



GENERATION DIVISION
Production Group
EnMax, Weather Modification

WM-Procedure-02

Recording Parameters in Flight

REV	REVISION DESCRIPTION	DESCRIPTION	REVIEWED	DATE
0	Original Issue 01/12/2003	Describes the collection and processing of data on cloud seeding flights	<input checked="" type="checkbox"/>	

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December 2003

1. Purpose

The purpose of the document is to describe the collection and processing of data collected on cloud seeding flights and to list instructions specific to this procedure.

2. Resources

Cloud seeding officers or CSO are trained to fly on cloud seeding missions and to collect data as required.

- The M200 data acquisition system is in operation to collect data during cloud seeding flights, playback the collected data and create data output files for further processing.
- An instrument control database is in use by the EnMax Cloud Seeding group to record an changes to instruments which might effect the data collection (ie replacement of hot wire)
- A temperature probe, located in a reverse flow housing is mounted on the outside of the aircraft
- The liquid water meter ...

3. Responsibilities

When active in the program, CSO are responsible for collection and processing of data. Maintenance and calibration of instruments is the responsibility of the duty CSO.

4. Instructions associated with this procedure


WM-Instruction-P02/01	M200 Use and Operation
WM-Instruction-P02/02	Instrument Control Database
WM-Instruction-P02/03	Measurement of Ambient Temperature
WM-Instruction-P02/04	Measurement of Liquid Water Content

5. Appendices



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WM-Instruction-P02/01 M200 Use and Operation

REV	REVISION DESCRIPTION	DESCRIPTION	REVIEWED	DATE
0	Original Issue December 2003	How to use the M200 software in aircraft and office		

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& 
December 2003

1. Description

This instruction describes the software used for recording, viewing and processing of data collected on cloud seeding flights.

2. Detail

2.2 Description of M200 software

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2.3 Recording Data in flight

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2.4. Playback (*Instruction to play back and output data recorded by M200*)

This document is an instruction on the use of SEA PlayBack®, (hereafter PB) for flight data recorded using SEA Model 200® (hereafter M200) version V4D0, the software developed by ██████████ in 2003 and released for use on flights from 7th July 2003.

PB is installed on workstation HY0656 located on the 9th floor in the area occupied by EnMax Weather Modification. It essentially is a copy of M200 in that it has the same look and feel as M200. PB also has the facility to output data to text files. The user can specify which parameters are written and can control during PB when to commence or terminate the output.

On HY0656, PB is run from the DOS directory below:

```
C:\DATA\SEA\M200\V4D0
```

Typically the raw M200 data file of flight data will be a zip file on a 3.5 inch floppy disk. If so, the file requires unzipping first to a directory reserved for flight data below:

```
C:\DATA\SEA\M200\V4D0\fltdata\2003
```

Extract the <filename>.dat zipped files from the 3.5 inch floppy disk by using the command below:

```
pkunzip a:\<filename>.zip
```

PB is now ready to run from the root directory defined above. Go back to:

```
C:\DATA\SEA\M200\V4D0
```

Type the command below to start PB:

```
pb .\fltdata\2003\<filename>.dat
```

PB has commands that initiate and terminates the writing of parameters recorded by M200 to ASCII text files, for example lwc.asc. Output templates have been drafted that contain a number of related parameters a user may want written to an output file. The templates have a file extension of cfg, for example lwc.cfg. Each output template has an identified number and are listed in the file ASCTBL.TXT below:

C:\DATA\SEA\M200V4D0\ASCTBL.TXT

```

;*****
;* ASCTBL.TXT
;*      ASCII TEXT OUTPUT FILE TABLE
;*
;*      Modified: 08-06-01 ██████████
;*      Revised: 11-08-03 ██████████
;* Retrieve text data using the ASC Number on/off command (S5.8)
;*
;* Description  Number      State  Time  Frequency  ConfigFile  OutputFile
;*****
;
;
Nav           0             0     0     5           nav.cfg     nav.asc
Atmos         1             0     0     1           atmos.cfg  atmos.asc
LWC           2             0     0     1           lwc.cfg    lwc.asc
Skew_T        3             0     0     1           skew_t.cfg skew_t.asc
T(øC)_Cal     4             0     0     1           t_cal.cfg  t_cal.asc
T(øC)_Check   5             0     0     1           t_check.cfg t_check.asc
CAS_Hist      6             0     0     1           cas_hst.cfg cas_hst.asc
Air_Ice_Srv   7             0     0     1           ais.cfg    ais.asc

```

An example of an output template, in this case file 2, lwc.cfg is given below:

C:\DATA\SEA\M200V4D0\LWC.CFG

```

;*****
;* LWC.CFG
;*      ASCII CONFIG FILE OUTPUT TABLE
;*
;*      Created: 24-08-01
;*      Revised: 11th Aug '03 ██████████
;*
;* Description      Type      Data      Format
;*****
;
;
Date                row      F1         %10s
Time                row      F0         %10s
Baro_Alt(ft)        row      F329       %9.0f
RFT_Amb_T(øC)       row      F3315      %7.1f
TAS_HC(kt)          row      F3317      %6.1f
InstWndSpd(kt)      row      F3813      %6.1f
InstWindDir(øT)     row      F3812      %6.0f

```

LWC_DMT	row	F3521	%7.3f
;LWC_CAPS	row	F3621	%7.3f
;LWC_CSIRO	row	F5012	%7.3f
;LWC_CAS	row	F4405	%7.3f
EGT(L)	row	F3104	%4.0f
EGT(R)	row	F3105	%4.0f
LF	row	F65532	%c

The basic command to initiate output to text files during PB is:

```
asc nn on
           where nn is the number identifying the <filename>.crg
```

and to terminate output to text files is:

```
asc nn off
           where nn is the number identifying the <filename>.crg
```

The commands “asc nn on” and “asc nn off” can be executed at any time during PB. Following the example above, the command “asc 2 on” will write the parameters listed in lwc.cfg above to lwc.asc.



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WM-Instruction-P02/02

Instrument Control Database

REV	REVISION DESCRIPTION	DESCRIPTION	REVIEWED	DATE
0	Original Issue December 2003	Recording of changes to instruments	<input checked="" type="checkbox"/>	

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1. Description

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WM-Instruction-P02/03

Measurement of Ambient Temperature

REV	REVISION DESCRIPTION	DESCRIPTION	REVIEWED	DATE
0	Original Issue December 2003	Measurement of temperature and calibration of instrument		

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December 2003

1. Description

This instruction describes

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GENERATION DIVISION
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WM-Instruction-P02/04

Measurement of Liquid Water Content

REV	REVISION DESCRIPTION	DESCRIPTION	REVIEWED	DATE
0	Original Issue December 2003	Measurement of liquid water content and calibration of instrument	<input checked="" type="checkbox"/>	

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