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AWSOM WELL HEAD UNIT – USING FTP AS AN ALTERNATIVE TRANSPORT MECHANISM TO THE SHORT MESSAGE SERVICE

MAURICE SMITH MBE

1. Executive Summary

This document defines the message format when attempting to use File Transport Protocol instead of the Short Message Service. It is expanded from the SMS Format Message as the Network Service Provider's Server does not provide DATE; TIME & MOBILE PHONE NUMBER. This information can be obtained by using the AT Command Structure of the SIM800L Mobile Phone Module. When obtaining this information, Latitude and Longitude of the SIM800L is also made available, so has been added.

This document defines the etiquette of using the "Back End" Website. Access credentials will be advised under separate cover.

2. Background

This document is one of a series of documents that outline the operation, use and integration aspects of *A Well System for Ongoing Maintenance* (AWSOM). The AWSOM system consists of four units, the AWSOM:

a) Well Head Unit,

b) Base Station

c) EXCEL Workbook (with Visual Basic Automation)

d) Web Site(s)

The above units, together with an associated PC/Workstation, are linked to form *A Well System for Ongoing Maintenance* (AWSOM).

This document details the format of the data that is sent by the FTP Transport Mechanism and where the information is to be sent.

3. FTP Message Format

The following information is to be taken from the Arduino's Sketch and the SIM800L Mobile Phone Module. This information is uploaded to a defined website that results in a "Human Readable Interpretation " message.

The file name that is PUT with FTP will be in the format of "AWSOM#" and the Well's Identity Number and a "underscore" character and the date e.g. "AWSOM#3891_20201120.txt" and will be a text file. Experience has shown that it there are spaces in the Filename, then unexpected results occur then using the File Transport Protocol. From the Windows 10 Appstore, "WinSCP" was downloaded (free of charge) to provide enhanced FTP functions for the EXCEL Workbook to use.

Data Derived from the Arduino Sketch and SIM800L **Description**	**Example**	**Length**	**Sub-Total**
Preamble and delimitator	AWSOM#	6	6
Well's identity	9999	4	10
Delimitator (Space)	" "	1	11
Preamble	"MxTmp"	5	16
Delimitator (space & = & space)	" = "	3	19
Maximum Temperature reading (will be two significant digits and two decimal place)	70.90	4	23
Delimitator (colon & Carriage Return)	":" & CR	2	25
Preamble and delimitator ("Ni-Battery = ")	"Ni-Battery = "	12	37
The current value of the NiMH Battery reading (will be one significant digit and two decimal place)	5.72	4	41
Delimitator (space & "Volts (" & percentage charged & ")"& colon & Carriage Return)	" Volts (56%):" & CR	13	54
Preamble and delimitator ("PUMP-COUNT = ")	"PUMP-COUNT = "	12	66
The value of the 'counter' up to six digits in length (rolls over back to 1 when a million has been counted)	999999	6	72
Delimitator (colon & Carriage Return)	":" & CR	2	73
Preamble and delimitator ("Work-day = ")	"Work-day = "	11	84
The number of days since the phone's memory was cleared (max number of 999 days)	900	3	87
Delimitator (colon & Carriage Return)	":" & CR	2	89
Preamble and delimitator ("Powered-time = ")	"Powered-time = "	15	104
The number of time that the Arduino has run through its main loop (up to four digits) (rolls over back to 1 when a 150,000 has been counted)	999999	6	110
Data Terminator (":" & Carriage Return)	":" & CR	2	112
Preamble for Mobile Phone number ("Mobile :")	"Mobile :"	8	120
Mobile Telephone Number in the international GSM format (derived from AT+CNUM)	+447##########	15	135
Delimiter (Carriage Return)	CR	1	136
Preamble ("System Date & Time")	"System Date & Time"	17	153
Separator (Space)	" "	1	154
System Date (GMT) in YYYY/MM/DD (derived from AT+CIPGSMLOC)	"2020/11/20"	10	164
Separator (Space)	" "	1	165
System Time (GMT) in hh:mm:ss (derived from AT+CIPGSMLOC)	"06:10:32"	8	173
Delimiter (Carriage Return)	CR	1	174
Preamble ("Lat:")	"Lat:"	4	178
Current Latitude in Degrees (derived from AT+CIPGSMLOC)	51.81634° N	12	190
Delimiter (Carriage Return)	CR	1	191

Preamble (“Long:”)	“Long:”	5	195
Current Longitude in Degrees (derived from AT+CIPGSMLOC)	-0.35665° E	12	208
Delimiter (Carriage Return)	CR	1	209

4. Dedicated Website

The Development Team have utilised a two Website solution with the public facing website that displays the information and the EXCEL Workbook Generated Graphs.

This website can be viewed at www.wellmonitoringservice.co.uk.

There is also a “Back End” Website where the EXCEL Workbook uploads the Graphs it self-generates. This Website is “5858.co.uk” and a Folder called “Data_Upload” has been created for the “.txt” files to be uploaded too. As this is a “Free Hosted Service”, the allocated space is limited, and the space taken by these files should be limited to 10 MB. As each file is 216 Bytes long, this should allow for 45,000 messages to be uploaded.

AS THIS IS A “SHARED” WEBSITE, IT IS ESSENTIAL THAT EVERYBODY RESPECTS THE OTHER USERS CONTENT.

For access, the following credentials will be supplied under separate cover:

- Domain Name
- Account Name
- Account Password

5. Conclusions

This is an interesting concept to investigate and this document defines the Message Format to be used as well as the etiquette for the “Back End” Website.

If successful, the Automation Coding of the EXCEL Workbook will need to be updated to achieve the following activities:

- GET (download) the data file from the “Back End” Website
- Decode the message such that the same variables are generated as from the SMS text
- Load the variables into the relevant Worksheets
- MOVE the now redundant data file into the ARCHIVE Folder on the “Back End” Website