

|         |              |                                               |                              |
|---------|--------------|-----------------------------------------------|------------------------------|
| TO      | M. E. Guyer  | FIELD POINT OR DEPT. & BLDG. NO.<br>Henry, IL | DATE YOUR LETTER             |
| FROM    | D. G. Friesz | FIELD POINT OR DEPT. & BLDG. NO.<br>Henry, IL | DATE THIS LETTER<br>02/27/86 |
| SUBJECT |              |                                               |                              |

1985 Industrial Hygiene Summary - Henry Plant

Henry Plant personnel were monitored for exposure to noise, nuisance dust (total and respirable), toxic heavy metals, benzene, and acetonitrile during 1985. The following exposure summaries reflect the results of this monitoring.

- I. NOISE (BFG Permissible Exposure Limit = 50% dose)  
(OSHA Permissible Exposure Limit = 100% dose)

DuPont Mark I noise dosimeters were used to monitor employees for noise exposure. The dosimeter is worn by the employee to measure his total exposure to noise over the work shift. The noise dosimeter integrates all continuous, intermittent and impulsive sound levels over time to provide a reading of the cumulative noise exposure in percent dose.

The BFGoodrich noise standard requires that each employee working in areas exceeding 85 decibels be monitored every other year. This monitoring was done during 1984. During 1985, noise exposures were spot-checked by monitoring representative individuals from job classifications.

| <u>Job Classification</u>     | <u>Building</u>         | <u>No. People Monitored</u> | <u>Average Personnel Exposure (%)</u> |
|-------------------------------|-------------------------|-----------------------------|---------------------------------------|
| Compound Operator             | 741                     | 3                           | 133.52*                               |
| Recovery Operator             | 731 (Poly)              | 1                           | 71.04                                 |
| Wastewater Treatment Operator | 721 (Sludge dewatering) | 2                           | 48.40                                 |
| Pearl Charge Operator         | 731 (Poly)              | 2                           | 47.64                                 |
| BBTS Operator                 | 712 (PC)                | 2                           | 47.25                                 |
| Lo Sope Charge Operator       | 731 (Poly)              | 2                           | 42.06                                 |
| 3114 Operator                 | 722                     | 2                           | 41.00                                 |
| OBTS Operator                 | 712 (PC)                | 2                           | 37.30                                 |
| Operator Helper               | 712 (PC)                | 1                           | 32.00                                 |
| Utilities                     | 719 (Boiler House)      | 3                           | 28.25                                 |
| S & E Operator                | 712 (PC)                | 1                           | 13.50                                 |

- \* Compound Operators working in the mill and/or henschel areas had the highest noise exposure average. This was the only job classification that exceeded the OSHA permissible exposure limit of 100% dose.

NGC 01334

Sound attenuation curtains were installed around the Compounding weight scale in October. Various other sound attenuating materials and devices are being installed at the henschel. Overall, noise exposure in the henschel and weighman's area has been reduced by approximately 6 decibels (equivalent to cutting the sound pressure in half).

Seventy percent of the employees monitored for noise exposure during 1985 were less than 50% dose. All of the employees exceeding 50% dose wore hearing protection.

- II. DUST (Total Dust Exposure Limit =  $10 \text{ mg/M}^3$ )  
 (Respirable Dust Exposure Limit =  $5 \text{ mg/M}^3$ )  
 (Toxic Dust Exposure Limit:  
     Antimony =  $0.05 \text{ mg/M}^3$   
     Cadmium =  $0.05 \text{ mg/M}^3$   
     Chromium =  $0.05 \text{ mg/M}^3$   
     Nickel =  $1.0 \text{ mg/m}^3$ )

- A. Unspecified, non-toxic dust in the respirable and non-respirable size range is termed total dust. Polymer Chemical employees who bag product were spot-checked for dust exposure in 1985 since previous exposures have been low. The average total dust exposure was  $2.00 \text{ mg/M}^3$  and there were no individual exposures exceeding the specified limit.
- B. Dust consisting primarily of PVC was monitored in the total size range and in the respirable range. Employee monitoring for PVC total dust in the Dryer Building and Compounding averaged  $1.2 \text{ mg/M}^3$ . A spot-check of respirable range dust exposure in the Dryer Building averaged  $0.10 \text{ mg/M}^3$ . There were no exposures exceeding the specified limits.
- C. The henschel operator and weighman in compounding were monitored for exposure to pigment dusts containing heavy metals. The sampling filters were then sent to the Brecksville Environmental Laboratory for analysis by atomic absorption spectrophotometry. There were no samples that exceeded the heavy metal exposure limits. Monitoring done during 1984 also indicated that there are no exposure problems.

AVERAGE PERSONNEL EXPOSURE TO HEAVY METALS  
IN COMPOUNDING

Antimony =  $0.005 \text{ mg/M}^3$   
 Cadmium =  $0.002 \text{ mg/M}^3$   
 Chromium =  $0.004 \text{ mg/M}^3$   
 Nickel =  $0.01 \text{ mg/M}^3$

Several weld shop employees were monitored for exposure to fumes containing lead, chromium and nickel in order to verify the adequacy of welding booth ventilation. All sample results were below the permissible exposure limits for these heavy metals.

III. BENZENE (BFG Permissible Exposure Limit = 1 ppm)  
 (OSHA Permissible Exposure Limit = 10 ppm)  
 (OSHA Proposed Permissible Exposure Limit = 1 ppm)

Due to continuing low benzene exposure levels, monitoring during 1985 was reduced to monthly for a representative operator on the X-70 and Geltrol processes, and annually for a representative of each other job classification where there may be benzene exposure. Thirty-four employees in the Polymer Chemicals (PC) Building, PC Laboratory, PC Maintenance, and the Sludge Dewatering Building were monitored for benzene exposures during 1985. Only two exposures were greater than 1 ppm, and one of these exceeded 10 ppm. The remaining samples (94%) were less than 0.5 ppm.

The high benzene exposure (16.5 ppm) was to a Polymer Chemicals Laboratory operator who had set up several process samples under the hood. Although both samples contained benzene, other laboratory operators monitored under the same conditions had never shown excessive exposure. The highest laboratory exposure to benzene during 1984 was 1.26 ppm; the average annual exposure was 0.33 ppm.

Further investigation disclosed that the operator had set up other samples during the day that involved heating methanol. As a test, a 3M organic Vapor Badge (which is the same device used for benzene monitoring) was exposed to hot methanol vapors for fifteen minutes. With the cooperation of the Brecksville Laboratory, the sample was analyzed for benzene. The analysis result was 7.1 ppm.

It appears that methanol vapors can interfere with the benzene analysis method. If the lab is expecting to see benzene in a sample, then the methanol interference peak may not be discerned.

The second benzene exposure greater than one ppm (2.80 ppm) occurred when a Polymer Chemical Maintenance operator was repairing leaks at the wet benzene meter and the bottom valve of the X-70 reactor. A fresh-air mask was worn at the time of the repair job.

1985 BENZENE EXPOSURE (PPM) BY JOB CLASSIFICATION

| <u>Job Classification</u>     | <u>No. People Monitored</u> | <u>Average Personnel Exposure (ppm)</u> |
|-------------------------------|-----------------------------|-----------------------------------------|
| PC Maintenance                | 3                           | 1.08                                    |
| PC Bagger                     | 1                           | 0.30                                    |
| Wastewater Treatment Operator | 4                           | 0.30                                    |
| PC Laboratory Operator        | 2                           | 0.30(*)                                 |
| MBTS Operator                 | 1                           | 0.20                                    |
| BBTS Operator                 | 1                           | 0.20                                    |
| X-70 Operator                 | 9                           | 0.20                                    |
| Geltrol Operator              | 7                           | 0.19                                    |
| Stalite Operator              | 2                           | 0.18                                    |
| OBTs Operator                 | 3                           | 0.13                                    |

(\*) The high benzene exposure result which was due to the methanol interference was coded as an invalid sample and not included in the average.

NGC 01336

YEARLY BENZENE EXPOSURE AVERAGES

| <u>Year</u> | <u>Average PPM</u> |
|-------------|--------------------|
| 1982        | 0.29               |
| 1983        | 0.34               |
| 1984        | 0.38               |
| 1985        | 0.29               |

IV. ACETONITRILE (BFG and OSHA Permissible Exposure Limit = 40 ppm)

Personnel monitoring for acetonitrile has also been reduced due to low exposure levels. Operators in the 3114 Building (722) are spot-checked for Acetonitrile exposure. Spot-check monitoring will also be done during any special operations in the 3114 Building. For 1985, the Acetonitrile exposure average was 0.64 ppm.

V. VINYL CHLORIDE (BFGoodrich and OSHA Permissible Exposure Limit = 1 ppm)

All operators in the Poly and Dryer Buildings as well as the PVC Tank Farm are monitored for vinyl chloride exposure at least once per year. The schedule of monitoring then follows the OSHA VCl standard which requires monthly monitoring for any exposure greater than 1 ppm or quarterly monitoring for any exposure greater than 0.5 ppm until two consecutive monitorings are less than 0.5 ppm. The employee need not be monitored again during the year if his annual monitoring result or the two consecutive monitorings are below 0.5 ppm. The VCl monitoring samples are then sent to the Brecksville Environmental Laboratory for analysis.

The 1985 VCl personnel monitoring results are summarized below:

VINYL CHLORIDE MONITORING (POLY AND DRYER BUILDING)

| <u>Year</u> | <u>No. of People Monitored</u> | <u>Average (PPM)</u> | <u>% Greater Than 1 PPM</u> |
|-------------|--------------------------------|----------------------|-----------------------------|
| 1983        | 152                            | 0.82                 | 15                          |
| 1984        | 165                            | 0.67                 | 15                          |
| 1985        | 231                            | 1.58                 | 38                          |

RESPIRATOR COMPLIANCE (POLY BLDG.)

| <u>Year</u> | <u>No. of Exposures Greater Than 1 PPM</u> | <u>No. of Exposures Greater Than 1 W/O Respirator</u> | <u>Respirator Compliance</u> |
|-------------|--------------------------------------------|-------------------------------------------------------|------------------------------|
| 1983        | 23                                         | 10                                                    | 57%                          |
| 1984        | 25                                         | 5                                                     | 80%                          |
| 1985        | 87                                         | 33                                                    | 62%                          |

NGC 01337

VINYL CHLORIDE EXPOSURE BY JOB CLASSIFICATION

| <u>Job Class</u>                 | <u>No. of People Monitored</u> | <u>Average (PPM)</u> |
|----------------------------------|--------------------------------|----------------------|
| Helper/HRC Poly Cleaner          | 21                             | 3.09                 |
| Lo Sope Charge                   | 46                             | 1.66                 |
| Pearl Charge                     | 51                             | 1.63                 |
| Recovery                         | 24                             | 1.21                 |
| Production Foreman (Poly Bldg.)  | 20                             | 1.12                 |
| Vinyl Tank Farm Operator         | 2                              | 1.03                 |
| Dryer Operator                   | 23                             | 0.99                 |
| Production Foreman (Dryer Bldg.) | 8                              | 0.59                 |
| Helper/Dryer Bldg. Bagger        | 15                             | 0.57                 |
| S & E Operator                   | 1                              | 0.56                 |
| Catalyst Make-up                 | 4                              | 0.47                 |
| Silo Operator                    | 5                              | 0.43                 |

Obviously, the VCl personnel exposure levels have increased during 1985. This may be due in part to the Reizner gas badges which have been used for VCl exposure monitoring since 5/15/85. Although the Reizner badge and the head-space/GC analysis method are reported to have greater accuracy for VCl than the previously used PMCC tube/GC method, I'm surprised to see such a large increase in Henry Plant exposures. Other plants using the Reizner gas badge have also seen an increase in VCl exposure levels (20-40% greater than the 1984 average) and some high results that were unexplainable.

There seem to be no other chemicals in the Poly building that will interfere with VCl analysis of the Reizner badge. I've placed duplicate badges on several employees and requested mass spectrophotometer analysis on the second badge. Each test showed a peak that was clearly vinyl chloride with no interfering peaks.

The Brecksville Laboratory is presently investigating possible contamination of the charcoal vials or other problems that could cause erroneously high test results. In the meantime, any sample for which the VCl result is high and unexplainable will be voided out and the employee remonitored.

VI. SPECIAL PROJECTS

- A. Area monitoring in the sludge dewatering building during the winter of 1984/1985 revealed that benzene and vinyl chloride were concentrating in the area when all doors were closed to an average of 5.5 ppm and 3.0 ppm, respectively. Wall exhaust fans were installed in the building during the summer. Area exposures now average 0.10 ppm benzene and 0.29 ppm vinyl chloride.
- B. As an energy saving measure, ventilation rates on all floors of the PC building (712) and 3114 building (722) were reduced from 12 air exchanges per hour to eight during February, 1985. There has no significant employee exposure impact as a result of this change.

In conclusion, the vinyl chloride monitoring situation is the most serious industrial hygiene concern at this time. The last two sets of analysis results from the Brecksville laboratory have improved with more low exposures and fewer unexplainable exposures without respirator protection. Hopefully, the trend will continue.

Other personnel monitoring results for 1985 continue to show a trend of decreasing chemical exposures. The Henry Plant should have no trouble meeting the 1 ppm benzene exposure limit if the proposed standard is finalized.

Diana G. Friesz

wpgh19/0114Q

Distribution:

R. J. Grahek  
M. E. Guyer ✓  
D. E. Giffin  
D. L. Rys  
W. B. Bispeck  
K. J. Willings  
J. V. Nordmeyer  
T. S. Bialke

NGC 01339

|         |                                                                 |                                                |                             |
|---------|-----------------------------------------------------------------|------------------------------------------------|-----------------------------|
| TO      | M.E. GUYER                                                      | FIELD POINT OR DEPT. & BLDG NO.<br>HENRY PLANT | DATE YOUR LETTER            |
| FROM    | DIANA FRIESZ                                                    | FIELD POINT OR DEPT. & BLDG NO.<br>HENRY PLANT | DATE THIS LETTER<br>7/31/85 |
| SUBJECT | <u>INDUSTRIAL HYGIENE UPDATE FOR THE SECOND QUARTER OF 1985</u> |                                                |                             |

The Henry Plant personnel monitoring results for the first quarter 1985 are summarized as follows:

| <u>BUILDING</u>                                                                                                                                                                                                                                                                                                                       | <u>NUMBER OF<br/>PERSONNEL<br/>MONITORED</u> | <u>AVERAGE<br/>PERSONNEL<br/>EXPOSURE</u> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------------------------|
| <b>I. <u>NOISE</u> (BFG Permissible Exposure Limit = 50%)</b>                                                                                                                                                                                                                                                                         |                                              |                                           |
| Polymer Chemicals<br>(712)                                                                                                                                                                                                                                                                                                            | 2                                            | 47.25%                                    |
| Poly Building                                                                                                                                                                                                                                                                                                                         | 5                                            | 50.1 %                                    |
| 3114 Building                                                                                                                                                                                                                                                                                                                         | 1                                            | 64.0 %                                    |
| Boiler House                                                                                                                                                                                                                                                                                                                          | 3                                            | 28.25%                                    |
| <b>II. <u>DUST/TOTAL UNSPECIFIED</u> (Permissible Exposure Limit = 10 mg/M<sup>3</sup>)</b>                                                                                                                                                                                                                                           |                                              |                                           |
| Polymer Chemicals                                                                                                                                                                                                                                                                                                                     | 4                                            | 2.7 mg/M <sup>3</sup>                     |
| <b><u>DUST/HEAVY METALS</u></b>                                                                                                                                                                                                                                                                                                       |                                              |                                           |
| Several dust samples were taken of Weld Shop personnel while cutting and welding on stainless and carbon steel. These samples were analyzed for lead, chromium and nickel by atomic absorption spectroscopy at the Brecksville Laboratory. All sample results were well below the permissible exposure limits for these heavy metals. |                                              |                                           |
| <b>III. <u>BENZENE</u> (BFG Permissible Exposure Limit = 1 ppm, OSHA Exposure Limit = 10 ppm)</b>                                                                                                                                                                                                                                     |                                              |                                           |
| Polymer Chemicals                                                                                                                                                                                                                                                                                                                     | 9                                            | 0.2 ppm                                   |
| Utilities (Sludge<br>Dewatering)                                                                                                                                                                                                                                                                                                      | 2                                            | 0.2 ppm                                   |
| PC Maintenance                                                                                                                                                                                                                                                                                                                        | 1                                            | 0.2 ppm                                   |
| <b>IV. <u>VINYL CHLORIDE</u> (Permissible Exposure Limit = 1 ppm)</b>                                                                                                                                                                                                                                                                 |                                              |                                           |
| Poly Building                                                                                                                                                                                                                                                                                                                         | 45                                           | 0.96 ppm                                  |

1ST/2ND  
QUARTERS  
1985

INDUSTRIAL HYGIENE UPDATE FOR THE SECOND QUARTER OF 1985  
(Cont'd.)

2.

| <u>BUILDING</u>                  | <u>NUMBER OF<br/>PERSONNEL<br/>MONITORED</u> | <u>AVERAGE<br/>PERSONNEL<br/>EXPOSURE</u> |
|----------------------------------|----------------------------------------------|-------------------------------------------|
| IV. <u>VINYL CHLORIDE</u>        |                                              |                                           |
| Dryer Building                   | 13                                           | 0.66 ppm                                  |
| Utilities (Sludge<br>Dewatering) | 3                                            | 0.40 ppm                                  |
| PVC Tank Farm                    | 1                                            | 1.20 ppm                                  |

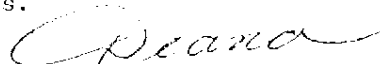
There were 62 VCl personnel exposure samples taken during the second quarter of 1985. Of these, 19 samples (31%) exceeded 1 ppm.

Ten (53%) of the samples that were greater than one ppm occurred without the use of a respirator. These people were questioned concerning their exposure to VCl during monitoring and, in most cases, they were in no alarm lights and did nothing beyond routine, non-vinyl tasks. Almost all of the samples in question were collected on the new Reizner gas badges. The possibility of a VCl interference during analysis of these badges is presently being investigated.

The PVC Tank Farm Operator was monitored during the short-term task of hooking-up and uncoupling VCl tank cars in order to verify that these jobs are still respirator required tasks. The results for car hook-ups (average exposure - 8.9 ppm) and car uncoupling (average exposure - 4.4 ppm) indicate that a respirator is a continuing requirement for either task.

NEW PROJECTS

1. Exhaust fans have been installed in the Sludge Dewatering Building in order to eliminate the wintertime concentration of Benzene and VCl.
2. Noise attenuation curtains have been ordered and will be installed around the Compounding weigh scales in order to reduce noise levels in the Henschel and Weigh Booth areas.



Diana Friesz

DF:bkw

cc:R.J.Grahek

~ K.J.Willings

W.B.Bispeck

R.V.Tebbutt

T.S.Bialke

J.A.Bernardi

J.V.Nordmeyer

D.E.Giffin

W.W.Walk

File

NGC 01341

|                                                                |                                  |                  |
|----------------------------------------------------------------|----------------------------------|------------------|
| TO                                                             | FIELD POINT OR DEPT. & BLDG. NO. | DATE YOUR LETTER |
| M.E. GUYER                                                     | HENRY PLANT                      |                  |
| FROM                                                           | FIELD POINT OR DEPT. & BLDG. NO. | DATE THIS LETTER |
| DIANA FRIESZ                                                   | HENRY PLANT                      | 5/9/85           |
| SUBJECT                                                        |                                  |                  |
| <u>INDUSTRIAL HYGIENE UPDATE FOR THE FIRST QUARTER OF 1985</u> |                                  |                  |

Henry Plant personnel monitoring results for the first quarter of 1985 are summarized as follows:

|                                                                                                                                                                                                                                                                                                          | <u>BUILDING</u>                                                                       | <u>NUMBER OF PERSONNEL MONITORED</u> | <u>AVERAGE PERSONNEL EXPOSURE</u> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------|-----------------------------------|
| I.                                                                                                                                                                                                                                                                                                       | <u>NOISE</u> (BFG Permissible Exposure Limit = 50%)                                   |                                      |                                   |
|                                                                                                                                                                                                                                                                                                          | Polymer Chemicals<br>(712)                                                            | 3                                    | 29.4%                             |
| <p>The BF Goodrich noise standard requires that each person in noise exposure areas exceeding 85 decibels be monitored every second year. These people were monitored during 1984. For 1985, we will spot-check noise exposures by monitoring representative individuals in each job classification.</p> |                                                                                       |                                      |                                   |
| II.                                                                                                                                                                                                                                                                                                      | <u>DUST/TOTAL</u> (Permissible Exposure Limit = 10 mg/M <sup>3</sup> )                |                                      |                                   |
|                                                                                                                                                                                                                                                                                                          | Polymer Chemicals<br>(712)                                                            | 1                                    | 0.59 mg/M <sup>3</sup>            |
|                                                                                                                                                                                                                                                                                                          | <u>DUST/TOTAL PVC</u> (Permissible Exposure Limit = 10 mg/M <sup>3</sup> )            |                                      |                                   |
|                                                                                                                                                                                                                                                                                                          | Dryer Building<br>(732)                                                               | 1                                    | 2.94 mg/M <sup>3</sup>            |
|                                                                                                                                                                                                                                                                                                          | <u>DUST/RESPIRABLE PVC</u> (Permissible Exposure Limit = 5 mg/M <sup>3</sup> )        |                                      |                                   |
|                                                                                                                                                                                                                                                                                                          | Dryer Building<br>(732)                                                               | 1                                    | 0.10 mg/M <sup>3</sup>            |
| III.                                                                                                                                                                                                                                                                                                     | <u>BENZENE</u> (BFG Permissible Exposure Limit = 1 ppm, OSHA Exposure Limit = 10 ppm) |                                      |                                   |
|                                                                                                                                                                                                                                                                                                          | Polymer Chemicals<br>(712)                                                            | 11                                   | 0.18 ppm                          |

|                   |   |              |
|-------------------|---|--------------|
| Laboratory (718)  | 2 | 0.30 ppm     |
| Utilities (719)   | 2 | 0.40 ppm (1) |
| Maintenance (712) | 1 | 2.80 ppm (2) |

(1) These operators were monitored while working in the Sludge Dewatering Building at Wastewater Treatment. The doors of the building were open at the time allowing adequate ventilation.

(2) Monitoring was done while the Maintenance Operators completed a work order on equipment in benzene service.

IV. VINYL CHLORIDE (Permissible Exposure Limit = 1 ppm)

|                      |    |              |
|----------------------|----|--------------|
| Poly Building (731)  | 46 | 1.16 ppm     |
| Dryer Building (732) | 2  | 0.25 ppm     |
| Utilities (719)      | 2  | 0.59 ppm (1) |

(1) These operators were monitored while working in the Sludge Dewatering Building at Wastewater Treatment. The doors of the building were open at the time of monitoring.

Thirteen of the first quarter vinyl chloride exposures exceeded 1 ppm. Of these, four (31%) were without the use of respirators. Three of the four exposed employees were Pearl charge or Pearl relief operators. I suspect that opening X500 polys after each charge has increased the exposure of employees in the immediate area. The operator who actually performs the reactor compliance test with the THA probe is required to wear a respirator. These operators have been reinstructed to open the poly manhead only wide enough to insert the THA hose rather than to open it completely. This modified work practice should eliminate overexposures to nearby employees without respirators.

NEW PROJECTS

It has been determined that vinyl chloride and benzene will concentrate to unacceptable levels in the Sludge Dewatering Building during wintertime operation when the doors are closed. A project is underway to design a ventilation system for this building which will be installed before next winter.

DF:bkw

cc: R.J.Grahek

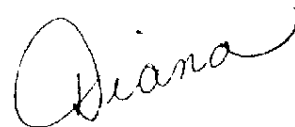
K.J.Willings

W.B.Bispeck

File ✓

R.V.Tebbutt

T.S.Bialke



NGC 01343

# BF Goodrich

1984

12/31

| Y   | Rel | DB | 21                  | 23       | 215                                        |
|-----|-----|----|---------------------|----------|--------------------------------------------|
| 350 | 79  | 10 | 128                 | 12       | 4                                          |
| 90  | 10  | 6  | 7 <sup>AVG 88</sup> | 19 72    | 6 9.3                                      |
| 88  | 14  | 2  | DEC ? (8644)        | 15 (676) | 0 279                                      |
| 66  | 11  | 5  | 7                   | 15       | 9                                          |
| 213 | 47  | 20 | 244                 | 70       | 27                                         |
| 112 | 45  | 15 | 239                 | 56       | 11                                         |
| 6   | 2   | 0  | 10.3                | 41       | 14                                         |
| 40  | 18  | 3  | 107                 | 24       | 8                                          |
| 46  | 8   | 7  | 174                 | 42       | 5                                          |
| 37  | 4   | 1  | 52                  | 151      | 70                                         |
| 117 | 60  | 30 | 3                   | 19       | 214 <small>ALL LIGHT FROM OLD AREA</small> |
| 104 | 33  | 16 | 82                  | 40       | 16                                         |
| 77  | 88  | 21 | 90                  | 13       | 11                                         |
| 117 | 16  | 7  | 36                  | 21       | 11                                         |
| 87  | 20  | 1  | 39                  | 14       | 3                                          |
| 89  | 27  | 10 | 79                  | 24       | 25                                         |
| 105 | 14  | 11 | 64                  | 21       | 9                                          |
| 71  | 5   | 2  | 6.3                 | 15       | 7                                          |
| 125 | 15  | 11 | 147                 | 25       | 3                                          |
| 84  | 4   | 2  | 180                 | 49       | 9                                          |
| 70  | 18  | 6  | 11/13 186           | 78       | 5                                          |
| 47  | 8   | 5  | 75                  | 38       | 28                                         |
| 79  | 16  | 20 | 162                 | 41       | 33                                         |
| 47  | 10  | 7  | 67                  | 5        | 2                                          |
| 60  | 24  | 1  | 71                  | 40       | 5                                          |
| 111 | 33  | 11 | 111                 | 13       | 7                                          |
| 61  | 1   | 1  | 41                  | 31       | 12                                         |

|         |      |      |
|---------|------|------|
| 63      | 25   | 0    |
| 97      | 35   | 6    |
| 101     | 40   | 10   |
| 100     | 72   | 12   |
| 125     | 14   | 1    |
| 61      | 7    | 2    |
| <hr/>   |      |      |
| 3065    | 1044 | 578  |
| avg 102 | 34.8 | 19.3 |

June

|     |    |    |
|-----|----|----|
| 532 | 82 | 2  |
| 380 | 30 | 13 |
| 89  | 7  | 12 |
| 44  | 6  | 1  |
| 69  | 3  | 3  |
| 67  | 38 | 7  |
| 35  | 3  | 4  |
| 40  | 2  | 0  |
| 27  | 7  | 4  |
| 29  | 15 | 6  |
| 9   | 5  | 2  |
| 14  | 10 | 1  |
| 57  | 1  | 1  |
| 38  | 16 | 4  |
| 52  | 7  | 2  |
| 16  | 2  | 1  |
| 24  | 26 | 21 |
| 53  | 51 | 30 |
| 54  | 12 | 4  |
| 155 | 30 | 1  |
| 71  | 23 | 12 |
| 59  | 7  | 3  |
| 110 | 6  | 2  |

|       |     |     |
|-------|-----|-----|
| 85    | 48  | 20  |
| 110   | 25  | 3   |
| 110   | 54  | 8   |
| 205   | 95  | 27  |
| 240   | 145 | 24  |
| 105   | 55  | 8   |
| 79    | 4   | 6   |
| <hr/> |     |     |
| 2378  | 809 | 222 |
| 97.5  | 273 | 7.4 |

NGC 01345