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## ภาคผนวก ก

รายการคำนวณ ผ1 ความเร็วในการตกตะกอนของอนุภาคดินคาโอลิน

รายการคำนวณ ความเร็วในการตกตะกอนของอนุภาคดินคาโอลิน จากสมการของ

Stoke's Law

$$V_s = \frac{2(P_s - P)d^2}{18\mu}$$

โดย  $V_s$  = ความเร็วในการตกตะกอนของอนุภาคดิน ม./วท.

$g$  = ความเร่งเนื่องจากแรงโน้มถ่วง ม./วท.<sup>-2</sup>

$P_s$  = ความหนาแน่นของมวลดิน กก./ม.<sup>3</sup>

$P$  = ความหนาแน่นของน้ำ กก./ม.<sup>3</sup>

$d$  = เส้นผ่าศูนย์กลางของอนุภาคดิน ม.

$\mu$  = ความหนืดพลศาสตร์ของน้ำ นิวตัน-วท./ม.<sup>2</sup>

แทนค่าสูตรโดย

$$d = 10^{-6} \text{ ม.}$$

$$P_s = 2,380 \text{ กก./ม.}^3 \text{ โดยประมาณ}$$

$$g = 9.81 \text{ ม./วท.}^{-2}$$

$$P = 1,000 \text{ กก./ม.}^3$$

$$\mu = 0.1 \times 10^{-3} \text{ นิวตัน-วท./ม.}^2 \text{ ที่อุณหภูมิ } 25^\circ \text{ c}$$

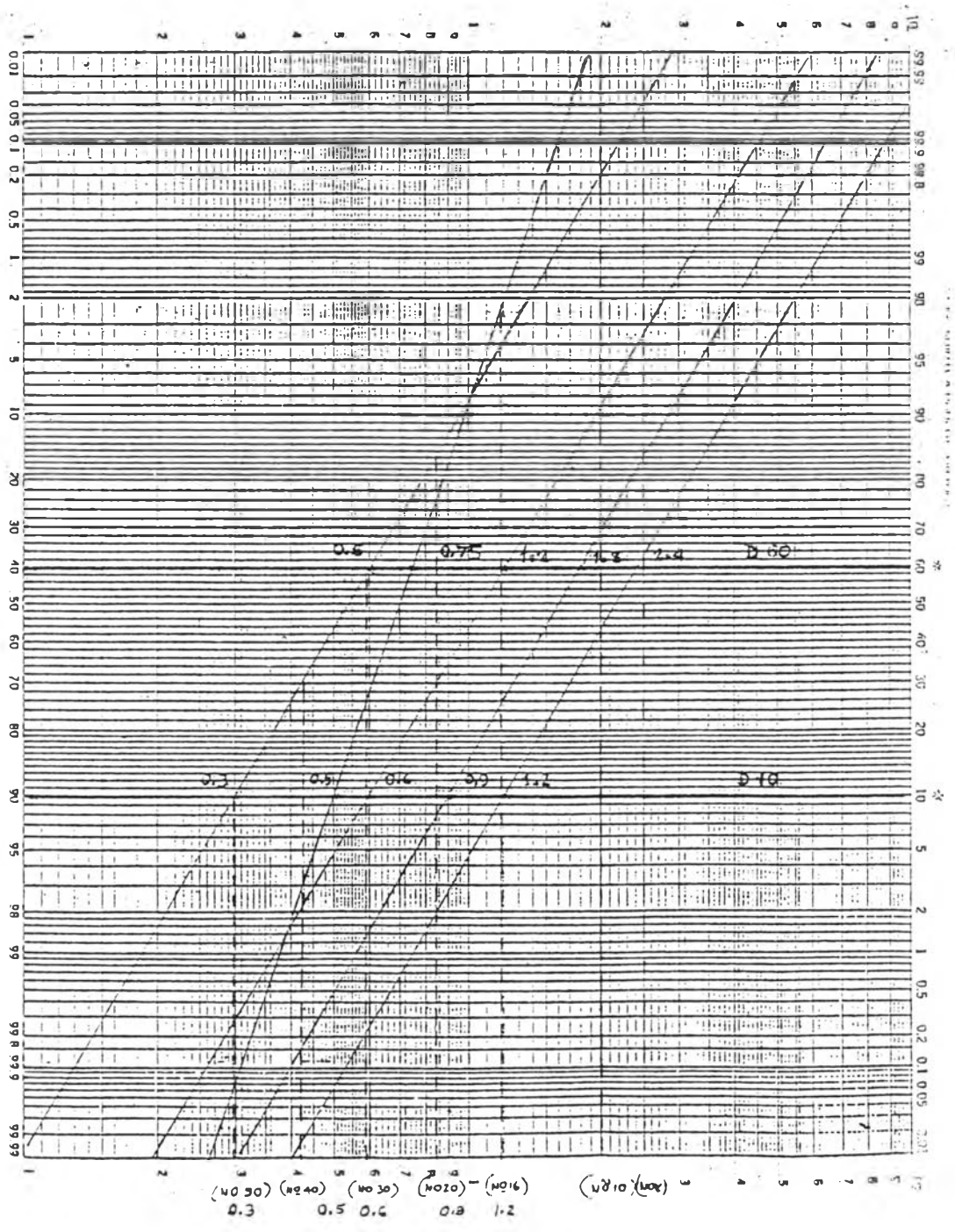
$$V_s = \frac{9.81 (2,380 - 1,000)(10^{-6})^2}{18 \times 0.1 \times 10^{-3}}$$

$$= 8.41 \times 10^{-7} \text{ ม./วท.}$$

$$= 0.3 \text{ ซม./ชม.}$$

$$\text{ใน } 48 \text{ ชม. ตกได้ลึก} = 0.3 \times 48 = 14.4 \text{ ซม.}$$

จะต้องคุดน้ำที่ระดับไม่เกิน 14.4 ซม. จากผิวน้ำลงมา



(%) หมายเหตุ  
% Passing

(10 30) (20 40) (30 50) (40 60) (50 70) (60 80) (70 90) (80 90) (90 99)

ขนาดทราย (มม.)

Sand Size (mm.)

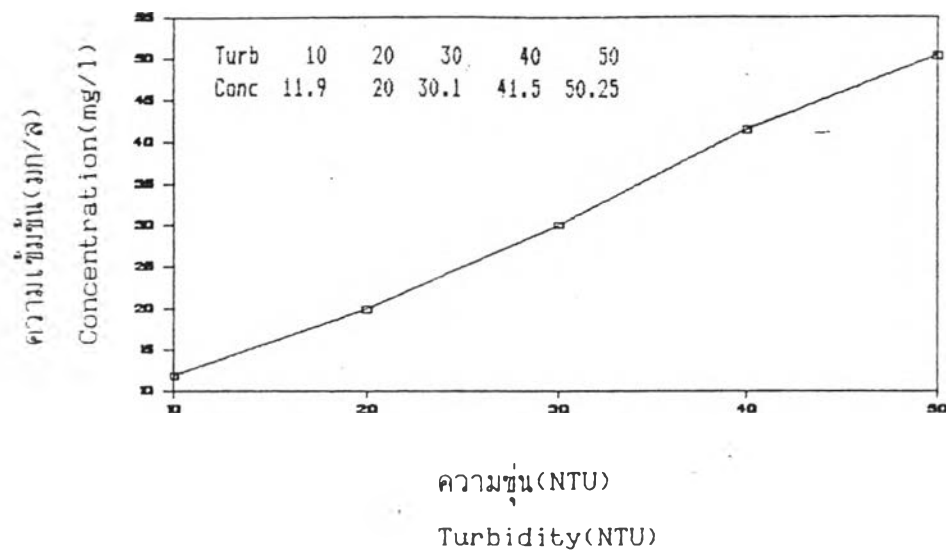
รูปที่ พ3 แสดงการจัดขนาดทรายโดยใช้กราฟ Prop-Log

ตารางที่ ๘1 แสดงสัดส่วนเป็นเปอร์เซ็นต์โดยน้ำหนัก ของทรายขนาดสัมฤทธิ์  
ต่าง ๆ โดยกราฟ Prob-Log

| Effective<br>Size(mm) | sieve No.<br>pass-retain | UC 2.๐ | UC 1.5 |
|-----------------------|--------------------------|--------|--------|
| 0.3                   | 16-20                    | 17%    | -      |
|                       | 20-30                    | 23%    | -      |
|                       | 30-40                    | 28%    | -      |
|                       | 40-50                    | 32%    | -      |
| 0.6                   | 10-16                    | 40%    | -      |
|                       | 16-20                    | 28%    | -      |
|                       | 20-30                    | 22%    | -      |
|                       | 30-40                    | 10%    | -      |
| 0.9                   | 8-10                     | 31.8%  | -      |
|                       | 10-16                    | 40.5%  | -      |
|                       | 16-20                    | 20%    | -      |
|                       | 20-30                    | 6.3%   | -      |
|                       | 30-40                    | 1.4%   | -      |
| 1.2                   | 8-10                     | 54%    | -      |
|                       | 10-16                    | 36%    | -      |
|                       | 16-20                    | 10%    | -      |
| 0.5                   | 10-16                    | -      | 2.2%   |
|                       | 16-20                    | -      | 22.8%  |
|                       | 20-30                    | -      | 49.0%  |
|                       | 30-40                    | -      | 26.0%  |

ตารางที่ ๗๒ แสดงคุณลักษณะทรายกรองขนาดต่างๆที่ใช้ในการวิจัย

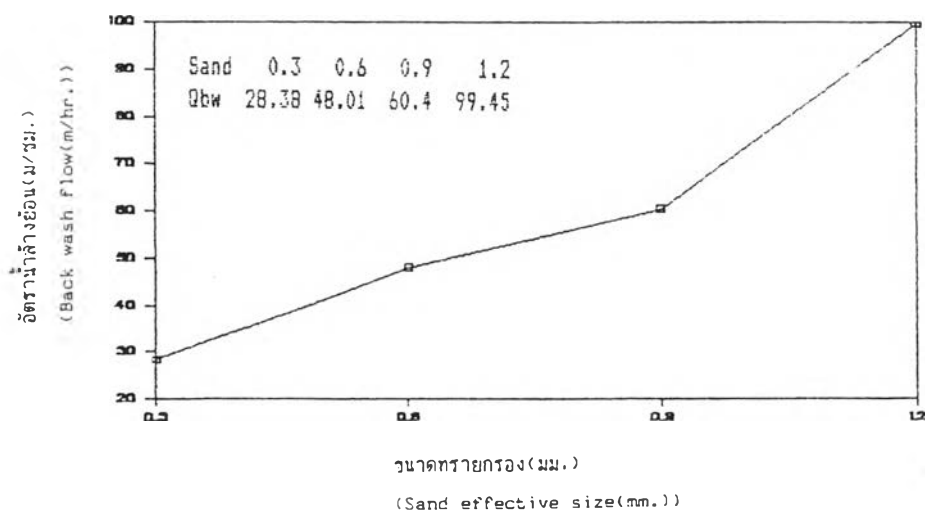
| ขนาดทราย<br>D10 | ขนาดทราย<br>D60 | ส.ป.ส.<br>U.C. | ความพรุน<br>% | ความถ่วง<br>จำเพาะ | ช่วงขนาดทราย<br>(มม.-มม.) |
|-----------------|-----------------|----------------|---------------|--------------------|---------------------------|
| 0.3             | 0.6             | 2.0            | 41.09         | 2.62               | 0.297-1.190               |
| 0.6             | 1.2             | 2.0            | 40.20         | 2.69               | 0.420-2.000               |
| 0.9             | 1.8             | 2.0            | 39.55         | 2.82               | 0.420-2.500               |
| 1.2             | 2.4             | 2.0            | 37.18         | 2.97               | 0.840-2.500               |
| 0.5             | 0.75            | 1.5            | 40.90         | 2.59               | 0.420-1.190               |



รูปที่ ๗ แสดงความสัมพันธ์ระหว่าง ค่าความขุ่น กับ ความเข้มข้น ของคาโอสลิน

ตารางที่ ๗๓ แสดงผลการวิเคราะห์การล้างย้อน

| ชนิดการกรอง | ขนาดทราย<br>DO <sub>10</sub> (มม.) | อัตราน้ำล้างย้อน<br>(ม./ชม.) | ระยะเวลาล้างย้อน<br>นาที |
|-------------|------------------------------------|------------------------------|--------------------------|
| D.U.F.      | ๐.3                                | 28.375                       | 5                        |
| D.U.F.      | ๐.6                                | 48.๐12                       | ๓                        |
| D.U.F.      | ๐.9                                | 60.4๐7                       | ๒                        |
| D.U.F.      | 1.2                                | 99.447                       | ๑                        |
| D.D.F.      | ๐.3                                | 39.6๐4                       | ๓                        |



รูปที่ ๗๒ แสดงความสัมพันธ์ระหว่าง อัตราน้ำล้างย้อน กับ ขนาดทราย



ภาคผนวก ข

ผลการทดลอง การกรองตรงโดยใช้เครื่องกรองทรายเร็วแบบไหลขึ้น(การทดลองที่ 1-80)

การกรองตรงโดยใช้เครื่องกรองทรายเร็วแบบไหลลง(การทดลองที่ 81-100)

| DUF RUN 1 : Tin(NTU) 50.00 :Q(m/hr) 25.00 :ES(mm) 0.30 |        |    |             |    |    |      |    |           |  |
|--|--------|----|-------------|----|----|------|----|-----------|--|
| TIME   | H1(CM) | H2 | H3          | H4 | H5 | H6   | H7 | Teff(NTU) |  |
| 0.00   | Na     |    |             |    |    |      |    |           |  |
| 0.50   | No     |    |             |    |    |      |    |           |  |
| 1.00   | NO     |    |             |    |    |      |    |           |  |
| Teff (NTU)   |        | no | B.W.W(m/hr) |    | no | T(C) |    | 28.00     |  |
| Eff(%)   |        | no | % B.W.      |    | no |      |    | 1/12/88   |  |

| DUF RUN 2 : Tin(NTU) 50.00 :Q(m/hr) 25.00 :ES(mm) 0.60 |        |        |             |       |       |       |      |           |  |
|--|--------|--------|-------------|-------|-------|-------|------|-----------|--|
| TIME   | H1(CM) | H2     | H3          | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00   | 111.50 | 99.00  | 81.90       | 69.00 | 53.60 | 31.90 | 4.50 | 0.24      |  |
| 0.50   | 158.00 | 132.00 | 93.50       | 75.90 | 55.50 | 33.10 | 4.60 | 0.17      |  |
| 1.00   | 177.00 | 150.50 | 103.00      | 81.60 | 59.80 | 34.90 | 4.75 | 0.18      |  |
| Teff (NTU)   |        | 0.18   | B.W.W(m/hr) |       | 47.75 | T(C)  |      | 27.00     |  |
| Eff(%)   |        | 99.65  | % B.W.      |       |       | D/M/Y |      | 1/12/88   |  |

| DUF RUN 3 : Tin(NTU) 50.00 :Q(m/hr) 25.00 :ES(mm) 0.90 |        |        |             |       |       |       |      |           |  |
|--|--------|--------|-------------|-------|-------|-------|------|-----------|--|
| TIME   | H1(CM) | H2     | H3          | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00   | 65.00  | 59.00  | 45.00       | 32.00 | 22.00 | 12.00 | 2.00 | 0.55      |  |
| 0.50   | 83.00  | 67.90  | 46.10       | 33.00 | 22.00 | 12.10 | 2.10 | 0.28      |  |
| 1.00   | 103.50 | 80.00  | 48.10       | 33.50 | 22.50 | 12.10 | 2.10 | 0.45      |  |
| 2.00   | 165.00 | 126.50 | 70.75       | 36.00 | 30.00 | 15.90 | 2.40 | 12.00     |  |
| Teff (NTU)   |        | 0.45   | B.W.W(m/hr) |       | 58.50 | T(C)  |      | 27.00     |  |
| Eff(%)   |        | 99.10  | % B.W.      |       |       | D/M/Y |      | 8/12/88   |  |

| DUF RUN 4 : Tin(NTU) 50.00 :Q(m/hr) 25.00 :ES(mm) 1.20 |        |        |             |       |       |       |      |           |  |
|--|--------|--------|-------------|-------|-------|-------|------|-----------|--|
| TIME   | H1(CM) | H2     | H3          | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00   | 38.50  | 37.50  | 32.75       | 26.90 | 20.00 | 13.00 | 3.75 | 1.60      |  |
| 0.50   | 60.80  | 56.60  | 42.80       | 32.20 | 23.00 | 14.50 | 4.00 | 0.34      |  |
| 1.00   | 75.90  | 74.00  | 52.50       | 35.25 | 26.00 | 16.00 | 4.40 | 0.54      |  |
| 2.00   | 114.00 | 103.00 | 66.60       | 48.50 | 33.50 | 22.25 | 7.00 | 11.00     |  |
| Teff (NTU)   |        | 0.54   | B.W.W(m/hr) |       | 98.22 | T(C)  |      | 27.00     |  |
| Eff(%)   |        | 98.92  | % B.W.      |       |       | D/M/Y |      | 20/12/88  |  |

| DUF RUN 5 : Tin(NTU) 50.00 : Q(m/hr) 25.00 : ES(mm) 0.30 |        |    |             |    |    |      |    |           |  |
|--|--------|----|-------------|----|----|------|----|-----------|--|
| TIME   | H1(CM) | H2 | H3          | H4 | H5 | H6   | H7 | Teff(NTU) |  |
| 0.00   | NO     |    |             |    |    |      |    |           |  |
| 0.50   | NO     |    |             |    |    |      |    |           |  |
| 1.00   | NO     |    |             |    |    |      |    |           |  |
| Teff (NTU)   |        | NO | B.W.W(m/hr) |    | NO | T(C) |    | 27.50     |  |
| Eff(%)   |        | NO | % B.W.      |    | NO |      |    |           |  |

| DUF RUN 6 : Tin(NTU) 50.00 : Q(m/hr) 20.00 : ES(mm) 0.50 |        |        |             |       |       |       |      |           |  |
|--|--------|--------|-------------|-------|-------|-------|------|-----------|--|
| TIME   | H1(CM) | H2     | H3          | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00   | 84.00  | 65.50  | 59.00       | 46.00 | 39.10 | 24.60 | 3.10 | 2.80      |  |
| 0.50   | 96.50  | 83.00  | 66.25       | 55.25 | 42.00 | 25.90 | 3.10 | 0.22      |  |
| 1.00   | 121.50 | 102.00 | 71.80       | 57.50 | 42.50 | 26.40 | 3.10 | 0.17      |  |
| 2.00   | 185.00 | 151.00 | 94.25       | 62.50 | 51.00 | 26.50 | 3.10 | 0.16      |  |
| Teff (NTU)   |        | 0.18   | B.W.W(m/hr) |       | 47.99 | T(C)  |      | 28.00     |  |
| Eff(%)   |        | 99.65  | % B.W.      |       | 8.00  | D/M/Y |      | 20/12/89  |  |

| DUF RUN 7 : Tin(NTU) 50.00 : Q(m/hr) 20.00 : ES(mm) 0.90 |        |        |             |       |       |         |      |           |  |
|--|--------|--------|-------------|-------|-------|---------|------|-----------|--|
| TIME   | H1(CM) | H2     | H3          | H4    | H5    | H6      | H7   | Teff(NTU) |  |
| 0.00   | 52.00  | 48.25  | 40.00       | 30.90 | 21.75 | 12.50   | 2.20 | 11.00     |  |
| 0.50   | 65.60  | 58.00  | 44.00       | 32.50 | 22.40 | 12.60   | 2.25 | 0.57      |  |
| 1.00   | 86.60  | 71.50  | 48.50       | 34.50 | 23.30 | 12.75   | 2.30 | 0.38      |  |
| 2.00   | 117.00 | 91.30  | 53.00       | 38.90 | 24.60 | 13.75   | 2.40 | 0.55      |  |
| 2.50   | 153.00 | 117.75 | 64.00       | 41.10 | 27.40 | 14.90   | 2.60 | 12.00     |  |
| Teff (NTU)   |        | 0.46   | B.W.W(m/hr) |       | 59.27 | T(C)    |      | 27.00     |  |
| Eff(%)   |        | 99.07  | % B.W.      |       | 12.59 | 9/12/88 |      |           |  |

| DUF RUN 8       |        |                  |       |               |       |             |      |           |  |
|-----------------|--------|------------------|-------|---------------|-------|-------------|------|-----------|--|
|                 |        | Tin(NTU) 50.00   |       | Q(m/hr) 20.00 |       | ES(mm) 1.20 |      |           |  |
| TIME            | H1(CM) | H2               | H3    | H4            | H5    | H6          | H7   | Teff(NTU) |  |
| 0.00            | 30.50  | 27.50            | 26.50 | 22.00         | 17.30 | 11.40       | 3.00 | 4.20      |  |
| 0.50            | 40.75  | 39.90            | 32.00 | 25.50         | 18.80 | 12.00       | 3.25 | 0.55      |  |
| 1.00            | 54.60  | 50.20            | 37.50 | 26.70         | 19.80 | 12.40       | 3.25 | 0.34      |  |
| 2.00            | 82.25  | 74.30            | 53.00 | 36.70         | 25.25 | 15.40       | 3.90 | 0.68      |  |
| 3.00            | 102.50 | 93.50            | 67.00 | 46.80         | 32.40 | 20.50       | 4.90 | 9.60      |  |
| Teff (NTU) 0.51 |        | B.W.(m/hr) 99.75 |       | T(C) 28.00    |       |             |      |           |  |
| Eff(%) 98.98    |        | % B.W.           |       | 20.72         |       | 20/12/88    |      |           |  |

| DUF RUN 9       |        |                  |        |               |       |             |      |           |  |
|-----------------|--------|------------------|--------|---------------|-------|-------------|------|-----------|--|
|                 |        | Tin(NTU) 50.00   |        | Q(m/hr) 15.00 |       | ES(mm) 0.30 |      |           |  |
| TIME            | H1(CM) | H2               | H3     | H4            | H5    | H6          | H7   | Teff(NTU) |  |
| 0.00            | 135.00 | 125.10           | 105.50 | 87.25         | 66.10 | 37.00       | 4.00 | 0.24      |  |
| 0.50            | 152.50 | 157.00           | 118.50 | 97.20         | 73.25 | 41.25       | 5.25 | 0.14      |  |
| Teff (NTU) 0.14 |        | B.W.(m/hr) 59.25 |        | T(C) 27.00    |       |             |      |           |  |
| Eff(%) 99.72    |        | % B.W.           |        | 31.53         |       | 8/12/88     |      |           |  |

| DUF RUN 10      |        |                  |       |               |       |             |      |           |  |
|-----------------|--------|------------------|-------|---------------|-------|-------------|------|-----------|--|
|                 |        | Tin(NTU) 50.00   |       | Q(m/hr) 15.00 |       | ES(mm) 0.60 |      |           |  |
| TIME            | H1(CM) | H2               | H3    | H4            | H5    | H6          | H7   | Teff(NTU) |  |
| 0.00            | 72.00  | 64.00            | 55.50 | 47.50         | 36.40 | 23.50       | 3.75 | 0.70      |  |
| 0.50            | 95.50  | 81.75            | 63.10 | 51.50         | 38.90 | 23.60       | 3.75 | 0.25      |  |
| 1.00            | 119.90 | 101.00           | 70.10 | 56.25         | 41.40 | 23.75       | 3.80 | 0.28      |  |
| 2.00            | 180.80 | 141.10           | 85.50 | 66.20         | 48.30 | 24.70       | 3.90 | 0.24      |  |
| Teff (NTU) 0.26 |        | B.W.(m/hr) 98.15 |       | T(C) 25.50    |       |             |      |           |  |
| Eff(%) 99.49    |        | % B.W.           |       | 13.34         |       | 20/12/88    |      |           |  |

| DUF RUN 11 : Tin(NTU) 50.00 : Q(m/hr) 15.00 : ES(mm) 0.90 |        |        |       |       |       |       |      |           |  |
|---|--------|--------|-------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2     | H3    | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 38.00  | 35.00  | 28.60 | 21.80 | 15.40 | 8.50  | 1.75 | 1.70      |  |
| 0.50  | 57.50  | 47.10  | 33.25 | 24.50 | 17.00 | 9.50  | 2.00 | 0.63      |  |
| 1.00  | 70.75  | 55.20  | 35.20 | 25.25 | 17.20 | 9.60  | 2.20 | 0.49      |  |
| 2.00  | 90.00  | 68.00  | 37.80 | 26.10 | 17.50 | 9.60  | 2.30 | 0.51      |  |
| 3.00  | 116.00 | 86.00  | 44.00 | 28.80 | 19.30 | 10.50 | 2.50 | 5.20      |  |
| 4.00  | 139.26 | 102.00 | 49.50 | 30.80 | 20.50 | 11.00 | 2.60 | 11.00     |  |
| Teff (NTU) 0.50 : B.W.W(m/hr) 59.25 : T(C) 26.00          |        |        |       |       |       |       |      |           |  |
| Eff(%) 99.00 : % B.W. 16.78 : 9/12/88                     |        |        |       |       |       |       |      |           |  |

| DUF RUN 12 : Tin(NTU) 50.00 : Q(m/hr) 15.00 : ES(mm) 1.20 |        |       |       |       |       |       |      |           |  |
|---|--------|-------|-------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2    | H3    | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 26.00  | 25.00 | 24.50 | 17.50 | 15.00 | 9.50  | 1.00 | 8.25      |  |
| 0.50  | 35.20  | 32.60 | 28.80 | 22.20 | 16.40 | 10.26 | 1.10 | 4.60      |  |
| 1.00  | 44.30  | 40.30 | 33.40 | 25.10 | 17.80 | 11.00 | 1.20 | 0.95      |  |
| 2.00  | 63.10  | 55.60 | 42.30 | 30.40 | 20.70 | 12.54 | 1.30 | 0.70      |  |
| 3.00  | 77.75  | 69.10 | 51.10 | 36.00 | 24.30 | 14.65 | 1.70 | 2.57      |  |
| 3.50  | 83.50  | 74.75 | 55.50 | 39.00 | 26.50 | 16.00 | 1.90 | 18.00     |  |
| Teff (NTU) 0.83 : B.W.W(m/hr) 98.15 : T(C) 25.50          |        |       |       |       |       |       |      |           |  |
| Eff(%) 98.35 : % B.W. 27.63 : 20/12/88                    |        |       |       |       |       |       |      |           |  |

| DUF RUN 13 : Tin(NTU) 50.00 : Q(m/hr) 10.00 : ES(mm) 0.30 |        |        |       |       |       |       |      |           |  |
|---|--------|--------|-------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2     | H3    | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 95.00  | 87.00  | 75.00 | 67.00 | 49.50 | 26.80 | 2.50 | 2.00      |  |
| 0.50  | 127.00 | 109.00 | 90.20 | 76.00 | 56.10 | 30.80 | 3.25 | 0.75      |  |
| 1.00  | 142.00 | 121.50 | 93.00 | 77.00 | 57.25 | 32.00 | 3.50 | 0.41      |  |
| 2.00  | 170.50 | 141.00 | 94.50 | 73.10 | 54.20 | 32.80 | 3.60 | 0.25      |  |
| 2.50  | 182.50 | 147.00 | 94.80 | 73.50 | 54.50 | 32.90 | 3.60 | 0.22      |  |
| Teff (NTU) 0.33 : B.W.W(m/hr) 28.60 : T(C) 27.00          |        |        |       |       |       |       |      |           |  |
| Eff(%) 99.34 : % B.W. 9.46 : 8/12/88                      |        |        |       |       |       |       |      |           |  |

| DUF RUN 14 : Tin(NTU) 50.00 : Q(m/hr) 10.00 : ES(mm) 0.60 |        |             |       |       |       |       |      |           |  |
|---|--------|-------------|-------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2          | H3    | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 45.00  | 42.80       | 38.20 | 32.50 | 25.80 | 15.60 | 2.00 | 2.20      |  |
| 0.50  | 66.40  | 52.25       | 40.00 | 33.30 | 26.40 | 16.00 | 2.10 | 0.29      |  |
| 1.00  | 80.60  | 60.00       | 41.50 | 34.20 | 26.40 | 16.10 | 2.25 | 0.26      |  |
| 2.00  | 106.10 | 79.30       | 47.10 | 34.90 | 26.50 | 16.20 | 2.20 | 0.20      |  |
| 3.00  | 131.75 | 98.25       | 54.60 | 38.00 | 27.10 | 16.20 | 2.20 | 0.20      |  |
| 4.00  | 166.50 | 124.50      | 66.00 | 46.70 | 31.50 | 16.30 | 2.30 | 0.19      |  |
| 4.50  | 175.00 | 136.50      | 78.00 | 51.10 | 35.50 | 16.30 | 2.30 | 0.18      |  |
| Teff (NTU)  | 0.21   | B.W.W(m/hr) |       |       | 48.82 | T(C)  |      | 27.00     |  |
| Eff(%)  | 99.58  | % B.W.      |       |       | 8.89  |       |      | 19/12/88  |  |

| DUF RUN 15 : Tin(NTU) 50.00 : Q(m/hr) 10.00 : ES(mm) 0.90 |        |             |       |       |       |      |      |           |  |
|---|--------|-------------|-------|-------|-------|------|------|-----------|--|
| TIME  | H1(CM) | H2          | H3    | H4    | H5    | H6   | H7   | Teff(NTU) |  |
| 0.00  | 25.00  | 24.20       | 20.30 | 16.00 | 11.60 | 7.00 | 1.40 | 34.00     |  |
| 0.50  | 31.00  | 28.90       | 21.20 | 16.40 | 11.70 | 7.00 | 1.60 | 1.20      |  |
| 1.00  | 35.60  | 29.80       | 21.50 | 16.40 | 11.70 | 7.00 | 1.60 | 0.80      |  |
| 2.00  | 47.10  | 36.80       | 23.40 | 16.60 | 11.75 | 7.00 | 1.60 | 0.70      |  |
| 3.00  | 57.10  | 43.25       | 25.50 | 17.90 | 11.97 | 7.00 | 1.60 | 0.55      |  |
| 4.00  | 68.80  | 51.20       | 27.05 | 19.25 | 12.50 | 7.10 | 1.80 | 0.80      |  |
| 5.00  | 79.05  | 57.80       | 29.50 | 19.50 | 13.50 | 7.25 | 2.00 | 0.90      |  |
| 6.00  | 91.25  | 67.00       | 33.65 | 21.50 | 14.68 | 7.90 | 2.30 | 6.90      |  |
| Teff (NTU)  | 0.75   | B.W.W(m/hr) |       |       | 59.74 | T(C) |      | 26.00     |  |
| Eff(%)  | 98.50  | % B.W.      |       |       | 10.07 |      |      | 8/12/88   |  |

| DUF RUN 16 : Tin(NTU) 50.00 : Q(m/hr) 10.00 : ES(mm) 1.20 |        |             |       |       |       |      |      |           |  |
|---|--------|-------------|-------|-------|-------|------|------|-----------|--|
| TIME  | H1(CM) | H2          | H3    | H4    | H5    | H6   | H7   | Teff(NTU) |  |
| 0.00  | 15.50  | 15.00       | 13.00 | 10.80 | 8.10  | 5.50 | 0.50 | 5.20      |  |
| 0.50  | 23.50  | 21.00       | 15.75 | 12.20 | 9.00  | 6.00 | 0.50 | 1.75      |  |
| 1.00  | 27.00  | 23.50       | 16.75 | 12.60 | 9.20  | 6.00 | 0.50 | 1.60      |  |
| 2.00  | 34.90  | 29.50       | 19.50 | 13.90 | 10.00 | 6.40 | 0.60 | 1.10      |  |
| 3.00  | 43.00  | 36.40       | 23.20 | 16.30 | 11.00 | 7.20 | 0.70 | 1.10      |  |
| 4.00  | 52.60  | 44.50       | 28.50 | 19.50 | 13.40 | 8.70 | 0.80 | 3.25      |  |
| Teff (NTU)  | 0.95   | B.W.W(m/hr) |       |       | 99.31 | T(C) |      | 27.00     |  |
| Eff(%)  |        | % B.W.      |       |       | 23.68 |      |      | 19/12/88  |  |

| DUF RUN 17 : Tin(NTU) 50.00 : Q(a/hr) 5.00 : ES(aa) 0.30 |        |       |       |       |       |      |      |           |  |
|--|--------|-------|-------|-------|-------|------|------|-----------|--|
| TIME   | H1(CM) | H2    | H3    | H4    | H5    | H6   | H7   | Teff(NTU) |  |
| 0.00   | 30.90  | 30.50 | 25.00 | 20.20 | 13.10 | 4.00 | 3.90 | 4.20      |  |
| 1.00   | 60.40  | 38.10 | 25.10 | 20.20 | 13.10 | 4.00 | 3.90 | 0.51      |  |
| 2.00   | 93.00  | 46.30 | 25.20 | 20.20 | 13.10 | 4.00 | 3.90 | 0.38      |  |
| 3.00   | 130.00 | 54.80 | 25.20 | 20.30 | 13.10 | 4.00 | 4.00 | 0.25      |  |
| 4.00   | 164.10 | 62.50 | 25.30 | 20.30 | 13.10 | 4.00 | 4.00 | 0.21      |  |
| 4.50   | 178.20 | 66.00 | 25.75 | 20.30 | 13.20 | 4.00 | 4.00 | 0.19      |  |
| Teff (NTU) 0.31 : B.W.W(a/hr) 28.75 : T(C) 27.50         |        |       |       |       |       |      |      |           |  |
| Eff(%) 99.38 : % B.W. 10.51 : 6/1/89                     |        |       |       |       |       |      |      |           |  |

| DUF RUN 18 : Tin(NTU) 50.00 : Q(a/hr) 5.00 : ES(aa) 0.50 |        |        |        |        |       |       |      |           |  |
|--|--------|--------|--------|--------|-------|-------|------|-----------|--|
| TIME   | H1(CM) | H2     | H3     | H4     | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00   | 19.50  | 103.50 | 101.50 | 99.25  | 96.20 | 92.25 | 1.20 | 5.75      |  |
| 1.00   | 40.00  | 107.00 | 102.50 | 100.00 | 96.50 | 92.25 | 1.20 | 0.76      |  |
| 2.00   | 62.50  | 110.50 | 104.00 | 101.10 | 97.00 | 92.25 | 1.20 | 0.57      |  |
| 3.00   | 86.00  | 114.10 | 105.10 | 101.50 | 97.25 | 92.30 | 1.20 | 0.48      |  |
| 4.00   | 108.50 | 118.00 | 105.50 | 102.60 | 98.00 | 92.30 | 1.20 | 0.30      |  |
| 5.00   | 132.40 | 120.10 | 106.00 | 102.70 | 98.30 | 92.30 | 1.20 | 0.29      |  |
| 6.00   | 157.50 | 123.50 | 108.10 | 102.80 | 99.10 | 92.40 | 1.20 | 0.31      |  |
| 7.00   | 180.00 | 127.10 | 109.00 | 104.00 | 99.50 | 92.40 | 1.80 | 0.30      |  |
| Teff (NTU) 0.43 : B.W.W(a/hr) 48.59 : T(C) 28.00         |        |        |        |        |       |       |      |           |  |
| Eff(%) 99.14 : % B.W. 11.43 : 31/12/88                   |        |        |        |        |       |       |      |           |  |

| DUF RUN 19 : Tin(NTU) 50.00 : $\theta$ (m/hr) 5.00 : ES(mm) 0.90 |        |             |       |       |        |      |       |           |
|--|--------|-------------|-------|-------|--------|------|-------|-----------|
| TIME   | H1(CM) | H2          | H3    | H4    | H5     | H6   | H7    | Teff(NTU) |
| 0.00   | 12.00  | 10.10       | 8.75  | 7.90  | 5.60   | 3.20 | 0.70  | 9.72      |
| 1.00   | 21.75  | 15.50       | 9.80  | 8.60  | 5.80   | 3.40 | 0.70  | 3.75      |
| 2.00   | 31.80  | 21.25       | 10.90 | 9.25  | 6.10   | 3.60 | 0.70  | 0.93      |
| 3.00   | 42.70  | 26.80       | 12.00 | 9.80  | 6.30   | 3.75 | 0.70  | 0.90      |
| 4.00   | 53.50  | 32.80       | 13.25 | 10.40 | 6.60   | 3.70 | 0.70  | 0.90      |
| 5.00   | 64.25  | 37.70       | 14.40 | 11.00 | 6.75   | 4.10 | 0.75  | 0.84      |
| 6.00   | 74.90  | 43.80       | 15.30 | 11.75 | 6.80   | 4.23 | 0.75  | 0.73      |
| 7.00   | 83.50  | 49.50       | 16.50 | 12.00 | 7.20   | 4.30 | 0.75  | 0.80      |
| 8.00   | 95.20  | 55.30       | 18.30 | 12.90 | 7.75   | 5.00 | 0.75  | 1.97      |
| Teff (NTU)   | 0.85   | B.W.W(m/hr) |       | 60.15 | T(C)   |      | 27.00 |           |
| Eff(%)   | 98.30  | % B.W.      |       | 13.42 | 8/1/89 |      |       |           |

| DUF RUN 20 : Tin(NTU) 50.00 : $\theta$ (m/hr) 5.00 : ES(mm) 1.20 |        |             |       |       |         |      |       |           |
|--|--------|-------------|-------|-------|---------|------|-------|-----------|
| TIME   | H1(CM) | H2          | H3    | H4    | H5      | H6   | H7    | Teff(NTU) |
| 0.00   | 9.20   | 8.90        | 8.10  | 6.70  | 4.00    | 2.25 | 0.80  | 7.90      |
| 1.00   | 14.70  | 14.30       | 10.00 | 8.50  | 5.20    | 3.10 | 0.80  | 2.50      |
| 2.00   | 17.20  | 18.50       | 13.30 | 10.40 | 6.80    | 4.30 | 0.80  | 1.50      |
| 3.00   | 26.50  | 23.30       | 15.25 | 11.70 | 7.50    | 5.20 | 0.80  | 1.35      |
| 4.00   | 32.20  | 30.80       | 19.70 | 13.60 | 10.00   | 6.10 | 0.80  | 1.12      |
| 5.00   | 34.20  | 35.30       | 23.30 | 16.50 | 11.50   | 7.40 | 0.80  | 1.02      |
| 5.50   | 42.30  | 39.00       | 24.80 | 17.50 | 12.30   | 8.00 | 0.80  | 1.31      |
| Teff (NTU)   | 0.97   | B.W.W(m/hr) |       | 99.75 | T(C)    |      | 28.00 |           |
| Eff(%)   |        | % B.W.      |       | 30.14 | 12/1/89 |      |       |           |

| DUF RUN 21 : Tin(NTU) 30.00 : $\theta$ (m/hr) 25.00 : ES(mm) 0.30 |        |             |    |    |      |    |    |           |
|---|--------|-------------|----|----|------|----|----|-----------|
| TIME  | H1(CM) | H2          | H3 | H4 | H5   | H6 | H7 | Teff(NTU) |
| 0.00  | NO     |             |    |    |      |    |    |           |
| 0.50  | NO     |             |    |    |      |    |    |           |
| 1.00  | NO     |             |    |    |      |    |    |           |
| 2.00  | NO     |             |    |    |      |    |    |           |
| Teff (NTU)  |        | B.W.W(m/hr) |    |    | T(C) |    |    |           |
| Eff(%)  |        | % B.W.      |    |    |      |    |    |           |

| DUF RUN 22 : Tin(NTU) 30.00 : Q(m/hr) 25.00 : ES(mm) 0.60 |        |        |             |       |       |       |      |           |  |
|---|--------|--------|-------------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2     | H3          | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 101.00 | 97.50  | 86.60       | 74.00 | 57.50 | 32.00 | 3.50 | 0.28      |  |
| 0.50  | 135.50 | 125.80 | 100.40      | 83.30 | 61.75 | 33.80 | 3.50 | 0.17      |  |
| 1.00  | 177.50 | 160.00 | 113.00      | 88.50 | 64.80 | 35.00 | 4.00 | 0.16      |  |
| Teff (NTU)  |        | 0.16   | B.W.W(m/hr) |       | 47.25 | T(C)  |      | 26.00     |  |
| Eff(%)  |        | 99.47  | % B.W.      |       |       |       |      | 17/12/88  |  |

| DUF RUN 23 : Tin(NTU) 30.00 : Q(m/hr) 25.00 : ES(mm) 0.90 |        |        |             |       |       |       |      |           |  |
|---|--------|--------|-------------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2     | H3          | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 60.00  | 55.00  | 45.50       | 35.00 | 25.25 | 15.50 | 3.10 | 1.20      |  |
| 0.50  | 96.25  | 79.40  | 54.00       | 39.25 | 27.50 | 16.50 | 3.40 | 0.23      |  |
| 1.00  | 121.50 | 96.90  | 59.90       | 42.25 | 28.90 | 17.00 | 3.50 | 0.22      |  |
| 2.00  | 173.00 | 133.10 | 73.50       | 49.10 | 33.50 | 19.75 | 4.25 | 1.55      |  |
| Teff (NTU)  |        | 0.24   | B.W.W(m/hr) |       | 59.18 | T(C)  |      | 27.50     |  |
| Eff(%)  |        | 99.19  | % B.W.      |       |       |       |      | 7/12/88   |  |

| DUF RUN 24 : Tin(NTU) 30.00 : Q(m/hr) 25.00 : ES(mm) 1.20 |        |        |             |       |       |       |      |           |  |
|---|--------|--------|-------------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2     | H3          | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 38.00  | 36.90  | 31.00       | 24.80 | 19.50 | 11.00 | 2.75 | 2.60      |  |
| 0.50  | 50.00  | 47.30  | 36.40       | 27.70 | 20.00 | 12.00 | 2.90 | 0.50      |  |
| 1.00  | 71.40  | 66.80  | 46.00       | 33.25 | 23.00 | 13.50 | 3.00 | 0.55      |  |
| 2.00  | 113.50 | 105.40 | 65.00       | 42.25 | 28.10 | 15.75 | 2.80 | 1.50      |  |
| Teff (NTU)  |        | 0.57   | B.W.W(m/hr) |       | 98.12 | T(C)  |      | 26.00     |  |
| Eff(%)  |        | 98.10  | % B.W.      |       |       |       |      | 17/12/88  |  |



| DUF RUN 25 : Tin(NTU) 30.00 : Q(m/hr) 20.00 : ES(mm) 0.30 |        |             |    |    |      |    |    |           |  |
|---|--------|-------------|----|----|------|----|----|-----------|--|
| TIME  | H1(CM) | H2          | H3 | H4 | H5   | H6 | H7 | Teff(NTU) |  |
| 0.00  | NO     |             |    |    |      |    |    |           |  |
| 0.50  | NO     |             |    |    |      |    |    |           |  |
| 1.00  | NO     |             |    |    |      |    |    |           |  |
| 2.00  | NO     |             |    |    |      |    |    |           |  |
| Teff (NTU)  |        | B.W.W(m/hr) |    |    | T(C) |    |    |           |  |
| Eff(%)  |        | % B.W.      |    |    |      |    |    |           |  |

| DUF RUN 26 : Tin(NTU) 30.00 : Q(m/hr) 20.00 : ES(mm) 0.60 |        |        |             |       |       |       |      |           |  |
|---|--------|--------|-------------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2     | H3          | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 90.50  | 82.50  | 74.00       | 64.00 | 53.00 | 29.25 | 4.75 | 0.50      |  |
| 0.50  | 113.75 | 104.00 | 85.60       | 71.60 | 54.70 | 31.50 | 5.10 | 0.30      |  |
| 1.00  | 137.30 | 119.40 | 87.50       | 72.50 | 54.80 | 31.50 | 5.10 | 0.19      |  |
| 2.00  | 184.50 | 152.50 | 100.00      | 77.00 | 54.90 | 31.60 | 5.10 | 0.15      |  |
| Teff (NTU)  |        | 0.17   | B.W.W(m/hr) |       | 47.49 | T(C)  |      | 25.00     |  |
| Eff(%)  |        | 99.44  | % B.W.      |       | 10.00 |       |      | 19/12/88  |  |

| DUF RUN 27 : Tin(NTU) 30.00 : Q(m/hr) 20.00 : ES(mm) 0.90 |        |        |             |       |       |       |      |           |  |
|---|--------|--------|-------------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2     | H3          | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 56.00  | 70.50  | 40.00       | 30.00 | 20.75 | 11.70 | 3.80 | 0.76      |  |
| 0.50  | 80.20  | 76.80  | 45.00       | 31.90 | 21.50 | 12.05 | 3.80 | 0.30      |  |
| 1.00  | 104.50 | 83.00  | 50.00       | 33.80 | 22.25 | 12.40 | 3.90 | 0.25      |  |
| 2.00  | 142.50 | 108.25 | 58.80       | 38.00 | 24.50 | 13.70 | 4.15 | 0.23      |  |
| 3.00  | 175.00 | 134.00 | 66.90       | 43.90 | 26.50 | 14.50 | 4.30 | 2.80      |  |
| Teff (NTU)  |        | 0.24   | B.W.W(m/hr) |       | 58.27 | T(C)  |      | 25.80     |  |
| Eff(%)  |        | 99.20  | % B.W.      |       | 10.07 |       |      | 7/12/88   |  |

| DUF RUN 28 |        |        |             |       |         |          |        |           |
|------------|--------|--------|-------------|-------|---------|----------|--------|-----------|
|            |        |        | Tin(NTU)    | 30.00 | Q(m/hr) | 20.00    | ES(mm) | 1.20      |
| TIME       | H1(CM) | H2     | H3          | H4    | H5      | H6       | H7     | Teff(NTU) |
| 0.00       | 30.00  | 29.00  | 25.50       | 20.70 | 15.20   | 9.10     | 2.50   | 3.20      |
| 0.50       | 36.75  | 35.30  | 30.00       | 23.70 | 17.00   | 10.00    | 2.75   | 0.72      |
| 1.00       | 49.80  | 46.30  | 35.90       | 26.30 | 18.20   | 10.40    | 2.80   | 0.39      |
| 2.00       | 76.30  | 68.90  | 49.25       | 33.20 | 22.00   | 12.00    | 3.20   | 0.30      |
| 3.00       | 101.00 | 90.90  | 63.75       | 40.80 | 26.50   | 14.50    | 3.60   | 2.70      |
| 3.50       | 116.25 | 105.00 | 73.25       | 46.50 | 29.50   | 16.00    | 4.00   | 5.20      |
| Teff (NTU) |        | 0.35   | B.W.W(m/hr) |       | 99.50   | T(C)     |        | 25.00     |
| Eff(%)     |        | 98.85  | % B.W.      |       | 20.72   | 19/12/88 |        |           |

| DUF RUN 29 |        |        |             |       |         |         |        |           |
|------------|--------|--------|-------------|-------|---------|---------|--------|-----------|
|            |        |        | Tin(NTU)    | 30.00 | Q(m/hr) | 15.00   | ES(mm) | 0.30      |
| TIME       | H1(CM) | H2     | H3          | H4    | H5      | H6      | H7     | Teff(NTU) |
| 0.00       | 133.00 | 117.50 | 102.50      | 95.00 | 63.50   | 35.00   | 4.50   | 2.60      |
| 0.50       | 148.50 | 126.50 | 102.50      | 95.00 | 63.75   | 35.20   | 4.90   | 0.27      |
| 1.00       | 177.00 | 150.25 | 107.00      | 86.50 | 64.75   | 35.50   | 5.00   | 0.26      |
| Teff (NTU) |        | 0.20   | B.W.W(m/hr) |       | 26.84   | T(C)    |        | 26.00     |
| Eff(%)     |        | 99.33  | % B.W.      |       | 15.77   | 5/12/88 |        |           |

| DUF RUN 30 |        |        |             |       |         |          |        |           |
|------------|--------|--------|-------------|-------|---------|----------|--------|-----------|
|            |        |        | Tin(NTU)    | 30.00 | Q(m/hr) | 15.00    | ES(mm) | 0.60      |
| TIME       | H1(CM) | H2     | H3          | H4    | H5      | H6       | H7     | Teff(NTU) |
| 0.00       | 84.00  | 72.50  | 62.00       | 52.00 | 38.60   | 22.00    | 3.00   | 0.50      |
| 0.50       | 106.80 | 88.40  | 68.00       | 52.00 | 38.70   | 23.40    | 3.00   | 0.26      |
| 1.00       | 115.00 | 97.75  | 69.00       | 52.20 | 38.30   | 23.60    | 3.25   | 0.22      |
| 2.00       | 155.50 | 126.00 | 75.25       | 52.50 | 38.80   | 23.70    | 3.40   | 0.18      |
| 2.50       | 176.00 | 144.20 | 81.25       | 54.90 | 39.50   | 23.70    | 3.50   | 0.18      |
| Teff (NTU) |        | 0.20   | B.W.W(m/hr) |       | 46.59   | T(C)     |        | 25.00     |
| Eff(%)     |        | 99.33  | % B.W.      |       | 10.67   | 17/12'88 |        |           |

| DUF RUN 31 : Tin(NTU) 30.00 : Q(g/hr) 15.00 : ES(mm) 0.90 |        |        |             |       |       |       |      |           |  |
|---|--------|--------|-------------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2     | H3          | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 32.00  | 30.25  | 25.50       | 19.50 | 14.90 | 8.10  | 2.75 | 16.00     |  |
| 0.50  | 45.00  | 39.10  | 27.50       | 23.00 | 16.50 | 9.00  | 3.00 | 0.80      |  |
| 1.00  | 51.10  | 41.25  | 29.25       | 24.00 | 17.00 | 9.50  | 3.00 | 0.55      |  |
| 2.00  | 87.25  | 67.70  | 42.30       | 29.60 | 20.90 | 11.00 | 3.40 | 0.40      |  |
| 3.00  | 104.60 | 79.50  | 46.30       | 31.50 | 21.50 | 11.70 | 3.60 | 0.39      |  |
| 4.00  | 123.40 | 92.80  | 50.70       | 33.00 | 22.60 | 12.50 | 3.80 | 0.45      |  |
| 5.00  | 140.10 | 104.25 | 54.50       | 35.30 | 23.60 | 13.20 | 3.90 | 0.55      |  |
| 5.50  | 148.50 | 110.10 | 56.40       | 35.90 | 24.00 | 13.30 | 3.90 | 1.70      |  |
| Teff (NTU)  |        | 0.47   | B.W.W(g/hr) |       | 59.82 | T(C)  |      | 26.00     |  |
| Eff(%)  |        | 98.44  | % B.W.      |       | 6.71  |       |      | 5/12/88   |  |

| DUF RUN 32 : Tin(NTU) 30.00 : Q(g/hr) 15.00 : ES(mm) 1.20 |        |       |             |       |       |       |      |           |  |
|---|--------|-------|-------------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2    | H3          | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 27.00  | 25.50 | 22.00       | 18.30 | 13.00 | 7.20  | 2.50 | 4.30      |  |
| 0.50  | 36.50  | 33.80 | 27.80       | 24.00 | 15.00 | 8.00  | 3.00 | 0.96      |  |
| 1.00  | 45.00  | 40.30 | 31.40       | 23.75 | 15.80 | 8.40  | 3.00 | 0.67      |  |
| 2.00  | 55.10  | 47.75 | 35.25       | 24.90 | 16.20 | 8.50  | 3.10 | 0.53      |  |
| 3.00  | 69.10  | 58.50 | 42.10       | 28.00 | 17.75 | 9.10  | 3.20 | 0.53      |  |
| 4.00  | 84.50  | 72.00 | 52.50       | 34.10 | 21.75 | 12.00 | 4.10 | 3.40      |  |
| Teff (NTU)  |        | 0.58  | B.W.W(g/hr) |       | 98.77 | T(C)  |      | 26.00     |  |
| Eff(%)  |        | 98.08 | % B.W.      |       | 18.42 |       |      | 17/12/88  |  |

| DUF RUN 33 : Tin(NTU) 30.00 : Q(g/hr) 10.00 : ES(mm) 0.30 |        |        |             |       |       |       |      |           |  |
|---|--------|--------|-------------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2     | H3          | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 95.00  | 89.50  | 70.00       | 63.50 | 47.70 | 25.00 | 4.50 | 0.55      |  |
| 0.50  | 105.00 | 91.00  | 70.00       | 63.50 | 47.75 | 25.00 | 4.50 | 0.33      |  |
| 1.00  | 120.40 | 100.00 | 72.40       | 64.50 | 48.80 | 25.50 | 4.60 | 0.28      |  |
| 2.00  | 145.75 | 110.50 | 75.00       | 65.50 | 50.00 | 25.75 | 4.75 | 0.25      |  |
| 2.50  | 176.00 | 143.75 | 83.50       | 71.25 | 53.00 | 27.50 | 4.90 | 0.18      |  |
| Teff (NTU)  |        | 0.27   | B.W.W(g/hr) |       | 27.51 | T(C)  |      | 26.50     |  |
| Eff(%)  |        | 99.12  | % B.W.      |       | 9.46  |       |      | 7/12/88   |  |

| DUF RUN 34 |        |                |       |               |       |             |      |           |  |
|------------|--------|----------------|-------|---------------|-------|-------------|------|-----------|--|
|            |        | Tin(NTU) 30.00 |       | Q(m/hr) 10.00 |       | ES(mm) 0.60 |      |           |  |
| TIME       | H1(CM) | H2             | H3    | H4            | H5    | H6          | H7   | Teff(NTU) |  |
| 0.00       | 50.00  | 45.50          | 40.00 | 34.50         | 25.40 | 14.75       | 1.90 | 2.00      |  |
| 0.50       | 57.50  | 49.00          | 40.90 | 35.00         | 27.00 | 14.90       | 1.90 | 0.55      |  |
| 1.00       | 69.50  | 54.70          | 42.00 | 35.50         | 27.40 | 15.00       | 2.00 | 0.36      |  |
| 2.00       | 87.40  | 64.90          | 44.50 | 35.60         | 27.50 | 15.20       | 2.00 | 0.25      |  |
| 3.00       | 100.50 | 76.20          | 47.60 | 37.00         | 27.75 | 15.30       | 2.00 | 0.24      |  |
| 4.00       | 118.60 | 83.20          | 52.60 | 40.00         | 28.50 | 15.40       | 2.00 | 0.25      |  |
| 5.00       | 132.00 | 106.70         | 59.40 | 44.60         | 29.50 | 15.40       | 2.10 | 0.22      |  |
| 6.00       | 153.50 | 117.90         | 67.00 | 49.50         | 30.90 | 15.50       | 2.10 | 0.18      |  |
| 7.00       | 170.50 | 133.50         | 74.50 | 55.00         | 34.60 | 15.50       | 2.10 | 0.18      |  |
| Teff (NTU) | 0.24   | B.W.(m/hr)     |       | 48.88         |       | T(C)        |      | 25.50     |  |
| Eff(%)     | 99.19  | % B.W.         |       | 5.72          |       |             |      | 18/12/88  |  |

| DUF RUN 35 |        |                |       |               |       |             |      |           |  |
|------------|--------|----------------|-------|---------------|-------|-------------|------|-----------|--|
|            |        | Tin(NTU) 30.00 |       | Q(m/hr) 10.00 |       | ES(mm) 0.90 |      |           |  |
| TIME       | H1(CM) | H2             | H3    | H4            | H5    | H6          | H7   | Teff(NTU) |  |
| 0.00       | 25.00  | 22.50          | 19.00 | 14.00         | 10.25 | 6.00        | 1.25 | 1.80      |  |
| 0.50       | 31.60  | 26.80          | 19.50 | 14.50         | 10.30 | 6.25        | 1.25 | 1.25      |  |
| 1.00       | 34.00  | 28.00          | 20.00 | 14.75         | 10.50 | 6.40        | 1.30 | 0.90      |  |
| 2.00       | 48.00  | 38.50          | 23.80 | 16.60         | 11.30 | 6.50        | 1.30 | 0.81      |  |
| 3.00       | 62.00  | 49.00          | 27.50 | 18.50         | 12.10 | 6.70        | 1.40 | 0.58      |  |
| 4.00       | 72.50  | 55.75          | 28.80 | 20.00         | 12.10 | 6.70        | 1.40 | 0.52      |  |
| 5.00       | 80.40  | 60.50          | 29.70 | 20.00         | 12.40 | 6.70        | 1.50 | 0.52      |  |
| 6.00       | 93.00  | 69.50          | 32.75 | 0.50          | 13.10 | 6.80        | 1.50 | 1.00      |  |
| Teff (NTU) | 0.43   | B.W.(m/hr)     |       | 60.54         |       | T(C)        |      | 26.00     |  |
| Eff(%)     | 98.50  | % B.W.         |       | 10.07         |       |             |      | 6/12/89   |  |

| DUF RUN 36 : Tin(NTU) 30.00 : Q(m/hr) 10.00 : ES(mm) 1.20 |        |       |            |       |        |       |      |           |  |
|---|--------|-------|------------|-------|--------|-------|------|-----------|--|
| TIME  | H1(CM) | H2    | H3         | H4    | H5     | H6    | H7   | Teff(NTU) |  |
| 0.00  | 16.00  | 15.50 | 13.40      | 11.20 | 8.20   | 5.40  | 0.70 | 7.30      |  |
| 0.50  | 17.10  | 16.10 | 13.50      | 11.25 | 8.30   | 5.50  | 0.80 | 3.40      |  |
| 1.00  | 24.00  | 22.25 | 18.00      | 14.50 | 10.40  | 6.75  | 1.20 | 2.96      |  |
| 2.00  | 29.00  | 25.70 | 17.50      | 15.10 | 10.60  | 6.70  | 1.20 | 0.93      |  |
| 3.00  | 36.40  | 31.90 | 23.90      | 17.25 | 12.10  | 7.40  | 1.40 | 0.85      |  |
| 4.00  | 42.10  | 36.90 | 27.25      | 20.70 | 13.00  | 7.65  | 1.50 | 0.78      |  |
| 5.00  | 46.50  | 40.70 | 29.70      | 21.30 | 14.00  | 7.90  | 1.50 | 0.75      |  |
| 6.00  | 52.75  | 45.90 | 33.10      | 23.25 | 15.00  | 8.50  | 1.40 | 0.73      |  |
| 6.50  | 58.40  | 50.75 | 36.90      | 26.00 | 16.90  | 10.70 | 1.50 | 1.10      |  |
| Teff (NTU)  |        | 0.85  | B.W.(m/hr) |       | 100.45 | T(C)  |      | 25.50     |  |
| Eff(%)  |        | 97.18 | % B.W.     |       | 13.81  |       |      | 18/12/89  |  |

| DUF RUN 37 : Tin(NTU) 30.00 : Q(m/hr) 5.00 : ES(mm) 0.30 |        |       |            |       |       |       |      |           |  |
|--|--------|-------|------------|-------|-------|-------|------|-----------|--|
| TIME   | H1(CM) | H2    | H3         | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00   | 30.90  | 29.10 | 26.30      | 23.70 | 18.30 | 11.70 | 3.80 | 5.10      |  |
| 1.00   | 53.10  | 35.00 | 26.50      | 23.80 | 18.30 | 11.70 | 3.80 | 0.86      |  |
| 2.00   | 92.75  | 41.90 | 27.00      | 23.80 | 18.30 | 11.70 | 3.90 | 0.33      |  |
| 3.00   | 111.60 | 47.50 | 27.50      | 23.90 | 18.50 | 11.75 | 3.90 | 0.25      |  |
| 4.00   | 140.25 | 52.10 | 28.10      | 23.90 | 18.40 | 11.75 | 3.90 | 0.26      |  |
| 5.00   | 168.00 | 57.10 | 28.75      | 24.10 | 18.50 | 11.80 | 3.90 | 0.22      |  |
| 5.50   | 175.00 | 59.50 | 29.50      | 24.20 | 18.50 | 11.80 | 3.90 | 0.21      |  |
| Teff (NTU)   |        | 0.38  | B.W.(m/hr) |       | 29.95 | T(C)  |      | 27.00     |  |
| Eff(%)   |        | 98.72 | % B.W.     |       | 8.60  |       |      | 5/1/89    |  |

| DUF RUN 38 : Tin(NTU) 30.00 : Q(m/hr) 5.00 : ES(mm) 0.60 |        |       |       |       |       |      |      |           |  |
|--|--------|-------|-------|-------|-------|------|------|-----------|--|
| TIME   | H1(CM) | H2    | H3    | H4    | H5    | H6   | H7   | Teff(NTU) |  |
| 0.00   | 20.00  | 19.20 | 15.70 | 13.75 | 10.90 | 6.50 | 1.50 | 0.92      |  |
| 0.50   | 26.00  | 19.75 | 16.00 | 13.90 | 11.00 | 6.50 | 1.50 | 0.73      |  |
| 1.00   | 31.40  | 21.40 | 16.00 | 14.00 | 11.10 | 6.75 | 1.60 | 0.56      |  |
| 2.00   | 44.50  | 23.50 | 17.00 | 14.25 | 12.00 | 6.80 | 1.60 | 0.54      |  |
| 3.00   | 57.40  | 24.75 | 17.50 | 14.80 | 12.10 | 6.80 | 1.60 | 0.38      |  |
| 4.00   | 77.50  | 25.10 | 17.70 | 15.00 | 12.00 | 6.90 | 1.60 | 0.30      |  |
| 5.00   | 93.10  | 27.75 | 17.80 | 15.50 | 12.40 | 6.80 | 1.60 | 0.33      |  |
| 6.00   | 116.30 | 29.50 | 19.80 | 16.50 | 13.00 | 6.80 | 1.60 | 0.29      |  |
| 7.00   | 137.40 | 32.25 | 20.00 | 16.75 | 13.00 | 6.90 | 1.70 | 0.25      |  |
| 8.00   | 173.70 | 34.50 | 21.00 | 17.30 | 13.00 | 7.00 | 1.70 | 0.24      |  |
| Teff (NTU) 0.44 : B.W.(m/hr) 48.41 : T(C) 28.00          |        |       |       |       |       |      |      |           |  |
| Eff(%) 98.52 : % B.W. 10.00 : 1/1/89                     |        |       |       |       |       |      |      |           |  |

| DUF RUN 39 : Tin(NTU) 30.00 : Q(m/hr) 5.00 : ES(mm) 0.90 |        |       |       |      |      |      |      |           |  |
|--|--------|-------|-------|------|------|------|------|-----------|--|
| TIME   | H1(CM) | H2    | H3    | H4   | H5   | H6   | H7   | Teff(NTU) |  |
| 0.00   | 10.50  | 9.50  | 7.60  | 3.90 | 3.00 | 2.60 | 0.50 | 5.00      |  |
| 0.50   | 13.50  | 10.40 | 8.00  | 6.00 | 4.00 | 2.70 | 0.60 | 3.80      |  |
| 1.00   | 13.50  | 11.20 | 8.20  | 6.10 | 4.00 | 2.70 | 0.50 | 3.20      |  |
| 2.00   | 21.30  | 13.25 | 8.40  | 6.25 | 4.00 | 2.70 | 0.60 | 0.77      |  |
| 3.00   | 27.40  | 16.25 | 8.50  | 6.25 | 4.00 | 2.70 | 0.60 | 0.72      |  |
| 4.00   | 33.90  | 19.40 | 8.70  | 6.30 | 4.00 | 2.70 | 0.60 | 0.81      |  |
| 5.00   | 41.00  | 22.80 | 8.80  | 6.00 | 4.00 | 2.70 | 0.60 | 0.72      |  |
| 6.00   | 48.10  | 26.50 | 10.50 | 6.00 | 4.00 | 2.70 | 0.60 | 0.73      |  |
| 7.00   | 55.80  | 30.70 | 10.85 | 6.20 | 4.00 | 2.70 | 0.60 | 0.71      |  |
| 8.00   | 66.75  | 36.50 | 12.00 | 6.50 | 4.00 | 2.70 | 0.60 | 0.70      |  |
| 9.00   | 80.10  | 42.60 | 13.10 | 6.50 | 4.10 | 2.70 | 0.50 | 0.75      |  |
| 10.00  | 100.10 | 50.90 | 15.00 | 6.70 | 4.20 | 2.70 | 0.70 | 0.78      |  |
| 10.50  | 109.50 | 54.75 | 16.20 | 6.80 | 4.20 | 2.70 | 0.70 | 1.90      |  |
| Teff (NTU) 0.79 : B.W.(m/hr) 65.45 : T(C) 29.00          |        |       |       |      |      |      |      |           |  |
| Eff(%) 97.37 : % B.W. 10.07 : 7/1/89                     |        |       |       |      |      |      |      |           |  |

| DUF RUN 40 |        |                |       |               |       |              |      |           |
|------------|--------|----------------|-------|---------------|-------|--------------|------|-----------|
|            |        | Tin(NTU) 30.00 |       | :Q(m/hr) 5.00 |       | :ES(mm) 1.20 |      |           |
| TIME       | H1(CM) | H2             | H3    | H4            | H5    | H6           | H7   | Teff(NTU) |
| 0.00       | 9.00   | 8.50           | 8.00  | 6.80          | 4.00  | 2.25         | 0.70 | 9.72      |
| 1.00       | 12.80  | 12.60          | 12.70 | 9.75          | 5.40  | 3.50         | 0.70 | 4.75      |
| 2.00       | 17.50  | 17.40          | 15.50 | 13.00         | 7.30  | 4.40         | 0.70 | 2.17      |
| 3.00       | 20.80  | 20.10          | 15.90 | 13.20         | 8.50  | 5.30         | 0.70 | 0.98      |
| 4.00       | 28.20  | 25.00          | 17.00 | 13.30         | 10.10 | 6.60         | 0.70 | 0.91      |
| 5.00       | 31.70  | 30.25          | 18.10 | 15.30         | 11.50 | 7.10         | 0.70 | 0.87      |
| 6.00       | 38.90  | 35.00          | 13.25 | 17.00         | 12.50 | 7.60         | 0.80 | 0.88      |
| 7.00       | 43.60  | 42.90          | 24.70 | 18.25         | 13.50 | 8.50         | 0.80 | 0.85      |
| 7.50       | 46.10  | 51.00          | 28.00 | 19.00         | 14.80 | 9.00         | 0.80 | 1.56      |
| Teff (NTU) | 0.90   | : B.W.W(m/hr)  |       | 99.77         |       | : T(C)       |      | 27.50     |
| Eff(%)     | 97.00  | : % B.W.       |       | 23.68         |       |              |      |           |

| DUF RUN 41 |        |               |    |          |    |         |    |           |
|------------|--------|---------------|----|----------|----|---------|----|-----------|
|            |        | Tin(NTU)      |    | :Q(m/hr) |    | :ES(mm) |    |           |
| TIME       | H1(CM) | H2            | H3 | H4       | H5 | H6      | H7 | Teff(NTU) |
| 0.00       |        |               |    |          |    |         |    |           |
| 0.50       |        |               |    |          |    |         |    |           |
| 1.00       |        |               |    |          |    |         |    |           |
| 2.00       |        |               |    |          |    |         |    |           |
| Teff (NTU) |        | : B.W.W(m/hr) |    |          |    | : T(C)  |    |           |
| Eff(%)     |        | : % B.W.      |    |          |    |         |    |           |

| DUF RUN 42 |        |                |        |                |       |              |      |           |
|------------|--------|----------------|--------|----------------|-------|--------------|------|-----------|
|            |        | Tin(NTU) 20.00 |        | :Q(m/hr) 25.00 |       | :ES(mm) 0.60 |      |           |
| TIME       | H1(CM) | H2             | H3     | H4             | H5    | H6           | H7   | Teff(NTU) |
| 0.00       | 113.00 | 110.00         | 100.75 | 88.75          | 72.00 | 42.50        | 4.10 | 2.00      |
| 0.50       | 164.50 | 149.50         | 120.25 | 99.40          | 77.50 | 45.00        | 4.20 | 0.20      |
| 1.00       | 177.50 | 165.00         | 127.00 | 103.00         | 79.50 | 45.70        | 4.50 | 0.20      |
| Teff (NTU) | 0.20   | : B.W.W(m/hr)  |        | 47.98          |       | : T(C)       |      | 29.00     |
| Eff(%)     | 99.00  | : % B.W.       |        |                |       | 14/12/89     |      |           |

| DUF RUN 43 |        | Tin(NTU) 20.00 |       | Q(m/hr) 25.00 |       | ES(mm) 0.90 |      |           |
|------------|--------|----------------|-------|---------------|-------|-------------|------|-----------|
| TIME       | H1(CM) | H2             | H3    | H4            | H5    | H6          | H7   | Teff(NTU) |
| 0.00       | 65.00  | 53.50          | 44.00 | 33.70         | 23.50 | 13.25       | 4.00 | 1.80      |
| 0.50       | 86.00  | 75.00          | 54.50 | 39.00         | 26.40 | 14.50       | 4.20 | 0.36      |
| 1.00       | 110.50 | 91.00          | 60.00 | 41.50         | 27.00 | 14.70       | 4.20 | 0.30      |
| 2.00       | 160.50 | 126.50         | 69.50 | 44.50         | 28.50 | 14.90       | 4.20 | 0.28      |
| 2.50       | 175.00 | 135.75         | 73.00 | 46.00         | 29.25 | 15.00       | 4.20 | 0.29      |
| Teff (NTU) | 0.29   | B.W.W(m/hr)    |       | 60.40         |       | T(C)        |      | 25.00     |
| Eff(%)     | 98.55  | Z B.W.         |       |               |       |             |      | 4/12/88   |

| DUF RUN 44 |        | Tin(NTU) 20.00 |       | Q(m/hr) 25.00 |       | ES(mm) 1.20 |      |           |
|------------|--------|----------------|-------|---------------|-------|-------------|------|-----------|
| TIME       | H1(CM) | H2             | H3    | H4            | H5    | H6          | H7   | Teff(NTU) |
| 0.00       | 36.50  | 35.00          | 30.50 | 26.50         | 19.00 | 12.50       | 3.40 | 0.25      |
| 0.50       | 43.00  | 41.00          | 34.50 | 28.10         | 20.80 | 13.40       | 3.50 | 0.58      |
| 1.00       | 63.25  | 57.00          | 43.90 | 33.50         | 23.80 | 15.00       | 3.70 | 0.38      |
| 2.00       | 90.50  | 78.00          | 54.80 | 38.20         | 26.00 | 16.00       | 4.00 | 1.00      |
| Teff (NTU) | 0.38   | B.W.W(m/hr)    |       | 99.65         |       | T(C)        |      | 25.00     |
| Eff(%)     | 98.12  | Z B.W.         |       |               |       |             |      | 15/12/88  |

| DUF RUN 45 |        | Tin(NTU) 20.00 |    | Q(m/hr) 20.00 |    | ES(mm) 0.30 |    |           |
|------------|--------|----------------|----|---------------|----|-------------|----|-----------|
| TIME       | H1(CM) | H2             | H3 | H4            | H5 | H6          | H7 | Teff(NTU) |
| 0.00       | ND     |                |    |               |    |             |    |           |
| 0.50       | ND     |                |    |               |    |             |    |           |
| 1.00       | ND     |                |    |               |    |             |    |           |
| Teff (NTU) |        | B.W.W(m/hr)    |    |               |    | T(C)        |    |           |
| Eff(%)     |        | Z B.W.         |    |               |    |             |    |           |



| DUF RUN 46 : Tin(NTU) 20.00 : Q(m/hr) 20.00 : ES(mm) 0.60 |        |        |        |       |       |       |      |           |  |
|---|--------|--------|--------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2     | H3     | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 92.00  | 111.00 | 100.75 | 84.00 | 66.50 | 36.50 | 3.00 | 0.30      |  |
| 0.50  | 133.00 | 121.50 | 101.00 | 84.70 | 66.75 | 36.75 | 3.10 | 0.23      |  |
| 1.00  | 166.50 | 143.75 | 105.00 | 85.25 | 67.10 | 36.75 | 3.10 | 0.18      |  |
| 1.50  | 181.00 | 153.50 | 107.50 | 85.50 | 68.00 | 37.00 | 3.10 | 0.15      |  |
| Teff (NTU) 0.18 : B.W.W(m/hr) 47.98 : T(C) 26.50          |        |        |        |       |       |       |      |           |  |
| Eff(%) 99.10 : % B.W. 13.34 : 14/12/88                    |        |        |        |       |       |       |      |           |  |

| DUF RUN 47 : Tin(NTU) 20.00 : Q(m/hr) 20.00 : ES(mm) 0.90 |        |        |       |       |       |       |      |           |  |
|---|--------|--------|-------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2     | H3    | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 47.00  | 44.50  | 36.50 | 27.90 | 19.50 | 11.00 | 3.00 | 15.00     |  |
| 0.50  | 65.70  | 56.90  | 41.30 | 30.30 | 20.80 | 11.75 | 3.00 | 0.41      |  |
| 1.00  | 84.50  | 69.25  | 46.25 | 32.75 | 22.00 | 12.50 | 3.10 | 0.36      |  |
| 2.00  | 117.25 | 89.75  | 55.00 | 37.50 | 24.00 | 12.80 | 3.30 | 0.30      |  |
| 3.00  | 167.50 | 125.50 | 61.70 | 38.50 | 24.60 | 13.00 | 3.40 | 0.49      |  |
| 3.50  | 183.00 | 133.50 | 65.50 | 40.50 | 26.00 | 13.60 | 3.50 | 1.80      |  |
| Teff (NTU) 0.38 : B.W.W(m/hr) 59.94 : T(C) 25.00          |        |        |       |       |       |       |      |           |  |
| Eff(%) 98.08 : % B.W. 8.39 : 4/12/88                      |        |        |       |       |       |       |      |           |  |

| DUF RUN 48 : Tin(NTU) 20.00 : Q(m/hr) 20.00 : ES(mm) 1.20 |        |       |       |       |       |       |      |           |  |
|---|--------|-------|-------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2    | H3    | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 27.00  | 26.00 | 22.70 | 19.50 | 14.50 | 10.50 | 2.00 | 3.60      |  |
| 0.50  | 32.40  | 31.00 | 26.10 | 21.00 | 16.10 | 11.50 | 2.50 | 0.78      |  |
| 1.00  | 43.00  | 37.90 | 29.40 | 24.25 | 18.10 | 12.00 | 3.00 | 0.44      |  |
| 2.00  | 58.80  | 53.30 | 39.40 | 28.50 | 21.40 | 14.20 | 3.75 | 0.61      |  |
| 3.00  | 80.25  | 71.25 | 50.25 | 34.50 | 25.00 | 17.60 | 4.70 | 1.75      |  |
| Teff (NTU) 0.53 : B.W.W(m/hr) 99.73 : T(C) 26.00          |        |       |       |       |       |       |      |           |  |
| Eff(%) 97.38 : % B.W. 20.72 : 14/12/88                    |        |       |       |       |       |       |      |           |  |

| DUF RUN 49 : Tin(NTU) 20.00 : Q(m/hr) 15.00 : ES(mm) 0.30 |        |        |        |       |       |       |      |           |  |
|---|--------|--------|--------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2     | H3     | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 135.00 | 113.00 | 98.00  | 81.80 | 60.00 | 25.50 | 5.10 | 12.50     |  |
| 0.50  | 162.00 | 147.00 | 115.25 | 94.50 | 70.00 | 35.00 | 6.50 | 0.32      |  |
| 1.00  | 184.00 | 157.00 | 120.50 | 98.00 | 70.78 | 36.00 | 6.50 | 0.25      |  |
| Teff (NTU) 0.25 : B.W.W(m/hr) 26.26 : T(C) 26.00          |        |        |        |       |       |       |      |           |  |
| Eff(%) 98.75 : % B.W. 15.77 : 2/12/88                     |        |        |        |       |       |       |      |           |  |

| DUF RUN 50 : Tin(NTU) 20.00 : Q(m/hr) 15.00 : ES(mm) 0.60 |        |        |       |       |       |       |      |           |  |
|---|--------|--------|-------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2     | H3    | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 83.00  | 75.00  | 62.10 | 51.10 | 39.00 | 21.75 | 4.00 | 0.40      |  |
| 1.00  | 118.10 | 82.50  | 72.00 | 57.00 | 43.10 | 23.00 | 4.40 | 0.32      |  |
| 2.00  | 150.50 | 130.10 | 82.60 | 63.50 | 48.20 | 27.10 | 4.50 | 0.24      |  |
| 3.00  | 180.00 | 140.50 | 91.50 | 68.00 | 52.00 | 29.75 | 5.00 | 0.23      |  |
| Teff (NTU) 0.26 : B.W.W(m/hr) 47.76 : T(C) 25.00          |        |        |       |       |       |       |      |           |  |
| Eff(%) 98.68 : % B.W. 8.89 : 15/12/88                     |        |        |       |       |       |       |      |           |  |

| DUF RUN 51 : Tin(NTU) 20.00 : Q(m/hr) 15.00 : ES(mm) 0.90 |        |        |       |       |       |       |      |           |  |
|---|--------|--------|-------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2     | H3    | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 33.50  | 31.50  | 25.75 | 19.00 | 13.80 | 7.60  | 2.40 | 4.40      |  |
| 0.50  | 54.00  | 45.00  | 31.50 | 23.10 | 15.00 | 8.00  | 2.50 | 0.36      |  |
| 1.00  | 74.00  | 55.50  | 33.70 | 23.30 | 15.20 | 8.10  | 2.50 | 0.30      |  |
| 2.00  | 92.50  | 68.00  | 35.50 | 23.75 | 15.40 | 8.25  | 2.50 | 0.38      |  |
| 3.00  | 113.00 | 74.25  | 35.50 | 25.50 | 17.00 | 8.50  | 2.50 | 0.38      |  |
| 4.00  | 146.75 | 107.50 | 52.00 | 32.70 | 20.90 | 10.50 | 3.00 | 1.80      |  |
| Teff (NTU) 0.34 : B.W.W(m/hr) 59.86 : T(C) 26.00          |        |        |       |       |       |       |      |           |  |
| Eff(%) 98.32 : % B.W. 11.19 : 3/12/88                     |        |        |       |       |       |       |      |           |  |

| DUF RUN 52 : Tin(NTU) 20.00 : Q(a/hr) 15.00 : ES(mm) 1.20 |        |       |             |       |       |       |      |           |  |
|---|--------|-------|-------------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2    | H3          | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 20.50  | 19.90 | 17.40       | 14.60 | 11.50 | 8.50  | 1.25 | 17.00     |  |
| 0.50  | 25.30  | 24.00 | 24.60       | 15.10 | 12.70 | 9.25  | 1.40 | 5.79      |  |
| 1.00  | 30.20  | 27.90 | 32.20       | 17.50 | 14.10 | 9.80  | 1.60 | 1.24      |  |
| 2.00  | 40.00  | 36.00 | 47.20       | 20.00 | 16.40 | 11.20 | 2.10 | 0.95      |  |
| 3.00  | 49.90  | 44.00 | 32.00       | 23.50 | 17.00 | 12.40 | 2.60 | 0.81      |  |
| 4.00  | 57.00  | 50.10 | 36.00       | 26.20 | 17.50 | 14.00 | 2.80 | 0.80      |  |
| Teff (NTU)  |        | 0.88  | B.W.W(a/hr) |       | 99.50 | T(C)  |      | 25.00     |  |
| Eff(%)  |        | 95.60 | % B.W.      |       | 18.42 |       |      | 15/12/88  |  |

| DUF RUN 53 : Tin(NTU) 20.00 : Q(a/hr) 10.00 : ES(mm) 0.30 |        |        |             |       |       |       |      |           |  |
|---|--------|--------|-------------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2     | H3          | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 87.00  | 84.50  | 74.00       | 62.00 | 47.50 | 26.00 | 3.50 | 1.00      |  |
| 0.50  | 119.90 | 113.00 | 85.00       | 70.00 | 50.50 | 29.00 | 3.60 | 0.49      |  |
| 1.00  | 135.00 | 113.50 | 86.25       | 71.50 | 54.00 | 29.25 | 3.75 | 0.38      |  |
| 2.00  | 161.50 | 132.25 | 87.50       | 72.00 | 54.25 | 29.30 | 3.90 | 0.31      |  |
| 3.00  | 185.00 | 146.00 | 89.00       | 72.75 | 54.50 | 23.50 | 3.90 | 0.24      |  |
| Teff (NTU)  |        | 0.31   | B.W.W(a/hr) |       | 28.31 | T(C)  |      | 26.00     |  |
| Eff(%)  |        | 98.45  | % B.W.      |       | 7.88  |       |      | 2/12/88   |  |

| DUF RUN 54 : Tin(NTU) 20.00 : Q(a/hr) 10.00 : ES(mm) 0.60 |        |        |             |       |       |       |      |           |  |
|---|--------|--------|-------------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2     | H3          | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 50.00  | 55.50  | 49.50       | 42.70 | 31.70 | 19.00 | 3.00 | 0.74      |  |
| 0.50  | 62.75  | 57.00  | 49.70       | 42.75 | 31.80 | 19.00 | 3.00 | 0.48      |  |
| 1.00  | 75.80  | 64.00  | 50.80       | 42.70 | 32.00 | 19.00 | 3.10 | 0.38      |  |
| 2.00  | 99.50  | 77.80  | 53.80       | 42.70 | 32.50 | 19.10 | 3.10 | 0.31      |  |
| 3.00  | 121.25 | 92.60  | 202.30      | 45.00 | 33.60 | 19.25 | 3.10 | 0.31      |  |
| 4.00  | 143.25 | 107.90 | 64.27       | 48.40 | 34.00 | 19.30 | 3.20 | 0.25      |  |
| 5.00  | 164.50 | 124.00 | 71.40       | 52.50 | 34.60 | 20.00 | 3.20 | 0.26      |  |
| 6.00  | 180.00 | 133.00 | 76.00       | 55.50 | 35.75 | 20.00 | 3.25 | 0.25      |  |
| Teff (NTU)  |        | 0.29   | B.W.W(a/hr) |       | 48.67 | T(C)  |      | 24.00     |  |
| Eff(%)  |        | 98.53  | % B.W.      |       | 6.67  |       |      | 14/12/88  |  |

| DUF RUN 55      |        |                   |       |               |       |             |      |           |  |
|-----------------|--------|-------------------|-------|---------------|-------|-------------|------|-----------|--|
|                 |        | Tin(NTU) 20.00    |       | Q(m/hr) 10.00 |       | ES(mm) 0.90 |      |           |  |
| TIME            | H1(CM) | H2                | H3    | H4            | H5    | H6          | H7   | Teff(NTU) |  |
| 0.00            | 18.40  | 17.00             | 14.00 | 10.80         | 7.50  | 4.25        | 1.10 | 5.40      |  |
| 0.50            | 27.00  | 22.30             | 16.80 | 12.50         | 13.50 | 4.50        | 1.20 | 0.98      |  |
| 1.00            | 34.75  | 27.50             | 19.00 | 13.90         | 9.70  | 5.20        | 1.40 | 0.87      |  |
| 2.00            | 40.60  | 33.30             | 19.00 | 13.75         | 9.50  | 5.20        | 1.40 | 0.81      |  |
| 3.00            | 49.00  | 36.10             | 20.70 | 14.40         | 9.75  | 5.30        | 1.40 | 0.73      |  |
| 4.00            | 58.80  | 42.40             | 22.10 | 15.25         | 10.00 | 5.40        | 1.40 | 0.69      |  |
| 5.00            | 69.00  | 49.25             | 25.00 | 16.50         | 10.40 | 5.50        | 1.40 | 0.68      |  |
| 6.00            | 81.00  | 57.75             | 28.10 | 18.50         | 11.00 | 5.80        | 1.40 | 0.57      |  |
| 7.00            | 96.50  | 69.90             | 34.10 | 21.90         | 13.70 | 7.00        | 1.80 | 0.91      |  |
| 8.00            | 106.00 | 77.90             | 38.50 | 24.40         | 15.50 | 8.10        | 2.10 | 0.95      |  |
| Teff (NTU) 0.77 |        | B.W.W(m/hr) 60.75 |       | T(C) 26.00    |       |             |      |           |  |
| Eff(%) 96.17    |        | % B.W.            |       | 7.19          |       | 2/12/88     |      |           |  |

| DUF RUN 56      |        |                    |       |               |       |             |      |           |  |
|-----------------|--------|--------------------|-------|---------------|-------|-------------|------|-----------|--|
|                 |        | Tin(NTU) 20.00     |       | Q(m/hr) 10.00 |       | ES(mm) 1.20 |      |           |  |
| TIME            | H1(CM) | H2                 | H3    | H4            | H5    | H6          | H7   | Teff(NTU) |  |
| 0.00            | 13.00  | 12.00              | 10.30 | 8.40          | 7.50  | 5.00        | 1.50 | 12.50     |  |
| 0.50            | 13.60  | 12.10              | 10.50 | 8.50          | 7.70  | 5.00        | 1.75 | 4.45      |  |
| 1.00            | 16.10  | 14.60              | 12.25 | 9.80          | 8.00  | 5.50        | 1.90 | 1.29      |  |
| 2.00            | 20.60  | 18.40              | 14.00 | 11.25         | 8.40  | 6.20        | 2.20 | 0.95      |  |
| 3.00            | 26.00  | 22.70              | 17.00 | 12.60         | 9.50  | 6.75        | 2.40 | 0.79      |  |
| 4.00            | 31.90  | 27.40              | 19.70 | 14.00         | 10.25 | 7.20        | 2.50 | 0.77      |  |
| 5.00            | 36.25  | 30.50              | 21.40 | 14.90         | 10.80 | 7.50        | 2.70 | 0.80      |  |
| 6.00            | 42.00  | 33.75              | 23.50 | 18.10         | 11.50 | 7.75        | 2.90 | 0.73      |  |
| 7.00            | 47.10  | 37.90              | 25.25 | 17.30         | 12.25 | 7.90        | 2.90 | 0.81      |  |
| 8.00            | 54.50  | 42.50              | 27.50 | 18.50         | 13.50 | 8.10        | 3.25 | 0.98      |  |
| Teff (NTU) 0.81 |        | B.W.W(m/hr) 100.95 |       | T(C) 24.00    |       |             |      |           |  |
| Eff(%) 95.96    |        | % B.W.             |       | 11.84         |       | 14/12/88    |      |           |  |

| DUF RUN 57 |        |                |       |              |       |             |      |           |  |
|------------|--------|----------------|-------|--------------|-------|-------------|------|-----------|--|
|            |        | Tin(NTU) 20.00 |       | Q(m/hr) 5.00 |       | ES(mm) 0.30 |      |           |  |
| TIME       | H1(CM) | H2             | H3    | H4           | H5    | H6          | H7   | Teff(NTU) |  |
| 0.00       | 30.50  | 79.00          | 26.25 | 23.40        | 18.25 | 11.60       | 3.60 | 6.70      |  |
| 0.50       | 33.50  | 30.50          | 27.00 | 23.40        | 18.50 | 11.70       | 3.60 | 0.56      |  |
| 1.00       | 42.20  | 31.00          | 27.10 | 23.50        | 18.50 | 11.70       | 3.60 | 0.43      |  |
| 2.00       | 58.25  | 31.60          | 27.80 | 23.75        | 18.70 | 11.80       | 3.60 | 0.31      |  |
| 3.00       | 75.25  | 34.00          | 27.90 | 23.80        | 18.70 | 11.90       | 3.70 | 0.33      |  |
| 4.00       | 97.00  | 39.50          | 28.00 | 24.60        | 19.10 | 12.00       | 3.80 | 0.32      |  |
| 5.00       | 122.75 | 46.25          | 28.10 | 24.60        | 19.20 | 12.00       | 3.80 | 0.26      |  |
| 6.00       | 150.10 | 53.90          | 28.25 | 24.70        | 19.30 | 12.10       | 3.80 | 0.35      |  |
| 7.00       | 179.40 | 60.30          | 28.40 | 24.80        | 19.50 | 12.25       | 3.80 | 0.38      |  |
| Teff (NTU) | 0.34   | B.W.W(m/hr)    |       | 29.70        |       | T(C)        |      | 27.00     |  |
| Eff(%)     | 98.31  | % B.W.         |       | 6.76         |       |             |      | 4/1/89    |  |

| DUF RUN 58 |        |                |       |              |       |             |      |           |  |
|------------|--------|----------------|-------|--------------|-------|-------------|------|-----------|--|
|            |        | Tin(NTU) 20.00 |       | Q(m/hr) 5.00 |       | ES(mm) 0.60 |      |           |  |
| TIME       | H1(CM) | H2             | H3    | H4           | H5    | H6          | H7   | Teff(NTU) |  |
| 0.00       | 20.50  | 19.50          | 17.75 | 15.80        | 13.00 | 7.75        | 2.80 | 1.75      |  |
| 0.50       | 28.40  | 21.00          | 18.00 | 15.80        | 13.00 | 7.75        | 2.80 | 0.69      |  |
| 1.00       | 36.25  | 25.70          | 18.00 | 15.80        | 13.00 | 8.00        | 3.00 | 0.48      |  |
| 2.00       | 50.00  | 28.40          | 18.20 | 15.90        | 13.00 | 8.00        | 3.00 | 0.31      |  |
| 3.00       | 65.30  | 33.25          | 18.75 | 16.60        | 13.00 | 8.00        | 3.00 | 0.38      |  |
| 4.00       | 79.80  | 41.75          | 20.25 | 17.75        | 13.30 | 8.60        | 3.00 | 0.38      |  |
| 5.00       | 95.75  | 49.70          | 20.80 | 18.00        | 14.00 |             | 3.00 | 0.39      |  |
| 6.00       | 111.75 | 57.70          | 21.60 | 18.25        | 14.90 | 9.00        | 3.00 | 0.38      |  |
| 7.00       | 127.95 | 63.10          | 22.40 | 18.80        | 15.10 | 9.20        | 3.00 | 0.43      |  |
| 8.00       | 144.25 | 68.50          | 23.40 | 19.90        | 15.25 | 9.50        | 3.00 | 0.41      |  |
| 9.00       | 158.67 | 73.90          | 24.10 | 20.30        | 15.30 | 9.50        | 3.10 | 0.41      |  |
| 10.00      | 178.10 | 79.30          | 25.00 | 20.60        | 15.50 | 9.60        | 3.10 | 0.46      |  |
| Teff (NTU) | 0.40   | B.W.W(m/hr)    |       | 48.91        |       | T(C)        |      | 27.00     |  |
| Eff(%)     | 97.99  | % B.W.         |       | 8.00         |       |             |      | 3/1/89    |  |

| DUF RUN 59 : Tin(NTU) 20.00 : Q(m/hr) 5.00 : ES(mm) 0.90 |        |             |       |       |        |       |      |           |
|--|--------|-------------|-------|-------|--------|-------|------|-----------|
| TIME   | H1(CM) | H2          | H3    | H4    | H5     | H6    | H7   | Teff(NTU) |
| 0.00   | 10.50  | 10.00       | 8.50  | 7.00  | 5.00   | 3.20  | 0.80 | 5.50      |
| 0.50   | 14.00  | 11.60       | 9.40  | 7.40  | 5.25   | 3.40  | 0.80 | 2.70      |
| 1.00   | 17.25  | 12.25       | 9.50  | 7.40  | 5.25   | 3.50  | 0.80 | 0.99      |
| 2.00   | 24.60  | 15.00       | 9.60  | 7.40  | 5.25   | 3.70  | 0.80 | 0.85      |
| 3.00   | 33.50  | 19.00       | 9.90  | 7.50  | 5.30   | 3.80  | 0.80 | -0.64     |
| 4.00   | 37.00  | 28.00       | 11.60 | 8.10  | 5.75   | 4.20  | 0.90 | 0.58      |
| 5.00   | 46.00  | 30.75       | 11.10 | 8.25  | 5.75   | 4.20  | 0.90 | 0.57      |
| 6.00   | 53.00  | 36.25       | 12.50 | 8.50  | 5.80   | 4.30  | 0.90 | 0.51      |
| 7.00   | 59.50  | 36.40       | 12.50 | 9.00  | 5.80   | 4.30  | 0.90 | 0.55      |
| 8.00   | 67.50  | 38.25       | 13.80 | 9.30  | 5.80   | 4.30  | 0.90 | 0.75      |
| 9.00   | 74.20  | 42.00       | 14.10 | 9.50  | 5.85   | 4.30  | 0.90 | 0.65      |
| 10.00  | 78.50  | 44.10       | 14.30 | 9.75  | 5.85   | 4.30  | 0.90 | 0.67      |
| 11.00  | 86.10  | 46.30       | 14.75 | 9.00  | 5.90   | 4.30  | 1.00 | 0.69      |
| 12.00  | 90.70  | 48.50       | 15.00 | 10.00 | 5.90   | 4.40  | 1.00 | 0.69      |
| 13.00  | 99.20  | 52.00       | 16.50 | 10.60 | 5.90   | 4.40  | 1.00 | 1.79      |
| 14.00  | 107.50 | 57.00       | 17.10 | 10.80 | 5.90   | 4.40  | 1.00 | 1.65      |
| 15.00  | 120.00 | 58.40       | 17.40 | 11.00 | 5.95   | 4.40  | 1.00 | 1.72      |
| 16.00  | 130.75 | 64.00       | 18.90 | 11.75 | 6.00   | 4.50  | 1.00 | 1.87      |
| Teff (NTU)   | 0.68   | B.W.W(m/hr) |       | 65.90 | T(C)   | 25.00 |      |           |
| Eff(%)   | 96.57  | % B.W.      |       | 7.74  | 9/1/89 |       |      |           |

| DUF RUN 60 : Tin(NTU) 20.00 : Q(m/hr) 5.00 : ES(mm) 1.20 |        |             |       |        |         |       |      |           |
|--|--------|-------------|-------|--------|---------|-------|------|-----------|
| TIME   | H1(CM) | H2          | H3    | H4     | H5      | H6    | H7   | Teff(NTU) |
| 0.00   | 9.00   | 8.10        | 7.00  | 6.25   | 4.25    | 2.50  | 0.30 | 6.35      |
| 1.00   | 11.00  | 10.40       | 8.20  | 6.70   | 5.00    | 2.75  | 0.30 | 2.17      |
| 2.00   | 14.90  | 13.00       | 9.00  | 7.00   | 6.10    | 3.10  | 0.30 | 1.12      |
| 3.00   | 15.25  | 13.80       | 10.00 | 7.40   | 6.50    | 3.20  | 0.30 | 0.98      |
| 4.00   | 16.10  | 14.80       | 11.10 | 8.00   | 6.90    | 3.25  | 0.40 | 0.83      |
| 5.00   | 16.50  | 15.50       | 11.30 | 8.10   | 7.10    | 3.30  | 0.40 | 0.72      |
| 6.00   | 17.30  | 16.10       | 11.50 | 8.25   | 7.30    | 3.25  | 0.40 | 0.63      |
| 7.00   | 21.00  | 18.25       | 12.30 | 9.30   | 8.00    | 3.25  | 0.50 | 0.51      |
| 8.00   | 21.90  | 19.50       | 13.00 | 10.20  | 9.00    | 3.30  | 0.50 | 0.42      |
| 9.00   | 25.10  | 21.75       | 14.75 | 11.10  | 9.00    | 3.70  | 0.40 | 0.48      |
| 10.00  | 26.00  | 23.60       | 17.30 | 11.80  | 9.00    | 4.00  | 0.60 | 0.50      |
| 11.00  | 30.00  | 26.50       | 19.40 | 13.75  | 10.20   | 4.50  | 0.50 | 1.58      |
| 12.00  | 34.50  | 30.30       | 21.50 | 15.00  | 10.40   | 4.90  | 0.50 | 1.61      |
| 13.00  | 38.25  | 33.40       | 24.75 | 16.00  | 11.30   | 5.50  | 0.50 | 1.72      |
| 13.50  | 45.00  | 38.10       | 26.00 | 17.50  | 12.80   | 6.00  | 0.60 | 2.57      |
| Teff (NTU)   | 0.63   | B.W.W(m/hr) |       | 100.05 | T(C)    | 28.00 |      |           |
| Eff(%)   | 96.80  | % B.W.      |       | 16.58  | 10/1/89 |       |      |           |

| DUF RUN 61 : Tin(NTU) 10.00 : Q(m/hr) 25.00 : ES(mm) 0.30 |        |             |    |    |      |    |    |           |
|---|--------|-------------|----|----|------|----|----|-----------|
| TIME  | H1(CM) | H2          | H3 | H4 | H5   | H6 | H7 | Teff(NTU) |
| 0.00  | ND     |             |    |    |      |    |    |           |
| 0.50  | ND     |             |    |    |      |    |    |           |
| 1.00  | ND     |             |    |    |      |    |    |           |
| 2.00  | ND     |             |    |    |      |    |    |           |
| Teff (NTU)  |        | B.W.W(m/hr) |    |    | T(C) |    |    |           |
| Eff(%)  |        | % B.W.      |    |    |      |    |    |           |

| DUF RUN 62 : Tin(NTU) 10.00 : Q(m/hr) 25.00 : ES(mm) 0.60 |        |        |             |        |       |       |      |           |
|---|--------|--------|-------------|--------|-------|-------|------|-----------|
| TIME  | H1(CM) | H2     | H3          | H4     | H5    | H6    | H7   | Teff(NTU) |
| 0.00  | 109.00 | 133.00 | 118.50      | 101.25 | 80.50 | 49.00 | 4.00 | 1.10      |
| 0.50  | 167.50 | 152.50 | 129.70      | 107.25 | 84.25 | 51.00 | 4.00 | 0.17      |
| 1.00  | 181.00 | 170.00 | 139.00      | 113.00 | 88.00 | 53.50 | 5.10 | 0.15      |
| Teff (NTU)  |        | 0.15   | B.W.W(m/hr) |        | 48.86 | T(C)  |      | 25.00     |
| Eff(%)  |        | 98.50  | % B.W.      |        |       |       |      | 13/12/88  |

| DUF RUN 63 : Tin(NTU) 10.00 : Q(m/hr) 25.00 : ES(mm) 0.90 |        |        |             |       |       |       |      |           |
|---|--------|--------|-------------|-------|-------|-------|------|-----------|
| TIME  | H1(CM) | H2     | H3          | H4    | H5    | H6    | H7   | Teff(NTU) |
| 0.00  | 65.00  | 52.40  | 43.10       | 32.00 | 23.25 | 12.25 | 3.90 | 1.50      |
| 1.00  | 79.00  | 74.00  | 62.00       | 50.00 | 35.50 | 19.40 | 4.00 | 0.85      |
| 2.00  | 129.00 | 104.00 | 67.50       | 50.75 | 36.60 | 22.00 | 5.00 | 0.16      |
| 3.00  | 167.50 | 134.50 | 78.00       | 56.10 | 39.30 | 23.00 | 5.70 | 0.16      |
| 4.00  | 185.00 | 144.00 | 76.00       | 53.00 | 36.25 | 21.00 | 5.50 | 0.18      |
| Teff (NTU)  |        | 0.34   | B.W.W(m/hr) |       | 59.67 | T(C)  |      | 26.00     |
| Eff(%)  |        | 96.62  | % B.W.      |       |       |       |      | 26/10/88  |

| DUF RUN 64 : Tin(NTU) 10.00 : Q(m/hr) 25.00 : ES(mm) 1.20 |        |        |        |       |       |       |      |           |
|---|--------|--------|--------|-------|-------|-------|------|-----------|
| TIME  | H1(CM) | H2     | H3     | H4    | H5    | H6    | H7   | Teff(NTU) |
| 0.00  | 37.50  | 36.00  | 31.75  | 26.75 | 20.00 | 11.60 | 2.90 | 2.60      |
| 0.50  | 47.30  | 45.00  | 39.10  | 31.60 | 22.60 | 12.75 | 2.90 | 1.32      |
| 1.00  | 70.10  | 64.20  | 52.60  | 39.10 | 26.10 | 14.00 | 3.00 | 1.25      |
| 2.00  | 110.90 | 100.60 | 76.40  | 51.00 | 30.75 | 15.60 | 3.15 | 0.19      |
| 3.00  | 139.25 | 126.90 | 95.40  | 61.60 | 35.00 | 17.10 | 3.25 | 0.26      |
| 4.00  | 185.00 | 168.20 | 115.80 | 79.50 | 41.90 | 19.00 | 3.40 | 0.39      |
| Teff (NTU) 0.28 : B.W.W(m/hr) 98.77 : T(C) 27.00          |        |        |        |       |       |       |      |           |
| Eff(%) 97.20 : % B.W. : 26/12/88                          |        |        |        |       |       |       |      |           |

| DUF RUN 65 : Tin(NTU) 10.00 : Q(m/hr) 20.00 : ES(mm) 0.30 |        |    |    |    |    |    |    |           |
|---|--------|----|----|----|----|----|----|-----------|
| TIME  | H1(CM) | H2 | H3 | H4 | H5 | H6 | H7 | Teff(NTU) |
| 0.00  | NO     |    |    |    |    |    |    |           |
| 0.50  | NO     |    |    |    |    |    |    |           |
| 1.00  | NO     |    |    |    |    |    |    |           |
| 2.00  | NO     |    |    |    |    |    |    |           |
| Teff (NTU) : B.W.W(m/hr) : T(C)                           |        |    |    |    |    |    |    |           |
| Eff(%) : % B.W. :   |        |    |    |    |    |    |    |           |



|            |        |        |             |        |          |          |         |           |
|------------|--------|--------|-------------|--------|----------|----------|---------|-----------|
| DUF RUN    | 66.00  | :      | Tin(NTU)    | 10.00  | :Q(m/hr) | 20.00    | :ES(mm) | 0.60      |
| TIME       | H1(CM) | H2     | H3          | H4     | H5       | H6       | H7      | Teff(NTU) |
| 0.00       | 96.00  | 116.50 | 107.50      | 93.00  | 74.00    | 43.00    | 3.00    | 0.30      |
| 0.50       | 144.00 | 139.10 | 120.50      | 102.00 | 79.25    | 46.00    | 3.30    | 0.16      |
| 1.00       | 170.00 | 156.00 | 126.00      | 104.00 | 79.90    | 46.60    | 3.50    | 0.20      |
| Teff (NTU) | 0.18   | :      | B.W.W(m/hr) | 47.29  | : T(C)   | 25.00    |         |           |
| Eff(%)     | 98.25  | :      | % B.W.      | 16.00  | :        | 10/12/88 |         |           |

|            |        |        |             |       |          |         |         |           |
|------------|--------|--------|-------------|-------|----------|---------|---------|-----------|
| DUF RUN    | 67.00  | :      | Tin(NTU)    | 10.00 | :Q(m/hr) | 20.00   | :ES(mm) | 0.90      |
| TIME       | H1(CM) | H2     | H3          | H4    | H5       | H6      | H7      | Teff(NTU) |
| 0.00       | 56.50  | 53.00  | 43.00       | 31.25 | 20.00    | 11.00   | 3.70    | 2.80      |
| 0.50       | 64.00  | 57.25  | 43.25       | 31.50 | 20.50    | 11.75   | 3.70    | 0.60      |
| 1.00       | 74.75  | 64.60  | 45.30       | 32.00 | 21.00    | 11.80   | 3.70    | 0.43      |
| 2.00       | 97.00  | 79.75  | 49.00       | 32.80 | 21.50    | 11.80   | 3.71    | 0.26      |
| 3.00       | 126.00 | 100.25 | 54.50       | 34.30 | 22.00    | 11.80   | 3.73    | 0.26      |
| 4.00       | 152.25 | 119.50 | 60.25       | 36.20 | 22.50    | 11.80   | 3.73    | 0.26      |
| 5.00       | 171.00 | 133.25 | 64.00       | 37.40 | 22.60    | 11.80   | 3.75    | 0.28      |
| 6.50       | 181.00 | 140.50 | 66.00       | 38.00 | 22.75    | 11.80   | 3.75    | 1.30      |
| Teff (NTU) | 0.30   | :      | B.W.W(m/hr) | 60.79 | : T(C)   | 25.00   |         |           |
| Eff(%)     | 97.02  | :      | % B.W.      | 5.03  | :        | 1/12/88 |         |           |

|            |        |       |             |       |          |          |         |           |
|------------|--------|-------|-------------|-------|----------|----------|---------|-----------|
| DUF RUN    | 68.00  | :     | Tin(NTU)    | 10.00 | :Q(m/hr) | 20.00    | :ES(mm) | 1.20      |
| TIME       | H1(CM) | H2    | H3          | H4    | H5       | H6       | H7      | Teff(NTU) |
| 0.00       | 27.00  | 26.00 | 22.50       | 19.50 | 14.50    | 10.50    | 2.00    | 3.60      |
| 0.50       | 32.40  | 31.00 | 26.10       | 21.00 | 16.10    | 11.50    | 2.50    | 0.78      |
| 1.00       | 43.00  | 39.90 | 31.40       | 24.25 | 18.10    | 12.00    | 3.00    | 0.44      |
| 2.00       | 58.80  | 53.30 | 39.40       | 28.50 | 21.40    | 14.20    | 3.75    | 0.61      |
| 3.00       | 80.25  | 71.25 | 50.25       | 34.50 | 25.00    | 17.60    | 4.70    | 0.80      |
| 4.00       | 110.00 | 79.40 | 58.30       | 37.20 | 28.10    | 19.50    | 5.00    | 1.75      |
| Teff (NTU) | 0.62   | :     | B.W.W(m/hr) | 99.25 | : T(C)   | 26.00    |         |           |
| Eff(%)     | 93.84  | :     | % B.W.      | 3.80  | :        | 14/12/88 |         |           |

|            |        |        |             |        |          |          |         |           |
|------------|--------|--------|-------------|--------|----------|----------|---------|-----------|
| DUF RUN    | 69.00  | :      | Tin(NTU)    | 10.00  | :Q(m/hr) | 15.00    | :ES(mm) | 0.30      |
| TIME       | H1(CM) | H2     | H3          | H4     | H5       | H6       | H7      | Teff(NTU) |
| 0.00       | 127.00 | 123.80 | 113.00      | 96.00  | 72.50    | 39.00    | 5.40    | 0.20      |
| 0.50       | 162.80 | 153.00 | 133.00      | 110.00 | 83.00    | 44.50    | 7.00    | 0.17      |
| 1.00       | 178.00 | 161.50 | 135.50      | 111.25 | 84.10    | 45.00    | 7.00    | 0.16      |
| Teff (NTU) | 0.16   | :      | B.W.W(m/hr) | 28.73  | : T(C)   | 25.00    |         |           |
| Eff(%)     | 98.40  | :      | % B.W.      | 15.77  | :        | 30/11/88 |         |           |

|            |        |        |             |       |          |          |         |           |
|------------|--------|--------|-------------|-------|----------|----------|---------|-----------|
| DUF RUN    | 70.00  | :      | Tin(NTU)    | 10.00 | :Q(m/hr) | 15.00    | :ES(mm) | 0.60      |
| TIME       | H1(CM) | H2     | H3          | H4    | H5       | H6       | H7      | Teff(NTU) |
| 0.00       | 85.00  | 72.50  | 65.00       | 57.25 | 47.50    | 28.25    | 6.50    | 1.00      |
| 1.00       | 111.50 | 97.00  | 73.00       | 58.25 | 49.50    | 29.00    | 7.50    | 0.28      |
| 2.00       | 147.00 | 119.00 | 75.60       | 60.50 | 50.50    | 30.00    | 7.50    | 0.25      |
| 3.00       | 175.00 | 140.50 | 84.00       | 65.50 | 52.25    | 30.00    | 7.50    | 0.23      |
| Teff (NTU) | 0.25   | :      | B.W.W(m/hr) | 46.67 | : T(C)   | 25.00    |         |           |
| Eff(%)     | 97.50  | :      | % B.W.      | 8.47  | :        | 11/12/88 |         |           |

|            |        |        |             |       |          |          |         |           |
|------------|--------|--------|-------------|-------|----------|----------|---------|-----------|
| DUF RUN    | 71.00  | :      | Tin(NTU)    | 10.00 | :Q(m/hr) | 15.00    | :ES(mm) | 0.90      |
| TIME       | H1(CM) | H2     | H3          | H4    | H5       | H6       | H7      | Teff(NTU) |
| 0.00       | 37.50  | 35.50  | 29.40       | 23.20 | 16.30    | 10.20    | 2.00    | 1.80      |
| 0.50       | 47.00  | 41.50  | 32.30       | 24.70 | 17.00    | 10.20    | 2.30    | 1.75      |
| 1.00       | 53.40  | 45.25  | 33.15       | 24.80 | 17.10    | 10.20    | 2.30    | 0.90      |
| 2.00       | 71.10  | 56.00  | 35.40       | 25.40 | 17.25    | 10.20    | 2.30    | 0.45      |
| 3.00       | 87.25  | 66.25  | 37.30       | 25.75 | 17.30    | 10.20    | 2.30    | 0.38      |
| 4.00       | 96.50  | 71.90  | 38.25       | 25.80 | 17.50    | 10.20    | 2.30    | 0.37      |
| 5.00       | 107.00 | 78.90  | 38.75       | 25.90 | 17.75    | 10.20    | 2.30    | 0.39      |
| 6.00       | 121.25 | 89.00  | 40.00       | 26.25 | 17.90    | 10.20    | 2.30    | 0.36      |
| 7.00       | 141.50 | 105.00 | 45.75       | 28.75 | 18.70    | 10.20    | 2.30    | 0.35      |
| 8.00       | 163.75 | 123.25 | 53.25       | 32.50 | 20.25    | 10.80    | 2.30    | 0.50      |
| 9.00       | 178.25 | 133.00 | 56.25       | 33.75 | 21.10    | 11.40    | 2.40    | 0.72      |
| 9.50       | 182.50 | 135.00 | 56.50       | 33.50 | 21.20    | 11.50    | 2.50    | 0.80      |
| Teff (NTU) | .4905  | :      | B.W.W(m/hr) | 60.34 | : T(C)   | 25.00    |         |           |
| Eff(%)     | 95.094 | :      | % B.W.      | 3.53  | :        | 30/11/88 |         |           |

| TIME | H1(CM) | H2    | H3    | H4    | H5    | H6    | H7   | Teff(NTU) |
|------|--------|-------|-------|-------|-------|-------|------|-----------|
| 0.00 | 20.00  | 18.50 | 16.90 | 13.75 | 10.75 | 7.20  | 1.00 | 2.80      |
| 0.50 | 22.60  | 19.50 | 17.90 | 13.80 | 10.75 | 7.20  | 1.00 | 1.94      |
| 1.00 | 24.20  | 22.50 | 20.00 | 16.00 | 12.20 | 8.25  | 1.50 | 0.93      |
| 2.00 | 30.20  | 27.50 | 23.25 | 18.00 | 13.50 | 9.20  | 1.60 | 0.86      |
| 3.00 | 36.75  | 33.00 | 26.50 | 19.50 | 14.75 | 10.00 | 1.90 | 0.83      |
| 4.00 | 44.00  | 38.70 | 29.60 | 21.60 | 15.50 | 10.25 | 1.90 | 0.64      |
| 5.00 | 52.00  | 44.50 | 33.80 | 23.90 | 16.75 | 11.10 | 1.90 | 0.59      |
| 6.00 | 59.00  | 50.50 | 37.10 | 25.25 | 17.50 | 11.50 | 1.90 | 0.56      |
| 7.00 | 66.10  | 56.75 | 41.50 | 27.50 | 19.00 | 12.50 | 2.00 | 0.75      |
| 8.00 | 74.25  | 63.40 | 43.75 | 29.80 | 20.20 | 13.25 | 2.20 | 0.93      |
| 9.00 | 74.25  | 66.00 | 47.25 | 30.50 | 20.50 | 13.50 | 2.20 | 1.10      |

DUF RUN 72.00 : Tin(NTU) 10.00 : Q(m/hr) 15.00 : ES(mm) 1.20  
 Teff (NTU) .7606 : B.W.W(m/hr) 100.01 : T(C) 25.00  
 Eff(%) 92.394 : % B.W. 6.91 : 13/12/88

| TIME | H1(CM) | H2     | H3    | H4    | H5    | H6    | H7   | Teff(NTU) |
|------|--------|--------|-------|-------|-------|-------|------|-----------|
| 0.00 | 99.00  | 97.00  | 89.00 | 77.50 | 55.00 | 29.00 | 2.50 | 0.50      |
| 0.50 | 115.00 | 104.50 | 89.50 | 77.50 | 55.50 | 29.00 | 2.50 | 0.25      |
| 1.00 | 125.00 | 108.00 | 90.00 | 77.50 | 55.50 | 29.20 | 2.50 | 0.25      |
| 2.00 | 147.00 | 121.00 | 90.00 | 77.50 | 55.50 | 29.50 | 2.50 | 0.20      |
| 3.00 | 173.00 | 136.00 | 90.50 | 77.50 | 55.75 | 29.50 | 2.50 | 0.15      |
| 4.00 | 190.00 | 145.00 | 90.50 | 78.00 | 56.00 | 29.50 | 2.50 | 0.20      |

DUF RUN 73.00 : Tin(NTU) 10.00 : Q(m/hr) 10.00 : ES(mm) 0.30  
 Teff (NTU) 0.20 : B.W.W(m/hr) 28.74 : T(C) 26.00  
 Eff(%) 97.90 : % B.W. 5.91 : 29/11/88

| DUF RUN 74 : Tin(NTU) 10.00 : Q(m/hr) 10.00 : ES(mm) 0.6 |        |               |       |       |       |            |      |           |  |
|--|--------|---------------|-------|-------|-------|------------|------|-----------|--|
| TIME   | H1(CM) | H2            | H3    | H4    | H5    | H6         | H7   | Teff(NTU) |  |
| 0.00   | 52.25  | 50.00         | 45.50 | 39.50 | 29.50 | 16.60      | 2.00 | 0.75      |  |
| 0.50   | 69.50  | 57.20         | 46.00 | 41.00 | 29.60 | 16.80      | 2.25 | 0.35      |  |
| 1.00   | 79.25  | 63.80         | 48.90 | 42.00 | 31.00 | 17.70      | 2.30 | 0.35      |  |
| 2.00   | 96.40  | 76.25         | 53.20 | 43.00 | 32.50 | 18.50      | 2.40 | 0.34      |  |
| 3.00   | 111.30 | 87.70         | 55.00 | 43.00 | 32.50 | 18.50      | 2.40 | 0.27      |  |
| 4.00   | 124.00 | 99.00         | 58.25 | 43.30 | 32.50 | 18.50      | 2.50 | 0.26      |  |
| 5.00   | 146.10 | 115.50        | 65.20 | 45.90 | 32.80 | 18.60      | 2.50 | 0.28      |  |
| 6.00   | 168.00 | 128.50        | 70.00 | 48.70 | 33.00 | 18.60      | 2.60 | 0.30      |  |
| 6.50   | 180.00 | 130.50        | 71.00 | 49.00 | 33.00 | 18.60      | 2.60 | 0.20      |  |
| Teff (NTU) .300  |        | : B.W.W(m/hr) |       | 48.75 |       | : T(C)     |      | 24.00     |  |
| Eff(%) 97.00   |        | : % B.W.      |       | 6.16  |       | : 12/12/89 |      |           |  |

| DUF RUN 75 : Tin(NTU) 10.00 : Q(m/hr) 10.00 : ES(mm) 0.90 |        |               |       |       |       |            |      |           |  |
|---|--------|---------------|-------|-------|-------|------------|------|-----------|--|
| TIME  | H1(CM) | H2            | H3    | H4    | H5    | H6         | H7   | Teff(NTU) |  |
| 0.00  | 25.00  | 24.00         | 20.50 | 16.00 | 9.50  | 6.50       | 1.50 | 1.70      |  |
| 0.50  | 31.00  | 27.00         | 20.60 | 16.20 | 9.50  | 6.70       | 1.70 | 0.70      |  |
| 1.00  | 34.50  | 29.50         | 21.50 | 16.50 | 9.50  | 6.80       | 1.70 | 0.50      |  |
| 2.00  | 41.20  | 32.50         | 23.00 | 16.50 | 9.50  | 6.80       | 1.50 | 0.30      |  |
| 3.00  | 56.50  | 44.00         | 25.00 | 17.00 | 9.50  | 6.80       | 1.50 | 0.30      |  |
| 4.00  | 62.80  | 49.50         | 26.40 | 17.50 | 9.50  | 6.80       | 1.50 | 0.31      |  |
| 5.00  | 69.00  | 53.70         | 26.70 | 17.00 | 9.50  | 6.80       | 1.50 | 0.32      |  |
| 6.00  | 75.20  | 58.00         | 29.00 | 17.20 | 9.75  | 6.80       | 1.50 | 0.33      |  |
| 7.00  | 79.00  | 60.25         | 27.10 | 17.50 | 10.00 | 6.80       | 1.50 | 0.31      |  |
| 8.00  | 94.00  | 73.00         | 33.80 | 19.50 | 11.50 | 6.90       | 1.50 | 0.35      |  |
| 9.00  | 98.00  | 79.00         | 36.50 | 21.10 | 11.25 | 6.90       | 1.50 | 0.40      |  |
| 10.00   | 106.00 | 87.10         | 40.00 | 22.50 | 11.80 | 7.00       | 1.50 | 0.55      |  |
| 11.00   | 114.00 | 95.25         | 43.75 | 24.20 | 12.50 | 7.10       | 1.50 | 0.81      |  |
| 12.00   | 124.00 | 102.30        | 46.10 | 25.80 | 13.00 | 7.10       | 1.50 | 0.95      |  |
| 13.00   | 135.00 | 116.50        | 50.75 | 27.25 | 13.90 | 7.90       | 1.50 | 1.50      |  |
| 14.00   | 155.00 | 122.00        | 55.50 | 29.00 | 22.50 | 10.70      | 1.50 | 2.00      |  |
| 15.00   | 170.00 | 125.00        | 56.50 | 29.20 | 22.50 | 10.70      | 1.50 | 2.25      |  |
| Teff (NTU) 0.41   |        | : B.W.W(m/hr) |       | 60.81 |       | : T(C)     |      | 26.00     |  |
| Eff(%) 95.90  |        | : % B.W.      |       | 4.20  |       | : 29/11/88 |      |           |  |

| DUF RUN 76 : Tin(NTU) 10.00 : Q(m/hr) 10.00 : ES(mm) 1.20 |        |       |       |       |       |       |      |           |  |
|---|--------|-------|-------|-------|-------|-------|------|-----------|--|
| TIME  | H1(CM) | H2    | H3    | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00  | 15.00  | 14.00 | 13.50 | 11.75 | 10.00 | 7.50  | 0.00 | 8.40      |  |
| 0.50  | 17.20  | 16.50 | 14.90 | 13.50 | 11.20 | 8.40  | 0.50 | 4.50      |  |
| 1.00  | 20.50  | 18.40 | 17.25 | 14.50 | 12.50 | 9.60  | 1.50 | 1.18      |  |
| 2.00  | 24.75  | 22.50 | 19.50 | 16.70 | 14.00 | 10.90 | 2.25 | 0.92      |  |
| 3.00  | 29.75  | 26.50 | 22.50 | 18.70 | 15.00 | 11.60 | 2.70 | 0.83      |  |
| 4.00  | 34.75  | 30.60 | 25.50 | 20.70 | 16.00 | 12.25 | 3.20 | 0.74      |  |
| 5.00  | 37.00  | 32.25 | 25.50 | 20.00 | 16.25 | 12.50 | 3.50 | 0.80      |  |
| 6.00  | 44.00  | 36.50 | 27.90 | 21.00 | 16.50 | 12.75 | 3.75 | 0.77      |  |
| 7.00  | 45.10  | 36.80 | 31.50 | 23.50 | 18.75 | 14.10 | 4.00 | 0.83      |  |
| 8.00  | 53.90  | 45.50 | 34.50 | 24.00 | 19.00 | 14.50 | 4.25 | 0.76      |  |
| 9.00  | 55.30  | 46.10 | 34.25 | 24.25 | 19.50 | 14.50 | 4.30 | 0.83      |  |
| 10.00   | 59.60  | 49.50 | 35.25 | 24.50 | 19.50 | 14.75 | 4.30 | 1.25      |  |
| 11.00   | 65.00  | 54.50 | 38.00 | 24.75 | 19.75 | 13.75 | 4.40 | 1.50      |  |
| Teff (NTU) .809 : B.W.W(m/hr) 99.79 : T(C) 26.00          |        |       |       |       |       |       |      |           |  |
| Eff(%) 91.91 : % B.W. 9.21 : 12/12/88                     |        |       |       |       |       |       |      |           |  |

| DUF RUN 77 : Tin(NTU) 10.00 : Q(m/hr) 5.00 : ES(mm) 0.30 |        |       |       |       |       |       |      |           |  |
|--|--------|-------|-------|-------|-------|-------|------|-----------|--|
| TIME   | H1(CM) | H2    | H3    | H4    | H5    | H6    | H7   | Teff(NTU) |  |
| 0.00   | 31.50  | 30.80 | 27.25 | 24.50 | 18.50 | 11.90 | 3.40 | 5.00      |  |
| 0.50   | 36.00  | 33.70 | 29.80 | 26.00 | 19.80 | 12.50 | 3.50 | 0.49      |  |
| 1.00   | 44.25  | 34.50 | 30.00 | 26.10 | 19.90 | 12.60 | 3.50 | 0.31      |  |
| 2.00   | 54.80  | 35.00 | 30.00 | 26.20 | 19.90 | 12.60 | 3.60 | 0.27      |  |
| 3.00   | 69.50  | 36.00 | 30.10 | 26.20 | 19.90 | 12.60 | 3.60 | 0.27      |  |
| 4.00   | 88.30  | 38.00 | 30.20 | 26.20 | 19.90 | 12.70 | 3.60 | 0.28      |  |
| 5.00   | 109.00 | 42.00 | 30.25 | 26.20 | 20.00 | 12.70 | 3.60 | 0.28      |  |
| 6.00   | 130.25 | 46.50 | 30.50 | 26.20 | 20.00 | 12.75 | 3.60 | 0.38      |  |
| 7.00   | 150.00 | 53.25 | 31.50 | 26.20 | 20.00 | 12.80 | 3.60 | 0.31      |  |
| 8.00   | 169.25 | 52.50 | 32.50 | 26.75 | 20.10 | 13.10 | 3.60 | 0.30      |  |
| 9.00   | 179.00 | 55.10 | 35.00 | 28.50 | 20.20 | 13.20 | 3.60 | 0.28      |  |
| Teff (NTU) .297 : B.W.W(m/hr) 29.15 : T(C) 28.00         |        |       |       |       |       |       |      |           |  |
| Eff(%) 97.03 : % B.W. 5.26 : 9/1/89                      |        |       |       |       |       |       |      |           |  |

| DUF RUN 78 : Tin(NTU) 10.00 : Q(g/hr) 5.00 : ES(mm) 0.60 |        |       |       |       |       |      |      |           |  |
|--|--------|-------|-------|-------|-------|------|------|-----------|--|
| TIME   | H1(CM) | H2    | H3    | H4    | H5    | H6   | H7   | Teff(NTU) |  |
| 0.00   | 23.50  | 22.75 | 19.50 | 17.10 | 14.00 | 8.00 | 1.10 | 6.25      |  |
| 0.50   | 26.50  | 24.60 | 20.90 | 18.00 | 14.00 | 8.60 | 2.00 | 0.50      |  |
| 1.00   | 30.60  | 24.80 | 20.40 | 18.00 | 14.80 | 8.60 | 2.00 | 0.39      |  |
| 2.00   | 35.50  | 25.00 | 21.50 | 18.20 | 14.80 | 9.00 | 2.30 | 0.31      |  |
| 3.00   | 45.80  | 26.00 | 22.50 | 17.75 | 14.80 | 8.90 | 2.50 | 0.35      |  |
| 4.00   | 62.00  | 38.60 | 23.10 | 17.80 | 15.70 | 9.00 | 2.70 | 0.33      |  |
| 5.00   | 69.40  | 39.30 | 23.20 | 17.90 | 13.70 | 8.75 | 2.90 | 0.30      |  |
| 6.00   | 84.10  | 43.70 | 23.40 | 19.00 | 13.70 | 8.80 | 2.90 | 0.38      |  |
| 7.00   | 96.80  | 48.50 | 24.00 | 19.50 | 13.70 | 8.40 | 2.90 | 0.38      |  |
| 8.00   | 100.90 | 53.25 | 30.50 | 19.65 | 15.20 | 8.40 | 2.90 | 0.38      |  |
| 9.00   | 126.20 | 55.30 | 32.50 | 20.10 | 15.50 | 8.40 | 3.00 | 0.38      |  |
| 10.00  | 137.10 | 64.90 | 34.00 | 21.00 | 15.80 | 8.40 | 3.00 | 0.38      |  |
| 11.00  | 147.25 | 74.20 | 36.50 | 21.25 | 15.90 | 8.40 | 3.25 | 0.44      |  |
| 12.00  | 160.00 | 83.50 | 40.00 | 21.50 | 16.00 | 8.50 | 3.30 | 0.43      |  |
| 13.00  | 177.00 | 95.10 | 44.10 | 21.60 | 16.20 | 8.50 | 3.30 | 0.42      |  |
| Teff (NTU) 0.373 : B.W.W(g/hr) 48.53 : T(C) 27.00        |        |       |       |       |       |      |      |           |  |
| Eff(%) 96.27 : % B.W. 6.16 : 2/1/89                      |        |       |       |       |       |      |      |           |  |

| DUF RUN 79 |        |       |       |            |       |         |         |           |      |
|------------|--------|-------|-------|------------|-------|---------|---------|-----------|------|
|            |        |       |       | Tin(NTU)   | 10.00 | Q(m/hr) | 5.00    | ES(mm)    | 0.90 |
| TIME       | H1(CM) | H2    | H3    | H4         | H5    | H6      | H7      | Teff(NTU) |      |
| 0.00       | 10.50  | 10.00 | 8.50  | 7.00       | 5.00  | 3.20    | 1.20    | 4.67      |      |
| 0.50       | 14.00  | 11.60 | 9.40  | 7.40       | 5.25  | 3.40    | 1.22    | 2.00      |      |
| 1.00       | 17.25  | 12.25 | 9.50  | 7.40       | 5.25  | 3.50    | 1.20    | 0.99      |      |
| 2.00       | 24.60  | 15.00 | 9.60  | 7.40       | 5.25  | 3.70    | 1.30    | 0.85      |      |
| 3.00       | 33.50  | 19.00 | 9.90  | 7.50       | 5.30  | 3.80    | 1.35    | 0.55      |      |
| 4.00       | 37.00  | 29.00 | 11.60 | 8.10       | 5.75  | 4.20    | 1.30    | 0.58      |      |
| 5.00       | 46.00  | 30.75 | 11.10 | 8.25       | 5.75  | 4.20    | 1.40    | 0.57      |      |
| 6.00       | 53.00  | 36.25 | 12.50 | 8.50       | 5.80  | 4.30    | 1.35    | 0.51      |      |
| 7.00       | 59.50  | 36.40 | 12.50 | 9.00       | 5.80  | 4.30    | 1.35    | 0.55      |      |
| 8.00       | 67.50  | 38.25 | 13.80 | 9.30       | 5.80  | 4.30    | 1.35    | 0.75      |      |
| 9.00       | 74.20  | 42.00 | 14.10 | 9.50       | 5.85  | 4.30    | 1.35    | 0.65      |      |
| 10.00      | 78.50  | 44.10 | 14.30 | 9.75       | 5.85  | 4.30    | 1.35    | 0.67      |      |
| 11.00      | 86.10  | 46.30 | 14.75 | 9.00       | 5.90  | 4.30    | 1.35    | 0.69      |      |
| 12.00      | 90.70  | 49.50 | 15.00 | 10.00      | 5.90  | 4.40    | 1.40    | 0.69      |      |
| 13.00      | 96.00  | 52.00 | 16.50 | 10.60      | 5.90  | 4.40    | 1.40    | 0.66      |      |
| 14.00      | 99.00  | 57.00 | 17.10 | 10.80      | 5.90  | 4.40    | 1.40    | 0.65      |      |
| 15.00      | 110.00 | 58.40 | 17.40 | 11.00      | 5.95  | 4.40    | 1.40    | 0.71      |      |
| 16.00      | 120.60 | 60.00 | 18.00 | 11.40      | 6.00  | 4.50    | 1.50    | 0.85      |      |
| 17.00      | 125.90 | 63.00 | 18.60 | 11.75      | 6.00  | 4.50    | 1.50    | 0.98      |      |
| 18.00      | 130.00 | 64.00 | 18.50 | 12.00      | 6.00  | 4.50    | 1.50    | 1.87      |      |
| Teff (NTU) | 0.71   |       |       | B.W.(m/hr) | 60.41 | T(C)    | 26.00   |           |      |
| Eff(%)     | 92.90  |       |       | % B.W.     | 5.92  |         | 15/1/89 |           |      |

| DUF RUN 80 |        |       |       |            |       |         |         |           |      |
|------------|--------|-------|-------|------------|-------|---------|---------|-----------|------|
|            |        |       |       | Tin(NTU)   | 10.00 | Q(m/hr) | 5.00    | ES(mm)    | 1.20 |
| TIME       | H1(CM) | H2    | H3    | H4         | H5    | H6      | H7      | Teff(NTU) |      |
| 0.00       | 9.00   | 8.10  | 7.00  | 6.25       | 4.25  | 2.50    | 0.30    | 5.60      |      |
| 1.00       | 11.00  | 10.40 | 8.20  | 6.70       | 5.00  | 2.75    | 0.30    | 1.65      |      |
| 2.00       | 14.90  | 13.00 | 9.00  | 7.00       | 6.10  | 3.10    | 0.30    | 0.99      |      |
| 3.00       | 15.25  | 13.80 | 10.00 | 7.40       | 6.50  | 3.20    | 0.30    | 0.98      |      |
| 4.00       | 16.10  | 14.80 | 11.10 | 8.00       | 6.90  | 3.25    | 0.40    | 0.83      |      |
| 5.00       | 16.50  | 15.50 | 11.30 | 8.10       | 7.10  | 3.30    | 0.40    | 0.72      |      |
| 6.00       | 17.30  | 16.10 | 11.50 | 8.25       | 7.30  | 3.25    | 0.40    | 0.63      |      |
| 7.00       | 21.00  | 18.25 | 12.30 | 9.30       | 8.00  | 3.25    | 0.50    | 0.51      |      |
| 8.00       | 21.90  | 19.50 | 13.00 | 10.20      | 9.00  | 3.30    | 0.50    | 0.42      |      |
| 9.00       | 25.10  | 21.75 | 14.75 | 11.10      | 9.00  | 3.70    | 0.40    | 0.46      |      |
| 10.00      | 26.00  | 23.60 | 17.30 | 11.80      | 9.00  | 4.00    | 0.60    | 0.50      |      |
| 11.00      | 30.00  | 26.50 | 19.40 | 13.75      | 10.20 | 4.50    | 0.50    | 0.67      |      |
| 12.00      | 34.50  | 30.30 | 21.50 | 15.00      | 10.40 | 4.90    | 0.50    | 0.76      |      |
| 13.00      | 38.25  | 33.40 | 24.75 | 16.00      | 11.30 | 5.50    | 0.50    | 0.84      |      |
| 14.00      | 45.00  | 38.10 | 26.00 | 17.50      | 12.80 | 6.00    | 0.60    | 0.50      |      |
| 15.00      | 46.00  | 40.00 | 28.00 | 18.50      | 11.30 | 5.50    | 0.50    | 0.96      |      |
| 16.00      | 50.00  | 43.00 | 30.00 | 19.00      | 12.80 | 6.00    | 0.60    | 1.79      |      |
| Teff (NTU) | 0.89   |       |       | B.W.(m/hr) | 59.45 | T(C)    | 28.00   |           |      |
| Eff(%)     | 91.10  |       |       | % B.W.     | 11.05 |         | 16/1/89 |           |      |

| DUF RUN 81 : Tin(NTU) 50.00 : Q(m/hr) 25.00 : ES(mm) |        |             |       |       |       |        |        |           |  |
|--|--------|-------------|-------|-------|-------|--------|--------|-----------|--|
| TIME   | H1(CM) | H2          | H3    | H4    | H5    | H6     | H7     | Teff(NTU) |  |
| 0.00   | 2.50   | 13.60       | 27.50 | 45.00 | 66.60 | 90.50  | 118.00 | 0.56      |  |
| 0.50   | 2.50   | 13.60       | 27.60 | 45.50 | 66.60 | 100.00 | 175.30 | 0.23      |  |
| Teff (NTU) 0.225                                     |        | B.W.W(m/hr) |       | 39.95 |       | T(C)   |        | 27.50     |  |
| Eff(%) 99.55   |        | % B.W.      |       |       |       | D/M/Y  |        | 24/1/89   |  |

| DUF RUN 82 : Tin(NTU) 50.00 : Q(m/hr) 20.00 : ES(mm) 0.50 |        |             |       |       |       |       |        |           |  |
|---|--------|-------------|-------|-------|-------|-------|--------|-----------|--|
| TIME  | H1(CM) | H2          | H3    | H4    | H5    | H6    | H7     | Teff(NTU) |  |
| 0.00  | 2.50   | 10.50       | 22.00 | 34.90 | 54.60 | 77.70 | 86.50  | 2.40      |  |
| 0.50  | 2.50   | 10.50       | 22.00 | 35.25 | 54.90 | 86.00 | 160.00 | 0.19      |  |
| 0.75  | 2.50   | 10.50       | 22.20 | 35.30 | 55.90 | 90.00 | 175.20 | 0.18      |  |
| Teff (NTU) 0.19   |        | B.W.W(m/hr) |       | 37.63 |       | T(C)  |        | 27.50     |  |
| Eff(%) 99.63  |        | % B.W.      |       | 22.00 |       | D/M/Y |        | 24/1/89   |  |

| DUF RUN 83 : Tin(NTU) 50.00 : Q(m/hr) 15.00 : ES(mm) 0.50 |        |             |       |       |       |        |        |           |  |
|---|--------|-------------|-------|-------|-------|--------|--------|-----------|--|
| TIME  | H1(CM) | H2          | H3    | H4    | H5    | H6     | H7     | Teff(NTU) |  |
| 0.00  | 1.10   | 9.80        | 26.40 | 44.00 | 61.00 | 77.50  | 81.50  | 0.89      |  |
| 0.50  | 1.10   | 10.40       | 27.60 | 46.60 | 62.00 | 94.00  | 127.50 | 0.23      |  |
| 1.00  | 1.30   | 10.40       | 27.60 | 46.60 | 63.00 | 110.00 | 156.50 | 0.22      |  |
| 1.50  | 1.40   | 10.40       | 27.60 | 46.60 | 64.00 | 125.00 | 175.10 | 0.20      |  |
| Teff (NTU) 0.216  |        | B.W.W(m/hr) |       | 36.92 |       | T(C)   |        | 27.50     |  |
| Eff(%) 99.57  |        | % B.W.      |       | 14.67 |       | D/M/Y  |        | 24/1/89   |  |

| DUF RUN 84 : Tin(NTU) 50.00 : Q(m/hr) 10.00 : ES(mm) 0.50 |        |             |       |       |       |       |        |           |  |
|---|--------|-------------|-------|-------|-------|-------|--------|-----------|--|
| TIME  | H1(CM) | H2          | H3    | H4    | H5    | H6    | H7     | Teff(NTU) |  |
| 0.00  | 0.40   | 2.20        | 10.20 | 23.20 | 35.70 | 49.00 | 52.50  | 7.25      |  |
| 0.50  | 0.40   | 2.20        | 10.20 | 23.25 | 35.90 | 53.50 | 96.00  | 0.20      |  |
| 1.00  | 0.40   | 2.20        | 10.20 | 23.30 | 36.00 | 66.40 | 139.00 | 0.18      |  |
| 1.50  | 0.50   | 2.30        | 10.30 | 23.50 | 36.10 | 80.00 | 175.00 | 0.17      |  |
| Teff (NTU) 0.183  |        | B.W.W(m/hr) |       | 38.51 |       | T(C)  |        | 27.50     |  |
| Eff(%) 99.63  |        | % B.W.      |       | 22.00 |       | D/M/Y |        | 24/1/89   |  |



| DUF RUN 85 : Tin(NTU) 50.00 : Q(a/hr) 5.00 : ES(mm) 0.50 |        |               |      |       |       |        |        |           |  |
|--|--------|---------------|------|-------|-------|--------|--------|-----------|--|
| TIME   | H1(CM) | H2            | H3   | H4    | H5    | H6     | H7     | Teff(NTU) |  |
| 0.00   | 0.50   | 1.20          | 3.10 | 8.70  | 14.70 | 20.00  | 24.00  | 0.90      |  |
| 0.50   | 0.60   | 1.20          | 3.10 | 8.75  | 14.90 | 20.10  | 25.10  | 0.20      |  |
| 1.00   | 0.60   | 1.25          | 3.20 | 9.50  | 16.00 | 22.50  | 50.10  | 0.18      |  |
| 2.00   | 0.60   | 1.25          | 3.30 | 9.50  | 16.00 | 22.60  | 92.20  | 0.18      |  |
| 3.00   | 0.60   | 1.25          | 3.40 | 9.60  | 16.10 | 22.50  | 139.25 | 0.22      |  |
| 3.50   | 0.60   | 1.25          | 3.40 | 9.50  | 16.50 | 39.00  | 162.90 | 0.21      |  |
| Teff (NTU) .19   |        | : B.W.W(a/hr) |      | 40.06 |       | : T(C) |        | 26.50     |  |
| Eff(%) 99.62   |        | : % B.W.      |      | 18.86 |       | :      |        | 29/1/89   |  |

| DUF RUN 86 : Tin(NTU) 30.00 : Q(a/hr) 25.00 : ES(mm) 0.50 |        |               |       |       |       |        |        |           |  |
|---|--------|---------------|-------|-------|-------|--------|--------|-----------|--|
| TIME  | H1(CM) | H2            | H3    | H4    | H5    | H6     | H7     | Teff(NTU) |  |
| 0.00  | 2.30   | 15.80         | 31.10 | 48.75 | 74.80 | 103.40 | 118.00 | 0.66      |  |
| 0.50  | 2.30   | 15.80         | 31.10 | 48.75 | 74.80 | 106.50 | 175.00 | 0.23      |  |
| Teff (NTU) 0.23   |        | : B.W.W(a/hr) |       | 39.70 |       | : T(C) |        | 27.50     |  |
| Eff(%) 99.23  |        | : % B.W.      |       |       |       | :      |        | 24/1/89   |  |

| DUF RUN 87 : Tin(NTU) 30.00 : Q(a/hr) 20.00 : ES(mm) 0.50 |        |               |       |       |       |        |        |           |  |
|---|--------|---------------|-------|-------|-------|--------|--------|-----------|--|
| TIME  | H1(CM) | H2            | H3    | H4    | H5    | H6     | H7     | Teff(NTU) |  |
| 0.00  | 1.20   | 9.80          | 20.00 | 35.50 | 56.70 | 86.50  | 98.00  | 5.60      |  |
| 0.50  | 1.20   | 9.90          | 20.50 | 35.50 | 56.70 | 91.00  | 131.00 | 0.46      |  |
| 1.00  | 1.20   | 9.80          | 20.60 | 35.60 | 56.80 | 91.50  | 176.00 | 0.44      |  |
| Teff (NTU) 0.45   |        | : B.W.W(a/hr) |       | 40.15 |       | : T(C) |        | 27.50     |  |
| Eff(%) 98.50  |        | : % B.W.      |       | 16.50 |       | :      |        | 23/12/89  |  |

| DUF RUN 88                                   |        |             |        |        |        |        |        |           |  |
|--|--------|-------------|--------|--------|--------|--------|--------|-----------|--|
| Tin(NTU) 30.00 : Q(m/hr) 15.00 : ES(mm) 0.50 |        |             |        |        |        |        |        |           |  |
| TIME   | H1(CM) | H2          | H3     | H4     | H5     | H6     | H7     | Teff(NTU) |  |
| 0.00   | 0.60   | 90.20       | 103.80 | 124.50 | 147.00 | 159.40 | 86.70  | 0.71      |  |
| 0.50   | 0.90   | 91.00       | 105.70 | 128.00 | 152.80 | 183.10 | 162.50 | 0.17      |  |
| 1.00   | 0.90   | 91.00       | 105.70 | 128.00 | 152.80 | 187.90 | 175.50 | 0.18      |  |
| Teff (NTU) 0.188                             |        | B.W.W(m/hr) |        | 39.50  |        | T(C)   |        | 27.50     |  |
| Eff(%) 99.37                                 |        | % B.W.      |        | 22.00  |        |        |        | 24/1/89   |  |

| DUF RUN 89                                   |        |             |       |       |       |       |        |           |  |
|--|--------|-------------|-------|-------|-------|-------|--------|-----------|--|
| Tin(NTU) 30.00 : Q(m/hr) 10.00 : ES(mm) 0.50 |        |             |       |       |       |       |        |           |  |
| TIME   | H1(CM) | H2          | H3    | H4    | H5    | H6    | H7     | Teff(NTU) |  |
| 0.00   | 0.40   | 5.50        | 15.50 | 26.00 | 38.00 | 52.50 | 56.50  | 0.83      |  |
| 0.50   | 0.40   | 5.60        | 15.70 | 27.50 | 39.25 | 59.00 | 106.50 | 0.24      |  |
| 1.00   | 0.40   | 5.60        | 16.10 | 28.75 | 42.00 | 73.60 | 142.25 | 0.21      |  |
| 1.50   | 0.40   | 5.60        | 17.00 | 28.75 | 42.50 | 90.00 | 177.25 | 0.17      |  |
| Teff (NTU) 0.206                             |        | B.W.W(m/hr) |       | 38.97 |       | T(C)  |        | 27.50     |  |
| Eff(%) 99.31                                 |        | % B.W.      |       | 22.00 |       |       |        | 23/1/89   |  |

| DUF RUN 90                                  |        |             |      |       |       |       |        |           |  |
|---|--------|-------------|------|-------|-------|-------|--------|-----------|--|
| Tin(NTU) 30.00 : Q(m/hr) 5.00 : ES(mm) 0.50 |        |             |      |       |       |       |        |           |  |
| TIME  | H1(CM) | H2          | H3   | H4    | H5    | H6    | H7     | Teff(NTU) |  |
| 0.00  | 0.60   | 1.50        | 2.50 | 8.25  | 14.10 | 18.40 | 25.00  | 2.60      |  |
| 0.50  | 0.60   | 1.60        | 2.70 | 8.50  | 16.00 | 18.50 | 31.40  | 0.24      |  |
| 1.00  | 0.60   | 1.60        | 2.75 | 8.50  | 15.75 | 19.90 | 56.00  | 0.17      |  |
| 2.00  | 0.60   | 1.60        | 2.75 | 8.50  | 15.75 | 22.00 | 94.70  | 0.23      |  |
| 3.00  | 0.60   | 1.60        | 2.75 | 8.60  | 15.80 | 30.20 | 133.20 | 0.18      |  |
| 4.00  | 0.60   | 1.60        | 2.75 | 8.60  | 15.80 | 41.10 | 165.00 | 0.15      |  |
| 5.00  | 0.60   | 1.60        | 2.75 | 8.70  | 15.80 | 45.00 | 175.00 | 0.14      |  |
| Teff (NTU) 0.182                            |        | B.W.W(m/hr) |      | 39.10 |       | T(C)  |        | 25.00     |  |
| Eff(%) 99.395                               |        | % B.W.      |      | 13.20 |       |       |        | 28/12/89  |  |

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+-----+
| DUF RUN 91      :   Tin(NTU) 20.00 :Q(m/hr) 25.00 :ES(mm) 0.50 |
+-----+
| TIME  |H1(CM) | H2  | H3  | H4  | H5  | H6  | H7  |Teff(NTU)|
+-----+
| 0.00 | 2.60 | 13.70 | 26.80 | 45.00 | 73.60 | 108.00 | 120.00 | 3.20 |
| 0.15 | 2.60 | 13.70 | 29.30 | 48.00 | 78.00 | 113.00 | 169.50 | 0.24 |
+-----+
|Teff (NTU) 0.24      :   B.W.W(m/hr) 38.90 : T(C) 27.00 |
| Eff(%) 98.80       :   % B.W.           :           23/1/89 |
+-----+

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+-----+
| DUF RUN 92      :   Tin(NTU) 20.00 :B(m/hr) 20.00 :ES(mm) 0.50 |
+-----+
| TIME  |H1(CM) | H2  | H3  | H4  | H5  | H6  | H7  |Teff(NTU)|
+-----+
| 0.00 | 1.50 | 9.50 | 20.20 | 37.00 | 59.00 | 83.50 | 100.00 | 2.00 |
| 0.50 | 1.20 | 9.50 | 20.40 | 37.20 | 59.20 | 88.20 | 154.00 | 0.20 |
| 1.00 | 1.20 | 9.50 | 20.40 | 37.20 | 59.20 | 89.90 | 175.00 | 0.15 |
+-----+
|Teff (NTU) 0.20      :   B.W.W(m/hr) 40.59 : T(C) 26.00 |
| Eff(%) 99.00       :   % B.W.           16.50 :           23/1/89 |
+-----+

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+-----+
| DUF RUN 93      :   Tin(NTU) 20.00 :Q(m/hr) 15.00 :ES(mm) 0.50 |
+-----+
| TIME  |H1(CM) | H2  | H3  | H4  | H5  | H6  | H7  |Teff(NTU)|
+-----+
| 0.00 | 1.50 | 16.80 | 30.80 | 48.00 | 67.50 | 91.70 | 93.60 | 1.30 |
| 0.50 | 1.70 | 15.50 | 31.50 | 49.00 | 69.20 | 97.00 | 148.00 | 0.27 |
| 1.00 | 1.70 | 15.50 | 31.70 | 49.00 | 69.20 | 100.80 | 178.00 | 0.27 |
+-----+
|Teff (NTU) 0.27      :   B.W.W(m/hr) 39.50 : T(C) 27.00 |
| Eff(%) 98.65       :   % B.W.           22.00 :           25/1/89 |
+-----+

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| DUF RUN 94      |        | Tin(NTU) 20.00 |       | Q(m/hr) 10.00 |       | ES(mm) 0.50 |        |           |
|-----------------|--------|----------------|-------|---------------|-------|-------------|--------|-----------|
| TIME            | H1(CM) | H2             | H3    | H4            | H5    | H6          | H7     | Teff(NTU) |
| 0.00            | 0.70   | 2.70           | 10.50 | 23.50         | 40.50 | 53.50       | 58.40  | 0.28      |
| 0.50            | 0.70   | 3.00           | 10.80 | 24.70         | 40.60 | 56.50       | 114.50 | 0.18      |
| 1.00            | 0.70   | 3.00           | 11.00 | 25.00         | 42.00 | 63.80       | 152.25 | 0.18      |
| 1.30            | 0.80   | 3.00           | 11.00 | 25.00         | 42.00 | 69.25       | 176.10 | 0.18      |
| Teff (NTU) 0.17 |        | B.W.W(m/hr)    |       | 40.00         |       | T(C) 26.00  |        |           |
| Eff(%) 99.11    |        | % B.W.         |       | 22.00         |       | 23/1/89     |        |           |

| DUF RUN 95       |        | Tin(NTU) 20.00 |      | Q(m/hr) 5.00 |       | ES(mm) 0.50 |        |           |
|------------------|--------|----------------|------|--------------|-------|-------------|--------|-----------|
| TIME             | H1(CM) | H2             | H3   | H4           | H5    | H6          | H7     | Teff(NTU) |
| 0.00             | 0.20   | 2.00           | 6.00 | 12.20        | 19.30 | 40.00       | 24.00  | 1.60      |
| 0.50             | 0.50   | 2.20           | 6.10 | 12.20        | 19.30 | 42.50       | 35.20  | 0.34      |
| 1.00             | 0.70   | 2.20           | 6.10 | 12.20        | 19.40 | 43.00       | 46.10  | 0.33      |
| 2.00             | 0.70   | 2.20           | 6.10 | 12.20        | 19.50 | 47.10       | 77.00  | 0.28      |
| 3.00             | 0.80   | 2.20           | 6.10 | 12.20        | 19.50 | 52.80       | 98.60  | 0.26      |
| 4.00             | 0.90   | 2.25           | 6.20 | 12.20        | 19.60 | 57.50       | 133.10 | 0.24      |
| 5.00             | 0.90   | 2.25           | 6.25 | 12.25        | 19.70 | 60.00       | 175.25 | 0.21      |
| Teff (NTU) 0.264 |        | B.W.W(m/hr)    |      | 41.15        |       | T(C) 26.00  |        |           |
| Eff(%) 98.68     |        | % B.W.         |      | 13.20        |       | 28/1/89     |        |           |

| DUF RUN 96       |        | Tin(NTU) 10.00 |       | Q(m/hr) 25.00 |       | ES(mm) 0.50 |        |           |
|------------------|--------|----------------|-------|---------------|-------|-------------|--------|-----------|
| TIME             | H1(CM) | H2             | H3    | H4            | H5    | H6          | H7     | Teff(NTU) |
| 0.00             | 1.00   | 11.50          | 24.00 | 39.50         | 57.10 | 95.25       | 113.00 | 0.20      |
| 0.50             | 1.75   | 13.80          | 28.20 | 45.00         | 70.80 | 99.10       | 177.00 | 0.18      |
| Teff (NTU) 0.175 |        | B.W.W(m/hr)    |       | 40.53         |       | T(C) 28.00  |        |           |
| Eff(%) 98.25     |        | % B.W.         |       |               |       | 22/1/89     |        |           |

| DUF RUN 97      |        |             |       |       |       |       |        |           |  |
|-----------------|--------|-------------|-------|-------|-------|-------|--------|-----------|--|
| TIME            | H1(CM) | H2          | H3    | H4    | H5    | H6    | H7     | Teff(NTU) |  |
| 0.00            | 0.70   | 3.00        | 10.80 | 24.70 | 40.60 | 56.50 | 98.10  | 0.18      |  |
| 0.50            | 0.70   | 3.00        | 11.00 | 25.00 | 42.00 | 63.80 | 152.25 | 0.18      |  |
| 1.00            | 0.80   | 3.00        | 11.00 | 25.00 | 42.00 | 69.25 | 176.00 | 0.18      |  |
| Teff (NTU) 0.18 |        | B.W.W(m/hr) |       | 39.91 |       | T(C)  |        | 26.00     |  |
| Eff(%) 98.22    |        | % B.W.      |       | 16.50 |       |       |        | 20/1/89   |  |

| DUF RUN 98       |        |             |       |       |       |       |        |           |  |
|------------------|--------|-------------|-------|-------|-------|-------|--------|-----------|--|
| TIME             | H1(CM) | H2          | H3    | H4    | H5    | H6    | H7     | Teff(NTU) |  |
| 0.00             | 0.20   | 10.20       | 26.90 | 45.00 | 63.40 | 82.25 | 89.75  | 0.25      |  |
| 0.50             | 0.20   | 10.20       | 26.80 | 45.00 | 63.80 | 88.00 | 134.50 | 0.24      |  |
| 1.00             | 0.20   | 10.25       | 27.00 | 45.80 | 64.25 | 95.20 | 162.50 | 0.23      |  |
| 1.15             | 0.20   | 10.25       | 27.10 | 45.90 | 64.30 | 97.25 | 175.20 | 0.24      |  |
| Teff (NTU) 0.232 |        | B.W.W(m/hr) |       | 40.10 |       | T(C)  |        | 28.00     |  |
| Eff(%) 97.67     |        | % B.W.      |       | 17.60 |       |       |        | 22/1/89   |  |

| DUF RUN 99      |        |             |       |       |       |       |        |           |  |
|-----------------|--------|-------------|-------|-------|-------|-------|--------|-----------|--|
| TIME            | H1(CM) | H2          | H3    | H4    | H5    | H6    | H7     | Teff(NTU) |  |
| 0.00            | 1.50   | 7.50        | 19.50 | 31.60 | 47.50 | 60.00 | 63.50  | 0.20      |  |
| 0.50            | 1.50   | 7.50        | 19.90 | 33.70 | 47.75 | 61.00 | 93.50  | 0.16      |  |
| 1.00            | 1.50   | 7.50        | 20.20 | 33.90 | 48.50 | 69.00 | 127.00 | 0.14      |  |
| 2.00            | 1.50   | 7.50        | 20.50 | 34.00 | 49.00 | 91.00 | 178.00 | 0.14      |  |
| Teff (NTU) 0.14 |        | B.W.W(m/hr) |       | 39.81 |       | T(C)  |        | 28.00     |  |
| Eff(%) 98.57    |        | % B.W.      |       | 16.50 |       |       |        | 19/1/89   |  |

| DUF RUN 100 |        | :    | Tin(NTU) 10.00 | :     | Q(m/hr) 5.00 | :     | ES(mm) 0.50 | :         |
|-------------|--------|------|----------------|-------|--------------|-------|-------------|-----------|
| TIME        | H1(CM) | H2   | H3             | H4    | H5           | H6    | H7          | Teff(NTU) |
| 0.00        | 0.50   | 1.20 | 3.60           | 8.40  | 15.00        | 21.00 | 23.00       | 1.00      |
| 0.50        | 0.50   | 1.20 | 3.60           | 8.50  | 15.10        | 22.00 | 34.40       | 0.24      |
| 1.00        | 0.50   | 1.20 | 3.60           | 8.50  | 15.20        | 22.40 | 45.00       | 0.18      |
| 2.00        | 0.50   | 1.20 | 3.60           | 8.50  | 15.20        | 23.50 | 69.00       | 0.24      |
| 3.00        | 0.50   | 1.20 | 3.60           | 8.50  | 15.25        | 28.80 | 99.25       | 0.24      |
| 4.00        | 0.50   | 1.25 | 3.60           | 8.50  | 15.30        | 35.40 | 127.50      | 0.18      |
| 5.00        | 0.50   | 1.25 | 3.70           | 8.50  | 15.40        | 45.40 | 157.50      | 0.16      |
| 6.00        | 0.50   | 1.25 | 3.70           | 8.50  | 15.60        | 55.40 | 180.00      | 0.19      |
| Teff (NTU)  | 0.198  | :    | B.W.W(m/hr)    | 41.09 | :            | T(C)  | 28.50       | :         |
| Eff(%)      | 98.03  | :    | % B.W.         | 11.00 | :            |       | 29/1/89     | :         |

ประวัติผู้เขียน



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