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A Comparison of Radiosonde Reports Received by Four Major U.S. Global Data Processing Centers

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A. Introduction

In order to accurately compare the availability of data at various processing centers it is essential to standardize evaluation methods. Such an undertaking was accomplished for the computer runs at 1200 GMT on October 30, 1974. This was done with the cooperation of: a. The Air Force Global Weather Central at Offutt AFB, Omaha, Nebraska; b. The Fleet Numerical Weather Central at Monterey, California, and c. Detachment 7, 6th Weather Wing (The Air Weather Service Global Communications Relay Center) at Carswell AFB, Fort Worth, Texas. The Upper Air Branch of NMC's Development Division organized the survey, coordinated ground rules and compiled, compared, and evaluated each center's computerized summaries.

B. Reason for the Survey

Aside from the obvious benefits of doing periodic surveys of data availability, some of which have already been mentioned, there were specific reasons for doing this particular study. At the ICMS WG/OPC Meeting held at the NMC, Washington on October 8-9, 1974 the Director, NMC received the results of a survey covering the period from 0000 GMT, September 12 through 1200 GMT, September 20, 1974 inclusively. A series of "real time" upper air data comparison tests had been conducted for the so-called operational runs. The survey was presumably based on data available at the 3+25 deadline which were analyzed for total count and coverage. At the time of the survey it was not widely known that the NMC's "operational" processing deadline on the CDC6600 computer was not rigidly set at 3+25. It varied from 2+54 to 3+33 as Table 1 shows. If the NMC statistics used were generated on the 6600, which in all likelihood they were, they did not reflect data availability at 3+25, but rather at an average dump time of 3+18. In fact, the precise operational dump times on the 6600 for the period surveyed were as shown below.

Table 1

Operational Raob Data Dump Times to the CDC6600 at the NMC, Washington, 1974

September 1974	0000 GMT Data	1200 GMT Data
16	0315Z	1518Z
17	0318Z	1533Z
18	0325Z	1529Z
19	0254Z	1527Z
20	0324Z	1500Z

Although this may seem trivial in terms of data receipts, the bulk of raob reports received by an analysis center arrive during the 1-3 hour period after observations were made. Beginning around the third hour the curve on a graph of data receipts begins abruptly to become asymptotic in time as Figure 1 shows. Figure 1 is a plot of the cumulative number of 1200Z Part A raob reports for October 30, 1974 that were received at the AWS AWN Weather Relay Center at Carswell. Clearly, a data dump fifteen minutes earlier than an optimum time on one day is by no means compensated by one fifteen minutes late on another day.

In any event, the original independent survey indicated gross differences in data availability at two centers--considerably greater than could be explained by a relatively minor difference in dump times. The original survey findings were:

Table 2

Average Total Raob Count

0000Z	NMC, Washington	507
	Carswell*	767
1200Z	NMC, Washington	486
	Carswell*	772

*Data received from Carswell

Preliminary investigations suggested that the "Carswell averages" probably included "reports" that did not contain data. The WMC counts are based exclusively on reports containing data. Contact with Carswell confirmed that their statistics were from a computer program that checked only the first three groups in a report. This program only verified it as a raob message (Part A), validated the date and time and checked the block and station number (source). This type of check does not confirm the utility of the report to an analysis and forecasting center because it does not indicate whether the report contained data. Many raob messages are received from Europe, Asia, and other WMO Regions that contain no data. A few from South America and Africa are shown in Figures 2 and 3.

Figure 2

```
ZCZC  WBC546
USAG2 SABM S  160000
TTAA  66004   87344   99960  16818 ... etc.
TTAA  6600/   87155   NIL    (SCTD SYMBOL)
TTAA  6600/   87860   NIL    (SCTD SYMBOL)

NNNN
```

Figure 1

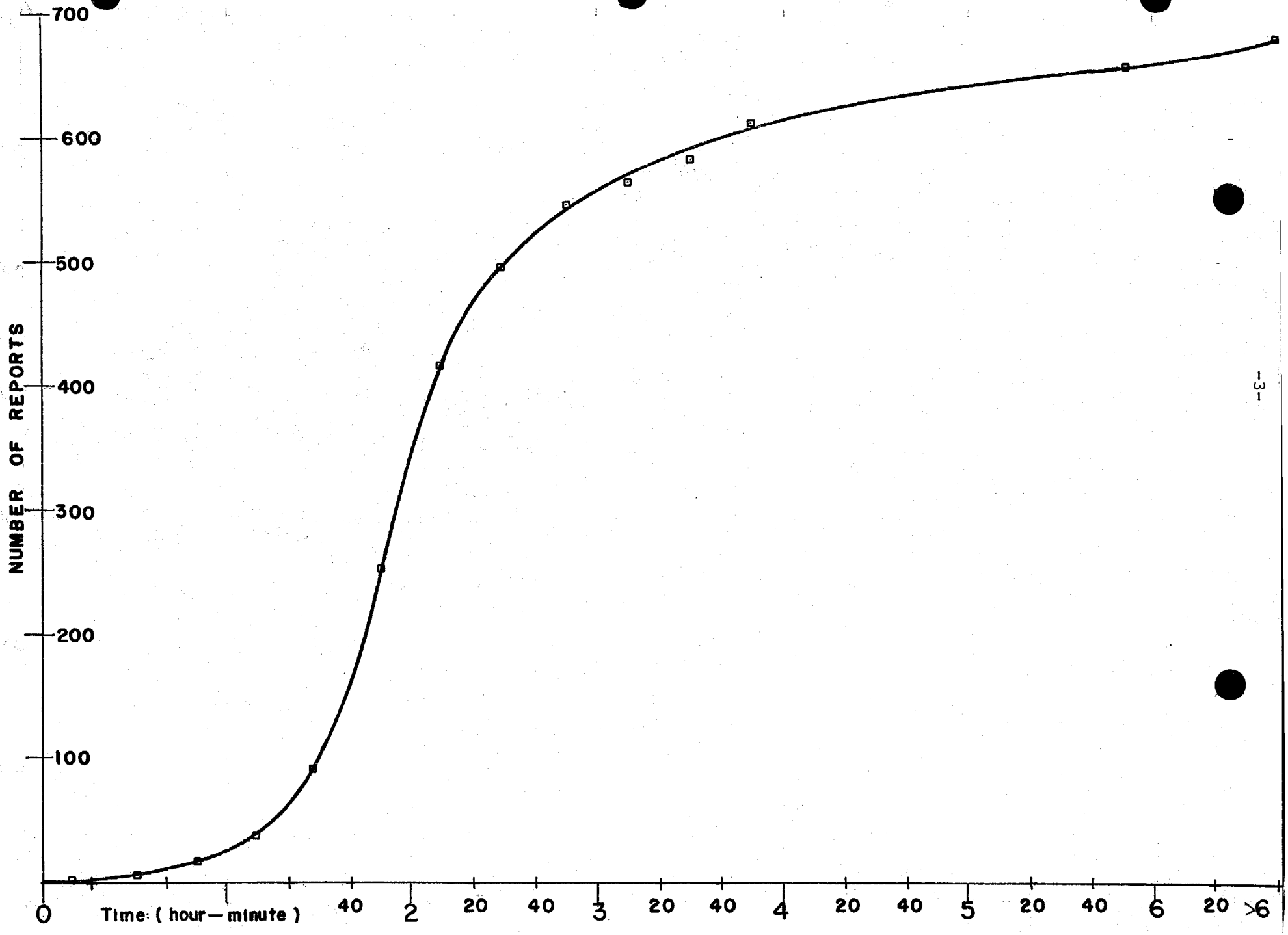
NUMBER OF REPORTS
700
600
500
400
300
200
100
0
Time: (hour — minute)
40
2
20
40
3
20
40
4
20
40
5
20
40
6
20
>6

Figure 2 (continued)

```
ZCZC  WBC548
UKAG2 SABM S  160000
TTBB  6600/   87344   00960   16818 ... etc.
TTBB  6600/   87155   NIL     (SCTD SYMBOL)
TTBB  6600/   87860   NIL     (SCTD SYMBOL)

NNNN


ZCZC  WBC486
UECH2 SABM S  160000
TTDD  6600/   85442   NIL     (SCTD SYMBOL)
TTDD  6600/   85799   NIL     (SCTD SYMBOL)

NNNN
```

Figure 3

```
ZCZC WBC310
USAF10 EDZW 031200
TTAA 53121 61902 99006 25057 12014
00134 24256 12014 05532 18264 05511 70165 06866 18008
50508 05570 14519 40758 16366 13005 30968 33364 29027
25093 441// 30523 20239 549// 29542 15419 663// 29545
10656 759// 32013
88112 781// 29034 77999 4////©

TTAA 0312/ 61967 NIL©

TTAA 0312/ 61995 NIL©

TTAA 0312/ 61996 NIL©

TTAA 0312/ 61998 NIL©

TTAA 53121 63741 99819 21061 08010 85/// ///// ///// 73114
006// 07020 50583 05168 17009 40755 13571 08119 30967 32773
06324 25093 405// 08018 20241 523// 25535 15421 673// 8//// 10676
811// ///// 33999 77999©

TTAA 53112 63394 99002 31460 08012 00078 30260 05107 85491 19870
03306 70139 09857 13010 50587 07762 12023 40760 14363 11524
30971 30571 04514 25093 39170 03018 20242 5011/ 08529 85999
77999©

TTAA 0312/ 64220 NIL©

TTAA 0312/ 64235 NIL©

TTAA 53121 66160 99003 27458 29009 03099 27058 29009 87511
17061 36011 70147 10063 09008 50586 05368 09516 40757 17369
07512 30967 31967 08012 25093 431// 12012 20239 553// 16317
15411 683// 23541 10625 817// 12024 88999 77999©

TTAA 0312/ 66285 NIL©

TTAA 0312/ 66390 NIL©

TTAA 0312/ 67083 NIL©

TTAA 0312/ 67197 NIL©

TTAA 0312/ 67237 NIL©

TTAA 53122 67341 90EEE 99006 25457 19010 00083 28017 18011 3749
     15059 28513 70117 09266 26614 50583 07164 28316 40774 7777
     28516 30964 323// 28524 25090 421//0 01540 20237 543// 29548
     15416 653// 29556 86999 77999©
```

It can clearly be seen from these figures that by using the Carswell program, the receipts from the several stations with "NIL" reports would be counted although no data were provided. The WMC's statistics would not normally include these as received reports. It has been noted that during each synoptic raob cycle many of these "NIL" reports are received from all over the world. Unless various centers are treating them alike in statistical summaries there is bound to be a significant bias introduced into compared results.

C. A Quality Controlled Study of Data Receipts

Comparisons of data availability at major processing centers must be performed in a manner that will produce valid results. Otherwise Center Directors may commit manpower and resources which are scarce and costly to investigate and analyze non-existent problems. In order to perform an accurate evaluation of data availability at major centers, coordination is essential. This ensures standardization of the methods used to obtain data for comparisons. Such a coordinated study was performed by the centers at Washington, Carswell, Offutt, and Monterey.

The conditions agreed upon were:

1. Evaluation would be based on data collections for 1200Z, October 30, 1974.

2. Part A (TTAA) raob mandatory levels from the surface thru 100 millibars would be the type of data evaluated.

3. Each center would provide a list of stations from which Part A data had been received.

4. A data collection cut off (dump) time of 1525Z would be used.

5. The individual center's summaries would be forwarded to NMC for analysis.

6. If possible, each center would provide a printout of the data which had been received and processed.

Following is what each center provided.

1. NMC

NMC provided a complete list, by station, of all 1200Z raob data received and automatically processed by 1523Z on October 30, 1974. This listing showed each mandatory level that had been processed and indicated whether or not the data contained deficiencies. Figure 4a and 4b are samples of NMC's output.

Figure 4a

```
                    1200Z  OCTOBER  30, 1974  ADPUPA      NMC/WMC WASHINGTON          DUMP TIME      15.38Z      PAGE  10

10393     1200Z      52.22N     014.12E     ELEVATION     00100M            INST TYPE       10      RESERVED 9999990      RPT TYPE 011
   1000MB    00020    *    *    * / *   A     01321 -043 005 270/006 AA A   02872 -135 020 255/006 AA A   05300 -313 090 190/012 AA A
    400MB    06840 -427 070 170/020 AA A   08730 -499 060 165/016 AA A   09940 -457 080 155/008 AA A   11430 -443 100 195/008 AA A
    150MB    13350 -477  *  210/006 AA A   16010 -507  *  210/008 AA A   18330 -519  *  235/010 AA A   20500 -533  *  250/010 AA A
     30MB    23780 -545  *  255/012 AA A
        SIG TEMP    09690 0044 005 V     08900 -033 010  A    08240 -053 000  A    06500 -163 048  A    04420 -383 080  A
                    03320 -511 050 TA    03080 -511 060  A    02820 -465 060  A    02050 -441 090  A    01730 -449 100  A
                    01370 -489  *   A    00855 -497  *   A    00252 -569  *   A
        WNDS-PRESS 09690 270/002         03320 170/020 T
        TROPOPAUSE 03320 -511 050 170/020

10404     1200Z      51.67N     006.17E     ELEVATION     00023M            INST TYPE       07      RESERVED 9999990      RPT TYPE 011
   1000MB    00075 0068 032 335/008 AA    01383 -039 034  * / *  AA    02887 -143 025  * / *  AA    05350 -319 060  * / *  AA
    400MB    06890 -425 035  * / *  AA    08790 -503 049  * / *  AA    09980 -509  *   * / *  AA    11450 -471  *   * / *  AA
        SIG TEMP    10070 0072 033 V     07520 -105 050  A    06110 -219 014  A    05430 -279 070  A    03890 -439 034  A
                    03520 -473 039  A    02670 -523 060  A    02120 -465  *   A    01580 -485  *   A

10410     1200Z      51.40N     006.97E     ELEVATION     00154M            INST TYPE       07      RESERVED 9999990      RPT TYPE 011
   1000MB    00069    *    *    * / *   A     01375 -041 024 340/012 AA A   02876 -141 080 360/019 AA A   05340 -333 110 350/024 AA A
    400MB    06870 -447 060 360/038 AA A   08760 -487 070 005/044 AA A   09960 -479 100 005/039 AA A   11440 -473 140 360/019 AA A
    150MB    13320 -513  *  350/010 AA A   15950 -511  *  355/010 AA A   18260 -511  *  340/010 AA A   20460 -533  *  350/012 AA A
     30MB    23740 -565  *  330/020 AA A   26310 -587  *  320/016 AA A   30670 -595  *  260/048 AA A
        SIG TEMP    09900 0068 030 V     09610 0028 010       09040 -007 000       08790 -021 028  A    07810 -097 016  A
                    07640 -093 070  A    06660 -167 090  A    06040 -231 046  A    05200 -307 110  A    03780 -481 050  A
                    03320 -503 060 TA    02250 -451 110  A    01220 -533  *   A    01000 -511  *   A    00600 -501  *   A
                    00500 -533  *   A    00440 -567  *   A    00330 -569  *   A    00240 -561  *   A    00160 -597  *   A
                    00110 -571  *   A    00090 -617  *
        WNDS-PRESS 09900 320/008         03320 005/049 T      00090 260/068 4
        TROPOPAUSE 03320 -503 060 005/049

10486     1200Z      51.12N     013.68E     ELEVATION     00231M            INST TYPE       10      RESERVED 9999990      RPT TYPE 011
   1000MB    00030    *    *    * / *   A     01333 -053 011 255/012 AA A   02829 -143 029 290/010 AA A   05290 -335 060 245/008 AA A
    400MB    06820 -451 060 195/018 AA A   08700 -507  *  160/014 AA A   09900 -469  *  160/006 AA A   11380 -455  *  265/006 AA A
    150MB    13300 -475  *  030/004 AA A   15960 -513  *  020/006 AA A   18290 -513  *  065/008 AA A   20470 -515  *  100/010 AA A
        SIG TEMP    09750 0042 028 V     09000 -021 010  A    07400 -129 015  A    07100 -137 027  A    04000 -451 060  A
                    03200 -527  *  TA    02700 -473  *   A    01700 -447  *   A    01450 -483  *  TA    00920 -517  *   A
                    00600 -489  *   A    00320 -519  *   A
        WNDS-PRESS 09750 270/004         03200 165/020 T      01450 030/004 T
        TROPOPAUSE 03200 -527  *  165/020          01450 -483  *  030/004

10548     1200Z      50.57N     010.38E     ELEVATION     00456M            INST TYPE       07      RESERVED 9999990      RPT TYPE 011
   1000MB    00043    *    *    * / *   A     01352 -047 013 330/018 AA A   02852 -145 027 325/010 AA A   05310 -339 038 340/014 AA A
    400MB    06830 -475 032 340/016 AA A   08710 -495 060 005/014 AA A   09910 -457 070 010/014 AA A   11400 -463 090 360/014 AA A
    150MB    13290 -489  *  355/012 AA A   15930 -513  *  315/010 AA A   18240 -515  *  295/012 AA A   20410 -551  *  285/010 AA A
        SIG TEMP    09510 0024 011 V     05600 -265 040  A    03880 -489 032 TA    03600 -489 045  A    03340 -507 050  A
                    02550 -457 070  A    02040 -459 090  A    01830 -495 100 TA    01340 -487  *   A    01160 -521  *   A
                    00876 -509  *   A    00750 -531  *   A    00684 -507  *   A    00532 -559  *  TA    00355 -543  *   A
        WNDS-PRESS 09510 270/012         03680 340/016 T      01830 360/016 T      00532 280/012 T
        TROPOPAUSE 03680 -489 032 340/016          01830 -495 100 360/016          00532 -559  *  280/012

10616     1200Z      49.70N     007.33E     ELEVATION     00376M            INST TYPE       07      RESERVED 9999990      RPT TYPE 011
   1000MB    00066    *    *    * / *   A     01375 -047 001 345/010 AA A   02871 -153 011 355/010 AA A   05330 -337 070 005/017 AA A
    400MB    06650 -449 061 005/035 AA A   08750 -487  *  010/041 AA A   09960 -457  *  005/030 AA A   11440 -465  *  005/020 AA A
    150MB    13330 -521  *  320/018 AA A   15960 -523  *  360/003 AA A
        SIG TEMP    09630 0032 021 V     08480 -049 000  A    08070 -079 000  A    07450 -121 022  A    06940 -157 010  A
                    04480 -395 070  A    04060 -445 060  A    03370 -493 048 TA    02470 -453  *   A    01800 -475  *   A
                    01520 -521  *  TA
        WNDS-PRESS 09630 330/003         03370 010/048 T      01520 320/019 T
        TROPOPAUSE 03370 -493 048 010/048          01520 -521  *  320/019

10739     1200Z      48.83N     009.20E     ELEVATION     00325M            INST TYPE       07      RESERVED 9999990      RPT TYPE 011
   1000MB    00066    *    *    * / *   A     01368 -063 000 300/005 AA A   02862 -157 043 320/006 AA A   05310 -343 041 015/019 AA A
    400MB    06830 -467 039 005/014 AA A   08720 -479 060 345/020 AA A   09930 -449 090 005/018 AA A   11420 -461 120 350/014 AA A
    150MB    13320 -507  *  325/014 AA A   15960 -505  *  340/004 AA A   18280 -515  *  280/006 AA A   20450 -523  *  325/008 AA A
     30MB    23740 -543  *  005/006 AA A   26320 -561  *  350/014 AA A   30710 -569  *  270/032 AA A
        SIG TEMP    09760 0034 013 V     08860 -035 000  A    08200 -085 000  A    08000 -075 024  A    07390 -131 044  A
                    06900 -163 042  A    05380 -301 035  A    03780 -497 035 TA    02660 -471 080       02430 -431 090  A
                    01830 -469  *   A    01460 -511  *   A    01330 -497  *   A    01130 -511  *   A    00700 -515  *   A
                    00580 -529  *   A    00500 -523  *   A    00240 -561  *   A    00100 -569  *   A
        WNDS-PRESS 09700 290/002         03780 005/012 T
        TROPOPAUSE 03780 -497 035 005/012

10866     1200Z      48.13N     011.70E     ELEVATION     00535M            INST TYPE       07      RESERVED 9999990      RPT TYPE 011
   1000MB    00050    *    *    * / *   A     01352 -049 013 295/010 AA A   02849 -151 025 295/015 AA A   05360 -349 028 310/010 AA A
    400MB    06830 -445 043 265/013 AA A   08720 -499 050 270/011 AA A   09930 -451 080 300/016 AA A   11420 -465  *  295/012 AA A
    150MB    13310 -487  *  285/010 AA A   15960 -509  *  285/011 AA A   18280 -519  *  265/011 AA A   20460 -531  *  260/008 AA A
     30MB    23730 -541  *  325/010 AA A   26340 -553  *  350/006 AA A   30720 -581  *  270/034 AA A
        SIG TEMP    09430 0020 022 V     08770 -039 000  A    08530 -047 015  A    07990 -087 000  A    07630 -117 000  A
                    07400 -119 022  A    06500 -187 047  A    05180 -331 025  A    03580 -493 038  A    03120 -513 044 TA
                    02400 -433 090  A    01770 -485  *   A    01310 -487  *   A    01130 -515  *   A    00910 -503  *   A
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Figure 4b

```
                    1200Z  OCTOBER  30, 1974  ADPUPA      NMC/WMC WASHINGTON          DUMP TIME      15.38Z      PAGE  11
                 00770 -537  *    A   00560 -509  *    A   00460 -551  *    A   00410 -531  *    A   00340 -555  *    A
                 00260 -525  *    A   00150 -581  *    A   00070 -581  *
        WNDS-PRESS 09430 300/007      03120 260/010 T
        TROPOPAUSE 03120 -513 044 260/010

13130   1200Z    45.82N    016.03E    ELEVATION    00131M          INST TYPE      03     RESERVED 9999990      RPT TYPE 011
   1000MB   00023   *    *    * / *   A    01339 -035 037 015/012 AA A  02845 -125 090 355/010 AA A  05320 -299 070 205/017 AA A
    400MB   06880 -423  *  190/029 AA A  08770 -517  *  210/023 AA A  09960 -475  *  225/017 AA A  11440 -457  *  240/017 AA A
    150MB   13350 -467  *  235/021 AA A  16010 -479  *  230/021 AA A  18340 -539  *  240/014 AA A  20500 -551  *  245/008 AA A
     30MB   23780 -521  *  210/004 AA A
        SIG TEMP   09670 0066 060 V    09780 0066 090      08160 -065 034  A   07960 -069 044  A   06910 -129 100  A
                   05850 -227 070  A   05750 -227 080  A   05380 -263 120  A   04890 -309 060  A   04530 -351 100  A
                   04180 -401 060  A   03180 -523  *  TA  02810 -521  *  A   02380 -455  *  A   02100 -471  *  A
                   01900 -445  *   A   01180 -503  *  A   00970 -473  *  A   00720 -539  *  A   00370 -543  *  A
        WNDS-PRESS 09670 200/004      03180 200/027 T
        TROPOPAUSE 03180 -523  *  200/027

13275   1200Z    44.70N    020.53E    ELEVATION    00243M          INST TYPE      03     RESERVED 9999990      RPT TYPE 011
   1000MB   00006   *    *    * / *   A    01304 -039 000 320/010 AA A  02820 -109 016 275/010 AA A  05320 -307 100 210/016 AA A
    400MB   06870 -401 080 180/021 AA A  08770 -513  *  190/023 AA A  09960 -481  *  205/031 AA A  11440 -473  *  215/035 AA A
    150MB   13350 -491  *  230/033 AA A  15990 -515  *  220/021 AA A  18280 -543  *  230/021 AA A  20430 -539  *  225/014 AA A
     30MB   23710 -539  *  220/023 AA A  26340 -523  *  255/019 AA A  30870 -471  *  270/033 AA A
        SIG TEMP   09710 0064 010 V    07520 -073 000  A   06910 -117 019  A   06610 -117 050  A   06120 -155 070  A
                   05640 -257 110  F   04000 -401 080  A   03220 -531  *  TA  02680 -483  *  A   02010 -473  *  A
                   01390 -495  *   A   01230 -479  *  A   01040 -521  *  A   00990 -513  *  A   00820 -563  *  TA
                   00770 -535  *   A   00650 -549  *  A   00390 -527  *  A   00300 -543  *  A   00170 -515  *  A
                   00080 -453  *       00040 -417  *
        WNDS-PRESS 09710 250/008      03220 175/021 T     00820 210/016 T
        TROPOPAUSE 03220 -531  *  175/021          00820 -563  *  210/016

15120   1200Z    46.78N    023.57E    ELEVATION    00416M          INST TYPE      12     RESERVED 9999990      RPT TYPE 011
   1000MB   -0039   *    *    * / *   A    01272 0016 004 140/018 A  A  03116 0708 016 060/202 AB B   *    *    *    * / *
    400MB    *    -350  *    * / *   C     *   -520  *    * / *   C     *   -545  *    * / *   C     *   -558  *    * / *   C
    150MB    *    -572  *    * / *   C     *   -545  *    * / *   C   18330 -533  *  255/094 AA A  20500 -531  *  235/054 AA A
     30MB   23800 -529  *  240/036 AA A  26410  *    *  255/024 A  A  30880 -523  *  255/024 AA A
        SIG TEMP   09460 0022 003 V    09030 -017 006  A   08560 0016 004  A   08270 0016 002  A   06150 -117 000  A
                   04400 -291 010  A   03000 -521 012 TA   02440 -549 010  A   01300 -579 030  A   00920 -535  *  A
                   00100 -523  *   A
        WNDS-PRESS 09460 270/004      03000 145/052 T     01000 195/060 W     00074 255/098 W
        WNDS-HGT   00669 270/016      00914 195/010       01219 135/020       01524 135/018       01828 130/028
                   03048 160/028      03352 165/028
        TROPOPAUSE 03000 -521 012 145/052

15420   1200Z    44.42N    026.10E    ELEVATION    00100M          INST TYPE      12     RESERVED 9999990      RPT TYPE 011
   1000MB   -0056   *    *    * / *   A    01300 0068 021 220/026 AA A  02864 -019 023 215/026 AA A  05440 -189 032 210/076 AA A
    400MB   07070 -311 026 185/056 AA A  09040 -461 022 165/048 AA A  10230 -551 023 200/056 AA A  11660 -531 024 205/066 AA A
    150MB   13520 -507 030 210/064 AA A  16180 -531 048 220/038 AA A  18480 -521  *  325/032 AA F  20670 -515  *  225/022 AA
        SIG TEMP   09810 0152 150 U    07400 -011 019  A   07100 -011 024  A   05200 -189 019  A   05000 -189 032  A
                   02500 -551 023 TA   01500 -507 030  A   01400 -457 032  A   01000 -531 048  A   00750 -531  *  A
                   00556 -493  *   A   00400 -531  *  A
        WNDS-PRESS 09810 160/016      02500 200/056 T     01440 210/070 W
        WNDS-HGT   00304 160/016      00609 200/022       00914 215/028       01219 220/026       01524 220/026
                   01828 220/026      02133 215/024       02438 210/024       02743 210/026       03048 210/030
                   03352 210/038      03657 210/050       03962 200/046       04267 210/048       04572 210/050
        TROPOPAUSE 02500 -551 023 200/056

15480   1200Z    44.18N    028.67E    ELEVATION    00017M          INST TYPE      12     RESERVED 9999990      RPT TYPE 011
   1000MB   -0069   *    *    * / *   A    01356 0068 028 185/046 AA A  02935 -017 011 200/040 AA A  05530 -185 015 195/038 AA A
    400MB   07160 -297 036 195/048 AA A  09140 -461 030 205/058 AA A  10330 -541 026 195/064 AA A  11740 -567 028 205/076 AA A
    150MB   13560 -541 035 205/084 AA A  16160 -557 037 190/070 AA A
        SIG TEMP   09970 0170 046 V    09930 0144 048  F   07350 0004 001  A   06470 -051 019  A   05430 -147 000  A
                   04350 -247 040  A   02820 -493 028  A   02150 -601 025  A   01380 -527 036  A   01050 -559 036  A
                   01000 -557 037  A   00800 -549  *  A
        WNDS-PRESS 09970 160/020      01630 205/090 W
        WNDS-HGT   00304 155/042      00609 160/042       00914 175/038       01219 170/042       01524 185/046
                   01828 160/048      02133 185/044       02438 195/040       02743 200/040       03048 200/040
                   03352 195/044      03657 195/052       03962 195/056       04267 190/048       04572 190/040

15614   1200Z    42.82N    023.38E    ELEVATION    00595M          INST TYPE      12     RESERVED 9999990      RPT TYPE 011
   1000MB    *    *    *    * / *     *    *    *  340/008  A    *   -092  *  230/038  C A   *   -167  *  230/034  C$A
    400MB    *   -353  *  220/040  C$A  *   -450  *  230/076  C$A  *   -467  *  220/066  K A   *   -483  *  205/064  K A
    150MB    *   -499  *  230/048  C$1  *   -521  *   * / *   C$1 18260 -593  *  235/034 AA A  20360 -575  *  230/022 AA A
     30MB   23580 -561  *  230/020 AC A  26200 -527  *  225/020 AA A
        SIG TEMP   09260 0162 060      07000 -093 007  A   06860 -079 130  A   04940 -171 100  A   03670 -453 027  F
                   03490 -465 042      03330 -441 060  A   02250 -477 130  A   02070 -537 110  F   00980 -523  *  A
                   00640 -515  *   A   00370 -555  *  A   00230 -569  *  A   00200 -525  *  A   00160 -573  *  A
                   00130 -561  *   A

15730   1200Z    41.63N    025.40E    ELEVATION    00241M          INST TYPE      12     RESERVED 9999990      RPT TYPE 011
   1000MB   -0024   *    *    * / *   A    01348 0068 060 265/010 AA A  02913 -041 060 265/016 II$I  05500 -179 120 275/026 AA A
    400MB   07130 -291 140 255/034 AA A  09120 -459 110 255/038 AA I  10320 -509 110 250/048 AA I  11760 -565 110  * / *  AA
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2. AFGWC

Offutt provided a complete list, by station, of all 1200Z raob data received and automatically processed by 1520Z on October 30, 1974. This listing showed the mandatory level data (heights, temperatures, depressions, winds) for thirteen constant pressure surfaces from 1000 thru 10 millibars. Figures 5a and 5b are samples of GWC's output.

3. FNWC

Monterey provided a list of block/station numbers from which raob "reports" had been received by 1600Z on October 30. An entry on the Monterey file indicated it was a dump for 4+00 (1600Z). Computer hardware/software problems prevented Monterey from summarizing its receipt statistics until 35 minutes after the preferred time of 1525Z. FNWC indicated that an additional 79 reports were received during the added 35 minute period. Figure 6 is a sample of FNWC's output.

4. Det. 7, 6th Weather Wing

Carswell provided a list of block/station numbers from which 1200Z, October 30, 1974 "TTAA" reports had been received. The Carswell listing was not coupled with a specific data collection cut off time. Instead, to the benefit of this study, each report was identified according to its communication source (Europe, Japan, Philippines, NMC, etc.) and the precise time of receipt at Carswell. This additional information was particularly useful for the study. Figure 7 is a sample of Carswell's output.

D. Analysis of Data Receipts

It is important for readers to understand the complications which may enter into a study of this type. This can make them aware of the dangers involved in reaching premature conclusions about statistical sampling information. Table 2 suggested that one center was obtaining approximately fifty percent more reports than another. A difference of this magnitude is highly suspicious. It would be very unusual to be "losing" an average of fifty percent of the available raob reports without it becoming obvious almost immediately. There are a number of safeguards used routinely at most centers to immediately identify such an occurrence. A detailed study of the summary for 1200Z on October 30 revealed the probable reasons for the major differences. For the October 30 study FNWC first indicated it had received 828 Part A raob reports. An initial supposition would logically be that Monterey had received Part A raobs, containing data, from 828 different stations around the world. Such was not the case.

Figure 5a

74 OCT 30 12Z

STATION	(211) 1000MB HHH	ST	STD	DDFFF	(146) 850MB HHH	ST	STD	DDFFF	(331) 700MB HHH	ST	STD	DDFFF	(557) 500MB HHH	ST	STD	DDFFF	(916) 300MB HHH	TT	DDFFF	(936) 250MB HHH	TT	DDFFF	(178) 200MB HHH	TT	DDFFF	LAT	LON
285542	///	///	///	/////	146	///	///	35012	///	///	///	/////	///	///	///	/////	///	//	/////	///	//	/////	///	//	/////	37	008
162352	235	///	///	35012	136	-24	-25	34010	286	-15	-17	34009	532	-33	-40	05010	875	49	03030	995	47	02018	144	46	02015	55	013
161819	232	236	04	/////	132	-24	-28	/////	282	-14	-16	/////	529	-32	-38	/////	872	51	/////	991	47	/////	142	46	/////	54	013
162628	///	///	///	/////	146	///	///	31014	301	///	///	34021	557	///	///	35021	916	//	36047	036	//	36039	178	//	36026	53	007
162383	///	///	///	/////	136	-25	-25	35016	286	-14	-16	31019	532	-34	-37	01014	875	46	36025	996	44	02019	146	46	02014	53	010
163079	///	///	///	/////	138	-26	-36	/////	288	-15	-18	/////	533	-33	-43	/////	877	48	/////	998	46	/////	146	48	/////	52	007
163332	234	///	///	/////	135	-24	-36	34014	285	-15	-21	36019	533	-34	-41	36016	873	48	01033	994	46	01025	143	46	01015	52	013
163343	232	///	///	/////	133	-23	-33	31024	284	-14	-16	27033	533	-33	-46	24012	874	49	14012	995	46	11006	143	46	01003	52	013
163736	232	///	///	/////	132	-24	-35	27016	282	-14	-16	26036	532	-31	-40	19012	873	50	17016	994	46	16008	143	44	20008	52	014
164235	235	237	04	34008	138	-24	-27	/////	289	-14	-17	/////	535	-32	-38	/////	879	52	/////	998	51	/////	145	47	/////	52	006
164127	237	///	///	/////	138	-24	-37	34012	288	-14	-22	36019	534	-33	-44	35024	876	49	01044	996	48	01039	144	47	36019	51	007
164353	233	///	///	/////	133	-25	-36	26012	283	-14	-17	27010	529	-34	-42	25008	872	51	16014	993	47	16036	138	46	27026	51	014
165368	234	///	///	/////	135	-25	-36	33017	285	-15	-17	33010	531	-34	-38	34014	871	50	01014	991	46	01014	140	46	36014	51	010
172618	237	///	///	/////	138	-25	-25	35013	287	-15	-16	36013	533	-34	-41	01017	875	49	01041	996	46	01030	144	47	01020	52	007
172737	237	///	///	/////	137	-26	-26	35015	286	-16	-22	32006	531	-34	-38	02019	872	48	35020	993	45	01018	142	46	35014	49	009
188662	235	///	///	/////	135	-25	-26	31018	285	-15	-18	32015	530	-35	-38	31010	872	50	27011	993	45	32016	142	47	30012	48	012
112353	234	///	///	/////	135	-24	-26	32012	286	-13	-23	28046	534	-31	-49	29031	877	51	18039	996	49	19025	144	47	22019	48	016
115224	234	///	///	/////	134	-24	-24	27008	287	-14	-16	25034	534	-31	-35	19008	879	49	19019	999	47	19010	148	45	23010	50	014
119342	232	///	///	/////	132	-24	-26	34004	284	-13	-21	27010	536	-26	-28	16019	886	54	16066	002	54	17056	147	50	19029	49	020
121203	///	///	///	/////	131	-21	-21	29004	281	-13	-13	/////	534	-27	-27	/////	882	52	13023	000	52	15019	149	46	19014	55	018
123363	233	///	///	/////	134	-23	-23	26012	285	-12	-15	25006	534	-34	-43	18012	881	50	19017	001	47	18002	149	48	20014	52	017
123743	///	///	///	/////	133	-24	-26	25013	283	-13	-20	24019	536	-27	-42	20047	885	51	20074	003	55	19058	146	51	20037	52	021
124256	233	///	///	/////	134	-24	-26	27014	285	-13	-17	27013	532	-32	-36	21014	876	52	20033	995	49	20023	142	47	21017	51	017
128433	232	///	///	/////	132	-23	-26	32016	283	-11	-19	02008	534	-27	-33	20008	882	54	16043	000	51	20033	146	49	20031	47	019
127623	///	///	///	/////	129	-25	-26	36019	281	-13	-17	33006	532	-26	-27	21021	880	51	18027	998	51	18027	145	48	21035	46	020
131390	232	///	///	/////	134	-24	-27	32012	285	-13	-22	36010	532	-30	-37	21017	877	52	21023	996	48	23017	144	46	24017	46	016
132752	///	///	///	/////	132	-24	-24	32012	282	-11	-13	28010	532	-31	-41	21016	877	51	19023	996	48	21031	144	47	22035	45	021
151233	-24	///	///	/////	127	022	31	11017	282	-06	-26	14027	537	-23	-23	16027	890	52	15051	010	55	/////	151	56	16054	47	024
154200	///	///	///	/////	133	077	25	22025	286	-02	-34	22025	544	-19	-22	21074	904	46	19047	023	55	22054	166	53	21064	45	026
154803	///	///	///	/////	136	039	36	19045	294	-02	-33	23039	553	-19	-23	23037	914	46	21056	033	54	23062	174	59	21074	44	029
156143	///	///	///	/////	128	///	///	34008	283	///	///	23037	539	///	///	23033	898	//	23074	018	//	22064	163	//	21062	43	023
157308	-02	///	///	/////	135	007	21	27012	291	-04	-12	27016	550	-18	-30	20025	912	46	26037	032	51	25047	176	57	/////	42	025
160440	002	///	///	/////	134	-02	-12	33006	286	-13	-21	36015	532	-33	-41	30014	874	51	26013	998	47	28010	142	46	28010	46	013
162600	004	///	///	/////	136	021	-15	34008	288	-13	-24	33014	534	-34	-42	28015	876	50	28013	000	46	31018	145	47	30011	45	009
162428	004	113	02	33007	137	021	-11	33007	292	-11	-25	32005	539	-31	-46	24020	883	48	25042	004	46	25035	152	48	26032	42	012
163222	001	113	04	/////	134	021	-15	26007	287	-11	-25	25019	535	-31	-43	25043	884	46	24090	006	50	24090	152	48	24047	41	018
165653	005	109	05	33007	137	004	-16	29007	292	-12	-14	26023	539	-33	-35	25048	887	47	26089	010	48	26057	155	47	26049	39	009
165762	007	///	///	/////	142	003	-22	25020	296	-04	-23	26044	554	-20	-35	26077	913	45	26115	032	53	26108	175	55	26099	36	014
172303	///	///	///	/////	146	///	///	21041	301	///	///	23027	557	///	///	22027	///	//	/////	///	//	/////	///	//	/////	41	036
172623	///	///	///	/////	142	012	08	21046	301	-01	-05	22053	562	-16	-27	22064	925	45	22056	044	55	22068	185	60	22069	41	029
171338	///	///	///	/////	147	014	08	/////	307	001	-03	/////	572	-12	-21	/////	943	39	/////	066	48	/////	210	55	/////	40	033
172400	///	///	///	/////	147	011	15	/////	305	-01	-17	/////	567	-17	-32	22044	930	44	23058	050	54	23074	192	58	23064	38	031
172801	///	///	///	/////	146	///	///	19026	301	///	///	23028	557	///	///	21040	///	//	/////	///	//	/////	///	//	/////	38	040
176033	013	024	16	/////	151	013	02	26013	311	004	-15	27022	575	-13	-36	25033	942	44	26053	062	52	26052	235	59	26062	35	033
202466	021	-14	-15	15016	145	-12	-15	05006	291	-21	-22	36015	535	-33	-35	35026	876	57	13026	993	63	04026	132	54	35038	81	058
201693	024	-22	-24	16023	145	-15	-26	12012	294	-21	-35	08012	533	-35	-46	04023	871	57	04031	987	55	04027	132	53	04016	82	077
202748	023	-21	-23	13025	143	-21	-25	13016	286	-24	-33	09019	526	-37	-43	08019	865	57	36023	981	54	05017	125	52	05016	78	082
202925	022	-2	-23	07023	144	-22	-21	08019	287	-24	-25	09021	528	-34	-35	12029	866	55	15047	982	56	14035	124	52	13019	78	104
203538	022	-13	-15	15019	144	-13	-15	12008	290	-21	-24	14014	532	-35	-41	02019	873	56	36033	988	56	01019	132	52	35016	77	069
206742	019	-22	-22	08016	141	-19	-25	01014	283	-27	-34	36023	521	-38	-48	35037	860	53	35033	978	50	35031	123	50	34021	74	080
207443	019	-32	///	22002	146	-11	-15	34010	293	-19	-23	36016	536	-35	-42	33019	873	58	27014	989	54	36014	133	51	29017	72	053
208801	021	-25	///	/////	121	-19	///	/////	265	-20	///	/////	511	-27	///	/////	000	//	/////	000	//	/////	000	//	/////	84	074
208602	008	-24	///	/////	129	-18	///	/////	273	-21	///	/////	518	-28	///	/////	000	//	/////	000	//	/////	000	//	/////	85	114
208003	012	-23	///	/////	133	-15	///	/////	279	-20	///	/////	523	-30	///	/////	000	//	/////	000	//	/////	000	//	/////	83	147
208224	-03	-28	///	/////	116	-23	///	/////	258	-23	///	/////	534	-27	///	/////	000	//	/////	000	//	/////	000	//	/////	78	075

Figure 5b

74 OCT 30 12Z

STATION	(361) 150MB HHH	TT	DDFFF	(618) 100MB HHH	TT	DDFFF	(844) 70MB HHH	TT	DDFFF	(958) 50MB HHH	TT	DDFFF	(985) 30MB HHH	TT	DDFFF	(1136) 10MB HHH	TT	DDFFF	TROP DATA PPP	HHH	TT	MAX WIND HHHH	DDFFF	LAT LO N
208205	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	287	000	73	////	/////	81 091
208206	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	249	000	73	////	/////	78 135
208007	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	249	000	73	////	/////	78 156
208008	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	231	000	73	////	/////	80 179
208009	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	287	000	73	////	/////	74 079
208011	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	231	000	73	////	/////	74 110
208012	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	199	000	73	////	/////	76-153
208013	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	249	000	73	////	/////	73-166
208014	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	287	000	73	////	/////	70 082
208015	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	199	000	73	////	/////	55 035
208016	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	000	//	/////	249	000	73	////	/////	57 047
208017	412	76	/////	643	80	/////	850	70	/////	855	63	/////	379	53	/////	196	45	/////	121	000	79	////	/////	-05 020
208018	408	76	/////	639	80	/////	845	70	/////	851	63	/////	373	55	/////	183	44	/////	132	000	82	////	/////	-03 030
208019	405	79	/////	634	81	/////	842	67	/////	849	59	/////	373	54	/////	185	44	/////	132	000	82	////	/////	-04 033
208021	412	75	/////	644	80	/////	850	70	/////	855	61	/////	378	52	/////	186	45	/////	120	000	81	////	/////	-09 019
208022	402	79	/////	632	78	/////	841	68	/////	848	59	/////	373	52	/////	197	46	/////	144	000	80	////	/////	-08 024
208023	402	80	/////	631	79	/////	843	67	/////	846	60	/////	369	54	/////	198	45	/////	144	000	81	////	/////	-09 031
208024	414	78	/////	645	78	/////	854	68	/////	860	61	/////	384	51	/////	116	45	/////	132	000	79	////	/////	-12 017
208025	405	75	/////	638	78	/////	846	70	/////	853	63	/////	371	54	/////	198	45	/////	144	000	76	////	/////	-12 023
208026	397	79	/////	629	76	/////	839	67	/////	846	61	/////	368	54	/////	194	46	/////	144	000	83	////	/////	-13 028
208027	402	77	/////	633	79	/////	841	69	/////	846	62	/////	367	55	/////	198	44	/////	132	000	79	////	/////	-12 033
208028	401	74	/////	635	77	/////	845	69	/////	848	63	/////	370	53	/////	188	44	/////	144	000	75	////	/////	-16 018
208029	399	80	/////	628	79	/////	835	71	/////	838	65	/////	358	54	/////	191	43	/////	144	000	81	////	/////	-17 021
208031	399	78	/////	635	78	/////	839	69	/////	844	62	/////	365	54	/////	194	45	/////	144	000	79	////	/////	-15 029
208032	407	74	/////	642	75	/////	852	69	/////	856	64	/////	376	54	/////	194	44	/////	144	000	75	////	/////	-18 018
208039	264	60	/////	519	57	/////	747	53	/////	967	48	/////	349	41	/////	172	33	/////	249	000	66	////	/////	-66-006
208041	268	66	/////	514	63	/////	736	59	/////	950	53	/////	285	45	/////	142	34	/////	249	000	70	////	/////	-69 012
208042	261	64	/////	510	61	/////	734	56	/////	951	51	/////	289	43	/////	152	32	/////	249	000	69	////	/////	-70 003
208043	269	68	/////	513	65	/////	733	60	/////	945	55	/////	279	46	/////	138	32	/////	249	000	68	////	/////	-71 014
208910	328	59	10010	572	52	06010	///	//	/////	///	//	/////	///	//	/////	///	//	/////	420	060	49	////	/////	72-102
213580	321	56	09002	581	54	17004	///	//	/////	///	//	/////	///	//	/////	///	//	/////	222	147	67	1049	36035	76-153
214320	324	58	18010	582	55	18010	///	//	/////	///	//	/////	///	//	/////	///	//	/////	287	174	65	////	/////	76-138
215040	318	52	15019	581	52	13014	///	//	/////	///	//	/////	///	//	/////	///	//	/////	291	944	55	0841	16072	75-113
216470	322	59	09008	579	55	13006	///	//	/////	///	//	/////	///	//	/////	///	//	/////	196	207	67	////	/////	73-144
218243	318	57	12033	576	55	16019	///	//	/////	///	//	/////	///	//	/////	///	//	/////	///	///	//	1026	18060	72-129
219458	324	57	04041	583	53	09016	///	//	/////	///	//	/////	///	//	/////	///	//	/////	218	092	65	////	/////	71-148
219655	321	53	09019	583	52	/////	///	//	/////	///	//	/////	///	//	/////	///	//	/////	307	914	56	////	/////	71-162
219825	318	51	11025	582	51	11025	///	//	/////	///	//	/////	///	//	/////	///	//	/////	296	938	58	////	/////	71 179
221133	327	53	26019	587	57	25023	///	//	/////	///	//	/////	///	//	/////	///	//	/////	305	897	58	////	/////	69-033
222170	333	52	23016	591	55	23025	///	//	/////	///	//	/////	///	//	/////	///	//	/////	297	917	56	////	/////	67-032
222710	335	51	26025	///	//	/////	///	//	/////	///	//	/////	///	//	/////	///	//	/////	307	906	56	1001	27029	68-044
225220	341	50	27029	605	53	27019	///	//	/////	///	//	/////	///	//	/////	///	//	/////	252	038	57	0691	25070	65-035
228020	339	51	23021	///	//	/////	///	//	/////	///	//	/////	///	//	/////	///	//	/////	///	///	//	////	/////	62-031
228200	336	52	24027	597	54	23027	///	//	/////	///	//	/////	///	//	/////	///	//	/////	265	968	59	1057	22056	62-034
228450	342	54	25031	602	54	23029	///	//	/////	///	//	/////	///	//	/////	///	//	/////	247	042	61	////	/////	62-039
232223	321	53	29021	583	54	29029	///	//	/////	///	//	/////	///	//	/////	///	//	/////	314	090	55	////	/////	72-062
232930	///	//	/////	///	//	/////	///	//	/////	///	//	/////	///	//	/////	///	//	/////	///	///	//	////	/////	68-053
233305	327	52	29033	593	54	30029	///	//	/////	///	//	/////	///	//	/////	///	//	/////	311	891	57	0995	28039	67-067
234725	315	52	32027	576	54	33027	///	//	/////	///	//	/////	///	//	/////	///	//	/////	///	///	//	////	/////	66-088
235520	367	//	31029	625	//	31037	///	//	/////	///	//	/////	///	//	/////	///	//	/////	356	766	53	////	/////	65-078
238840	324	54	32043	584	56	33043	///	//	/////	///	//	/////	///	//	/////	///	//	/////	///	///	//	0899	30080	62-090
239210	341	56	28041	597	60	28021	///	//	/////	///	//	/////	///	//	/////	///	//	/////	222	110	61	////	/////	61-060
239330	339	56	30039	596	57	30035	///	//	/////	///	//	/////	///	//	/////	///	//	/////	253	017	62	1098	29064	61-069
239550	343	54	33039	623	55	31033	///	//	/////	///	//	/////	///	//	/////	///	//	/////	247	027	57	0999	29068	60-078
242660	///	//	/////	///	//	/////	///	//	/////	///	//	/////	///	//	/////	///	//	/////	///	///	//	////	/////	68-133

Figure 6

117	39.3	N	114,9	W	72480	118	39,1	N	108,5	W	72476
119	39.8	N	104,9	W	72469	120	39,1	N	95,6	W	72456
121	37.8	N	100,0	W	72451	122	38,7	N	89,0	W	72433
123	39.9	N	84,1	W	72429	124	38,4	N	82,6	W	72425
125	38.4	N	81,8	W	72414	126	39,0	N	77,5	W	72405
127	37.9	N	75,5	W	72402	128	34,8	N	100,6	W	72393
129	37.0	N	116,1	W	72385	130	34,9	N	117,9	W	72381
131	35.2	N	101,7	W	72363	132	35,2	N	97,5	W	72357
133	36.9	N	93,9	W	72349	134	34,7	N	92,2	W	72340
135	36.3	N	86,6	W	72327	136	36,1	N	80,0	W	72317
137	34.0	N	83.3	W	72311	138	35,3	N	75,6	W	72304
139	32.8	N	117,1	W	72290	140	38,1	N	110,9	W	72274
141	31.8	N	106,4	W	72270	142	31,9	N	104,2	W	72265
143	29.4	N	100,9	W	72261	144	32,2	N	98,2	W	72260
145	28.9	N	96,9	W	72255	146	25,9	N	97,4	W	72250
147	32.5	N	93,8	W	72248	148	32,5	N	93,8	W	72246
149	29.8	N	95,4	W	72243	150	30,1	N	93,2	W	72240
151	32.3	N	90,1	W	72235	152	29,3	N	89,4	W	72232
153	33.6	N	86,8	W	72228	154	32,3	N	86,4	W	72226
155	32.3	N	86,4	W	72226	156	32,3	N	86,4	W	72226
157	29.7	N	85,0	W	72220	158	31,3	N	82,4	W	72213
159	28.0	N	82,5	W	72211	160	32,9	N	80,0	W	72208
161	25.8	N	80,3	W	72202	162	24,6	N	81,7	W	72201
163	51.9	N	176,7	W	70454	164	52,7	N	174,1	E	70414
165	52.7	N	174,1	E	70414	166	57,8	N	192,5	W	70350
167	58.7	N	156,7	W	70326	168	55,2	N	162,7	W	70310
169	57.2	N	170,2	W	70308	170	61,2	N	150,0	W	70273
171	64.8	N	147,4	W	70261	172	63,0	N	195,6	W	70231
173	60.8	N	161,8	W	70219	174	64,5	N	165,4	W	70200
175	70.1	N	143,6	W	70086	176	71,3	N	190,8	W	70026
177	46.9	S	37,9	E	68994	178	30,0	S	31,0	E	68568
179	29.1	S	26,3	E	68442	180	5,3	N	3,9	W	65978
181	32.7	N	13,2	E	62010	182	37,9	S	97,5	E	61956
183	8.0	S	14,4	W	61902	184	19,7	N	17,5	W	61641
185	20.9	N	17,1	W	61415	186	12,6	N	8,0	W	61250
187	16.7	N	3,0	W	61223	188	36,8	N	10,2	E	60715
189	22.8	N	5,5	E	60680	190	33,7	N	2,3	W	60571
191	36.7	N	3,2	E	60390	192	33,6	N	7,7	W	60155
193	28.5	N	16,3	W	60020	194	16,8	N	112,3	E	59981
195	16.8	N	112,3	E	59981	196	16,8	N	112,3	E	59981
197	20.0	N	110,4	E	59758	198	20,0	N	110,4	E	59758
199	20.0	N	110,4	E	59758	200	21,9	N	112,0	E	59663
201	21.9	N	112,0	E	59663	202	21,9	N	112,0	E	59663
203	22.8	N	108,4	E	59431	204	22,8	N	108,4	E	59431
205	22.8	N	108,4	E	59431	206	22,8	N	108,4	E	59431
207	23.4	N	116,7	E	59310	208	23,4	N	116,7	E	59310
209	23.1	N	113,3	E	59287	210	23,5	N	111,3	E	59265
211	23.5	N	111,3	E	59265	212	23,9	N	106,5	E	59211
213	23.9	N	105,5	E	59211	214	23,9	N	106,5	E	59211
215	24.5	N	118,1	E	59134	216	24,5	N	118,1	E	59134
217	24.5	N	118,1	E	59134	218	24,4	N	114,5	E	59096
219	24.4	N	114,5	E	59096	220	24,7	N	108,1	E	59023
221	24.7	N	108,1	E	59023	222	24,7	N	108,1	E	59023
223	24.7	N	108,1	E	59023	224	26,1	N	119,3	E	58847
225	26.1	N	119,3	E	58847	226	26,1	N	119,3	E	58847
227	26.1	N	119,3	E	58847	228	26,1	N	119,3	E	58847
229	27.7	N	118,0	E	58725	230	27,7	N	118,0	E	58725
231	27.7	N	118,0	E	58725	232	28,5	N	121,9	E	58660
233	28.5	N	121,9	E	58660	234	29,0	N	118,9	E	58633
235	29.0	N	118,9	E	58633	236	28,7	N	116,0	E	58606
237	28.7	N	116,0	E	58606	238	28,7	N	116,0	E	58606
239	28.7	N	116,0	E	58606	240	30,2	N	120,2	E	58457
241	30.2	N	120,2	E	58457	242	30,2	N	120,2	E	58457
243	30.2	N	120,2	E	58457	244	30,5	N	117,0	E	58424
245	30.5	N	117,0	E	58424	246	30,5	N	117,0	E	58424
247	30.5	N	117,0	E	58424	248	[illegible]	N	[illegible]	E	[illegible]

Figure 7

SURVEY DATE: 30 OCT 74 SURVEY CLT: C24 DATA TYPE: TTAA OBSERVATION TIME: 12Z REQUESTER: WELCH# PAGE 4

CLT = SOURCE OF CLT IN ALPHABETICS (C = CARSWELL, E = ENGLAND, J = JAPAN, P = PHILLIPINES) FOLLOWED BY CLT NUMBER
TOR = TIME OF RECEIPT. (WHEN TOR >23:59, OBS WAS RECEIVED DURING THE NEXT DAY AT TOR - 24:00) EX: 26:30 = NEXT DAY AT 02:30Z
+ = MORE OBSERVATIONS WERE RECEIVED FOR THIS WMO-NR THAN THERE WAS ROOM TO PRINT
U = WMO NR WAS RECEIVED UNIQUELY FROM THE SURVEY SOURCE

WMO NR.	SURVEY +U	TOR	SOURCE 1 TOR	CLT	SOURCE 2 TOR	CLT	SOURCE 3 TOR	CLT
599810			1418	J05	1418	J19	1515	J05
603900			1502	E30	1826	E42	2208	E48
606800+		N	1501	E30	1820	E42	1943	E48
612230		1345	2214	E48				
616410+		1330	1556	C24	1919	E40	1945	E00
620100+			1418	E30	1418	E30	1450	E30
637050*			2200	E48				
650460*			2014	E41	2200	E48		
68112 Sigs OK at NMC 684420	U	1306						
700260	U	1400	1405	C24				
702190	U	1400	1405	C24				
702730	U	1400	1403	C24	1405	C24		
703260	U	1400	1405	C24				
703980	U	1557*	M	N				
722010+			1347	C65	1348	C66	1348	C43
722110		1406	1351	C07				
722260		1406	1351	C07	1351	C07		
722350		1406	1353	C07				
722480		1406	1353	C07				
722600			1353	C07				
722700		1406	1353	C07	WMSC (FAA)			
72295 Path OK at NMC 723040		1406	1353	C07				
723270		1406	1353	C07				
723570			1353	C07				
723740	U	1557	N					
723910*	M	N	1739	C07				
724030		1406	1312	C40	1354	C07		
724290		1406	1354	C07				
724560		1406	1354	C07				
724860		1406	1354	C07				
725200		1406	1354	C07				
725340			1446	C07				
725720		1407	1354	C07				
725970		1406	1354	C07				
726370		1407	1354	C07				
726550		1406	1355	C07				
726940		1407	1355	C07				
727220		1318	1407	C24	1445	C40		
727640		1407	1355	C07				
727850		1406	1355	C07				
728010	U	1314	1407	C24				
728480	U	1319	1407	C24	72853 OK at NMC			
729070	U	1359			72906 OK at NMC			
729170*	U	1557	N 1621	C24	72926 OK at NMC			
729340	U	1345	1407	C24				
729430*	U	2101	N 2118	C24	2209	C24		
729740*	M	1556	N 1557	C24	74081 OK at NMC			
741190		1354	1407	C24	1448	C40	74339 OK at NMC	
747940			1332	C78	76151 OK at NMC			
766790	U	1354						
781180	N	1544	1333	C78				

WMO NR.	SURVEY +U	TOR	SOURCE 1 TOR	CLT	SOURCE 2 TOR	CLT	SOURCE 3 TOR	CLT
*600200+			1436	E06	1440	E30	1525	F30
*605710+		1404	N 1417	E30	1812	E02	1820	F59
*607150+	N	1402	1406	E30	1812	E02	1816	F42
*612900		1303	1826	E42	1945	E48	2214	F48
*619020		1544	1333	C78				
627210	M	N	1837	E59				
646500			1903	E42				
654180	U	1557	M	N				
*685880	U	1309			68816 Sigs - OK at NMC			
*700860	U	1400	1403	C24	1405	C24		
*702310	U	1400	1405	C24				
*703080		1400	1405	C24	1706	J69		
*703500		1400	1405	C24	1706	J69		
*704140+		1330	1324	C72	1405	C24	1706	J69
*722020		1406	1351	C07				
*722130		1406	1351	C07				
*722280			1444	C07				
*722400		1406	1353	C07				
*722500		1406	1353	C07				
*722610		1406	1353	C07				
*722740		1406	1353	C07				
*723110		1406	1353	C07				
*723400		1406	1353	C07				
*723630			1412	C07				
*723810+		N	1313	C93	1314	C82	1316	C81
*723930		1807	1354	C07	1517	C07		
*724140			1354	C07				
*724330		1406	1354	C07				
*724690		1406	1354	C07				
*724930		1406	1354	C07				
*725280		1406	1354	C07				
*725530		1406	1354	C07				
*725760		1407	1354	C07				
726000	U	1645	N 1807	C24				
*726450		1406	1355	C07				
*726620		1406	1355	C07				
*727010	U	1333	1343	C24				
*727340		1406	1355	C07				
*727680		1406	1355	C07				
727930+	M	N	1614	C81	1614	C65	1614	C66
*728110	U	1356	1407	C24	72815 OK at NMC			
*728670		1333	1407	C24	1444	C40	72816 OK at NMC	
*729090	U	1353	1407	C24	72913 OK at NMC		72826 OK at NMC	
*729240	U	1259	1407	C24				
*729450	U	1256	1407	C24	72957 OK at NMC			
*740510	U	1348	1356	C24	1407	C24	1550	C24
*740820	M	U 1557*	1614	C24	74115 Part A probably garbled everywhere			
*744860		1406	1355	C07				
*762250	U	1354	76256, 394, 458 OK at NMC					
*766920	U	1354						
*783670		1557	1342	C42				

WMO NR.	SURVEY +U	TOR	SOURCE 1 TOR	CLT	SOURCE 2 TOR	CLT	SOURCE 3 TOR	CLT
*60155n+		1404	1417	F30	1812	E02	1816	F42
60630n	N	1706	1641	C42				
61052n	M		1826	F42	OK at NMC (Sigs)			
*61415n		1226	1830	F42				
*61996n	U	1310						
628400	M	N	1834	F59				
647000			1834	F42				
*65578n		1253	1727	E40	1826	E42	2214	E48
*68994n	U	1330						
*70200n		1400	1403	C24	1405	C24	1706	J69
*70261n	U	1400	1405	C24				
*70316n	U	1400	1557	C24				
70361n	U	1557	M	N				
*70454n+		1354	1400	C24	1405	C24	1706	J69
*72208n		1406	1351	C07				
*72220n			1509	C65	1513	C81	1617	C43
*72232n		1406	1353	C07				
*72243n			1445	C07				
*72255n		1406	1353	C07				
*72265n		1557	1409	C07				
*72290n			1353	C07				
*72317n		1406	1353	C07				
*72349n		1406	1353	C07				
72365n	M	1806	N 1354	C07				
*72385n		1406	1354	C07				
*72402n		1406	1354	C07				
*72425n		1406	1354	C07				
*72451n		1406	1354	C07				
*72476n+			1446	C66	1452	C81	1456	C65
*72518n		1406	1354	C07				
*72532n		1406	1354	C07				
*72562n		1557	1412	C07				
*72583n		1407	1354	C07				
*72606n		1406	1354	C07				
*72654n		1406	1355	C07				
*72681n		1406	1355	C07				
*72712n		1406	1355	C07				
*72747n		1406	1355	C07				
*72775n		1557	N 1412	C07				
*72797n		1406	1355	C07	1715	E02		
*72836n		1356	1407	C24	1447	C40		
*72896n		1346	1407	C24	1449	C40		
*72915n	U	1356	1407	C24				
*72925n	U	1356	1407	C24				
*72964n	U	1333	1407	C24				
74072n	M	M 1557						
*74109n		1356	1407	C24	1446	C40		
*744940+			1421	C43	1441	C65	1442	C81
*766440	U	1354	1544	C24				
*780160	N	1557	1533	C35				
*783840		1322	1326	C07	1544	C24		

Monterey said 79 Part A raobs were receiver after 3+25. Actually, it appears that only 15 validated reports were received between 1525Z and 1600Z when the FNWC "dump" was done. This reduced Monterey's count to 813. Of the 813, there were 247 duplicates which further reduced the count to 566. Excluding nine ship reports (only land stations were being considered in this study) brought Monterey's final count to 557. There were 40 validated reports Monterey did not receive.

Since GWC's listing included the raob data, it was relatively easy to evaluate. Although data types other than Part A raobs were included by GWC, most could be easily identified. A large number of reports in Offutt's output contained no 1000 mb heights. This introduced some question as to their validity whenever NMC's listing did not contain a comparable report. Each of these were eventually resolved, however, before the final tallies were made. It was found that GWC lacked 42 of the 597 validated raobs thereby limiting their final count to 555. Many of these missing reports were not the same ones that Monterey lacked as appendix 1 shows. GWC's listing also included what appeared to be at least 33 fictitious (bogus) reports which were not counted in this study. They were listed as multiples from four Russian stations:

20800	suffix 1-9
20801	suffix 1-9
20802	suffix 1-9
20803	suffixes 1, 2, and 9
20804	suffix 1-3

These are shown in Figure 5. There is no record of the existence of any such stations.

Carswell's listing indicated the source and time of receipt of each report. Carswell's listing did not contain data. There were clear indications that many reports listed by Carswell either were not Part A (TTAA) raobs or, if they were, they contained no data, as Figure 3 shows. According to the description of the logic in Carswell's program for counting Part A raobs, each of the NIL reports would be counted as a received report, which in fact it is. Yet the 11 "NILs" shown in Figure 3 are essentially useless to an analysis center because no data are included. Including such reports in a survey of data availability can be misleading if not adequately defined. Carswell's final count of validated reports was 571, with 26 reports not accounted for. Figure 8 is a sample of Carswell's summary of receipt by WMO Block incremented into cumulative totals for twenty minute periods from 1200Z to 1600Z. Column J shows the total TTAA's received by 3+20 (563) corresponding very closely to Carswell's validated count at 3+25 (571). Figure 1 is a graph of the totals from Figure 8.

Figure 8

TTAA - 122 OBSERVATION RECEIPT STATISTICS FOR 30 OCT 74 PAGE 5

A=0-20 B=20-40 C=40-1H D=1H-1H20 E=1H20-1H40 F=1H40-2H G=2H-2H20 H=2H20-2H40 I=2H40-3H J=3H-3H20 K=3H20-3H40 L=3H40-4H M=4H-6H N=+6

TIME OF RECEIPT AFTER OBSERVATION TIME

BLOCK	A	B	C	D	E	F	G	H	I	J	K	L	M	N
00														
01							2	6	6	6	6	6	6	6
02				1	4	7	8	9	9	9	9	9	9	9
03					8	9	9	9	10	10	10	10	11	11
04				1	1	3	6	7	7	7	7	7	7	7
05														0
06	1	2	3	5	5	6	6	6	6	6	6	6	6	6
07					2	7	7	7	7	7	7	7	7	7
08					4	6	6	6	6	6	6	6	8	8
09														0
10			1	6	6	10	14	14	14	14	14	14	14	14
11			1	1	1	1	1	3	3	3	3	3	3	3
12						1	2	3	6	6	6	6	6	6
13					1	1	1	2	2	2	2	2	2	2
14														0
15							3	4	4	4	4	4	5	5
16							1	6	6	6	7	7	7	7
17							3	3	3	3	3	3	4	4
18														0
19														0
20						7	8	8	8	8	8	8	10	10
21					7	8	8	8	8	8	8	8	8	8
22								3	6	7	7	8	8	8
23						4	7	8	8	8	8	11	12	12
24						3	7	10	10	10	10	10	10	10
25					7	10	12	12	12	12	12	13	14	14
26							2	4	4	5	5	5	10	10
27							2	2	4	5	5	7	8	8
28						1	5	8	8	8	8	8	8	8
29						4	8	8	8	8	8	8	8	8
30						8	11	13	13	13	13	13	13	13
31					1	6	8	9	13	13	13	14	14	14
32					4	4	9	10	10	10	10	10	10	10
33							5	5	8	10	10	10	11	11
34							1	3	8	9	9	9	9	9
35							2	6	8	9	9	9	9	9
36								4	7	7	7	7	7	7
37									1	1	1	3	6	6
38							3	6	13	13	13	13	13	14
39														0
40			1	1	1	1	1	2	2	3	3	6	9	13
41														0
42								3	5	5	5	5	7	7
43													1	2
44								1	2	2	3	3	7	7
45											1	1	1	1
46						1	2	3	3	3	3	3	3	3
47					7	17	18	21	22	22	23	23	23	23
48			1	1	4	4	4	4	6	6	6	6	6	6
49														0

TIME OF RECEIPT AFTER OBSERVATION TIME

BLOCK	A	B	C	D	E	F	G	H	I	J	K	L	M	N
50							2	3	3	3	4	4	4	4
51							9	10	10	10	11	11	11	11
52							7	9	9	10	12	13	13	13
53							7	7	7	7	9	10	10	10
54							11	11	11	12	12	12	12	12
55							1	1	1	1	2	2	2	2
56							5	15	15	15	18	18	18	18
57							16	17	17	17	17	17	17	17
58							12	12	12	12	12	13	14	14
59							11	11	11	11	11	12	13	13
60							3	4	4	6	6	6	7	7
61		1	1	3	5	6	6	6	6	6	6	6	6	7
62							1	1	1	1	1	1	1	3
63														1
64														2
65			1	1	1	1	1	1	1	1	1	2	2	3
66														0
67														0
68				2	3	3	3	3	3	3	3	3	3	3
69														0
70					1	2	13	13	13	13	13	15	15	15
71														0
72			2	7	10	79	83	83	87	88	88	90	93	93
73														0
74					1	5	5	6	6	6	6	9	9	10
75														0
76						4	4	4	4	4	4	4	4	4
77														0
78				1	8	9	10	10	12	12	13	15	15	15
79														0
80									1	2	2	2	2	2
81													1	1
82							1	1	1	1	1	1	5	6
83													3	6
84											1	1	1	1
85										2	2	3	3	3
86														0
87						5	6	6	7	7	8	9	9	9
88													1	1
89									1	1	2	2	3	6
90														0
91			2	3	6	6	7	8	8	8	8	8	8	8
92														0
93		1	3	4	4	4	4	4	4	4	4	4	4	4
94													1	2
95														0
96									1	1	1	1	1	1
97														0
98				1	1	1	1	1	1	1	1	1	1	1
99					1	4	4	4	4	4	4	5	6	6

TOTALS														
	1	4	16	38	104	258	425	497	547	563	581	611	658	680

TTAA - 122 30 OCT 74

At NMC the data cut off actually occurred slightly before 1523Z (1522.8Z to be precise). The NMC list contained 553 validated reports. NMC was missing 44 reports, 37 apparently lost as a result of an ongoing software problem at NMC. Automation Division indicates that this rather serious problem can be corrected soon. At the moment a program designed to automatically correct the processing library is being checked prior to operational implementation.

Nearly half (about 45%) of the reports not available at GWC and FNWC were ones not received by Carswell either. These were all from WMO Regions III, IV, and V (North America, South America, and Australia). It is believed that Carswell relies on Washington for relay of most of these data. Another 23 reports (58%) missing at GWC and/or FNWC were received by Carswell either after or within five minutes preceding the 1525Z deadline agreed to. Altogether this accounts for 93% of GWC's and FNWC's losses, the remaining 7% apparently being random and possibly attributable to garbling, report errors, software problems, etc. This does not explain why NMC had the data in ample time and Carswell didn't. If a full exchange of raobs between Carswell and NMC is supposed to be made routinely to ensure that each center obtains all data, perhaps there was some delay in accomplishing certain relays.

E. Conclusions

Slightly less than 75% of the Part A raob data scheduled to be provided by the worldwide network at 1200Z were available at major U.S. analysis centers with 3 1/2 hours. Of the reports validated as available with data, about 7% (40 of 600) were not received or processed by at least one center. Overall, each center had about the same number of reports at a 3 1/2 hour deadline although specific losses varied from center to center.

F. Recommendations

Perform quarterly surveys of this type to identify and correct problem areas. Each three months the survey could be performed by a different center.

Monitor ADP at NMC to ensure that software problems are not causing large scale long lasting losses of data, such as this study revealed.

Monitor and control the total exchange of raob data between NMC and Carswell to ensure that neither hub is being deprived of available data.

Develop automated programs at NMC and Carswell to interrogate each other's computers for missing data.

APPENDIX I

PART A RAOB REPORTS

PROCESSED BY

NMC, GWC, FNWC AND CARSWELL

(1200Z REPORTS— WITH DATA— AVAILABLE BY 1525Z, OCTOBER 30, 1974)

* BLANK — PROCESSED

* X— NOT PROCESSED

FORM 59-4

STA BK. NO	NMC	GWC	MTY	CARSWELL	T.O.R. CARSWELL	STA. BK. NO	NMC	GWC	MTY	CARSWELL	T.O.R. CARSWELL
72701					1333	78384					1322
72712					1355	78397					1451
72722					1318	78486					1335
72734					1355	78501					1302
72747					1355	78526					1328
72764					1355	78762					1336
72768					1355	78806					1402
72775	X				1412	78861					1333
72785					1355	78866		X	X		1547
72797					1355	78897					1450
72801		X			1314	78970					1544
72811					1356	78988					1327
72815		X	X	X		80001					1507
72816		X	X	X		80222					1452
72826		X	X	X		80413		X	X	X	
72836					1356	80447		X	X	X	
72848					1319	82193					1415
72853		X	X	X		82983		X	X	X	
72867					1333	83840		X	X	X	
72896					1346	85543					1506
72906			X	X		85799					1504
72907					1359	87047					1351
72909					1353	87344					1353
72913		X	X	X		87418	X				1352
72915					1356	87576					1449
72924					1259	87715					1349
72925					1356	87748					1540
72926			X	X		89611					1458
72934					1345	91066					1437
72945					1256	91165					1320
72957			X	X		91217					1302
72964					1333	91245					1252
74051					1348	91275					1328
74081		X	X	X		91285					1407
74109					1356	91366					1242
74119					1354	91765					1333
74399		X	X	X		93119			X	X	
74486					1355	93780					1250
74494					1421	93844					1222
74794					1332	93944					1316
76151		X	X	X		93997					1255
76225					1354	94612		X	X	X	
76256		X	X	X		94865		X	X	X	
76394		X	X	X		94975		X	X	X	
76458		X	X	X		96471					1453
76644					1354	98321					1302
76619					1354						
76692					1354						
78118	X				1333						
78367					1342						

FORM 59-4

STA BK. NO.		NMC	GWC	MTY	CARSWELL	T.O.R. CARSWELL		STA BK NO.		NMC	GWC	MTY	CARSWELL	TOR CARSWEL
01001				X		1428		10035		X				1303
01028						1422		10184		X				1353
01152						1420		10238		X				1417
01241						1420		10307		X				1405
01384						1411		10338		X				1303
01415						1411		10384		X				1243
02057						1434		10398		X				1353
02062						1400		10404		X				1405
02066						1337		10410		X				1303
02077						1335		10486		X				1348
02084						1337		10548		X				1353
02160						1318		10618		X				1417
02836						1345		10739		X				1303
02935						1348		10866		X				1303
02963						1351		11035		X				1241
03005						1335		11520		X				1428
03026						1335		11934		X				1432
03170						1335		12120		X				1448
03322						1335		12330		X				1450
03496						1335		12374		X				1438
03743						1355		12425		X				1446
03774						1335		12843		X				1348
03808						1335		12982		X				1418
03920						1335		13130						1339
03953						1440		13275						1438
04018						1432		15120						1412
04220						1353		15420						1412
04270						1353		15480						1412
04320						1404		15730						1430
04340						1404		16044						1432
04360						1404		16080						1432
06011						1341		16242						1432
06181						1315		16320						1432
06260						1330		16560						1432
06447						1224		16596						1405
06476						1243		16716			X			1530
06610						1206		17240						1417
07110						1343		17603						1417
07145						1341		20046		X				1350
07180						1330		20069						1350
07480						1348		20274						1350
07510						1335		20292						1350
07645						1343		20353						1350
07761						1341		20654						1350
08001						1327		20744						1405
08221						1331		20891						1350
08302						1327		21358						1328
08495						1334		21432						1328
08509						1344		21504						1326
08536						1351		21647						1328

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STA. BK. NO.	NMC	GWC	MTY	CARSWELL	TOR CARSWELL	STA BK. NO	NMC	GWC	MTY	CARSWELL	TOR CARSWELL
21824					1328	26702					1432
21946					1326	26781			X	X	1631
21965					1337	26850					1432
21982					1337	27037			X		1546
22113					1446	27196					1454
22217					1444	27553					1454
22271					1434	27595					1416
22522					1504	27612			X		1515
22802					1452	27707			X	X	1551
22820					1436	27731			X	X	1626
22845	X				1436	27962					1411
23022					1405	28225					1405
23205			X		1547	28275					1402
23330					1342	28440					1403
23418		X			1546	28661					1428
23472					1344	28698					1342
23552					1402	28722					1478
23864		X			1546	28900					1416
23884					1344	28952					1426
23921					1429	29231					1340
23933					1402	29263					1418
23955					1340	29282					1403
24266					1424	29574					1342
24343					1424	29634					1340
24507					1344	29698					1342
24641					1418	29838					1417
24688					1424	29865					1417
24726					1417	30054					1342
24817					1342	30230					1402
24908					1344	30309					1418
24944					1418	30372					1355
24959					1418	30521					1417
25042					1330	30554					1357
25123					1337	30635					1425
25358					1337	30673					1425
25400					1418	30692					1354
25551					1342	30710					1342
25563					1342	30758					1357
25594					1337	30985					1357
25677					1342	30965					1357
25703					1334	31004					1424
25822					1324	31088					1334
25913					1334	31168					1354
25954					1418	31300					1354
26038					1424	31329					1447
26063					1442	31369					1354
26258		X	X		1640	31538					1359
26298		X	X		1655	31561					1444
26422		X	X		1628	31735					1354
26477					1501	31770					1444

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STA. BK. NO.		NMC	GWC	MTY	CARSWELL	TOR CARSWELL		STA. BK NO.		NMC	GWC	MTY	CARSWELL	TOR CARSWELL
31873						1403		37789			X	X		1546
31909						1403		38062						1442
31960						1443		38341						1555
32061						1408		38353						1448
32098						1417		38392						1426
32150						1426		38413						1448
32165						1403		38457						1417
32186		X				1403		38567						1429
32217						1403		38613			X	X		2083
32389						1338		38750						1446
32477						1335		38836						1447
32540						1338		38879		X				1426
32618						1338		38880						1448
33008						1400		38927						1418
33041						1400		40179						1256
33345						1416		40265						1426
33398						1440		40400			X			1546
33681						1440		40477			X			1546
33658						1502		40564			X			1502
33791			X			1519		42182						1426
33815						1416		42410						1426
33837						1416		42809						1440
33946						1440		42971						1440
34009						1434		44292						1440
34122						1434		44373						1439
34172						1424		46692						1420
34247						1448		46747						1348
34300						1440		47122						1346
34560						1456		47138						1453
34731						1456		47401						1346
34858						1456		47412						1346
34886						1504		47420						1325
35108						1433		47580						1401
35121						1416		47582						1346
35229						1419		47590						1346
35361						1509		47600						1346
35394						1422		47646						1325
35700						1442		47678						1325
35746						1423		47681						1420
35796						1422		47744						1325
36003						1455		47778						1325
36096						1428		47867						1325
36177						1422		47827						1346
36259						1427		47909						1354
36859						1455		47918						1346
36870						1422		47936						1325
36974						1448		47945						1423
37018			X	X		1636		47971						1351
37084						1456		47991						1423
37549			X	X		1546		48327						1325

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STA BK. NO.	NMC	GWC	MTY	CARSWELL	T.O.R. CARSWELL	STA BK. NO.	NMC	GWC	MTY	CARSWELL	T.O.R. CARSWELL
48354					1252	54823					1417
48455					1337	54867					1417
48568					1325	56029	X				1433
48601					1451	56096					1419
48647					1452	56247					1419
50527					1433	56294					1421
50557					1417	56492					1420
50774		X			1521	56571	X				1418
50953					1407	56651	X				1428
51076					1407	56739	X				1421
51139					1419	56778	X				1420
51243					1419	56964	X				1429
51431					1417	56989	X				1429
51463					1417	57036					1403
51644					1412	57083					1407
51656					1420	57127					1418
51709					1417	57178					1407
51777					1417	57245					1419
51828					1407	57328		X			1428
52203					1403	57411					1419
52267		X			1521	57447					1418
52323					1407	57461					1403
52418					1515	57494					1403
52495	X				1428	57515					1418
52533					1417	57679					1418
52602					1419	57745					1403
52652		X			1543	57816					1403
52681		X			1527	57957					1407
52818					1407	57972					1418
52836	X				1417	57993					1403
52866					1407	58027					1418
52889					1433	58150					1407
53068					1417	58203					1418
53463					1417	58238					1417
53513					1407	58367					1417
53543					1419	58424					1418
53772					1417	58457					1407
53798					1419	58606					1418
53845					1418	58638					1403
53915		X			1521	58666					1406
54102					1417	58725					1407
54135					1407	58847					1417
54161					1417	59023		X			1419
54218					1412	59096					1419
54292					1407	59134					1418
54342					1417	59211	X				1418
54374	X				1515	59265					1418
54401					1419	59287					1418
54511					1417	59316					1418
54662					1417	59431					1417

FORM 59-4

STA BK. NO.	NMC	GWC	MTY	CARSWELL	TOR CARSWELL	STA BK. NO.	NMC	GWC	MTY	CARSWELL	TOR CARSWELL
59663					1419	72260					1353
59758					1404	72261					1353
59981					1418	72265					1409
60020					1436	72270					1353
60155					1404	72274					1353
60390					1502	72290					1353
60571	X				1404	72295		X	X		1353
60715	X				1402	72304					1353
61052			X		1826	72311					1353
61223					1345	72317					1353
61290					1303	72327					1353
61415					1226	72340					1353
61641					1330	72349					1353
61902					1333	72357					1353
61996					1310	72363					1412
62010					1418	72381					1313
65578					1253	72385					1354
68112			X	X		72393					1354
68442	X				1306	72402					1354
68588					1309	72403					1312
68816			X	X		72408			X	X	
68994					1330	72414					1354
70026					1400	72425					1354
70086					1400	72429					1354
70200					1400	72433					1354
70219					1400	72451					1354
70231					1400	72456					1354
70261					1400	72469					1354
70273					1400	72476					1446
70308					1400	72486					1354
70316					1400	72493					1354
70326					1400	72518					1354
70350					1400	72520					1354
70414					1324	72528					1354
70454					1354	72532					1354
72201					1347	72534					1446
72202					1351	72553					1354
72208					1406	72562					1412
72211					1351	72572					1354
72213					1351	72576					1354
72220					1509	72583					1354
72226					1351	72597					1354
72228					1351	72606					1354
72232					1353	72637					1354
72235					1353	72645					1355
72240					1353	72654					1354
72243					1445	72655					1355
72248					1353	72662					1355
72250					1353	72681					1355
72255					1353	72694					1355

APPENDIX 2

SUPPLEMENTAL LIST OF PART A RAOBS NOT PROCESSED

(SUSPECT REPORTS NOT VALIDATED)

FORM 59-4

STA BK No.	NMC	GWC	MTY	CARSWELL	T.O.R. CARSWELL
04202	X				1304
15614	X	X	X		1614
17130	X	X	X		1605
22550		X			1546
26629	X		X	X	
65046	X	X	X		2014
84129	X	X			1539
87623	X	X			1354
35611	X				1456
17062	X				1417

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE
National Meteorological Center
W321, WWB, Room 206
Washington, D. C. 20233

Date : January 14, 1975

Reply to Attn. of: W321

To : Recipients of NMC Office Note No. 107

From : Arthur R. Thomas Arthur R. Thomas
Quality Control Meteorologist, Upper Air Branch

Subject: NMC Office Note No. 107

Recipients of NMC Office Note No. 107 are requested to enclose this corrigendum with their copy of the office note.

Enclosure

Corrigendum

OFFICE NOTE 107

A Comparison of Radiosonde Reports Received by Four Major U.S. Global Data Processing Centers

Arthur R. Thomas
Development Division

January 14, 1975

Change Page 15, Paragraph 2 to read:

There were 57 reports processed by NMC that neither Offutt, Monterey nor Carswell accounted for. These are broken down in Table 3.

Table 3

Center(s) at which Reports were Missing	No. of Missing Reports
Offutt only	15
Monterey only	5
Carswell only	0
Offutt and Monterey	9
Offutt and Carswell	0
Monterey and Carswell	10
Offutt, Monterey and Carswell	18
Total missing	57

Eighteen (about 32%) of the reports not available at GWC and FNWC were ones Carswell did not register* either.

All were from WMO Regions III, IV and V (North America, South America, and Australia). It is believed that Carswell relies on Washington for relay of most of these data. Twenty-one reports registered by Carswell but missing at GWC and/or FNWC were not available at Carswell prior to five minutes before the 1525Z deadline. Totally this accounts for 39, or about 68% of the military's data losses. There were eight reports available to Carswell earlier than 1520Z that neither GWC nor FNWC registered. The remaining ten reports unavailable for GWC's or FNWC's analysis appeared to be random losses attributable possibly to a variety of problems such as garbling, coding errors, computer software problems, etc. Of course, this does not explain why NMC processed the data in ample time but Carswell didn't. If a full exchange of raobs between Carswell and NMC is supposed to be made routinely to ensure that each center obtains data, perhaps there was some delay in completing certain relays.

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*Registered is used because it is not known if they may have been received but could not be processed and identified.

Office Note 107 - Distribution List

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