and connectors
  - c. Proper cable splicing and terminating guide
7. Professional conduct on the radio network
  - a. Importance of using the correct radio procedures
  - b. Be able to know the phonetic Alphabet
  - c. Be able to use pro-words and radio check procedures
  - d. Benefits of having calls sign structure

### I. Radio Communication Principles

Session Objectives:

- To know what is communication



- To understand Radio wave
- To have a basic understanding of propagation

Communication – is the act of giving, receiving, and sharing information and be sure that the messages that we are going to send to another parties must be clear with basic explanation and with pattern.

Radio wave – Every Radio communications uses wave and every wave uses Frequency which represent the number of waves.

#### Electromagnetic Spectrum

Stretches from gamma rays down to the lowest form of radio waves. They include the following:

- Gamma-Ray
- X-Ray (like in a medical examination)
- Ultraviolet light
- The optical Spectrum that we can see: Red, Orange, yellow, green, blue, purple
- Infrared light
- Microwave Radar
- TV-FM Radio
- AM Radio
- Submarine communications

#### Radio Propagation

Is the behavior of Radio Waves as they travel. Radio that is in the VHS band travels in a straight line. In other words, they rays travel using line of sight. VHF (Very high Frequency) and UHF (ultra high frequency), operated in exactly the same way. However, the propagation is different.

**Sky wave** – refers to the propagation of radio waves reflected and refracted back toward Earth from ionosphere.

## II. Basic Radio Theory

Session Objectives:

- To describe the components of Radio System
- To know the characteristics of an antenna

**The Radio System have a Basic Components:**

- Power – Power cable
- Antenna, Antenna cable
- DC battery solar panel inverter/DC charger
- Lightning arrestor
- High gain antenna

#### Antenna (Directivity)

**Omni-directional** antennas receive and transmit at a 360 degrees radius, radiating power uniformly in all directions on one plane.



**Directional** antennas primarily receive and transmit energy from one direction. The most common type of directional antenna is the YAGI, its usual used as a TV aerial and promotes energy in one direction.

**The common types of Antenna:**

1. Whip/Monopole Antenna – Work best for narrow range and can be collapsible. Use on small radios and vehicles.
2. Dipole Antenna – Two monopoles facing away from each other. Used to create a powerful signal in a restricted space.
3. Yagi Antenna – Ideal for long distance range and directional applications. Can reach multiple frequencies.
4. Helical Antenna – an antenna consisting of one or more conducting wires wound in the form of a helix (spiral). It provides circularly polarized waves. It is used in extra-terrestrial communications in which satellite relays are involved.

**III. Radio Frequency**

Session Objectives:

- Basic understanding of the uses of each frequency range
- Advantages and disadvantages of various frequency range

In Radio frequency there is a wave length, frequency, Band and application.

Example: Wavelength is 10 000- 1 000 km, Frequency is 30-300 Hz, Band is Super low frequency and the application is Submarine communications.

Output power/wattage

VHF/UHF handheld radio = 5 W

Mobile or base radio = 25 W

Repeater = 50 W

HF base/mobile radio =125 W

**IV. Radio Communication system**

Session Objectives:

- To describe the important factors for radio communications
- Be able to know the different type of radios
- To understand radio signal range
- Discuss how a repeater system work
- To have a basic understanding on HF radio propagation

Some important factors for Radio Communication System:

Frequency

Output power

Terrain/surroundings/LoS

Repeaters (mainly for VHF, UHF)

Different types of Radio:

Maritime Radio Navigation

AM Radio



VHF television FM Radio  
 UHF television, Mobile phones, GPS, WI-FI, 4G  
 Satellite communications, WI-FI  
 Radio astronomy, satellite communications

### **Ranges of Radio**

The key considerations that effect range are: signal type, antenna, obstructions, and signal strength (wattage). One of those important factor in determining the distance a radio can communicate is its signal strength. The stronger the signal strength, the more it can withstand weakening when it passes through obstacles. Signal strength is mainly a result of a radios 'power output, measured in watts.

### **Types of output power**

1. Simplex operation – radios communicate directly with each other.
2. Duplex operation – radios communicate with each other using a repeater.

Duplex operation – repeater

A repeater was able to receive weak incoming signal and re-transmit on a different frequency and higher power. A repeater station improves the operational range of a radio network.

**Duplexer** – is a passive device used in radio communication to connect a receiver and a transmitter with different frequencies to one single antenna. A duplexer need to be “tuned” to the correct frequencies.

**HF Propagation (high frequency)** – it uses 3 to 30Mhz frequency, communication at this frequency is often called shortwave radio.

**Sky wave** – refer to the propagation of radio wave reflected or refracted back toward Earth from the Ionosphere.

**Ionosphere** – contains a high proportion of free electrons which influence radio propagation. High frequency (HF) radio waves hitting the free electrons in the ionosphere caused them to vibrate and re-radiate the energy back down at the same frequency, effectively bouncing the radio wave back towards the Earth.

### **Key points**

- The key factors affecting communication range are: antenna, obstructions, signal strength (wattage), and signal type.
- The higher your antenna, the farther your signal can reach, therefore the longer your communication range.
- For mounted antenna, mount your antenna standing straight-up on the highest point possible.
- For handheld radios, instead of a stubby antenna, get a whip antenna.
- Radio waves generally won't pass through metal or hills at all.
- Each successive object a radio signal through reduces its range.



FORMAT

• **Impressions/Comments:**

It is very difficult to attend zoom meeting, especially in our location, because of internet connection. But, I'm trying to gained/enhanced my knowledge about Mainstreaming Philippine Disaster Resilience. The other topics was missed due to brown out in our area of jurisdiction.

**II. RELEVANCE OF THE LEARNING EVENT TO PARTICIPANT'S WORK/FUNCTION**

The learning that we can get on this webinar is very useful for us to understand the means of Mainstreaming Philippine Disaster Resilience.

**III. RECOMMENDATIONS**

It is my first time to attend a zoom meeting discussing the Mainstreaming Philippine Disaster Resilience, I experienced difficulties while the discussion is currently going like the unstable internet connection and lacking knowledge about the topic like radio communication system that being discussed. I highly recommend, it's better not to only discussed this kind of issue in online but do it in a way where engaging to everyone and creating much more easy way of discussion like in person orientation with workshop to better understand what this topic is trying to convey.

**IV. POST LEARNING ACTION PLAN/PROPOSAL**

Proposed Plan/Activity/Output	Time Frame
To submit report and to re-eco or briefly discuss the most important Topic of the webinar.	7 days after the webinar

**Part 2 (To be accomplished by Supervisor)**

How will you support the post Learning Action Plan/ Proposal?  
*provide them the needed assistance to accomplish their proposed plan as well as to give them insight/suggestions for improvement and realization of their proposed activity.*

Have you discussed any concerns / resources needed by your subordinate so that he/she can effectively transfer/apply the skills and knowledge gained from the training?

*Yes, any proposed activities of this office needs to be discussed between the Head of the Office & the subordinates, so that issues & concerns will be raised & be addressed for the betterment of the proposed activity.*

Would you be willing to send him/her again to other training/seminars/conference?

Yes ☒ No ☐ Others ☐

If yes, please specify courses

*- training on Environmental Law Enforcement, and  
 Training on actual used of Basic Radio Communication System*

Submitted by:

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July 20, 2022  
 Date