

Flood Monitoring System via Short Message Service (SMS)

A Project Study

Presented to

The Faculty of Engineering

De La Salle University – Dasmariñas

In Partial Fulfillment

Of the Requirements for the Degree

Bachelor of Science in Electronics and Communications Engineering

Carias, Denna Jean S.

Esporlas, Jeffrey N.

Flores, Edward Genesis B.

Junio, John Gregorio P.

March 2010

TABLE OF CONTENTS

Approval Sheet	i
Acknowledgements	ii
Table of Contents	iii
List of Figures	v
List of Tables	vi
Abstract	vii
 <u>Chapter 1 - Introduction and the Problem</u>	
Introduction	1
Background of the Study	2
Statement of the Problem	3
Conceptual Framework	4
Significance of the Study	5
Scope and Limitations	6
Definition of Terms	7
 <u>Chapter 2 – Review of Related Literature and Studies</u>	
Foreign Studies	8
Local Studies	11
Relevance of the Study	12
 <u>Chapter 3 – Research Methodology</u>	
Research Method / Design	13

Research Instruments	.....	15
Data Gathering Procedure	.....	15
<u>Chapter 4 – Presentation and Evaluation of Gathered Data</u>		
Project Description	.....	27
Prototype Operation	.....	29
Cost Benefit Analysis	.....	35
PDCC Evaluation	.....	37
<u>Chapter 5 – Summary of Findings, Conclusion and Recommendations</u>		
Summary of Findings	.....	39
Conclusions	.....	40
Recommendations	.....	41
References		
Books	.....	42
Electronic Source	.....	42
Appendices		
Appendix A: PDCC Evaluation Form	.....	44
Appendix B: Source Code	.....	46
Appendix C: Materials Specifications	.....	66
Appendix D: Gantt Chart	.....	88
Certificate of Proofreading and Editing		
Curriculum Vitae		

LIST OF FIGURES

Chapter 1 - Introduction and the Problem

Fig.1.1: Research Paradigm	1
----------------------------	---

Chapter 2 – Review of Related Literature and Studies

Fig.2.1: US Alarm Water/Flood Sensor	8
Fig.2.2: MCU-Based Flood Mon. Device	9
Fig.2.3: MCU-Based Flood Mon. Device	10

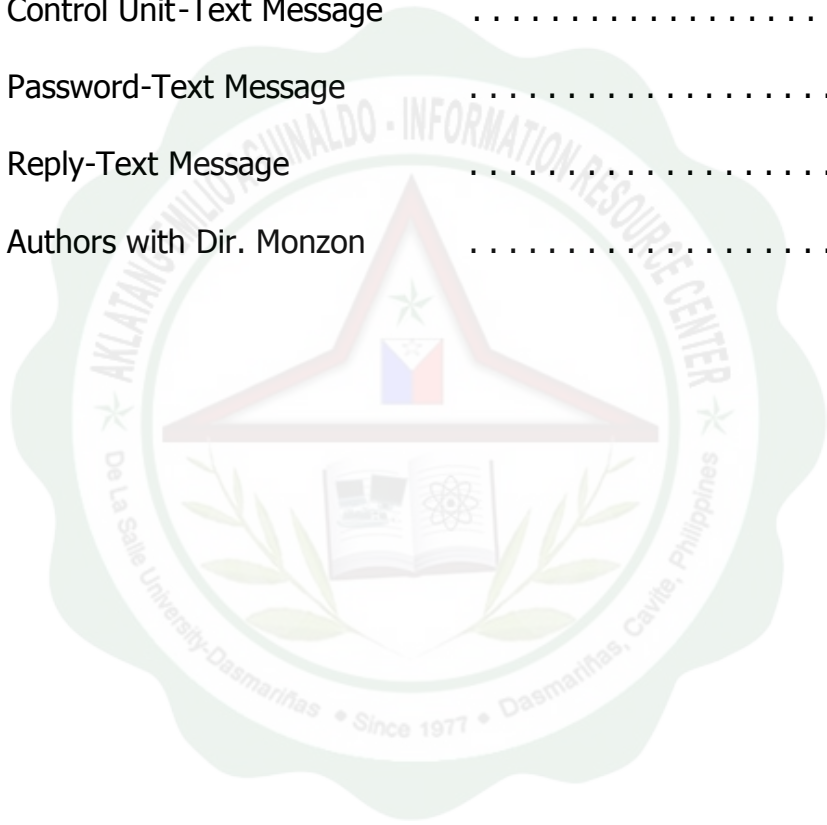
Chapter 3 – Research Methodology

Fig.3.1: Process Flow for Flood Monitoring	14
Fig.3.2: Process Flow for F.L. Status Inquiry.	14
Fig.3.3: Actual Reed Switch	16
Fig.3.4: Floaters with Reed Switch	17
Fig.3.5: Microcontroller Circuit	18
Fig.3.6: Actual MCU Circuit	19
Fig.3.7: GSM Module	20
Fig.3.8: Probe Dimensions	22
Fig.3.9: Control Unit Dimensions	22
Fig.3.10: Power Supply Circuit Diagram	23
Fig.3.11: Actual LCD and Keypad	24

Fig.3.12: Keypad Configuration and Interface	17
Fig.3.13: CAT-5e and RS-232	24

Chapter 4 – Presentation and Evaluation of Gathered Data

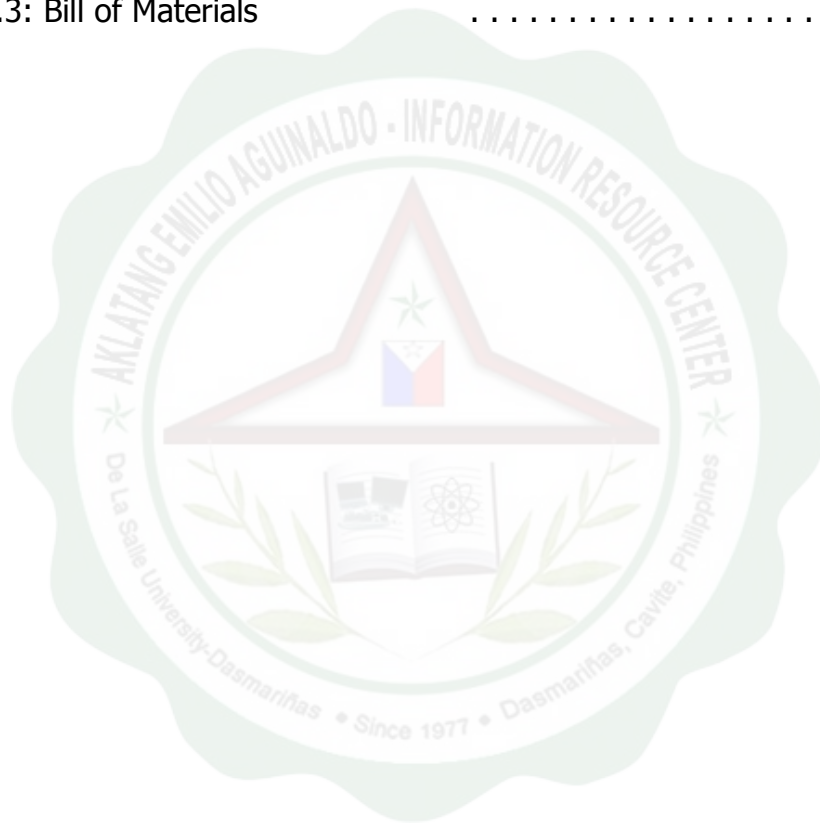
Fig.4.1: Control Unit	28
Fig.4.2: Probe	28
Fig.4.3: Control Unit-Text Message	29
Fig.4.4: Password-Text Message	34
Fig.4.5: Reply-Text Message	34
Fig.4.6: Authors with Dir. Monzon	38



LIST OF TABLES

Chapter 4 – Presentation and Evaluation of Gathered Data

Table.4.1: Operation-Normal Condition	30
Table.4.2: Operation-Critical Condition	32
Table.4.3: Bill of Materials	35



ABSTRACT

Title: FLOOD MONITORING SYSTEM VIA SHORT MESSAGE SERVICE (SMS)

Researchers: CARIAS, Denna Jean S.

ESPORLAS, Jeffrey N.

FLORES, Edward Genesis B.

JUNIO, John Gregorio P.

Adviser: Engr. Jose Rizaldy A. de Armas

School: De La Salle University – Dasmariñas

Pages: 88

Year: SY 2009 – 2010

Degree: BS Electronics and Communications Engineering

Flash flood is one of the leading causes of weather-related deaths. Flood is a problem, not only in the Philippines, but worldwide. In the Philippines, the most fatal natural disaster, which results to a lot of casualties and physical damages, is caused by storms and floods. The Philippines falls under the location of the typhoon belt that is why the country experiences annual torrential rains and thunderstorms.

This is the main goal of this study, to give solution to the problem using the concepts of electronics. This research will provide a better strategy in preventing flood problems. Flood will be monitored using electronic circuits and sensors. Every data will be sent using the Short Message Service (SMS). This would allow public officials to be notified 24/7 whenever there is a sensed flood or rise in its level. Using this system, an effective way of flood monitoring and early warning can be devised.