

## รายการอ้างอิง

### ภาษาไทย

เจริญ สุนทรวานิชย์. การวางแผนการผลิตและพัสดุดังคลังสำหรับโรงงานกระดาษเหนียว.

วิทยานิพนธ์มหาบัณฑิต ภาควิชาวิศวกรรมอุตสาหกรรม บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย, 2529.

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ภาคผนวก

ภาคผนวก ก.

ผลิตภัณฑ์ของโรงงานในปัจจุบัน



ตารางแสดงผลิตภัณฑ์ของโรงงานในปัจจุบัน

| GRADE NO. | GRADE NAME |         | COLOR NAME    |
|-----------|------------|---------|---------------|
| 1         | 7050 RT    | 0007-55 | S YELLOW      |
| 2         | 7050 RT    | 0011-35 | RED           |
| 3         | 7050 RT    | 0015-75 | L BLUE        |
| 4         | 7050 RT    | 0023-95 | BLACK         |
| 5         | 7050 RT    | 1001-45 | S ORANGE      |
| 6         | 7050 RT    | N       | N             |
| 7         | 7010 RTA   | N       | N             |
| 8         | 7030 RT    | N       | N             |
| 9         | 7050 RT    | 0011-15 | WHITE         |
| 10        | 7050 RT    | 7002-45 | VIOLET        |
| 11        | AGV-9990N  | N       | N             |
| 12        | AM-5825    | 0050-95 | BLACK         |
| 13        | AM-5825    | 0114-25 | BLACK (GD-90) |
| 14        | AM-5825    | 0173-25 | BLACK         |
| 15        | AMV-9998N  | 59-1060 | D GREY        |
| 16        | AP-6503A   | 12-0559 | BLACK         |
| 17        | AP-7504A   | 82-0215 | BLACK         |
| 18        | BDV-9967N  | 0019-21 | GREY          |
| 19        | C1         | 0091-15 | WHITE         |
| 20        | C24-2      | 0055-95 | BLACK         |
| 21        | C24-2      | 0144-25 | GREY          |
| 22        | C-15M      | 0174-25 | D GREY        |
| 23        | C-20M      | 0009-95 | BLACK         |
| 24        | C-20M      | 0145-25 | GREY          |
| 25        | C-24M      | 0175-25 | D GREY        |
| 26        | CH-2224    | 0004-11 | WHITE         |
| 27        | CH-2224    | 12-0545 | GREY          |
| 28        | CT-6       | 0174-25 | D GREY        |

ตารางแสดงผลิตภัณฑ์ของโรงงานในปัจจุบัน (ต่อ)

| GRADE NO. | GRADE NAME |         | COLOR NAME |
|-----------|------------|---------|------------|
| 29        | FV-117     | 0007-25 | GREY       |
| 30        | FV-123     | 0008-25 | GREY       |
| 31        | IGT-6301   | 1007-05 | CLEAR      |
| 32        | IGT-7502   | 52-0019 | BLACK      |
| 33        | IGT-7901   | 0008-55 | YELLOW     |
| 34        | IGT-8002   | 1002-05 | CLEAR      |
| 35        | IGT-8201   | 0009-25 | GREY       |
| 36        | IGT-8204   | 0037-15 | IVORY      |
| 37        | IGT-8305   | 62-0095 | BLACK      |
| 38        | IGT-8306   | 1006-05 | REDDISH    |
| 39        | IGT-8502   | 0143-25 | GREY       |
| 40        | IGT-8802   | 1009-45 | ORANGE     |
| 41        | IGT-8902   | N       | N          |
| 42        | IGT-9401   | 007-95  | BLACK      |
| 43        | IGT-9401   | 0031-65 | L GREEN    |
| 44        | IGT-9401   | 0032-6  | GREEN      |
| 45        | IGT-9401   | 0041-75 | BLUE       |
| 46        | IGT-9401   | 0059-15 | WHITE      |
| 47        | IGT-9401   | 1014-45 | ORANGE     |
| 48        | IGV-0027B  | 0046-85 | BROWN      |
| 49        | IGV-0027B  | 0058-75 | L BLUE     |
| 50        | IH-5400    | 0006-95 | BLACK      |
| 51        | IH-5400    | 0018-65 | GREEN      |
| 52        | IH-5400    | 0019-55 | YELLOW     |
| 53        | IH-5400    | 0021-35 | RED        |
| 54        | IH-5400    | 0027-75 | BLUE       |
| 55        | IH-5400    | 0073-25 | GREY       |
| 56        | IH-5400    | 1010-45 | ORANGE     |

ตารางแสดงผลิตภัณฑ์ของโรงงานในปัจจุบัน (ต่อ)

| GRADE NO. | GRADE NAME |         | COLOR NAME |
|-----------|------------|---------|------------|
| 57        | IH-5400    | 4006-45 | PINK       |
| 58        | IH-5400    | 61-0026 | WHITE      |
| 59        | IH-5400    | 7004-45 | VIOLET     |
| 60        | IH-5483    | 61-0026 | WHITE      |
| 61        | IH-5483    | 62-0095 | BLACK      |
| 62        | IH-5483    | 63-0112 | RED        |
| 63        | IH-5773    | 0013-55 | YELLOW     |
| 64        | IHT-3001   | 0040-35 | RED        |
| 65        | IHT-3001   | 0090-15 | WHITE      |
| 66        | IHT-7501   | 0048-95 | BLACK      |
| 67        | IHT-7501   | 0177-25 | GREY       |
| 68        | IHT-8302   | 0067-15 | WHITE      |
| 69        | IHT-8302   | 62-0095 | BLACK      |
| 70        | IHT-8403   | 0003-25 | GREY       |
| 71        | IHT-8403   | 0028-95 | BLACK      |
| 72        | IHT-8403   | 0030-25 | GREY       |
| 73        | IHT-8407   | 0046-15 | WHITE      |
| 74        | IHT-8409   | 0046-95 | BALCK      |
| 75        | IHT-8409   | 0062-15 | WHITE      |
| 76        | IHT-8409   | 0062-15 | WHITE      |
| 77        | IHT-8409   | 0122-25 | GREY       |
| 78        | IHT-8409   | 0123-25 | GREY       |
| 79        | IHT-8409   | 0124-25 | GREY       |
| 80        | IHT-8409   | 0125-25 | GREY       |
| 81        | IHT-8409   | 0166-25 | GREY       |
| 82        | IHT-8901   | 0004-15 | WHITE      |
| 83        | IHT-8901   | 0009-35 | RED        |
| 84        | IHT-8901   | 0010-55 | YELLOW     |

ตารางแสดงผลิตภัณฑ์ของโรงงานในปัจจุบัน (ต่อ)

| GRADE NO. | GRADE NAME |         | COLOR NAME |
|-----------|------------|---------|------------|
| 85        | IHT-8901   | 0018-75 | BLUE       |
| 86        | IHT-8901   | 0025-25 | GREY       |
| 87        | IHT-8901   | 0056-75 | BLUE       |
| 88        | IHT-8901   | 0165-25 | GREY       |
| 89        | IHT-8901   | 62-0095 | BLACK      |
| 90        | IHT-9702   | N       | N          |
| 91        | LE-608A-19 | 12-0634 | BALCK      |
| 92        | LGT-6201   | 0008-95 | BLACK      |
| 93        | LGT-6401   | 0012-95 | BLACK      |
| 94        | LGT-6401   | 0025-35 | RED        |
| 95        | LGT-6401   | 0033-75 | BLUE       |
| 96        | LGT-6401   | 0044-25 | GREY       |
| 97        | LGT-6401   | 7006-45 | VIOLET     |
| 98        | LGT-8301   | 0024-95 | BLACK      |
| 99        | LGT-8802   | N       | N          |
| 100       | LHT-6101   | 0043-65 | GREEN      |
| 101       | LHT-6801   | 0054-95 | GREEN      |
| 102       | LHT-6803   | 0068-15 | BEIGE      |
| 103       | LHT-7501   | 0039-95 | BLACK      |
| 104       | LHT-7501   | 0093-15 | WHT        |
| 105       | LJT-6101   | 0043-65 | GREEN      |
| 106       | LMT-7201   | 0110-25 | GREY       |
| 107       | LMT-7801   | 0047-95 | BLACK      |
| 108       | LMT-7901   | 0044-75 | BLUE       |
| 109       | NS-1361B   | 12-0018 | BLACK      |
| 110       | NS-1607    | 0003-91 | BROWN      |
| 111       | NS-1607    | 0008-91 | BLACK      |
| 112       | NS-1607    | 0020-21 | GREY       |

ตารางแสดงผลิตภัณฑ์ของโรงงานในปัจจุบัน (ต่อ)

| GRADE NO. | GRADE NAME |         | COLOR NAME |
|-----------|------------|---------|------------|
| 113       | PGT-8202   | 0021-55 | YELLOW     |
| 114       | PGT-8202   | 0022-35 | RED        |
| 115       | PGT-8202   | 0029-15 | WHITE      |
| 116       | PGT-8202   | 52-0091 | BLACK      |
| 117       | PGT-8802   | 0158-25 | GREY       |
| 118       | PGT-9301S  | 0009-55 | YELLOW     |
| 119       | PGT-9501   | 0006-95 | BLACK      |
| 120       | PGV-9993P  | 0012-95 | BLACK      |
| 121       | PM-0937    | 65-0172 | IVORY      |
| 122       | PM-0947    | 0036-65 | GREEN      |
| 123       | PM-0947    | 0178-25 | GREY       |
| 124       | PM-0947    | 51-0010 | WHITE      |
| 125       | PM-0947    | 52-0091 | BLACK      |
| 126       | PM-0947    | 53-0067 | RED        |
| 127       | PM-0947    | 65-0770 | YELLOW     |
| 128       | PMT-8201   | 0014-95 | BLACK      |
| 129       | PMT-8201   | 0060-95 | BLACK      |
| 130       | PMT-8201   | 0081-25 | GREY       |
| 131       | PMT-8201   | 0090-25 | GREY       |
| 132       | PMT-8301   | 0150-25 | GREY       |
| 133       | PMT-8401A  | 0022-95 | BLACK      |
| 134       | PN-91      | 0002-95 | BLACK      |
| 135       | PN-91      | 0003-25 | GREY       |
| 136       | SFT-7502   | 0013-91 | BLACK      |
| 137       | SG-0317    | 0044-95 | BLACK      |
| 138       | SG-0317    | 0059-75 | BLUE       |
| 139       | SG0317     | 0089-15 | WHITE      |
| 140       | SG-6876    | 62-0991 | BLACK      |



ตารางแสดงผลิตภัณฑ์ของโรงงานในปัจจุบัน (ต่อ)

| GRADE NO. | GRADE NAME |          | COLOR NAME  |
|-----------|------------|----------|-------------|
| 141       | SGT-8201   | 0030-15  | IVORY       |
| 142       | SGT-8304   | 0030-95  | BLACK       |
| 143       | SGT-8304   | N        | NATURAL     |
| 144       | SHL-9997N  | 0014-95  | BLACK       |
| 145       | SHT-7503   | 0168-25  | GREY        |
| 146       | SM-6498    | 62-0094  | BLACK       |
| 147       | SMT-6001   | 0033-55  | YELLOW      |
| 148       | SMT-7201   | 0054-95  | BLACK       |
| 149       | SMT-7302   | 0060-15  | BEIGE       |
| 150       | SMT-7501   | 1702-01  | BLUE CLEAR  |
| 151       | SMT-7901   | 0034-85  | D BROWN     |
| 152       | SMT-7902   | 0044-95  | BLACK       |
| 153       | SNT-7202   | 0019-21  | GREY        |
| 154       | SRT-8001A  | 0012-91  | BLACK       |
| 155       | TG-4322    | 0040-95  | BLACK       |
| 156       | TG-4322    | 0109-25  | GREY        |
| 157       | TG-4330S   | 0061-25  | CLOUD       |
| 158       | TG-4330S   | 0106-25  | GREY        |
| 159       | TG-4330S   | 02-0140  | PEBBLE GREY |
| 160       | TG-4330S   | 62-0095B | BLACK       |
| 161       | TG-4703    | 0013-95  | BLACK       |
| 162       | TN-3416A   | 0012-91  | BLACK       |
| 163       | TN-3416A   | 12-0014  | RED         |
| 164       | TN-6127B   | 0002-11  | WHITE       |
| 165       | TN-6127B   | 0004-91  | BROWN       |
| 166       | TN-6127B   | 0009-91  | BLACK       |
| 167       | TN-8959    | 12-0015  | BLACK       |
| 168       | TZ-9419    | 0011-25  | GREY        |

ตารางแสดงผลิตภัณฑ์ของโรงงานในปัจจุบัน (ต่อ)

| GRADE NO. | GRADE NAME        | COLOR NAME |
|-----------|-------------------|------------|
| 169       | V-107 RT 0046-95  | BLACK      |
| 170       | V-233 RT 54-0434  | ORANGE     |
| 171       | V-233 RT 59-0350  | VIOLET     |
| 172       | V-233 RT 61-0565  | WHITE      |
| 173       | V-233 RT 62-0095  | BLACK      |
| 174       | V-233 RT 62-0184  | GREY       |
| 175       | V-233 RT 63-0318  | RED        |
| 176       | V-233 RT 64-0507  | PINK       |
| 177       | V-233 RT 67-0468  | BLUE       |
| 178       | V-233 RT 67-0469  | L BLUE     |
| 179       | V-233 RT 78-0083  | BROWN      |
| 180       | V-233 RT 62-0184  | GREY       |
| 181       | V-240 RT 0001-25  | BLACK      |
| 182       | V-240 RT 0075-25  | GREY       |
| 183       | V-240 RT 51-1095  | WHITE      |
| 184       | V-240 RT 561-1095 | WHITE      |
| 185       | V-76 0003-95      | BLACK      |
| 186       | VC-47T-1 0005-95  | BLACK      |
| 187       | YV-201-3 0017-95  | BLACK      |
| 188       | YV-201-3 0039-35  | RED        |
| 189       | YV-201-3 0047-65  | GREEN      |
| 190       | YV-201-3 0169-25  | GREY       |
| 191       | YV-201-3 53-0277  | RED        |
| 192       | YV-201-3 55-0359  | YELLOW     |
| 193       | YV-201-3 57-0679  | BLUE       |
| 194       | YV-220-7 0008-65  | GREEN      |
| 195       | YV-220-7 0010-75  | BLUE       |
| 196       | YV-220-7 0159-25  | GREY       |

## ตารางแสดงผลิตภัณฑ์ของโรงงานในปัจจุบัน (ต่อ)

| GRADE NO. | GRADE NAME |         | COLOR NAME |
|-----------|------------|---------|------------|
| 197       | YV-220-7   | 1018-45 | ORANGE     |
| 198       | YV-220-7   | 52-0346 | BLACK      |
| 199       | YV-220-7   | 63-0066 | RED        |
| 200       | LGT-6401   | 1013-45 | ORANGE     |
| 201       | IHT-8904   | NAT     | NAT        |

ภาคผนวก ข.

บันทึกการทำงานของหัวหน้ากะ

YV 501-3 REP BY CITY INVENTORY  
 REVISED BY NO 1  
 START 8:00. EXT. DAS NO 1 21 4 01 00 00  
 STOP 8:30. TOTAL 510 KGS.  
 SD 3 KGS / SEED 4 KGS.

OPERATOR  
 OPERATOR  
 OPERATOR

REPORT NATURAL TAYLOR  
 BLENDER NO 1-17  
 START 07:05 EXT. DAS NO 1-11 4 11 000 KGS.  
 FINISH 16:10 TOTAL 8000 KGS.  
 SD 15 KGS / SEED 6 KGS.

ORDER  
 ORDER  
 ORDER

X-1  
 P. 2111 07:30 = 16:30

V. 120 RT 1-3 21:10:15 INVENTORY  
 BLENDER NO 1  
 START 07:07 EXT. DAS NO 1-23 4 13-25 KGS.  
 STOP 08:00 TOTAL 700 KGS.  
 SD 3 KGS / SEED 7 KGS.

ORDER  
 ORDER  
 ORDER

X-2

TN-6122B WHITE COOL-11 TAYLOR  
 BLENDER NO 1-1  
 START 11:55 EXT. DAS NO 1-47  
 STOP 13:05 TOTAL 1400 KGS.  
 SD 3 KGS / SEED 7 KGS.

ORDER  
 ORDER  
 ORDER

TN-6122B WHITE COOL-11 TAYLOR

TN-4300Y CLOUD COOL-11 TAYLOR  
 BLENDER NO 1-4  
 START 17:25 EXT. DAS NO 1-21 4 11 00 KGS.  
 STOP 20:15 TOTAL 2000 KGS.  
 SD 3 KGS / SEED 7 KGS.

ORDER  
 ORDER  
 ORDER

TN-4300Y CLOUD COOL-11 TAYLOR

10/1/00  
 10/1/00

10/1/00  
 10/1/00



ภาคผนวก ค.

รายงานเวลาการใช้เครื่องจักรในการผลิต

หน่วย : ชั่วโมง

| สายการผลิต | เดือน  |        |        |
|------------|--------|--------|--------|
|            | ต.ค.   | พ.ย.   | ธ.ค.   |
| 1          | 551.0  | 479.41 | 356.76 |
| 2          | 463.15 | 496.75 | 348.5  |

ตารางแสดงเวลาที่ใช้เครื่องจักรในการผลิตเดือนตุลาคม 38 ถึงธันวาคม 38

ภาคผนวก ง.

ข้อมูลจำนวนวันส่งสินค้าไม่ทันกำหนด  
ของการจัดลำดับการผลิตแบบเดิม

| ชื่อเกรด         | วันที่ลูกค้า<br>ต้องการ | วันที่ส่งสินค้า | จำนวนวันส่ง<br>สินค้าไม่ทัน<br>กำหนด<br>(วัน) |
|------------------|-------------------------|-----------------|-----------------------------------------------|
| NS-1607 0003-91  | 11 ต.ค.38               | 13 ต.ค.38       | 2                                             |
| AM-5825 0050-95  | 10 ต.ค.38               | 14 ต.ค.38       | 4                                             |
| 7050 0015-75     | 17 ต.ค.38               | 18 ต.ค.38       | 1                                             |
| LGT-6401 0033-75 | 26 ต.ค.38               | 27 ต.ค.38       | 1                                             |
| SGT-8304 0030-95 | 25 ต.ค.38               | 27 ต.ค.38       | 2                                             |
| V23RT 63-0318    | 28 ก.ย.38               | 1 ต.ค.38        | 3                                             |
| 7050 NATURAL     | 30 ก.ย.38               | 2 ต.ค.38        | 2                                             |
| 7050 NATURAL     | 30 ก.ย.38               | 3 ต.ค.38        | 3                                             |
| V233RT 62-0095   | 3 ต.ค.38                | 4 ต.ค.38        | 1                                             |
| IHT-8409 0046-95 | 3 ต.ค.38                | 6 ต.ค.38        | 3                                             |
| IHT-8409 0046-95 | 3 ต.ค.38                | 8 ต.ค.38        | 5                                             |
| YV-220-7 120545  | 27 ต.ค.38               | 29 ต.ค.38       | 2                                             |
| รวม              |                         |                 | 29                                            |

ตารางแสดงจำนวนวันส่งสินค้าไม่ทันกำหนดเดือนตุลาคม 38

| ชื่อเกรด                                                                | วันที่ลูกค้า<br>ต้องการ                        | วันที่ส่งสินค้า                                 | จำนวนวันส่ง<br>สินค้าไม่ทัน<br>กำหนด<br>(วัน) |
|-------------------------------------------------------------------------|------------------------------------------------|-------------------------------------------------|-----------------------------------------------|
| IHT-8901 0004-15<br>YV-201-3 0047-65<br>7030RT NATURAL<br>C24-2 0144-25 | 16 พ.ย.38<br>9 พ.ย.38<br>15 พ.ย.38<br>1 พ.ย.38 | 18 พ.ย.38<br>10 พ.ย.38<br>17 พ.ย.38<br>2 พ.ย.38 | 2<br>1<br>2<br>1                              |
| รวม                                                                     |                                                |                                                 | 6                                             |

ตารางแสดงจำนวนวันส่งสินค้าไม่ทันกำหนดเดือนพฤศจิกายน 38



| ชื่อเกรด         | วันที่ลูกค้า<br>ต้องการ | วันที่ส่งสินค้า | จำนวนวันส่ง<br>สินค้าไม่ทัน<br>กำหนด<br>(วัน) |
|------------------|-------------------------|-----------------|-----------------------------------------------|
| YV-201-3 0017-95 | 7 ธ.ค.38                | 9 ธ.ค.38        | 2                                             |
| TZ-9419 0011-25  | 19 ธ.ค.38               | 24 ธ.ค.38       | 5                                             |
| TN-3416A 0012-91 | 12 พ.ย.38               | 13 ธ.ค.38       | 31                                            |
| SRT-801A 0012-91 | 12 พ.ย.38               | 9 ธ.ค.38        | 27                                            |
| TN-3416A 12-0014 | 12 พ.ย.38               | 9 ธ.ค.38        | 27                                            |
| IHT-8409 0046-95 | 2 ธ.ค.38                | 3 ธ.ค.38        | 1                                             |
| 7010 RTA NATURAL | 6 ธ.ค.38                | 7 ธ.ค.38        | 1                                             |
| รวม              |                         |                 | 94                                            |

ตารางแสดงจำนวนวันส่งสินค้าไม่ทันกำหนดเดือนธันวาคม 38

ภาคผนวก จ.

เวลาเฉลี่ยในการทำความสะอาด  
เครื่องจักรในแต่ละระดับ

เวลาในการทำความสะอาดเครื่องจักรระดับ D ( จากเกรดหนึ่งไปเกรดหนึ่ง )

| วันที่      | จาก Grade Name    | ไป Grade Name     | Cleaning Time ( นาที ) |
|-------------|-------------------|-------------------|------------------------|
| 20 มี.ค. 38 | 7010RTA N         | 7050RT 0007-55    | 30                     |
| 27 เม.ย. 38 | 7010RTA N         | IGT-9401 0032-65  | 31                     |
| 28 ก.ค. 38  | 7010RTA N         | 7050RT N          | 27                     |
| 26 ส.ค. 38  | 7030RT N          | 7050RT 1001-45    | 26                     |
| 22 มี.ย. 38 | 7030RT N          | IGT-8802 1009-45  | 28                     |
| 4 ก.ค. 38   | AGV-9990N N       | AM-5825 0050-05   | 30                     |
| 17 พ.ค. 38  | AGV-9996N N       | AM-5825 1073-25   | 29                     |
| 3 ส.ค. 38   | AM-5825 0114-25   | 7050RT 0023-95    | 30                     |
| 7 ก.ค. 38   | AM-5825 0173-25   | IH-5400 0006-95   | 31                     |
| 18 เม.ย. 38 | AMV-9998N 59-1060 | C-20N 0009-95     | 26                     |
| 13 ก.ค. 38  | AP-7504A 82-0215  | AP-6503A 12-0559  | 28                     |
| 11 ก.พ. 38  | C-20M 0145-25     | C-20M 0009-95     | 29                     |
| 19 เม.ย. 38 | IH-5400 1010-45   | 7050RT 0023-95    | 30                     |
| 22 มี.ย. 38 | IH-5400 0018-65   | IGT-7502 52-0019  | 25                     |
| 25 มี.ค. 38 | IH-5400 1010-45   | IGT-8201 0009-25  | 28                     |
| 26 ม.ค. 38  | IH-5773 0013-55   | 7050RT 0023-95    | 25                     |
| 18 ก.พ. 38  | LGT-6401 0025-35  | 7050RT 0023-95    | 31                     |
| 11 พ.ค. 38  | LGT-6401 0044-25  | C24-2 0144-25     | 30                     |
| 13 ส.ค. 38  | LGT-6401 1013-45  | IGT-9401 0007-95  | 28                     |
| 17 เม.ย. 38 | LHT-6101 0043-65  | IGT-9401 0032-65  | 29                     |
| 12 มี.ย. 38 | LMT-7801 0047-95  | 7050RT 0023-95    | 32                     |
| 18 มี.ย. 38 | PM-0947 0178-25   | BDV-9967N 0019-21 | 30                     |
| 30 มี.ค. 38 | PMT-8201 0081-25  | 7050RT 0023-95    | 31                     |
| 28 พ.ค. 38  | SFT-7502 0013-91  | IGT-7502 52-0019  | 30                     |
| 21 พ.ค. 38  | SMT-6498 62-0094  | IGT-7901 0008-55  | 29                     |
| 9 มี.ย. 38  | TG-4330S 0061-25  | C-24M 0175-25     | 29                     |
| 2 มี.ย. 38  | TN-3416A 12-0014  | IH-5400 0006-95   | 28                     |
| 14 มี.ย. 38 | YV-201-3 0039-35  | 7050RT 0011-35    | 27                     |
| 3 ก.ค. 38   | YV-201-3 55-0359  | IGT-7901 0008-55  | 30                     |
| 12 ม.ค. 38  | YV-201-3 0169-25  | CT-6 0174-25      | 27                     |
|             |                   | รวม               | 864                    |
|             |                   | เฉลี่ย            | 28.8 นาที = 0.02 วัน   |

เวลาในการทำความสะอาดเครื่องจักรระดับ A ( จากเกรดหนึ่งไปเกรดหนึ่ง )

| วันที่      | จาก Grade Name    | ไป Grade Name     | Cleaning Time ( นาที )  |
|-------------|-------------------|-------------------|-------------------------|
| 18 เม.ย. 38 | 7050RT 0011-15    | 7010RTA N         | 369                     |
| 23 ก.พ. 38  | 7050RT 0007-55    | 7050RT 0023-95    | 377                     |
| 2 ก.พ. 38   | 7050RT 1001-45    | 7030RT N          | 371                     |
| 8 ม.ค. 38   | AM-5825 0050-95   | IGT-8902 N        | 373                     |
| 22 มี.ค. 38 | AP-6503A 12-0559  | 7030RT N          | 369                     |
| 30 ก.ค. 38  | AP-7504A 82-0215  | 7050RT 1001-45    | 375                     |
| 23 เม.ย. 38 | BDV-9998N 0019-21 | IGT-6301 1001-05  | 373                     |
| 24 พ.ค. 38  | C-20N 0009-95     | IGT-6301 1007-05  | 374                     |
| 21 ก.ค. 38  | C1 0091-15        | IGT-8502 0143-25  | 377                     |
| 8 ก.ค. 38   | CH-2224 0004-11   | C-24M 0175-25     | 378                     |
| 12 ก.ค. 38  | CH-6 0174-25      | 7050RT 0011-35    | 371                     |
| 18 เม.ย. 38 | FB-123 0008-25    | IGT-8002 1002-05  | 370                     |
| 28 มี.ค. 38 | IGT-9401 0059-15  | 7050RT 1001-45    | 376                     |
| 7 มี.ค. 38  | IH-5400 61-0026   | IGT-8902 N        | 371                     |
| 15 มี.ค. 38 | IHT-3001 0090-15  | IGV-0027B 0058-75 | 375                     |
| 21 ต.ค. 38  | IHT-8407 0046-15  | 7030RT N          | 375                     |
| 15 ก.ค. 38  | IHT-8901 0018-75  | 7030RT N          | 378                     |
| 2 มี.ค. 38  | LMT-7201 0110-25  | IGT-8002 1001-05  | 372                     |
| 8 เม.ย. 38  | LMT-7901 0044-75  | 7030RT N          | 374                     |
| 14 ก.พ. 38  | NS-1361V 12-0018  | AGV-9990N N       | 376                     |
| 17 มี.ค. 38 | NS-1607 0008-91   | C-24M 0175-25     | 377                     |
| 11 มี.ค. 38 | PGT-8202 0029-15  | IGT-6301 1007-05  | 374                     |
| 17 ก.ค. 38  | PM-0947 51-0010   | 7050RT 1001-45    | 376                     |
| 25 ก.พ. 38  | SFT-7502 0011-91  | IGT-9401 1014-45  | 378                     |
| 3 ก.พ. 38   | TZ-9419 0011-25   | IGT-6301 1007-05  | 375                     |
| 20 เม.ย. 38 | V-233RT 62-0095   | AMV-9998N 59-1060 | 373                     |
| 30 ก.ค. 38  | V-233RT 59-0350   | C-24M 0175-25     | 376                     |
| 28 เม.ย. 38 | V-240RT 561-1095  | C-20M 0145-25     | 377                     |
| 11 เม.ย. 38 | YV-201-3 0017-95  | IGT-8002 1002-05  | 375                     |
| 7 พ.ค. 38   | YV-220-7 52-0346  | IGT-6301 1007-05  | 376                     |
|             |                   | รวม               | 11230                   |
|             |                   | เฉลี่ย            | 374.333 นาที = 0.26 วัน |

เวลาในการทำความสะอาดเครื่องจักรระดับ B ( จากเกรดหนึ่งไปเกรดหนึ่ง )

| วันที่      | จาก Grade Name     | ไป Grade Name     | Cleaning Time ( นาที )  |
|-------------|--------------------|-------------------|-------------------------|
| 3 พ.ค. 38   | 7050RT 0011-15     | 7050RT 0023-95    | 263                     |
| 4 ส.ค. 38   | 7050RT 0011-15     | IGT-9401 0041-75  | 260                     |
| 1 ก.ค. 38   | AM-5825 0173-25    | 7050RT 0011-35    | 261                     |
| 30 ม.ค. 38  | AMV-9998N 59-1060  | IGT-9401 0031-65  | 260                     |
| 18 ม.ค. 38  | C1 0091-15         | FV-123 0008-25    | 267                     |
| 14 พ.ค. 38  | IGT-8306 1006-05   | 7050RT 0011-15    | 263                     |
| 26 เม.ย. 38 | IGT-8802 1009-45   | 7050RT 0011-35    | 255                     |
| 22 ก.ค. 38  | IGT-9401 0031-65   | AP-6503A 12-0559  | 254                     |
| 24 พ.ค. 38  | IGV-0027B 0058-75  | 7050RT 0015-75    | 268                     |
| 20 ส.ค. 38  | IGV-0027B 0046-85  | C-24-2 0114-25    | 264                     |
| 17 ม.ค. 38  | IH-5400 0018-65    | 7050RT 0011-35    | 258                     |
| 15 พ.ค. 38  | IH-5400 0018-65    | 7030RT N          | 257                     |
| 11 ส.ค. 38  | IH-5400 0073-25    | AP-6503A 12-0559  | 264                     |
| 14 ก.ค. 38  | IH-5400 4006-45    | C24-2 0114-25     | 262                     |
| 7 ก.พ. 38   | IH-5483 63-0112    | 7050RT 0011-15    | 255                     |
| 8 ส.ค. 38   | IH-5483 63-0112    | AP-7504A 12-0215  | 261                     |
| 2 ม.ค. 38   | IH-8403 0003-25    | AGV-9990N N       | 253                     |
| 1 ก.ค. 38   | IHT-8403 0028-95   | AGV-0027B 0058-72 | 254                     |
| 8 ม.ค. 38   | IHT-8409 0124-25   | AP-7504A 12-0215  | 258                     |
| 7 เม.ย. 38  | IHT-8409 0125-25   | IGT-9401 0059-15  | 259                     |
| 4 ก.พ. 38   | IHT-8901 0056-75   | 7050RT 1001-45    | 257                     |
| 23 ม.ค. 38  | LE-608A-19 12-0634 | AP-6503A 12-0559  | 264                     |
| 31 ก.ค. 38  | LGT-6401 0025-35   | AGV-0027B 0058-75 | 261                     |
| 18 ก.พ. 38  | LHT-6801 0054-95   | 7010RTA N         | 251                     |
| 16 พ.ค. 38  | NS-1607 0003-91    | 7010RTA N         | 264                     |
| 3 ม.ย. 38   | PGT-8202 0022-35   | 7050RT 0007-55    | 258                     |
| 4 ส.ค. 38   | PM-0947 0036-65    | 7050RT 0011-15    | 259                     |
| 26 ก.พ. 38  | SHT-7503 1068-25   | C24-2 0144-25     | 255                     |
| 13 ส.ค. 38  | SNT-7202 0019-21   | 7050RT 7002-45    | 260                     |
| 17 ส.ค. 38  | TG-4330S 0101-25   | 7050RT 7002-45    | 252                     |
|             |                    | รวม               | 7777                    |
|             |                    | เฉลี่ย            | 259.233 นาที = 0.18 วัน |



เวลาในการทำความสะอาดเครื่องจักรระดับ C ( จากเกรดหนึ่งไปเกรดหนึ่ง )

| วันที่      | จาก Grade Name    | ไป Grade Name     | Cleaning Time ( นาที ) |
|-------------|-------------------|-------------------|------------------------|
| 13 ต.ค. 38  | AM-5825 0114-25   | IGT-7502 52-0019  | 118                    |
| 16 ก.ค. 38  | 7010RTA N         | BDV-9967N 0019-21 | 115                    |
| 5 ต.ค. 38   | C-20M 0009-95     | 7050RT 0007-55    | 113                    |
| 18 ต.ค. 38  | C-20M 0009-95     | 7050RT 1001-45    | 113                    |
| 23 ม.ค. 38  | C24-2 0055-95     | 7050RT 1001-45    | 118                    |
| 9 ก.ค. 38   | C24-2 0055-95     | 7010RTA N         | 115                    |
| 4 พ.ค. 38   | IGT-6301 1007-05  | 7050RT 0015-75    | 117                    |
| 22 ต.ค. 38  | IGT-8204 0037-15  | 7050RT 0023-95    | 116                    |
| 19 พ.ค. 38  | IGT-8305 62-0095  | 7050RT N          | 114                    |
| 14 ม.ค. 38  | IGT-8502 0143-25  | C24-2 0055-95     | 117                    |
| 29 ม.ย. 38  | IGT-9401 0007-95  | 7010RTA N         | 116                    |
| 12 ม.ย. 38  | IHT-7501 0048-95  | 7050RT 0015-75    | 117                    |
| 23 เม.ย. 38 | IHT-8409 0046-95  | 7050RT N          | 114                    |
| 19 ม.ย. 38  | IHT-9409 0125-25  | C-20M 0009-95     | 115                    |
| 3 ก.ค. 38   | LGT-6401 0012-95  | 7050RT 0011-35    | 116                    |
| 18 ก.พ. 38  | LGT-6401 1013-45  | AM-5825 0173-25   | 117                    |
| 26 ก.ค. 38  | LHT-7501 0093-15  | C1 0091-15        | 115                    |
| 15 ก.พ. 37  | LMT-7801 0047-95  | C-20M 009-95      | 114                    |
| 3 ก.พ. 37   | PGU-9993P 0012-95 | 7050RT 001-45     | 116                    |
| 17 พ.ค. 38  | PM-91 0003-25     | C-20M 145-25      | 113                    |
| 4 ม.ย. 38   | PMT-8401A 0022-95 | 7050RT 002-45     | 115                    |
| 6 ก.ค. 38   | RM-0947 52-0091   | 7050RT 015-75     | 116                    |
| 13 ม.ค. 38  | SM-6498 62-0094   | IH-5400 0006-95   | 116                    |
| 4 เม.ย. 38  | SRT-8001A 0012-91 | 7030RT N          | 114                    |
| 7 ม.ย. 38   | TZ-9419 0011-25   | AM-5825 0050-95   | 113                    |
| 11 ม.ค. 38  | V-233RT 78-0083   | AM-5825 0114-25   | 117                    |
| 8 ก.ค. 38   | V-24RT 0001-25    | IGT-8502 0143-25  | 116                    |
| 19 ม.ค. 38  | V-24RT 0001-25    | IGT-9401 1014-45  | 111                    |
| 27 ม.ย. 38  | YV-201-3 0169-25  | IGT-8502 0143-25  | 115                    |
| 11 ก.ค. 38  | YV-220-7 63-0066  | BDV-9967N 0019-21 | 114                    |
|             |                   | รวม               | 3456                   |
|             |                   | เฉลี่ย            | 115.20 นาที = 0.08 วัน |

ภาคผนวก จ.

อัตราการผลิตของเครื่องจักรในการผลิต  
ผลิตภัณฑ์แต่ละเกรด

ตารางแสดงอัตราการผลิตของเครื่องจักรในการผลิตผลิตภัณฑ์แต่ละเกรด

| เลขที่เกรด | ชื่อเกรด          | อัตราการผลิต<br>(Kg/Hr) |
|------------|-------------------|-------------------------|
| 1          | 7050RT 0007-55    | 924                     |
| 2          | 7050RT 0011-35    | 768                     |
| 3          | 7050RT 0015-75    | 1096                    |
| 4          | 7050RT 0023-95    | 1095                    |
| 5          | 7050RT 1001-45    | 1016                    |
| 6          | 7050RT N          | 1053                    |
| 7          | 7010RTA N         | 929                     |
| 8          | 7030RT N          | 1393                    |
| 9          | 7050RT 0011-15    | 1032                    |
| 10         | 7050RT 7002-45    | 855                     |
| 11         | AGV-9990N N       | 1088                    |
| 12         | AM-5825 0050-95   | 816                     |
| 13         | AM-5825 1114-25   | 829                     |
| 14         | AM-5825 0173-25   | 539                     |
| 15         | AMV-9998N 59-1060 | 648                     |
| 16         | AP-6503A 12-0559  | 551                     |
| 17         | AP-7504A 82-0215  | 682                     |
| 18         | BDV-9967N 0019-21 | 443                     |
| 19         | C1 0091-15        | 1047                    |
| 20         | C24-2 0055-95     | 1007                    |
| 21         | C24-2 0144-25     | 944                     |
| 22         | C-15M 0174-25     | 600                     |
| 23         | C-20M 0009-95     | 1247                    |
| 24         | C-20M 0145-25     | 1111                    |
| 25         | C-24M 0175-25     | 770                     |

ตารางแสดงอัตราการผลิตของเครื่องจักรในการผลิตผลิตภัณฑ์แต่ละเกรด (ต่อ)

| เลขที่เกรด | ชื่อเกรด          | อัตราการผลิต<br>(Kg/Hr) |
|------------|-------------------|-------------------------|
| 26         | CH-2224 0004-11   | 612                     |
| 27         | CH-2224 12-0545   | 1105                    |
| 28         | CT-6 0174-25      | 869                     |
| 29         | FV-117 0007-25    | 752                     |
| 30         | FV-123 0008-25    | 847                     |
| 31         | IGT-6301 1007-05  | 652                     |
| 32         | IGT-7502 52-0019  | 1075                    |
| 33         | IGT-7901 0008-55  | 860                     |
| 34         | IGT-8002 1002-05  | 907                     |
| 35         | IGT-8201 0009-25  | 981                     |
| 36         | IGT-8204 0037-15  | 788                     |
| 37         | IGT-8305 62-0095  | 608                     |
| 38         | IGT-8306 1006-05  | 707                     |
| 39         | IGT-8502 0143-25  | 921                     |
| 40         | IGT-8802 1009-45  | 952                     |
| 41         | IGT-8902 N        | 1076                    |
| 42         | IGT-9401 0007-95  | 513                     |
| 43         | IGT-9401 0031-65  | 440                     |
| 44         | IGT-9401 0032-65  | 353                     |
| 45         | IGT-9401 0041-75  | 629                     |
| 46         | IGT-9401 0059-15  | 350                     |
| 47         | IGT-9401 1014-45  | 392                     |
| 48         | IGV-0027B 0046-85 | 392                     |
| 49         | IGV-0027B 0058-75 | 382                     |
| 50         | IH-5400 0006-95   | 753                     |

ตารางแสดงอัตราการผลิตของเครื่องจักรในการผลิตผลิตภัณฑ์แต่ละเกรด (ต่อ)

| เลขที่เกรด | ชื่อเกรด         | อัตราการผลิต<br>(Kg/Hr) |
|------------|------------------|-------------------------|
| 51         | IH-5400 0018-65  | 658                     |
| 52         | IH-5400 0019-55  | 746                     |
| 53         | IH-5400 0021-35  | 530                     |
| 54         | IH-5400 0027-75  | 738                     |
| 55         | IH-5400 0073-25  | 801                     |
| 56         | IH-5400 1010-45  | 564                     |
| 57         | IH-5400 4006-45  | 650                     |
| 58         | IH-5400 61-0026  | 1004                    |
| 59         | IH-5400 7004-45  | 600                     |
| 60         | IH-5483 61-0026  | 1156                    |
| 61         | IH-5483 62-0095  | 844                     |
| 62         | IH-5483 63-0112  | 979                     |
| 63         | IH-5773 0013-55  | 1212                    |
| 64         | IHT-3001 0040-35 | 753                     |
| 65         | IHT-3001 0090-15 | 339                     |
| 66         | IHT-7501 0048-95 | 884                     |
| 67         | IHT-7501 0177-25 | 392                     |
| 68         | IHT-8302 0067-15 | 461                     |
| 69         | IHT-8302 62-0095 | 492                     |
| 70         | IHT-8403 0003-25 | 856                     |
| 71         | IHT-8403 0028-95 | 794                     |
| 72         | IHT-8403 0030-25 | 1026                    |
| 73         | IHT-8407 0046-15 | 1045                    |
| 74         | IHT-8409 0046-95 | 1049                    |
| 75         | IHT-8409 0062-15 | 834                     |



ตารางแสดงอัตราการผลิตของเครื่องจักรในการผลิตผลิตภัณฑ์แต่ละเกรด (ต่อ)

| เลขที่เกรด | ชื่อเกรด           | อัตราการผลิต<br>(Kg/Hr) |
|------------|--------------------|-------------------------|
| 76         | IHT-8409 0062-15   | 1043                    |
| 77         | IHT-8409 0122-25   | 598                     |
| 78         | IHT-8409 0123-25   | 1048                    |
| 79         | IHT-8409 0124-25   | 1370                    |
| 80         | IHT-8409 0125-25   | 910                     |
| 81         | IHT-8409 0166-25   | 2635                    |
| 82         | IHT-8901 0004-15   | 1067                    |
| 83         | IHT-8901 0009-35   | 862                     |
| 84         | IHT-8901 0010-55   | 915                     |
| 85         | IHT-8901 0018-75   | 750                     |
| 86         | IHT-8901 0025-25   | 928                     |
| 87         | IHT-8901 0056-75   | 711                     |
| 88         | IHT-8901 0165-25   | 737                     |
| 89         | IHT-8901 62-0095   | 1060                    |
| 90         | IHT-9702 N         | 700                     |
| 91         | LE-608A-19 12-0634 | 233                     |
| 92         | LGT-6201 0008-95   | 593                     |
| 93         | LGT-6401 0012-95   | 741                     |
| 94         | LGT-6401 0025-35   | 762                     |
| 95         | LGT-6401 0033-75   | 587                     |
| 96         | LGT-6401 0044-25   | 674                     |
| 97         | LGT-6401 7006-45   | 585                     |
| 98         | LGT-8301 0024-95   | 836                     |
| 99         | LGT-8802 N         | 912                     |
| 100        | LHT-6101 0043-65   | 402                     |

ตารางแสดงอัตราการผลิตของเครื่องจักรในการผลิตผลิตภัณฑ์แต่ละเกรด (ต่อ)

| เลขที่เกรด | ชื่อเกรด          | อัตราการผลิต<br>(Kg/Hr) |
|------------|-------------------|-------------------------|
| 101        | LHT-6801 0054-95  | 701                     |
| 102        | LHT-6803 0068-15  | 576                     |
| 103        | LHT-7501 0039-95  | 636                     |
| 104        | LHT-7501 0093-15  | 552                     |
| 105        | LJT-6101 0043-65  | 389                     |
| 106        | LMT-7201 0110-25  | 741                     |
| 107        | LMT-7801 0047-95  | 871                     |
| 108        | LMT-7901 0044-75  | 1217                    |
| 109        | NS-1361B 12-0018  | 795                     |
| 110        | NS-1607 0003-91   | 822                     |
| 111        | NS-1607 0008-91   | 797                     |
| 112        | NS-1607 0020-21   | 519                     |
| 113        | PGT-8202 0021-55  | 851                     |
| 114        | PGT-8202 0022-35  | 892                     |
| 115        | PGT-8202 0029-15  | 860                     |
| 116        | PGT-8202 52-0091  | 780                     |
| 117        | PGT-8802 0158-25  | 779                     |
| 118        | PGT-9301S 0009-55 | 969                     |
| 119        | PGT-9501 0006-95  | 691                     |
| 120        | PGV-9993P 0012-95 | 594                     |
| 121        | PM-0937 65-0172   | 823                     |
| 122        | PM-0947 0036-65   | 823                     |
| 123        | PM-0947 0178-25   | 533                     |
| 124        | PM-0947 51-0010   | 1566                    |
| 125        | PM-0947 52-0091   | 718                     |

ตารางแสดงอัตราการผลิตของเครื่องจักรในการผลิตผลิตภัณฑ์แต่ละเกรด (ต่อ)

| เลขที่เกรด | ชื่อเกรด          | อัตราการผลิต<br>(Kg/Hr) |
|------------|-------------------|-------------------------|
| 126        | PM-0947 53-0067   | 955                     |
| 127        | PM-0947 65-0770   | 537                     |
| 128        | PMT-8001 0014-95  | 353                     |
| 129        | PMT-8201 0060-95  | 818                     |
| 130        | PMT-8201 0081-25  | 933                     |
| 131        | PMT-8201 0090-25  | 721                     |
| 132        | PMT-8302 0150-25  | 634                     |
| 133        | PMT-8401A 0022-95 | 936                     |
| 134        | PN-91 0002-95     | 1945                    |
| 135        | PN-91 0003-25     | 879                     |
| 136        | SFT-7502 0013-91  | 530                     |
| 137        | SG-0317 0044-95   | 382                     |
| 138        | SG-0317 0059-75   | 644                     |
| 139        | SG-0317 0089-15   | 775                     |
| 140        | SG-6876 62-0091   | 590                     |
| 141        | SGT-8201 0030-15  | 1016                    |
| 142        | SGT-8304 0030-95  | 1035                    |
| 143        | SGT-8304 N        | 773                     |
| 144        | SHL-9997N 0014-95 | 777                     |
| 145        | SHT-7503 0168-25  | 628                     |
| 146        | SM-6498 62-0094   | 1063                    |
| 147        | SMT-6001 0033-55  | 374                     |
| 148        | SMT-7201 0054-95  | 671                     |
| 149        | SMT-7302 0060-15  | 378                     |
| 150        | SMT-7501 1702-01  | 228                     |

ตารางแสดงอัตราการผลิตของเครื่องจักรในการผลิตผลิตภัณฑ์แต่ละเกรด (ต่อ)

| เลขที่เกรด | ชื่อเกรด          | อัตราการผลิต<br>(Kg/Hr) |
|------------|-------------------|-------------------------|
| 151        | SMT-7901 0034-85  | 1134                    |
| 152        | SMT-7901 0044-95  | 1031                    |
| 153        | SNT-7202 0019-21  | 438                     |
| 154        | SRT-8001A 0012-91 | 426                     |
| 155        | TG-4322 0040-95   | 496                     |
| 156        | TG-4322 0109-25   | 571                     |
| 157        | TG-4330S 0061-25  | 786                     |
| 158        | TG-4330S 0106-25  | 752                     |
| 159        | TG-4330S 02-0140  | 838                     |
| 160        | TG-4330S 62-0095B | 579                     |
| 161        | TG-4703 0013-95   | 2172                    |
| 162        | TN-3416A 0012-91  | 618                     |
| 163        | TN-3416A12-0014   | 216                     |
| 164        | TN-6127B 0002-11  | 915                     |
| 165        | TN-6172B 0004-91  | 769                     |
| 166        | TN-6127B 0009-91  | 1243                    |
| 167        | TN-8959 12-0015   | 915                     |
| 168        | TZ-9419 0011-25   | 711                     |
| 169        | V-107RT 0046-95   | 863                     |
| 170        | V-233RT 54-0434   | 911                     |
| 171        | V-233RT 59-0350   | 915                     |
| 172        | V-233RT 61-0565   | 1178                    |
| 173        | V-233RT 62-0095   | 1424                    |
| 174        | V-233RT 62-0184   | 662                     |
| 175        | V-233RT 63-0318   | 850                     |

ตารางแสดงอัตราการผลิตของเครื่องจักรในการผลิตผลิตภัณฑ์แต่ละเกรด (ต่อ)

| เลขที่เกรด | ชื่อเกรด         | อัตราการผลิต<br>(Kg/Hr) |
|------------|------------------|-------------------------|
| 176        | V-233RT 64-0507  | 978                     |
| 177        | V-233RT 67-0468  | 909                     |
| 178        | V-233RT 67-0469  | 747                     |
| 179        | V-233RT 78-0083  | 572                     |
| 180        | V-233RT 62-0184  | 1056                    |
| 181        | V-240RT 0001-25  | 863                     |
| 182        | V-240RT 0075-25  | 621                     |
| 183        | V-240RT 51-1095  | 689                     |
| 184        | V-240RT 561-1095 | 458                     |
| 185        | V-76 0003-95     | 944                     |
| 186        | VC-47T-1 0005-95 | 558                     |
| 187        | YV-201-3 0017-95 | 625                     |
| 188        | YV-201-3 0039-35 | 530                     |
| 189        | YV-201-3 0047-65 | 212                     |
| 190        | YV-201-3 0169-25 | 299                     |
| 191        | YV-201-3 53-0277 | 883                     |
| 192        | YV-201-3 55-0359 | 531                     |
| 193        | YV-201-3 57-0679 | 403                     |
| 194        | YV-220-7 0008-65 | 294                     |
| 195        | YV-220-7 0010-75 | 453                     |
| 196        | YV-220-7 0159-25 | 393                     |
| 197        | YV-220-7 1018-45 | 680                     |
| 198        | YV-220-7 52-0346 | 890                     |
| 199        | YV-220-7 63-0066 | 600                     |
| 200        | LGT-6401 1013-45 | 250                     |
| 201        | IHT-8904 N       | 950                     |



ภาคผนวก ช.

ข้อกำหนดในการจัดลำดับของแต่ละเกรด

ตารางแสดงเลขที่เกรดที่ไม่สามารถผลิตต่อเนื่องกันได้

| จาก GRADE NO. | ไป GRADE NO. | สาเหตุที่ไม่สามารถผลิต<br>ต่อเนื่องกันได้ |
|---------------|--------------|-------------------------------------------|
| 1             | 80           | Contamination                             |
| 4             | 34           | Contamination                             |
| 12            | 9            | Contamination                             |
| 12            | 19           | Contamination                             |
| 12            | 26           | Contamination                             |
| 12            | 31           | Contamination                             |
| 12            | 34           | Contamination                             |
| 12            | 36           | Contamination                             |
| 12            | 46           | Contamination                             |
| 12            | 60           | Contamination                             |
| 12            | 65           | Contamination                             |
| 12            | 68           | Contamination                             |
| 12            | 73           | Contamination                             |
| 12            | 75           | Contamination                             |
| 12            | 76           | Contamination                             |
| 12            | 82           | Contamination                             |
| 12            | 102          | Contamination                             |
| 12            | 115          | Contamination                             |
| 12            | 121          | Contamination                             |
| 12            | 141          | Contamination                             |
| 12            | 150          | Contamination                             |
| 12            | 164          | Contamination                             |
| 12            | 172          | Contamination                             |
| 12            | 176          | Contamination                             |
| 12            | 183          | Contamination                             |

ตารางแสดงเลขที่เกรดที่ไม่สามารถผลิตต่อเนื่องกันได้ (ต่อ)

| จาก GRADE NO. | ไป GRADE NO. | สาเหตุที่ไม่สามารถผลิตต่อเนื่องกันได้ |
|---------------|--------------|---------------------------------------|
| 12            | 184          | Contamination                         |
| 13            | 31           | Contamination                         |
| 13            | 34           | Contamination                         |
| 13            | 150          | Contamination                         |
| 14            | 31           | Contamination                         |
| 14            | 34           | Contamination                         |
| 14            | 150          | Contamination                         |
| 15            | 31           | Contamination                         |
| 15            | 34           | Contamination                         |
| 15            | 150          | Contamination                         |
| 16            | 9            | Contamination                         |
| 16            | 19           | Contamination                         |
| 16            | 26           | Contamination                         |
| 16            | 31           | Contamination                         |
| 16            | 34           | Contamination                         |
| 16            | 46           | Contamination                         |
| 16            | 58           | Contamination                         |
| 16            | 60           | Contamination                         |
| 16            | 65           | Contamination                         |
| 16            | 68           | Contamination                         |
| 16            | 73           | Contamination                         |
| 16            | 75           | Contamination                         |
| 16            | 76           | Contamination                         |
| 16            | 82           | Contamination                         |
| 16            | 104          | Contamination                         |

ตารางแสดงเลขที่เกรดที่ไม่สามารถผลิตต่อเนื่องกันได้ (ต่อ)

| จาก GRADE NO. | ไป GRADE NO. | สาเหตุที่ไม่สามารถผลิต<br>ต่อเนื่องกันได้ |
|---------------|--------------|-------------------------------------------|
| 16            | 115          | Contamination                             |
| 16            | 124          | Contamination                             |
| 16            | 139          | Contamination                             |
| 16            | 150          | Chemical Reaction                         |
| 16            | 164          | Contamination                             |
| 16            | 172          | Contamination                             |
| 16            | 183          | Contamination                             |
| 16            | 184          | Contamination                             |
| 17            | 9            | Contamination                             |
| 17            | 19           | Contamination                             |
| 17            | 26           | Contamination                             |
| 17            | 31           | Contamination                             |
| 17            | 34           | Contamination                             |
| 17            | 46           | Contamination                             |
| 17            | 58           | Contamination                             |
| 17            | 60           | Contamination                             |
| 17            | 65           | Contamination                             |
| 17            | 68           | Contamination                             |
| 17            | 73           | Contamination                             |
| 17            | 75           | Contamination                             |
| 17            | 76           | Contamination                             |
| 17            | 82           | Contamination                             |
| 17            | 104          | Contamination                             |
| 17            | 115          | Contamination                             |
| 17            | 124          | Contamination                             |

ตารางแสดงเลขที่เกรดที่ไม่สามารถผลิตต่อเนื่องกันได้ (ต่อ)

| จาก GRADE NO. | ไป GRADE NO. | สาเหตุที่ไม่สามารถผลิต<br>ต่อเนื่องกันได้ |
|---------------|--------------|-------------------------------------------|
| 17            | 139          | Contamination                             |
| 17            | 150          | Chemical Reaction                         |
| 17            | 164          | Contamination                             |
| 17            | 172          | Contamination                             |
| 17            | 183          | Contamination                             |
| 17            | 184          | Contamination                             |
| 18            | 31           | Contamination                             |
| 18            | 34           | Contamination                             |
| 18            | 150          | Contamination                             |
| 18            | 170          | Chemical Reaction                         |
| 18            | 171          | Chemical Reaction                         |
| 18            | 172          | Chemical Reaction                         |
| 18            | 173          | Chemical Reaction                         |
| 18            | 174          | Chemical Reaction                         |
| 18            | 175          | Chemical Reaction                         |
| 18            | 176          | Chemical Reaction                         |
| 18            | 177          | Chemical Reaction                         |
| 18            | 178          | Chemical Reaction                         |
| 18            | 179          | Chemical Reaction                         |
| 18            | 180          | Chemical Reaction                         |
| 19            | 31           | Contamination                             |
| 19            | 34           | Contamination                             |
| 19            | 150          | Contamination                             |
| 20            | 31           | Contamination                             |
| 20            | 150          | Contamination                             |



ตารางแสดงเลขที่เกรดที่ไม่สามารถผลิตต่อเนื่องกันได้ (ต่อ)

| จาก GRADE NO. | ไป GRADE NO. | สาเหตุที่ไม่สามารถผลิตต่อเนื่องกันได้ |
|---------------|--------------|---------------------------------------|
| 21            | 31           | Contamination                         |
| 21            | 34           | Contamination                         |
| 21            | 150          | Contamination                         |
| 22            | 31           | Contamination                         |
| 22            | 34           | Contamination                         |
| 22            | 150          | Chemical Reaction                     |
| 23            | 31           | Contamination                         |
| 23            | 150          | Chemical Reaction                     |
| 24            | 31           | Contamination                         |
| 24            | 150          | Chemical Reaction                     |
| 25            | 31           | Contamination                         |
| 25            | 34           | Contamination                         |
| 25            | 150          | Chemical Reaction                     |
| 26            | 31           | Contamination                         |
| 26            | 34           | Contamination                         |
| 26            | 150          | Contamination                         |
| 27            | 31           | Contamination                         |
| 27            | 34           | Contamination                         |
| 27            | 150          | Contamination                         |
| 28            | 31           | Contamination                         |
| 28            | 34           | Contamination                         |
| 28            | 150          | Contamination                         |
| 29            | 34           | Contamination                         |
| 30            | 34           | Contamination                         |
| 48            | 31           | Chemical Reaction                     |

ตารางแสดงเลขที่เกรดที่ไม่สามารถผลิตต่อเนื่องกันได้ (ต่อ)

| จาก GRADE NO. | ไป GRADE NO. | สาเหตุที่ไม่สามารถผลิต<br>ต่อเนื่องกันได้ |
|---------------|--------------|-------------------------------------------|
| 48            | 34           | Contamination                             |
| 48            | 150          | Chemical Reaction                         |
| 49            | 31           | Chemical Reaction                         |
| 49            | 34           | Contamination                             |
| 49            | 150          | Chemical Reaction                         |
| 50            | 31           | Chemical Reaction                         |
| 50            | 34           | Contamination                             |
| 50            | 150          | Contamination                             |
| 51            | 31           | Chemical Reaction                         |
| 51            | 34           | Contamination                             |
| 52            | 31           | Chemical Reaction                         |
| 52            | 34           | Contamination                             |
| 53            | 31           | Chemical Reaction                         |
| 53            | 34           | Contamination                             |
| 54            | 31           | Chemical Reaction                         |
| 54            | 34           | Contamination                             |
| 55            | 31           | Chemical Reaction                         |
| 55            | 34           | Contamination                             |
| 56            | 31           | Chemical Reaction                         |
| 56            | 34           | Contamination                             |
| 57            | 31           | Chemical Reaction                         |
| 57            | 34           | Contamination                             |
| 58            | 31           | Chemical Reaction                         |
| 58            | 34           | Contamination                             |
| 59            | 31           | Chemical Reaction                         |

ตารางแสดงเลขที่เกรดที่ไม่สามารถผลิตต่อเนื่องกันได้ (ต่อ)

| จาก GRADE NO. | ไป GRADE NO. | สาเหตุที่ไม่สามารถผลิตต่อเนื่องกันได้ |
|---------------|--------------|---------------------------------------|
| 59            | 34           | Contamination                         |
| 60            | 31           | Chemical Reaction                     |
| 60            | 34           | Contamination                         |
| 61            | 31           | Chemical Reaction                     |
| 61            | 34           | Contamination                         |
| 62            | 31           | Chemical Reaction                     |
| 62            | 34           | Contamination                         |
| 63            | 31           | Chemical Reaction                     |
| 63            | 34           | Contamination                         |
| 64            | 150          | Contamination                         |
| 65            | 150          | Contamination                         |
| 66            | 150          | Contamination                         |
| 67            | 150          | Contamination                         |
| 68            | 150          | Contamination                         |
| 69            | 150          | Contamination                         |
| 70            | 150          | Contamination                         |
| 71            | 150          | Contamination                         |
| 72            | 150          | Contamination                         |
| 73            | 150          | Contamination                         |
| 74            | 150          | Contamination                         |
| 75            | 150          | Contamination                         |
| 76            | 150          | Contamination                         |
| 77            | 150          | Contamination                         |
| 78            | 150          | Contamination                         |
| 79            | 150          | Contamination                         |

ตารางแสดงเลขที่เกรดที่ไม่สามารถผลิตต่อเนื่องกันได้ (ต่อ)

| จาก GRADE NO. | ไป GRADE NO. | สาเหตุที่ไม่สามารถผลิตต่อเนื่องกันได้ |
|---------------|--------------|---------------------------------------|
| 80            | 150          | Contamination                         |
| 81            | 150          | Contamination                         |
| 82            | 150          | Contamination                         |
| 83            | 150          | Contamination                         |
| 84            | 150          | Contamination                         |
| 84            | 170          | Chemical Reaction                     |
| 84            | 197          | Chemical Reaction                     |
| 85            | 150          | Contamination                         |
| 86            | 150          | Contamination                         |
| 87            | 150          | Contamination                         |
| 88            | 150          | Contamination                         |
| 89            | 150          | Contamination                         |
| 91            | 31           | Contamination                         |
| 91            | 34           | Contamination                         |
| 91            | 150          | Contamination                         |
| 92            | 31           | Contamination                         |
| 92            | 34           | Contamination                         |
| 92            | 150          | Contamination                         |
| 100           | 31           | Chemical Reaction                     |
| 100           | 34           | Chemical Reaction                     |
| 100           | 150          | Contamination                         |
| 101           | 31           | Chemical Reaction                     |
| 101           | 34           | Chemical Reaction                     |
| 101           | 150          | Contamination                         |
| 102           | 31           | Chemical Reaction                     |

ตารางแสดงเลขที่เกรดที่ไม่สามารถผลิตต่อเนื่องกันได้ (ต่อ)

| จาก GRADE NO. | ไป GRADE NO. | สาเหตุที่ไม่สามารถผลิตต่อเนื่องกันได้ |
|---------------|--------------|---------------------------------------|
| 102           | 34           | Chemical Reaction                     |
| 102           | 150          | Contamination                         |
| 103           | 31           | Chemical Reaction                     |
| 103           | 34           | Chemical Reaction                     |
| 103           | 150          | Contamination                         |
| 104           | 31           | Chemical Reaction                     |
| 104           | 34           | Chemical Reaction                     |
| 104           | 150          | Contamination                         |
| 105           | 31           | Chemical Reaction                     |
| 105           | 34           | Chemical Reaction                     |
| 105           | 150          | Contamination                         |
| 106           | 31           | Contamination                         |
| 106           | 34           | Contamination                         |
| 107           | 4            | Contamination                         |
| 107           | 31           | Contamination                         |
| 107           | 34           | Contamination                         |
| 107           | 150          | Contamination                         |
| 108           | 4            | Contamination                         |
| 108           | 31           | Contamination                         |
| 108           | 34           | Contamination                         |
| 109           | 4            | Contamination                         |
| 109           | 31           | Contamination                         |
| 109           | 34           | Contamination                         |
| 109           | 150          | Contamination                         |
| 110           | 4            | Contamination                         |



ตารางแสดงเลขที่เกรดที่ไม่สามารถผลิตต่อเนื่องกันได้ (ต่อ)

| จาก GRADE NO. | ไป GRADE NO. | สาเหตุที่ไม่สามารถผลิต<br>ต่อเนื่องกันได้ |
|---------------|--------------|-------------------------------------------|
| 110           | 31           | Contamination                             |
| 110           | 34           | Contamination                             |
| 110           | 150          | Contamination                             |
| 111           | 4            | Contamination                             |
| 111           | 31           | Contamination                             |
| 111           | 34           | Contamination                             |
| 111           | 150          | Contamination                             |
| 112           | 4            | Contamination                             |
| 112           | 31           | Chemical Reaction                         |
| 112           | 34           | Contamination                             |
| 112           | 150          | Contamination                             |
| 113           | 4            | Contamination                             |
| 113           | 31           | Chemical Reaction                         |
| 113           | 34           | Contamination                             |
| 114           | 4            | Contamination                             |
| 114           | 31           | Chemical Reaction                         |
| 114           | 34           | Contamination                             |
| 115           | 4            | Contamination                             |
| 115           | 31           | Chemical Reaction                         |
| 115           | 34           | Contamination                             |
| 116           | 4            | Contamination                             |
| 116           | 31           | Chemical Reaction                         |
| 116           | 34           | Contamination                             |
| 117           | 4            | Contamination                             |
| 117           | 31           | Chemical Reaction                         |

ตารางแสดงเลขที่เกรดที่ไม่สามารถผลิตต่อเนื่องกันได้ (ต่อ)

| จาก GRADE NO. | ไป GRADE NO. | สาเหตุที่ไม่สามารถผลิตต่อเนื่องกันได้ |
|---------------|--------------|---------------------------------------|
| 117           | 34           | Contamination                         |
| 118           | 4            | Contamination                         |
| 118           | 31           | Chemical Reaction                     |
| 118           | 34           | Contamination                         |
| 119           | 4            | Contamination                         |
| 119           | 31           | Chemical Reaction                     |
| 119           | 34           | Contamination                         |
| 120           | 4            | Contamination                         |
| 120           | 31           | Chemical Reaction                     |
| 120           | 34           | Contamination                         |
| 127           | 151          | Contamination                         |
| 128           | 31           | Contamination                         |
| 128           | 34           | Contamination                         |
| 129           | 31           | Contamination                         |
| 129           | 34           | Contamination                         |
| 130           | 31           | Contamination                         |
| 130           | 34           | Contamination                         |
| 131           | 31           | Contamination                         |
| 131           | 34           | Contamination                         |
| 132           | 31           | Contamination                         |
| 132           | 34           | Contamination                         |
| 133           | 31           | Contamination                         |
| 133           | 34           | Contamination                         |
| 134           | 31           | Contamination                         |
| 134           | 34           | Contamination                         |

ตารางแสดงเลขที่เกรดที่ไม่สามารถผลิตต่อเนื่องกันได้ (ต่อ)

| จาก GRADE NO. | ไป GRADE NO. | สาเหตุที่ไม่สามารถผลิต<br>ต่อเนื่องกันได้ |
|---------------|--------------|-------------------------------------------|
| 134           | 150          | Contamination                             |
| 135           | 31           | Contamination                             |
| 135           | 34           | Contamination                             |
| 135           | 150          | Contamination                             |
| 136           | 31           | Contamination                             |
| 136           | 34           | Contamination                             |
| 136           | 150          | Contamination                             |
| 137           | 31           | Contamination                             |
| 137           | 34           | Contamination                             |
| 137           | 150          | Contamination                             |
| 138           | 31           | Contamination                             |
| 138           | 34           | Contamination                             |
| 138           | 150          | Contamination                             |
| 139           | 31           | Contamination                             |
| 139           | 34           | Contamination                             |
| 139           | 150          | Contamination                             |
| 140           | 31           | Contamination                             |
| 140           | 34           | Contamination                             |
| 140           | 150          | Contamination                             |
| 141           | 31           | Contamination                             |
| 141           | 34           | Contamination                             |
| 141           | 150          | Contamination                             |
| 142           | 31           | Contamination                             |
| 142           | 34           | Contamination                             |
| 142           | 150          | Contamination                             |

ตารางแสดงเลขที่เกรดที่ไม่สามารถผลิตต่อเนื่องกันได้ (ต่อ)

| จาก GRADE NO. | ไป GRADE NO. | สาเหตุที่ไม่สามารถผลิต<br>ต่อเนื่องกันได้ |
|---------------|--------------|-------------------------------------------|
| 144           | 31           | Contamination                             |
| 144           | 34           | Contamination                             |
| 144           | 150          | Contamination                             |
| 145           | 31           | Chemical Reaction                         |
| 145           | 34           | Contamination                             |
| 145           | 150          | Contamination                             |
| 146           | 31           | Chemical Reaction                         |
| 146           | 34           | Contamination                             |
| 146           | 150          | Contamination                             |
| 147           | 31           | Chemical Reaction                         |
| 147           | 34           | Contamination                             |
| 147           | 150          | Contamination                             |
| 148           | 31           | Chemical Reaction                         |
| 148           | 34           | Contamination                             |
| 148           | 150          | Contamination                             |
| 149           | 31           | Contamination                             |
| 149           | 34           | Contamination                             |
| 149           | 150          | Contamination                             |
| 151           | 31           | Contamination                             |
| 151           | 34           | Contamination                             |
| 151           | 150          | Contamination                             |
| 152           | 31           | Contamination                             |
| 152           | 34           | Contamination                             |
| 152           | 150          | Contamination                             |
| 153           | 31           | Contamination                             |

ตารางแสดงเลขที่เกรดที่ไม่สามารถผลิตต่อเนื่องกันได้ (ต่อ)

| จาก GRADE NO. | ไป GRADE NO. | สาเหตุที่ไม่สามารถผลิต<br>ต่อเนื่องกันได้ |
|---------------|--------------|-------------------------------------------|
| 153           | 34           | Contamination                             |
| 153           | 150          | Contamination                             |
| 154           | 31           | Contamination                             |
| 154           | 34           | Contamination                             |
| 154           | 150          | Contamination                             |
| 155           | 31           | Contamination                             |
| 155           | 34           | Contamination                             |
| 155           | 150          | Contamination                             |
| 156           | 31           | Contamination                             |
| 156           | 34           | Contamination                             |
| 156           | 150          | Contamination                             |
| 157           | 31           | Contamination                             |
| 157           | 34           | Contamination                             |
| 157           | 150          | Contamination                             |
| 158           | 31           | Contamination                             |
| 158           | 34           | Contamination                             |
| 158           | 150          | Contamination                             |
| 159           | 31           | Contamination                             |
| 159           | 34           | Contamination                             |
| 159           | 150          | Contamination                             |
| 160           | 31           | Contamination                             |
| 160           | 34           | Contamination                             |
| 160           | 150          | Contamination                             |
| 161           | 31           | Contamination                             |
| 161           | 34           | Contamination                             |



ตารางแสดงเลขที่เกรดที่ไม่สามารถผลิตต่อเนื่องกันได้ (ต่อ)

| จาก GRADE NO. | ไป GRADE NO. | สาเหตุที่ไม่สามารถผลิต<br>ต่อเนื่องกันได้ |
|---------------|--------------|-------------------------------------------|
| 161           | 150          | Contamination                             |
| 162           | 31           | Contamination                             |
| 162           | 34           | Contamination                             |
| 162           | 150          | Contamination                             |
| 163           | 31           | Contamination                             |
| 163           | 34           | Contamination                             |
| 163           | 150          | Contamination                             |
| 164           | 31           | Contamination                             |
| 164           | 34           | Contamination                             |
| 164           | 110          | Contamination                             |
| 164           | 111          | Contamination                             |
| 164           | 112          | Contamination                             |
| 164           | 150          | Contamination                             |
| 165           | 31           | Contamination                             |
| 165           | 34           | Contamination                             |
| 165           | 109          | Contamination                             |
| 165           | 110          | Contamination                             |
| 165           | 111          | Contamination                             |
| 165           | 112          | Contamination                             |
| 165           | 150          | Contamination                             |
| 166           | 31           | Contamination                             |
| 166           | 34           | Contamination                             |
| 166           | 110          | Contamination                             |
| 166           | 111          | Contamination                             |
| 166           | 112          | Contamination                             |

ตารางแสดงเลขที่เกรดที่ไม่สามารถผลิตต่อเนื่องกันได้ (ต่อ)

| จาก GRADE NO. | ไป GRADE NO. | สาเหตุที่ไม่สามารถผลิตต่อเนื่องกันได้ |
|---------------|--------------|---------------------------------------|
| 166           | 150          | Contamination                         |
| 167           | 31           | Contamination                         |
| 167           | 34           | Contamination                         |
| 167           | 110          | Contamination                         |
| 167           | 111          | Contamination                         |
| 167           | 112          | Contamination                         |
| 167           | 150          | Contamination                         |
| 168           | 31           | Contamination                         |
| 168           | 34           | Contamination                         |
| 168           | 113          | Contamination                         |
| 168           | 114          | Contamination                         |
| 168           | 115          | Contamination                         |
| 168           | 116          | Contamination                         |
| 168           | 117          | Contamination                         |
| 168           | 118          | Contamination                         |
| 168           | 119          | Contamination                         |
| 168           | 150          | Contamination                         |
| 180           | 18           | Chemical Reaction                     |
| 186           | 31           | Contamination                         |
| 186           | 34           | Contamination                         |
| 186           | 150          | Contamination                         |
| 187           | 31           | Contamination                         |
| 187           | 34           | Contamination                         |
| 187           | 150          | Contamination                         |
| 188           | 31           | Contamination                         |

ตารางแสดงเลขที่เกรดที่ไม่สามารถผลิตต่อเนื่องกันได้ (ต่อ)

| จาก GRADE NO. | ไป GRADE NO. | สาเหตุที่ไม่สามารถผลิต<br>ต่อเนื่องกันได้ |
|---------------|--------------|-------------------------------------------|
| 188           | 34           | Contamination                             |
| 189           | 31           | Contamination                             |
| 189           | 34           | Contamination                             |
| 190           | 31           | Contamination                             |
| 190           | 34           | Contamination                             |
| 191           | 31           | Contamination                             |
| 191           | 34           | Contamination                             |
| 192           | 31           | Contamination                             |
| 192           | 34           | Contamination                             |
| 193           | 31           | Contamination                             |
| 193           | 34           | Contamination                             |
| 194           | 31           | Contamination                             |
| 194           | 34           | Contamination                             |
| 195           | 31           | Contamination                             |
| 195           | 34           | Contamination                             |
| 196           | 31           | Contamination                             |
| 196           | 34           | Contamination                             |
| 197           | 31           | Contamination                             |
| 197           | 34           | Contamination                             |
| 198           | 31           | Contamination                             |
| 198           | 34           | Contamination                             |
| 199           | 31           | Contamination                             |
| 199           | 34           | Contamination                             |
| 200           | 31           | Contamination                             |
| 200           | 34           | Contamination                             |

## ตารางแสดงเลขที่เกรดที่ไม่สามารถผลิตต่อเนื่องกันได้ (ต่อ)

| จาก GRADE NO. | ไป GRADE NO. | สาเหตุที่ไม่สามารถผลิตต่อเนื่องกันได้ |
|---------------|--------------|---------------------------------------|
| 201           | 31           | Contamination                         |
| 201           | 34           | Contamination                         |
| 201           | 150          | Contamination                         |

ภาคผนวก ซ.

ตัวอย่างการจัดลำดับการผลิตแบบเดิม



X-2

NO. 1

1/4

Date : 3/10/97  
Time : 14:26:22

Page : 1

| Ord. No.                             | Grade             | Hard | Prod. Order | Blending                      | Lot No.  | Receive No. | Due Date / Note / Customer / Packaging                                                             |
|--------------------------------------|-------------------|------|-------------|-------------------------------|----------|-------------|----------------------------------------------------------------------------------------------------|
| IGV-0027B<br>0058-75<br>(0058-75)    | EX<br>50 P<br>C   |      | 300         | 445<br>335 x 1                | 14YY0101 | 14<br>Bag   | New Grade New Color<br>03/11<br>FUJI CHEMI (PHOTO E & W)<br>25 Kgs. = 13 Bag(s) + 12 Kgs.          |
| IGV-0027B<br>0046-85<br>(0046-85)    | EX<br>50 P<br>C   |      | 300         | 335 x 1                       | 14YY0102 | 14<br>Bag   | New Grade New Color<br>03/11<br>FUJI CHEMI (PHOTO E & W)<br>25 Kgs. = 13 Bag(s) + 12 Kgs.          |
| PN-91<br>H-2 0003-25<br>(0003-25)    | INJ.<br>45 P<br>C |      | 1,200       | 529 x 1<br>327 x 5            | 14YY0103 | 64<br>Bag   | 04/11<br>THAI WIRE & CABLE SERVICES CO., LTD.<br>25 Kgs. = 63 Bag(s) + 6 Kg(s).                    |
| IHT-8403<br>H-2 0030-25<br>(0030-25) | EX<br>58 P<br>C   |      | 3,000       | 105 x 1<br>612 x 5<br>3,065   | 14YY0104 | 184<br>Bag  | 25/11<br>ousar cleaning (A)<br>HITACHI BANGKOK CABLE CO., LTD.<br>25 Kgs. = 122 Bag(s) + 15 Kg(s). |
| CH-2224<br>12-0545<br>(12-0545)      | EX<br>85 P<br>H   |      | 10,000      | 510 x 1<br>612 x 17<br>10,500 | 14YY0105 | 427<br>Bag  | 04/11<br>START Replet 1 Basket.<br>S.E. NOMURA THAI LTD.<br>25 Kgs. = 120 Bag(s) + 20 Kg(s).       |

ภาคผนวก ฉ.

การจัดลำดับการผลิตที่ได้จากการจำลองปัญหา

JOB SCHEDULING

| Line1                              |         |                   |        |         |         |          |          |       | 8 | 9  |
|------------------------------------|---------|-------------------|--------|---------|---------|----------|----------|-------|---|----|
| Starting production date: 01/10/95 |         |                   |        |         |         |          |          |       | 8 | 11 |
| ORDER                              | GRADENO | NAME              | AMOUNT | DAYWORK | PRODATE | DDATE    | CLEANING | SLACK | 8 | 10 |
| 6                                  | 175     | V-233RT 63-0318   | 1000   | 0.05    | 1.00    | 28/09/95 | 0.02     | -3    | 8 | 10 |
| 18                                 | 74      | IHT-8409 0046-95  | 8000   | 0.32    | 1.07    | 03/10/95 | 0.08     | 1     | 8 | 9  |
| 10                                 | 6       | 7050RT N          | 15000  | 0.59    | 1.47    | 30/09/95 | 0.00     | -2    | 6 | 10 |
| 11                                 | 6       | 7050RT N          | 5000   | 0.20    | 2.06    | 04/10/95 | 0.08     | 1     | 2 | 16 |
| 7                                  | 153     | SNT-7202 0019-21  | 300    | 0.03    | 2.34    | 04/10/95 | 0.02     | 1     | 3 | 9  |
| 48                                 | 74      | IHT-8409 0046-95  | 20000  | 0.79    | 2.39    | 03/10/95 | 0.08     | 0     | 2 | 9  |
| 4                                  | 7       | 7010RTA N         | 15000  | 0.67    | 3.26    | 04/10/95 | 0.02     | 0     | 6 | 9  |
| 23                                 | 73      | IHT-8407 0046-15  | 800    | 0.01    | 3.95    | 06/10/95 | 0.02     | 2     | 3 | 8  |
| 24                                 | 75      | IHT-8409 0062-15  | 1500   | 0.07    | 3.98    | 10/10/95 | 0.18     | 6     | 3 | 13 |
| 16                                 | 78      | IHT-8409 0123-25  | 2600   | 0.10    | 4.23    | 07/10/95 | 0.08     | 2     | 3 | 65 |
| 3                                  | 185     | V-76 0003-95      | 5000   | 0.22    | 4.41    | 08/10/95 | 0.08     | 3     | 3 | 29 |
| 22                                 | 102     | LHT-6803 0068-15  | 300    | 0.02    | 4.71    | 10/10/95 | 0.26     | 5     | 3 | 18 |
| 38                                 | 110     | NS-1607 0003-91   | 1000   | 0.05    | 4.99    | 11/10/95 | 0.02     | 6     | 3 | 18 |
| 47                                 | 166     | TN-6127B 0009-91  | 600    | 0.02    | 5.06    | 12/10/95 | 0.08     | 7     | 3 | 18 |
| 15                                 | 121     | PM-0937 65-0172   | 1000   | 0.05    | 5.16    | 11/10/95 | 0.08     | 5     | 3 | 18 |
| 20                                 | 12      | AM-5825 0050-95   | 4500   | 0.23    | 5.29    | 10/10/95 | 0.00     | 4     | 3 | 18 |
| 44                                 | 12      | AM-5825 0050-95   | 9000   | 0.46    | 5.52    | 10/10/95 | 0.08     | 4     | 3 | 18 |
| 25                                 | 79      | IHT-8409 0124-25  | 2800   | 0.09    | 6.06    | 11/10/95 | 0.18     | 5     | 3 | 18 |
| 27                                 | 6       | 7050RT N          | 10000  | 0.40    | 6.33    | 12/10/95 | 0.02     | 5     | 3 | 18 |
| 34                                 | 7       | 7010RTA N         | 10000  | 0.45    | 6.75    | 12/10/95 | 0.02     | 5     | 3 | 18 |
| 55                                 | 79      | IHT-8409 0124-25  | 5000   | 0.15    | 7.22    | 13/10/95 | 0.08     | 5     | 3 | 18 |
| 54                                 | 145     | SHT-7503 0168-25  | 300    | 0.02    | 7.45    | 17/10/95 | 0.18     | 9     | 3 | 18 |
| 122                                | 6       | 7050RT N          | 10000  | 0.40    | 7.65    | 14/10/95 | 0.00     | 6     | 3 | 18 |
| 52                                 | 6       | 7050RT N          | 25000  | 0.99    | 8.05    | 14/10/95 | 0.02     | 5     | 3 | 18 |
| 71                                 | 3       | 7050RT 0015-75    | 2000   | 0.08    | 9.06    | 17/10/95 | 0.18     | 8     | 3 | 18 |
| 66                                 | 2       | 7050RT 0011-35    | 5000   | 0.27    | 9.32    | 17/10/95 | 0.02     | 7     | 3 | 18 |
| 39                                 | 181     | V-240RT 0001-25   | 1500   | 0.07    | 9.61    | 17/10/95 | 0.08     | 7     | 3 | 18 |
| 67                                 | 1       | 7050RT 0007-55    | 5000   | 0.23    | 9.76    | 17/10/95 | 0.02     | 7     | 3 | 18 |
| 80                                 | 4       | 7050RT 0023-95    | 4000   | 0.15    | 10.01   | 17/10/95 | 0.26     | 7     | 3 | 18 |
| 21                                 | 35      | IGT-8201 0009-25  | 15000  | 0.68    | 10.42   | 17/10/95 | 0.18     | 6     | 3 | 18 |
| 37                                 | 118     | PGT-9301S 0009-55 | 5000   | 0.22    | 11.28   | 20/10/95 | 0.08     | 8     | 3 | 18 |
| 100                                | 74      | IHT-8409 0046-95  | 10000  | 0.40    | 11.58   | 20/10/95 | 0.02     | 8     | 3 | 18 |
| 46                                 | 89      | IHT-8901 62-0095  | 3000   | 0.12    | 12.00   | 19/10/95 | 0.08     | 7     | 3 | 18 |
| 32                                 | 29      | FV-117 0007-25    | 16000  | 0.89    | 12.20   | 17/10/95 | 0.02     | 4     | 3 | 18 |
| 45                                 | 107     | LMT-7801 0047-95  | 16000  | 0.77    | 13.11   | 19/10/95 | 0.02     | 5     | 3 | 18 |
| 81                                 | 74      | IHT-8409 0046-95  | 10000  | 0.40    | 13.90   | 20/10/95 | 0.08     | 5     | 3 | 18 |
| 109                                | 176     | V-233RT 64-0507   | 1000   | 0.04    | 14.38   | 21/10/95 | 0.08     | 6     | 3 | 18 |
| 78                                 | 20      | C24-2 0055-95     | 4000   | 0.17    | 14.50   | 21/10/95 | 0.08     | 6     | 3 | 18 |
| 108                                | 18      | BDV-9967N 0019-21 | 300    | 0.03    | 14.75   | 25/10/95 | 0.18     | 10    | 3 | 18 |
| 110                                | 53      | IH-5400 0021-35   | 300    | 0.02    | 14.96   | 25/10/95 | 0.02     | 10    | 3 | 18 |
| 91                                 | 185     | V-76 0003-95      | 10000  | 0.44    | 15.00   | 21/10/95 | 0.08     | 5     | 3 | 18 |
| 73                                 | 6       | 7050RT N          | 25000  | 0.99    | 15.52   | 20/10/95 | 0.08     | 3     | 3 | 18 |
| 98                                 | 52      | IH-5400 0019-55   | 500    | 0.03    | 16.59   | 25/10/95 | 0.18     | 8     | 3 | 18 |
| 104                                | 95      | LGT-6401 0033-75  | 300    | 0.02    | 16.80   | 26/10/95 | 0.02     | 9     | 3 | 18 |
| 76                                 | 125     | PM-0947 52-0091   | 4000   | 0.23    | 16.84   | 25/10/95 | 0.08     | 8     | 3 | 18 |
| 112                                | 59      | IH-5400 7004-45   | 500    | 0.03    | 17.15   | 25/10/95 | 0.08     | 8     | 3 | 18 |
| 113                                | 171     | V-233RT 59-0350   | 1000   | 0.05    | 17.26   | 25/10/95 | 0.18     | 7     | 3 | 18 |
| 99                                 | 55      | IH-5400 0073-25   | 1500   | 0.08    | 17.49   | 25/10/95 | 0.18     | 7     | 3 | 18 |
| 86                                 | 124     | PM-0947 51-0010   | 3000   | 0.08    | 17.75   | 26/10/95 | 0.26     | 8     | 3 | 18 |
| 95                                 | 127     | PM-0947 65-0770   | 1000   | 0.08    | 18.09   | 26/10/95 | 0.18     | 8     | 3 | 18 |
| 107                                | 182     | V-240RT 0075-25   | 300    | 0.02    | 18.35   | 26/10/95 | 0.02     | 7     | 3 | 18 |
| 72                                 | 15      | AMV-9998N 59-1060 | 6000   | 0.39    | 18.39   | 26/10/95 | 0.18     | 7     | 3 | 18 |
| 69                                 | 126     | PM-0947 53-0067   | 2000   | 0.09    | 18.96   | 26/10/95 | 0.18     | 7     | 3 | 18 |
| 115                                | 6       | 7050RT N          | 20000  | 0.79    | 19.23   | 26/10/95 | 0.18     | 6     | 3 | 18 |
| 116                                | 156     | TG-4322 0109-25   | 1500   | 0.11    | 20.20   | 29/10/95 | 0.02     | 8     | 3 | 18 |
| 106                                | 133     | PMT-8401A 0022-95 | 5500   | 0.24    | 20.33   | 29/10/95 | 0.02     | 8     | 3 | 18 |
| 148                                | 134     | PN-91 0002-95     | 1250   | 0.03    | 20.59   | 01/11/95 | 0.08     | 11    | 3 | 18 |
| 149                                | 5       | 7050RT 1001-45    | 1000   | 0.04    | 20.70   | 01/11/95 | 0.02     | 11    | 3 | 18 |
| 121                                | 74      | IHT-8409 0046-95  | 10000  | 0.40    | 20.76   | 30/10/95 | 0.08     | 9     | 3 | 18 |
| 77                                 | 6       | 7050RT N          | 25000  | 0.99    | 21.24   | 30/10/95 | 0.18     | 7     | 3 | 18 |
| 144                                | 159     | TG-4330S 02-0140  | 1000   | 0.05    | 22.41   | 02/11/95 | 0.08     | 10    | 3 | 18 |

## JOB SCHEDULING

Line2

Starting production date: 01/10/95

| ORDER | GRADENO | NAME               | AMOUNT | DAYWORK | PRODATE | DDATE    | CLEANING | SLACK |
|-------|---------|--------------------|--------|---------|---------|----------|----------|-------|
| 13    | 6       | 7050RT N           | 12000  | 0.47    | 1.00    | 30/09/95 | 0.08     | -2    |
| 1     | 195     | YV-220-7 0010-75   | 300    | 0.03    | 1.55    | 03/10/95 | 0.02     | 1     |
| 2     | 198     | YV-220-7 52-0346   | 400    | 0.02    | 1.60    | 03/10/95 | 0.08     | 1     |
| 5     | 172     | V-233RT 61-0565    | 1000   | 0.04    | 1.70    | 03/10/95 | 0.08     | 1     |
| 17    | 173     | V-233RT 62-0095    | 1000   | 0.03    | 1.82    | 03/10/95 | 0.08     | 1     |
| 9     | 174     | V-233RT 62-0184    | 1000   | 0.06    | 1.93    | 03/10/95 | 0.08     | 1     |
| 8     | 24      | C-20M 0145-25      | 1000   | 0.04    | 2.07    | 05/10/95 | 0.02     | 3     |
| 58    | 74      | IHT-8409 0046-95   | 10000  | 0.40    | 2.13    | 03/10/95 | 0.00     | 0     |
| 19    | 74      | IHT-8409 0046-95   | 25000  | 0.99    | 2.53    | 03/10/95 | 0.02     | -1    |
| 26    | 181     | V-240RT 0001-25    | 3000   | 0.14    | 3.54    | 05/10/95 | 0.08     | 1     |
| 12    | 6       | 7050RT N           | 15000  | 0.59    | 3.76    | 07/10/95 | 0.08     | 2     |
| 14    | 82      | IHT-8901 0004-15   | 12000  | 0.47    | 4.43    | 05/10/95 | 0.26     | 0     |
| 49    | 6       | 7050RT N           | 10000  | 0.40    | 5.16    | 10/10/95 | 0.00     | 4     |
| 35    | 6       | 7050RT N           | 25000  | 0.99    | 5.56    | 10/10/95 | 0.08     | 3     |
| 30    | 130     | PMT-8201 0081-25   | 500    | 0.02    | 6.63    | 13/10/95 | 0.08     | 6     |
| 31    | 159     | TG-4330S 02-0140   | 1500   | 0.07    | 6.73    | 13/10/95 | 0.18     | 6     |
| 29    | 131     | PMT-8201 0090-25   | 500    | 0.03    | 6.98    | 13/10/95 | 0.18     | 6     |
| 28    | 157     | TG-4330S 0061-25   | 2000   | 0.11    | 7.19    | 13/10/95 | 0.26     | 5     |
| 65    | 6       | 7050RT N           | 5000   | 0.20    | 7.56    | 14/10/95 | 0.00     | 6     |
| 51    | 6       | 7050RT N           | 25000  | 0.99    | 7.76    | 14/10/95 | 0.08     | 5     |
| 50    | 82      | IHT-8901 0004-15   | 14000  | 0.55    | 8.83    | 14/10/95 | 0.18     | 4     |
| 60    | 80      | IHT-8409 0125-25   | 5000   | 0.23    | 9.56    | 17/10/95 | 0.08     | 7     |
| 53    | 158     | TG-4330S 0106-25   | 600    | 0.03    | 9.87    | 14/10/95 | 0.08     | 4     |
| 63    | 78      | IHT-8409 0123-25   | 5000   | 0.20    | 9.98    | 17/10/95 | 0.18     | 7     |
| 70    | 2       | 7050RT 0011-35     | 5000   | 0.27    | 10.36   | 17/10/95 | 0.02     | 6     |
| 87    | 175     | V-233RT 63-0318    | 2000   | 0.10    | 10.65   | 18/10/95 | 0.18     | 7     |
| 84    | 172     | V-233RT 61-0565    | 1000   | 0.04    | 10.93   | 19/10/95 | 0.08     | 8     |
| 59    | 13      | AM-5825 1114-25    | 1000   | 0.05    | 11.05   | 19/10/95 | 0.02     | 8     |
| 41    | 120     | PGV-9993P 0012-95  | 500    | 0.04    | 11.12   | 19/10/95 | 0.08     | 8     |
| 33    | 30      | FV-123 0008-25     | 16000  | 0.79    | 11.24   | 17/10/95 | 0.18     | 5     |
| 85    | 183     | V-240RT 51-1095    | 1000   | 0.06    | 12.21   | 19/10/95 | 0.02     | 6     |
| 56    | 82      | IHT-8901 0004-15   | 3000   | 0.12    | 12.29   | 19/10/95 | 0.18     | 6     |
| 62    | 86      | IHT-8901 0025-25   | 2000   | 0.09    | 12.59   | 19/10/95 | 0.08     | 6     |
| 61    | 117     | PGT-8802 0158-25   | 1000   | 0.05    | 12.76   | 19/10/95 | 0.18     | 6     |
| 42    | 91      | LE-608A-19 12-0634 | 300    | 0.05    | 12.99   | 19/10/95 | 0.02     | 6     |
| 43    | 107     | LMT-7801 0047-95   | 16000  | 0.77    | 13.06   | 19/10/95 | 0.26     | 5     |
| 68    | 191     | YV-201-3 53-0277   | 500    | 0.02    | 14.09   | 20/10/95 | 0.02     | 6     |
| 64    | 74      | IHT-8409 0046-95   | 10000  | 0.40    | 14.13   | 20/10/95 | 0.08     | 5     |
| 93    | 78      | IHT-8409 0123-25   | 2000   | 0.08    | 14.51   | 20/10/95 | 0.02     | 5     |
| 88    | 77      | IHT-8409 0122-25   | 300    | 0.02    | 14.71   | 20/10/95 | 0.26     | 5     |
| 36    | 34      | IGT-8002 1002-05   | 600    | 0.03    | 14.99   | 20/10/95 | 0.08     | 5     |
| 102   | 6       | 7050RT N           | 10000  | 0.40    | 15.10   | 20/10/95 | 0.08     | 4     |
| 83    | 58      | IH-5400 61-0026    | 1000   | 0.04    | 15.58   | 25/10/95 | 0.26     | 9     |
| 111   | 54      | IH-5400 0027-75    | 500    | 0.03    | 15.88   | 25/10/95 | 0.02     | 9     |
| 89    | 50      | IH-5400 0006-95    | 500    | 0.03    | 15.93   | 25/10/95 | 0.02     | 9     |
| 90    | 173     | V-233RT 62-0095    | 2000   | 0.06    | 15.98   | 24/10/95 | 0.02     | 8     |
| 92    | 74      | IHT-8409 0046-95   | 20000  | 0.79    | 16.06   | 20/10/95 | 0.08     | 3     |
| 82    | 6       | 7050RT N           | 25000  | 0.99    | 16.93   | 20/10/95 | 0.08     | 2     |
| 75    | 101     | LHT-6801 0054-95   | 1000   | 0.06    | 18.00   | 25/10/95 | 0.02     | 7     |
| 79    | 32      | IGT-7502 52-0019   | 3000   | 0.12    | 18.08   | 26/10/95 | 0.02     | 8     |
| 105   | 142     | SGT-8304 0030-95   | 2000   | 0.08    | 18.22   | 25/10/95 | 0.08     | 6     |
| 103   | 6       | 7050RT N           | 15000  | 0.59    | 18.38   | 26/10/95 | 0.08     | 7     |
| 97    | 63      | IH-5773 0013-55    | 1000   | 0.03    | 19.05   | 27/10/95 | 0.02     | 8     |
| 74    | 92      | LGT-6201 0008-95   | 6000   | 0.42    | 19.10   | 25/10/95 | 0.26     | 5     |
| 96    | 147     | SMT-6001 0033-55   | 300    | 0.03    | 19.78   | 27/10/95 | 0.18     | 7     |
| 119   | 196     | YV-220-7 0159-25   | 300    | 0.03    | 19.99   | 27/10/95 | 0.18     | 7     |
| 101   | 6       | 7050RT N           | 10000  | 0.40    | 20.20   | 30/10/95 | 0.08     | 9     |
| 94    | 174     | V-233RT 62-0184    | 1000   | 0.06    | 20.68   | 27/10/95 | 0.18     | 6     |
| 114   | 165     | TN-61728 0004-91   | 8600   | 0.47    | 20.92   | 27/10/95 | 0.18     | 5     |



|     |                       |       |      |       |          |      |    |
|-----|-----------------------|-------|------|-------|----------|------|----|
| 118 | 75 IHT-8409 0062-15   | 2500  | 0.12 | 21.57 | 29/10/95 | 0.26 | 7  |
| 143 | 158 TG-43309 0106-25  | 1000  | 0.06 | 21.95 | 02/11/95 | 0.02 | 11 |
| 145 | 160 TG-43309 62-0095B | 3000  | 0.22 | 22.03 | 02/11/95 | 0.02 | 10 |
| 120 | 167 TN-8959 12-0015   | 2000  | 0.09 | 22.27 | 31/10/95 | 0.08 | 8  |
| 130 | 12 AM-5825 0050-95    | 10500 | 0.54 | 22.44 | 02/11/95 | 0.02 | 10 |
| 117 | 74 IHT-8409 0046-95   | 20000 | 0.79 | 23.00 | 30/10/95 | 0.00 | 6  |
| 40  | 74 IHT-8409 0046-95   | 10000 | 0.40 | 23.79 | 31/10/95 | 0.08 | 7  |
| 140 | 38 IGT-8306 1006-05   | 500   | 0.03 | 24.27 | 18/11/95 | 0.02 | 24 |
| 138 | 181 V-240RT 0001-25   | 2000  | 0.10 | 24.32 | 04/11/95 | 0.08 | 10 |
| 142 | 27 CH-2224 12-0545    | 3000  | 0.11 | 24.50 | 08/11/95 | 0.18 | 14 |
| 135 | 110 NS-1607 0003-91   | 7000  | 0.35 | 24.79 | 09/11/95 | 0.18 | 15 |
| 141 | 41 IGT-8902 N         | 9000  | 0.35 | 25.32 | 04/11/95 | 0.08 | 9  |
| 137 | 30 FV-123 0008-25     | 16000 | 0.79 | 25.75 | 09/11/95 | 0.02 | 13 |
| 126 | 71 IHT-8403 0028-95   | 3500  | 0.18 | 26.56 | 18/11/95 | 0.02 | 22 |
| 127 | 125 PM-0947 52-0091   | 4000  | 0.23 | 26.76 | 30/11/95 | 0.00 | 34 |

Total delayed day(s): -3.00  
Total cleaning time : 6.92  
Total Plans : .3307885E+108



## JOB SCHEDULING

Line1

Starting production date: 01/11/95

| ORDER | GRADENO | NAME              | AMOUNT | DAYWORK | PRODATE | DDATE    | CLEANING | SLACK |
|-------|---------|-------------------|--------|---------|---------|----------|----------|-------|
| 18    | 21      | C24-2 0144-25     | 1000   | 0.04    | 1.00    | 01/11/95 | 0.08     | 0     |
| 16    | 27      | CH-2224 12-0545   | 10000  | 0.38    | 1.12    | 04/11/95 | 0.02     | 2     |
| 28    | 198     | YV-220-7 52-0346  | 300    | 0.01    | 1.52    | 05/11/95 | 0.08     | 3     |
| 27    | 193     | YV-201-3 57-0679  | 300    | 0.03    | 1.61    | 05/11/95 | 0.18     | 3     |
| 22    | 172     | V-233RT 61-0565   | 2000   | 0.07    | 1.82    | 05/11/95 | 0.08     | 3     |
| 17    | 4       | 705ORT 0023-95    | 5000   | 0.19    | 1.97    | 03/11/95 | 0.26     | 1     |
| 11    | 6       | 705ORT N          | 15000  | 0.59    | 2.42    | 07/11/95 | 0.02     | 4     |
| 4     | 38      | IGT-8306 1006-05  | 500    | 0.03    | 3.03    | 08/11/95 | 0.02     | 5     |
| 9     | 129     | PMT-8201 0060-95  | 300    | 0.02    | 3.08    | 08/11/95 | 0.02     | 5     |
| 1     | 69      | IHT-8302 62-0095  | 500    | 0.04    | 3.12    | 08/11/95 | 0.08     | 5     |
| 57    | 188     | YV-201-3 0039-35  | 300    | 0.02    | 3.24    | 09/11/95 | 0.02     | 5     |
| 6     | 185     | V-76 0003-95      | 8000   | 0.35    | 3.28    | 07/11/95 | 0.08     | 3     |
| 47    | 189     | YV-201-3 0047-65  | 300    | 0.06    | 3.71    | 09/11/95 | 0.18     | 5     |
| 31    | 110     | NS-1607 0003-91   | 7000   | 0.35    | 3.95    | 09/11/95 | 0.02     | 4     |
| 37    | 66      | IHT-7501 0048-95  | 4500   | 0.21    | 4.32    | 10/11/95 | 0.08     | 5     |
| 25    | 64      | IHT-3001 0040-35  | 550    | 0.03    | 4.61    | 11/11/95 | 0.18     | 6     |
| 62    | 19      | C1 0091-15        | 500    | 0.02    | 4.82    | 11/11/95 | 0.02     | 6     |
| 23    | 82      | IHT-8901 0004-15  | 13000  | 0.51    | 4.86    | 10/11/95 | 0.26     | 4     |
| 61    | 31      | IGT-6301 1007-05  | 1000   | 0.06    | 5.63    | 11/11/95 | 0.08     | 5     |
| 41    | 95      | LGT-6401 0033-75  | 300    | 0.02    | 5.77    | 12/11/95 | 0.02     | 6     |
| 43    | 185     | V-76 0003-95      | 5000   | 0.22    | 5.81    | 11/11/95 | 0.08     | 5     |
| 74    | 192     | YV-201-3 55-0359  | 300    | 0.02    | 6.11    | 14/11/95 | 0.18     | 8     |
| 24    | 65      | IHT-3001 0090-15  | 300    | 0.04    | 6.31    | 11/11/95 | 0.02     | 4     |
| 20    | 73      | IHT-8407 0046-15  | 300    | 0.00    | 6.37    | 14/11/95 | 0.26     | 7     |
| 64    | 192     | YV-201-3 55-0359  | 300    | 0.02    | 6.63    | 14/11/95 | 0.18     | 7     |
| 14    | 135     | PN-91 0003-25     | 1200   | 0.06    | 6.83    | 14/11/95 | 0.18     | 7     |
| 73    | 2       | 705ORT 0011-35    | 2000   | 0.11    | 7.07    | 14/11/95 | 0.02     | 7     |
| 44    | 4       | 705ORT 0023-95    | 3000   | 0.11    | 7.20    | 14/11/95 | 0.26     | 6     |
| 77    | 3       | 705ORT 0015-75    | 4000   | 0.15    | 7.57    | 14/11/95 | 0.18     | 6     |
| 68    | 40      | IGT-8802 1009-45  | 8000   | 0.35    | 7.90    | 14/11/95 | 0.08     | 5     |
| 34    | 23      | C-20M 0009-95     | 500    | 0.02    | 8.33    | 15/11/95 | 0.00     | 6     |
| 45    | 23      | C-20M 0009-95     | 1000   | 0.03    | 8.35    | 15/11/95 | 0.08     | 6     |
| 35    | 61      | IH-5483 62-0095   | 1000   | 0.05    | 8.46    | 17/11/95 | 0.02     | 8     |
| 38    | 146     | SM-6498 62-0094   | 9000   | 0.35    | 8.53    | 17/11/95 | 0.08     | 8     |
| 48    | 6       | 705ORT N          | 10000  | 0.40    | 8.96    | 15/11/95 | 0.00     | 5     |
| 99    | 6       | 705ORT N          | 21000  | 0.83    | 9.36    | 15/11/95 | 0.08     | 5     |
| 148   | 108     | LMT-7901 0044-75  | 300    | 0.01    | 10.27   | 26/11/95 | 0.02     | 15    |
| 83    | 98      | LGT-8301 0024-95  | 2000   | 0.10    | 10.30   | 18/11/95 | 0.08     | 7     |
| 141   | 51      | IH-5400 0018-65   | 300    | 0.02    | 10.48   | 26/11/95 | 0.02     | 15    |
| 33    | 140     | SG-6876 62-0091   | 9000   | 0.64    | 10.52   | 17/11/95 | 0.02     | 6     |
| 154   | 181     | V-24ORT 0001-25   | 2000   | 0.10    | 11.18   | 25/11/95 | 0.08     | 13    |
| 84    | 6       | 705ORT N          | 15000  | 0.59    | 11.36   | 19/11/95 | 0.08     | 7     |
| 140   | 56      | IH-5400 1010-45   | 300    | 0.02    | 12.03   | 26/11/95 | 0.18     | 14    |
| 139   | 57      | IH-5400 4006-45   | 300    | 0.02    | 12.23   | 26/11/95 | 0.08     | 13    |
| 142   | 161     | TG-4703 0013-95   | 1000   | 0.02    | 12.33   | 26/11/95 | 0.26     | 13    |
| 149   | 59      | IH-5400 7004-45   | 300    | 0.02    | 12.61   | 26/11/95 | 0.18     | 13    |
| 138   | 52      | IH-5400 0019-55   | 500    | 0.03    | 12.81   | 26/11/95 | 0.02     | 13    |
| 152   | 50      | IH-5400 0006-95   | 500    | 0.03    | 12.86   | 26/11/95 | 0.26     | 13    |
| 118   | 55      | IH-5400 0073-25   | 500    | 0.03    | 13.15   | 26/11/95 | 0.02     | 13    |
| 151   | 152     | SMT-7901 0044-95  | 1000   | 0.04    | 13.20   | 26/11/95 | 0.02     | 12    |
| 132   | 154     | SRT-8001A 0012-91 | 300    | 0.03    | 13.26   | 29/11/95 | 0.08     | 15    |
| 150   | 151     | SMT-7901 0034-85  | 1000   | 0.04    | 13.37   | 26/11/95 | 0.02     | 12    |
| 91    | 135     | PN-91 0003-25     | 2400   | 0.11    | 13.43   | 28/11/95 | 0.08     | 14    |
| 143   | 144     | SHL-9997N 0014-95 | 2000   | 0.11    | 13.62   | 26/11/95 | 0.08     | 12    |
| 117   | 130     | PMT-8201 0081-25  | 500    | 0.02    | 13.81   | 30/11/95 | 0.02     | 16    |
| 156   | 180     | V-233RT 62-0184   | 1000   | 0.04    | 13.85   | 30/11/95 | 0.02     | 16    |
| 97    | 128     | PMT-8001 0014-95  | 500    | 0.06    | 13.91   | 29/11/95 | 0.08     | 15    |
| 121   | 131     | PMT-8201 0090-25  | 500    | 0.03    | 14.05   | 30/11/95 | 0.08     | 16    |
| 147   | 23      | C-20M 0009-95     | 1000   | 0.03    | 14.16   | 30/11/95 | 0.08     | 16    |
| 163   | 176     | V-233RT 64-0507   | 1000   | 0.04    | 14.27   | 30/11/95 | 0.18     | 15    |
| 90    | 110     | NS-1607 0003-91   | 1000   | 0.05    | 14.49   | 30/11/95 | 0.02     | 15    |

|     |                      |       |      |       |          |      |    |
|-----|----------------------|-------|------|-------|----------|------|----|
| 113 | 179 V-233RT 78-0083  | 1000  | 0.07 | 14.56 | 30/11/95 | 0.18 | 15 |
| 75  | 200 LGT-8401 1013-45 | 300   | 0.05 | 14.81 | 30/11/95 | 0.18 | 15 |
| 110 | 126 PM-0947 53-0067  | 2000  | 0.09 | 15.04 | 30/11/95 | 0.18 | 15 |
| 169 | 174 V-233RT 82-0184  | 1000  | 0.06 | 15.31 | 30/11/95 | 0.08 | 14 |
| 122 | 157 TG-43309 0061-25 | 1000  | 0.05 | 15.45 | 30/11/95 | 0.08 | 14 |
| 79  | 185 V-76 0003-95     | 5000  | 0.22 | 15.58 | 30/11/95 | 0.08 | 14 |
| 128 | 6 7050RT N           | 5000  | 0.20 | 15.88 | 30/11/95 | 0.00 | 14 |
| 178 | 6 7050RT N           | 8000  | 0.32 | 16.08 | 30/11/95 | 0.00 | 13 |
| 107 | 6 7050RT N           | 10000 | 0.40 | 16.40 | 30/11/95 | 0.02 | 13 |
| 145 | 7 7010RTA N          | 10000 | 0.45 | 16.82 | 30/11/95 | 0.02 | 12 |
| 112 | 175 V-233RT 83-0318  | 2000  | 0.10 | 17.29 | 30/11/95 | 0.18 | 12 |
| 170 | 112 NS-1607 0020-21  | 300   | 0.02 | 17.57 | 01/12/95 | 0.18 | 13 |
| 76  | 5 7050RT 1001-45     | 1000  | 0.04 | 17.77 | 01/12/95 | 0.26 | 13 |
| 116 | 6 7050RT N           | 15000 | 0.59 | 18.07 | 30/11/95 | 0.00 | 11 |
| 89  | 6 7050RT N           | 15000 | 0.59 | 18.66 | 30/11/95 | 0.00 | 10 |
| 160 | 6 7050RT N           | 18000 | 0.71 | 19.25 | 30/11/95 | 0.00 | 10 |
| 182 | 6 7050RT N           | 20000 | 0.79 | 19.96 | 30/11/95 | 0.02 | 9  |
| 78  | 10 7050RT 7002-45    | 1000  | 0.05 | 20.77 | 01/12/95 | 0.08 | 10 |
| 71  | 24 C-20M 0145-25     | 2000  | 0.08 | 20.90 | 01/12/95 | 0.02 | 10 |
| 134 | 20 C24-2 0055-95     | 2000  | 0.08 | 21.00 | 01/12/95 | 0.08 | 10 |
| 162 | 21 C24-2 0144-25     | 3000  | 0.13 | 21.16 | 01/12/95 | 0.02 | 9  |
| 167 | 181 V-240RT 0001-25  | 500   | 0.02 | 21.31 | 02/12/95 | 0.08 | 10 |
| 168 | 78 IHT-8409 0123-25  | 4000  | 0.16 | 21.41 | 01/12/95 | 0.02 | 9  |
| 166 | 182 V-240RT 0075-25  | 500   | 0.03 | 21.59 | 02/12/95 | 0.02 | 10 |
| 115 | 89 IHT-8901 82-0095  | 4000  | 0.16 | 21.64 | 02/12/95 | 0.08 | 10 |
| 130 | 60 IH-5483 61-0026   | 1000  | 0.04 | 21.88 | 02/12/95 | 0.26 | 10 |
| 161 | 90 IHT-9702 N        | 3750  | 0.22 | 22.18 | 02/12/95 | 0.18 | 9  |
| 30  | 17 AP-7504A 82-0215  | 2600  | 0.16 | 22.58 | 02/12/95 | 0.00 | 9  |
| 179 | 17 AP-7504A 82-0215  | 3500  | 0.21 | 22.74 | 02/12/95 | 0.18 | 9  |
| 81  | 110 NS-1607 0003-91  | 4000  | 0.20 | 23.13 | 07/12/95 | 0.02 | 13 |
| 180 | 142 SGT-8304 0030-95 | 2000  | 0.08 | 23.35 | 06/12/95 | 0.08 | 12 |
| 174 | 13 AM-5825 1114-25   | 1000  | 0.05 | 23.51 | 06/12/95 | 0.02 | 12 |
| 175 | 186 VC-47T-1 0005-95 | 2500  | 0.19 | 23.58 | 09/12/95 | 0.02 | 15 |
| 135 | 74 IHT-8409 0046-95  | 12000 | 0.48 | 23.79 | 02/12/95 | 0.00 | 7  |
| 136 | 74 IHT-8409 0046-95  | 20000 | 0.79 | 24.27 | 02/12/95 | 0.08 | 7  |
| 109 | 113 PGT-8202 0021-55 | 1000  | 0.05 | 25.14 | 13/12/95 | 0.02 | 18 |
| 70  | 116 PGT-8202 52-0091 | 1000  | 0.05 | 25.21 | 13/12/95 | 0.08 | 17 |
| 171 | 81 IHT-8409 0166-25  | 500   | 0.01 | 25.34 | 12/12/95 | 0.02 | 16 |
| 133 | 89 IHT-8901 82-0095  | 7000  | 0.28 | 25.37 | 09/12/95 | 0.08 | 13 |
| 127 | 201 IHT-8904 N       | 9000  | 0.39 | 25.73 | 09/12/95 | 0.08 | 13 |
| 111 | 114 PGT-8202 0022-35 | 3000  | 0.14 | 26.20 | 13/12/95 | 0.18 | 16 |
| 82  | 111 NS-1607 0008-91  | 500   | 0.03 | 26.52 | 14/12/95 | 0.00 | 17 |
| 177 | 111 NS-1607 0008-91  | 500   | 0.03 | 26.55 | 14/12/95 | 0.02 | 17 |
| 49  | 146 SM-6498 82-0094  | 16000 | 0.63 | 26.60 | 13/12/95 | 0.08 | 15 |
| 87  | 115 PGT-8202 0029-15 | 3000  | 0.15 | 27.31 | 13/12/95 | 0.08 | 15 |
| 101 | 164 TN-61278 0002-11 | 1200  | 0.05 | 27.54 | 14/12/95 | 0.08 | 16 |
| 176 | 12 AM-5825 0050-95   | 6000  | 0.31 | 27.67 | 14/12/95 | 0.26 | 16 |
| 137 | 58 IH-5400 61-0026   | 500   | 0.02 | 28.24 | 26/12/95 | 0.00 | 27 |

Total delayed day(s): 0.00  
Total cleaning time : 9.22  
Total Plans : .1443859E+177

## JOB SCHEDULING

Line2

Starting production date: 01/11/95

| ORDER | GRADENO | NAME              | AMOUNT | DAYWORK | PRODATE | DDATE    | CLEANING | SLACK |
|-------|---------|-------------------|--------|---------|---------|----------|----------|-------|
| 13    | 48      | IGV-0027B 0046-85 | 300    | 0.03    | 1.00    | 03/11/95 | 0.18     | 2     |
| 12    | 49      | IGV-0027B 0058-75 | 300    | 0.03    | 1.21    | 03/11/95 | 0.18     | 1     |
| 7     | 96      | LGT-6401 0044-25  | 300    | 0.02    | 1.42    | 04/11/95 | 0.18     | 2     |
| 5     | 100     | LHT-6101 0043-65  | 3000   | 0.31    | 1.82    | 04/11/95 | 0.18     | 2     |
| 2     | 7       | 7010RTA N         | 15000  | 0.67    | 2.11    | 04/11/95 | 0.02     | 1     |
| 21    | 183     | V-240RT 51-1095   | 500    | 0.03    | 2.80    | 04/11/95 | 0.26     | 1     |
| 10    | 7       | 7010RTA N         | 15000  | 0.67    | 3.09    | 07/11/95 | 0.02     | 3     |
| 55    | 81      | IHT-8409 0166-25  | 500    | 0.01    | 3.78    | 10/11/95 | 0.08     | 6     |
| 51    | 130     | PMT-8201 0081-25  | 500    | 0.02    | 3.87    | 10/11/95 | 0.18     | 6     |
| 56    | 62      | IH-5483 63-0112   | 1000   | 0.04    | 4.07    | 09/11/95 | 0.18     | 5     |
| 58    | 189     | YV-201-3 0047-65  | 300    | 0.06    | 4.29    | 09/11/95 | 0.18     | 4     |
| 26    | 87      | IHT-8901 0056-75  | 500    | 0.03    | 4.53    | 10/11/95 | 0.26     | 5     |
| 50    | 131     | PMT-8201 0090-25  | 500    | 0.03    | 4.82    | 10/11/95 | 0.18     | 5     |
| 53    | 158     | TG-4330S 0106-25  | 500    | 0.03    | 5.03    | 10/11/95 | 0.02     | 5     |
| 8     | 88      | IHT-8901 0165-25  | 3000   | 0.17    | 5.08    | 10/11/95 | 0.08     | 4     |
| 54    | 159     | TG-4330S 02-0140  | 1000   | 0.05    | 5.33    | 10/11/95 | 0.02     | 4     |
| 36    | 119     | PGT-9501 0006-95  | 500    | 0.03    | 5.40    | 10/11/95 | 0.08     | 4     |
| 52    | 157     | TG-4330S 0061-25  | 1500   | 0.08    | 5.51    | 10/11/95 | 0.08     | 4     |
| 29    | 74      | IHT-8409 0046-95  | 15000  | 0.60    | 5.67    | 10/11/95 | 0.18     | 3     |
| 3     | 34      | IGT-8002 1002-05  | 8000   | 0.28    | 6.45    | 10/11/95 | 0.02     | 3     |
| 59    | 185     | V-76 0003-95      | 10000  | 0.44    | 6.75    | 11/11/95 | 0.02     | 4     |
| 40    | 133     | PMT-8401A 0022-95 | 8000   | 0.36    | 7.21    | 14/11/95 | 0.08     | 6     |
| 46    | 6       | 7050RT N          | 20000  | 0.79    | 7.65    | 15/11/95 | 0.02     | 6     |
| 65    | 40      | IGT-8802 1009-45  | 8000   | 0.35    | 8.46    | 14/11/95 | 0.18     | 5     |
| 104   | 191     | YV-201-3 53-0277  | 500    | 0.02    | 8.99    | 18/11/95 | 0.02     | 9     |
| 85    | 129     | PMT-8201 0060-95  | 1000   | 0.05    | 9.03    | 18/11/95 | 0.08     | 9     |
| 93    | 82      | IHT-8901 0004-15  | 2000   | 0.08    | 9.16    | 16/11/95 | 0.00     | 6     |
| 63    | 82      | IHT-8901 0004-15  | 3000   | 0.12    | 9.24    | 16/11/95 | 0.26     | 6     |
| 39    | 186     | VC-47T-1 0005-95  | 5000   | 0.37    | 9.62    | 16/11/95 | 0.02     | 6     |
| 80    | 146     | SM-6498 62-0094   | 15000  | 0.59    | 10.01   | 17/11/95 | 0.08     | 6     |
| 102   | 157     | TG-4330S 0061-25  | 2000   | 0.11    | 10.68   | 21/11/95 | 0.08     | 10    |
| 100   | 183     | V-240RT 51-1095   | 500    | 0.03    | 10.87   | 25/11/95 | 0.08     | 14    |
| 88    | 164     | TN-6127B 0002-11  | 1000   | 0.05    | 10.98   | 21/11/95 | 0.18     | 10    |
| 19    | 141     | SGT-8201 0030-15  | 2000   | 0.08    | 11.21   | 18/11/95 | 0.08     | 6     |
| 72    | 36      | IGT-8204 0037-15  | 5500   | 0.29    | 11.37   | 18/11/95 | 0.18     | 6     |
| 94    | 15      | AMV-9998N 59-1060 | 2000   | 0.13    | 11.84   | 22/11/95 | 0.18     | 10    |
| 119   | 96      | LGT-6401 0044-25  | 600    | 0.04    | 12.15   | 25/11/95 | 0.02     | 13    |
| 105   | 134     | PN-91 0002-95     | 500    | 0.01    | 12.21   | 28/11/95 | 0.08     | 15    |
| 15    | 72      | IHT-8403 0030-25  | 10000  | 0.41    | 12.30   | 25/11/95 | 0.02     | 12    |
| 153   | 182     | V-240RT 0075-25   | 700    | 0.05    | 12.73   | 25/11/95 | 0.08     | 12    |
| 98    | 106     | LMT-7201 0110-25  | 500    | 0.03    | 12.86   | 28/11/95 | 0.00     | 15    |
| 131   | 106     | LMT-7201 0110-25  | 500    | 0.03    | 12.89   | 28/11/95 | 0.18     | 15    |
| 164   | 178     | V-233RT 67-0469   | 1000   | 0.06    | 13.10   | 30/11/95 | 0.18     | 17    |
| 108   | 124     | PM-0947 51-0010   | 3000   | 0.08    | 13.34   | 30/11/95 | 0.26     | 16    |
| 165   | 171     | V-233RT 59-0350   | 1000   | 0.05    | 13.68   | 30/11/95 | 0.08     | 16    |
| 123   | 158     | TG-4330S 0106-25  | 1000   | 0.06    | 13.81   | 30/11/95 | 0.08     | 16    |
| 124   | 159     | TG-4330S 02-0140  | 2000   | 0.10    | 13.95   | 30/11/95 | 0.02     | 16    |
| 92    | 185     | V-76 0003-95      | 10000  | 0.44    | 14.07   | 28/11/95 | 0.08     | 13    |
| 60    | 7       | 7010RTA N         | 5000   | 0.22    | 14.59   | 30/11/95 | 0.02     | 15    |
| 159   | 6       | 7050RT N          | 5000   | 0.20    | 14.83   | 30/11/95 | 0.00     | 15    |
| 95    | 6       | 7050RT N          | 10000  | 0.40    | 15.03   | 30/11/95 | 0.02     | 14    |
| 106   | 7       | 7010RTA N         | 10000  | 0.45    | 15.45   | 30/11/95 | 0.02     | 14    |
| 144   | 185     | V-76 0003-95      | 6000   | 0.26    | 15.92   | 30/11/95 | 0.08     | 14    |
| 120   | 82      | IHT-8901 0004-15  | 9000   | 0.35    | 16.26   | 30/11/95 | 0.26     | 13    |
| 103   | 30      | FV-123 0008-25    | 16000  | 0.79    | 16.87   | 01/12/95 | 0.02     | 13    |
| 32    | 140     | SG-8876 62-0091   | 9000   | 0.64    | 17.68   | 30/11/95 | 0.02     | 11    |
| 114   | 89      | IHT-8901 62-0095  | 6000   | 0.24    | 18.34   | 02/12/95 | 0.08     | 13    |
| 146   | 6       | 7050RT N          | 15000  | 0.59    | 18.66   | 30/11/95 | 0.00     | 10    |
| 129   | 6       | 7050RT N          | 20000  | 0.79    | 19.25   | 30/11/95 | 0.02     | 10    |

|     |     |                  |       |      |       |          |      |    |
|-----|-----|------------------|-------|------|-------|----------|------|----|
| 67  | 7   | 7010RTA N        | 20000 | 0.90 | 20.06 | 30/11/95 | 0.02 | 9  |
| 125 | 11  | AGV-9990N N      | 3000  | 0.11 | 20.98 | 03/12/95 | 0.02 | 12 |
| 157 | 72  | IHT-8403 0030-25 | 8000  | 0.32 | 21.11 | 09/12/95 | 0.08 | 17 |
| 155 | 35  | IGT-8201 0009-25 | 16000 | 0.68 | 21.51 | 03/12/95 | 0.02 | 11 |
| 181 | 74  | IHT-8409 0046-95 | 16000 | 0.64 | 22.21 | 02/12/95 | 0.08 | 9  |
| 126 | 41  | IGT-8902 N       | 12000 | 0.46 | 22.93 | 09/12/95 | 0.08 | 15 |
| 96  | 165 | TN-61728 0004-91 | 8000  | 0.43 | 23.47 | 07/12/95 | 0.18 | 13 |
| 158 | 72  | IHT-8403 0030-25 | 4000  | 0.16 | 24.08 | 16/12/95 | 0.08 | 21 |
| 173 | 80  | IHT-8409 0125-25 | 1000  | 0.05 | 24.32 | 21/12/95 | 0.08 | 26 |
| 172 | 27  | CH-2224 12-0545  | 8000  | 0.30 | 24.45 | 13/12/95 | 0.02 | 18 |
| 42  | 140 | SG-6876 62-0091  | 9000  | 0.64 | 24.77 | 13/12/95 | 0.00 | 17 |
| 66  | 140 | SG-6876 62-0091  | 9000  | 0.64 | 25.41 | 02/01/96 | 0.00 | 37 |

Total delayed day(s): 0.00

Total cleaning time : 6.38

Total Plans : .8504785E+102



## JOB SCHEDULING

Line1

Starting production date: 01/12/95

| ORDER | GRADENO | NAME              | AMOUNT | DAYWORK | PRODATE | DDATE    | CLEANING | SLACK |
|-------|---------|-------------------|--------|---------|---------|----------|----------|-------|
| 34    | 163     | TN-3416A12-0014   | 300    | 0.06    | 1.00    | 12/11/95 | 0.02     | -19   |
| 12    | 44      | IGT-9401 0032-65  | 300    | 0.04    | 1.08    | 06/12/95 | 0.08     | 5     |
| 65    | 162     | TN-3416A 0012-91  | 300    | 0.02    | 1.20    | 12/11/95 | 0.26     | -19   |
| 8     | 26      | CH-2224 0004-11   | 800    | 0.04    | 1.48    | 06/12/95 | 0.18     | 4     |
| 41    | 7       | 7010RTA N         | 10000  | 0.45    | 1.70    | 06/12/95 | 0.02     | 4     |
| 13    | 45      | IGT-9401 0041-75  | 300    | 0.02    | 2.17    | 06/12/95 | 0.18     | 4     |
| 3     | 7       | 7010RTA N         | 10000  | 0.45    | 2.37    | 06/12/95 | 0.02     | 3     |
| 6     | 73      | IHT-8407 0046-15  | 500    | 0.01    | 2.84    | 09/12/95 | 0.18     | 6     |
| 31    | 123     | PM-0947 0178-25   | 300    | 0.02    | 3.03    | 09/12/95 | 0.08     | 6     |
| 32    | 67      | IHT-7501 0177-25  | 300    | 0.03    | 3.13    | 09/12/95 | 0.08     | 6     |
| 44    | 187     | YV-201-3 0017-95  | 300    | 0.02    | 3.24    | 07/12/95 | 0.08     | 3     |
| 26    | 118     | PGT-9301S 0009-55 | 2000   | 0.09    | 3.34    | 09/12/95 | 0.18     | 5     |
| 40    | 109     | NS-1361B 12-0018  | 1000   | 0.05    | 3.61    | 12/12/95 | 0.02     | 8     |
| 16    | 74      | IHT-8409 0046-95  | 20000  | 0.79    | 3.68    | 12/12/95 | 0.08     | 7     |
| 38    | 15      | AMV-9998N 59-1060 | 7000   | 0.45    | 4.55    | 13/12/95 | 0.18     | 8     |
| 56    | 80      | IH-5483 61-0026   | 1000   | 0.04    | 5.18    | 15/12/95 | 0.02     | 9     |
| 7     | 183     | V-240RT 51-1095   | 500    | 0.03    | 5.24    | 12/12/95 | 0.02     | 6     |
| 60    | 68      | IHT-8302 0067-15  | 300    | 0.03    | 5.29    | 15/12/95 | 0.26     | 9     |
| 9     | 200     | LGT-6401 1013-45  | 7000   | 1.17    | 5.58    | 15/12/95 | 0.02     | 8     |
| 21    | 173     | V-233RT 62-0095   | 2000   | 0.06    | 6.77    | 15/12/95 | 0.08     | 8     |
| 63    | 168     | TZ-9419 0011-25   | 500    | 0.03    | 6.91    | 19/12/95 | 0.00     | 12    |
| 72    | 168     | TZ-9419 0011-25   | 500    | 0.03    | 6.94    | 19/12/95 | 0.18     | 12    |
| 48    | 60      | IH-5483 61-0026   | 1000   | 0.04    | 7.15    | 15/12/95 | 0.02     | 8     |
| 62    | 115     | PGT-8202 0029-15  | 3000   | 0.15    | 7.21    | 17/12/95 | 0.26     | 9     |
| 87    | 168     | TZ-9419 0011-25   | 1500   | 0.09    | 7.62    | 19/12/95 | 0.00     | 11    |
| 30    | 168     | TZ-9419 0011-25   | 2000   | 0.12    | 7.71    | 19/12/95 | 0.08     | 11    |
| 52    | 155     | TG-4322 0040-95   | 600    | 0.05    | 7.91    | 20/12/95 | 0.02     | 12    |
| 64    | 116     | PGT-8202 52-0091  | 1500   | 0.08    | 7.98    | 20/12/95 | 0.08     | 12    |
| 68    | 157     | TG-4330S 0061-25  | 1000   | 0.05    | 8.14    | 19/12/95 | 0.08     | 11    |
| 61    | 19      | C1 0091-15        | 1500   | 0.06    | 8.27    | 19/12/95 | 0.26     | 10    |
| 73    | 169     | V-107RT 0046-95   | 5000   | 0.24    | 8.59    | 21/12/95 | 0.02     | 12    |
| 89    | 185     | V-76 0003-95      | 5000   | 0.22    | 8.85    | 31/12/95 | 0.08     | 22    |
| 69    | 36      | IGT-8204 0037-15  | 5400   | 0.29    | 9.15    | 22/12/95 | 0.02     | 12    |
| 67    | 89      | IHT-8901 62-0095  | 12000  | 0.47    | 9.46    | 24/12/95 | 0.00     | 14    |
| 81    | 89      | IHT-8901 62-0095  | 12000  | 0.47    | 9.93    | 27/12/95 | 0.08     | 16    |
| 4     | 6       | 7050RT N          | 8000   | 0.32    | 10.48   | 31/12/95 | 0.18     | 20    |
| 36    | 146     | SM-6498 62-0094   | 9000   | 0.35    | 10.98   | 31/12/95 | 0.08     | 19    |
| 83    | 6       | 7050RT N          | 10000  | 0.40    | 11.41   | 31/12/95 | 0.00     | 19    |
| 74    | 6       | 7050RT N          | 12000  | 0.47    | 11.81   | 31/12/95 | 0.00     | 18    |
| 10    | 6       | 7050RT N          | 15000  | 0.59    | 12.28   | 31/12/95 | 0.00     | 18    |
| 85    | 6       | 7050RT N          | 20000  | 0.79    | 12.87   | 31/12/95 | 0.00     | 17    |
| 75    | 6       | 7050RT N          | 22000  | 0.87    | 13.66   | 31/12/95 | 0.08     | 16    |
| 100   | 73      | IHT-8407 0046-15  | 1000   | 0.01    | 14.61   | 06/01/96 | 0.02     | 22    |
| 101   | 183     | V-240RT 51-1095   | 1000   | 0.06    | 14.64   | 10/01/96 | 0.26     | 26    |
| 96    | 113     | PGT-8202 0021-55  | 1000   | 0.05    | 14.96   | 17/01/96 | 0.08     | 33    |
| 99    | 107     | LMT-7801 0047-95  | 16000  | 0.77    | 15.09   | 03/01/96 | 0.26     | 18    |
| 97    | 100     | LHT-6101 0043-65  | 4000   | 0.41    | 16.12   | 17/01/96 | 0.02     | 31    |
| 94    | 4       | 7050RT 0023-95    | 1000   | 0.04    | 16.55   | 01/01/96 | 0.00     | 15    |

Total delayed day(s): -38.00

Total cleaning time : 4.20

Total Plans : .12413915E+62



## JOB SCHEDULING

Line2

Starting production date: 01/12/95

| ORDER | GRADENO | NAME              | AMOUNT | DAYWORK | PRODATE | DDATE    | CLEANING | SLACK |
|-------|---------|-------------------|--------|---------|---------|----------|----------|-------|
| 15    | 14      | AM-5825 0173-25   | 800    | 0.06    | 1.00    | 08/12/95 | 0.02     | 7     |
| 33    | 154     | SRT-8001A 0012-91 | 300    | 0.03    | 1.08    | 12/11/95 | 0.08     | -19   |
| 11    | 79      | IHT-8409 0124-25  | 1500   | 0.05    | 1.19    | 09/12/95 | 0.02     | 7     |
| 14    | 74      | IHT-8409 0046-95  | 15000  | 0.60    | 1.26    | 02/12/95 | 0.08     | 0     |
| 20    | 7       | 7010RTA N         | 10000  | 0.45    | 1.94    | 06/12/95 | 0.02     | 3     |
| 25    | 33      | IGT-7901 0008-55  | 5000   | 0.24    | 2.41    | 09/12/95 | 0.18     | 6     |
| 29    | 145     | SHT-7503 0168-25  | 300    | 0.02    | 2.83    | 13/12/95 | 0.18     | 10    |
| 1     | 106     | LMT-7201 0110-25  | 500    | 0.03    | 3.03    | 13/12/95 | 0.02     | 10    |
| 19    | 148     | SMT-7201 0054-95  | 1000   | 0.06    | 3.08    | 13/12/95 | 0.08     | 10    |
| 28    | 149     | SMT-7302 0060-15  | 500    | 0.06    | 3.22    | 13/12/95 | 0.18     | 9     |
| 27    | 157     | TG-4330S 0061-25  | 2000   | 0.11    | 3.46    | 13/12/95 | 0.08     | 9     |
| 53    | 160     | TG-4330S 62-0095B | 1000   | 0.07    | 3.65    | 13/12/95 | 0.00     | 9     |
| 18    | 160     | TG-4330S 62-0095B | 2600   | 0.19    | 3.72    | 13/12/95 | 0.02     | 9     |
| 39    | 129     | PMT-8201 0060-95  | 2400   | 0.12    | 3.93    | 13/12/95 | 0.08     | 9     |
| 55    | 197     | YV-220-7 1018-45  | 300    | 0.02    | 4.13    | 16/12/95 | 0.00     | 12    |
| 78    | 197     | YV-220-7 1018-45  | 300    | 0.02    | 4.15    | 16/12/95 | 0.18     | 12    |
| 24    | 150     | SMT-7501 1702-01  | 2000   | 0.37    | 4.35    | 13/12/95 | 0.08     | 8     |
| 17    | 16      | AP-6503A 12-0559  | 6000   | 0.45    | 4.80    | 13/12/95 | 0.18     | 7     |
| 45    | 22      | C-15M 0174-25     | 500    | 0.03    | 5.43    | 16/12/95 | 0.02     | 10    |
| 46    | 25      | C-24M 0175-25     | 500    | 0.03    | 5.48    | 16/12/95 | 0.08     | 10    |
| 71    | 28      | CT-6 0174-25      | 1000   | 0.05    | 5.59    | 16/12/95 | 0.02     | 10    |
| 35    | 98      | LGT-8301 0024-95  | 1000   | 0.05    | 5.66    | 16/12/95 | 0.08     | 10    |
| 58    | 194     | YV-220-7 0008-65  | 300    | 0.04    | 5.79    | 16/12/95 | 0.18     | 10    |
| 57    | 83      | IHT-8901 0009-35  | 1000   | 0.05    | 6.01    | 16/12/95 | 0.18     | 10    |
| 43    | 86      | IHT-8901 0025-25  | 3000   | 0.13    | 6.24    | 16/12/95 | 0.08     | 9     |
| 49    | 82      | IHT-8901 0004-15  | 13000  | 0.51    | 5.45    | 16/12/95 | 0.26     | 9     |
| 47    | 28      | CT-6 0174-25      | 2000   | 0.10    | 7.22    | 16/12/95 | 0.08     | 8     |
| 51    | 182     | V-240RT 0075-25   | 1500   | 0.10    | 7.40    | 16/12/95 | 0.08     | 8     |
| 70    | 27      | CH-2224 12-0545   | 12000  | 0.45    | 7.58    | 19/12/95 | 0.18     | 11    |
| 2     | 40      | IGT-8802 1009-45  | 8000   | 0.35    | 8.21    | 17/12/95 | 0.18     | 8     |
| 54    | 201     | IHT-8904 N        | 4000   | 0.18    | 8.74    | 23/12/95 | 0.02     | 14    |
| 77    | 84      | IHT-8901 0010-55  | 2000   | 0.09    | 8.94    | 24/12/95 | 0.08     | 15    |
| 42    | 93      | LGT-6401 0012-95  | 2000   | 0.11    | 9.11    | 29/12/95 | 0.08     | 19    |
| 80    | 191     | YV-201-3 53-0277  | 300    | 0.01    | 9.30    | 30/12/95 | 0.18     | 20    |
| 86    | 104     | LHT-7501 0093-15  | 300    | 0.02    | 9.49    | 24/12/95 | 0.02     | 14    |
| 84    | 82      | IHT-8901 0004-15  | 12000  | 0.47    | 9.53    | 27/12/95 | 0.26     | 17    |
| 37    | 165     | TN-6172B 0004-91  | 1000   | 0.05    | 10.26   | 31/12/95 | 0.02     | 20    |
| 82    | 140     | SG-6876 62-0091   | 500    | 0.04    | 10.33   | 31/12/95 | 0.08     | 20    |
| 23    | 6       | 7050RT N          | 5000   | 0.20    | 10.45   | 31/12/95 | 0.08     | 20    |
| 79    | 170     | V-233RT 54-0434   | 1000   | 0.05    | 10.73   | 31/12/95 | 0.18     | 20    |
| 5     | 164     | TN-6127B 0002-11  | 500    | 0.02    | 10.96   | 31/12/95 | 0.02     | 20    |
| 76    | 172     | V-233RT 61-0565   | 2000   | 0.07    | 11.00   | 31/12/95 | 0.08     | 20    |
| 98    | 74      | IHT-8409 0046-95  | 7500   | 0.30    | 11.15   | 31/12/95 | 0.00     | 19    |
| 59    | 74      | IHT-8409 0046-95  | 8000   | 0.32    | 11.45   | 31/12/95 | 0.08     | 19    |
| 91    | 140     | SG-6876 62-0091   | 5700   | 0.40    | 11.85   | 31/12/95 | 0.00     | 18    |
| 50    | 140     | SG-6876 62-0091   | 9000   | 0.64    | 12.25   | 31/12/95 | 0.08     | 18    |
| 66    | 6       | 7050RT N          | 10000  | 0.40    | 12.97   | 31/12/95 | 0.00     | 17    |
| 22    | 6       | 7050RT N          | 15000  | 0.59    | 13.37   | 31/12/95 | 0.08     | 17    |
| 104   | 187     | YV-201-3 0017-95  | 300    | 0.02    | 14.04   | 04/01/96 | 0.02     | 21    |
| 103   | 136     | SFT-7502 0013-91  | 300    | 0.02    | 14.08   | 05/01/96 | 0.02     | 22    |
| 105   | 42      | IGT-9401 0007-95  | 300    | 0.02    | 14.12   | 04/01/96 | 0.08     | 21    |
| 90    | 6       | 7050RT N          | 20000  | 0.79    | 14.22   | 31/12/95 | 0.00     | 16    |
| 92    | 6       | 7050RT N          | 22000  | 0.87    | 15.01   | 31/12/95 | 0.02     | 15    |
| 95    | 9       | 7050RT 0011-15    | 1000   | 0.04    | 15.90   | 04/01/96 | 0.18     | 19    |
| 93    | 132     | PMT-8302 0150-25  | 500    | 0.03    | 16.12   | 05/01/96 | 0.08     | 20    |
| 98    | 166     | TN-6127B 0009-91  | 1000   | 0.03    | 16.23   | 05/01/96 | 0.08     | 19    |
| 102   | 114     | PGT-8202 0022-35  | 6000   | 0.28    | 16.34   | 05/01/96 | 0.08     | 19    |
| 106   | 12      | AM-5825 0050-95   | 12000  | 0.61    | 16.70   | 10/01/96 | 0.00     | 23    |

Total delayed day(s): -19.00  
Total cleaning time : 4.80  
Total Plans : .23505613E+79

ภาคผนวก ญ.

ชุดคำสั่งโปรแกรมภาษา Fox Pro

```

para firstday
clea
set date french
set esca off
set talk off
set stat off
set safe off
set hour to 24
defi wind panel from 0,0 to 24,79 fill '☐';
__ Footer ' Esc: Quit * <- /-> Change Panel '
defi wind main from 0,0 to 24,79 DOUB fill '☐' foot ' Press F11 to Cancel '
defi wind mess from 1,60 to 4,76 doub colo SCHE 5
defi wind panel1 from 0,0 to 21,70 doub shad;
__ Title ' JOB SCHEDULING * LINE 1 '
defi wind panel2 from 0,10 to 21,80 doub shad;
Title ' JOB SCHEDULING * LINE 2 ';
colo sche 5
defi wind bell from 0,76 to 2,79 none colo sche 5
defi wind total1 from 16,49 to 21,78 Title ' TOTAL ' shad
defi wind total2 from 16,1 to 21,30 Title ' TOTAL ' shad colo sche 5
stor 0 to giodau,phutdau,giaydau,timein
public pakxd,sopa,salefile,lastjob,sumwork
stor 0 to pakxd,sopa,lastjob
crea dbf jtam (job n(3))
use
i=1
n=1
*----- MAIN PROGRAM -----
do while .t.
acti wind main
@10,1 say 'HHHHHHH HHHHHHH HH          HHHHHHH HH  HH HH          HHHHHHH HHHHHHHHHH HHHHHHH'
@11,1 say 'HH          HH  HH HH          HH          HH HH          HH HH          HH  HH
@12,1 say 'HH          HH  HH HH          HH          HH HH          HH HH          HH  HH
@13,1 say 'HH          HHHHHHH HH          HH          HH HH          HHHHHHH          HH  HHHHHHH'
@14,1 say 'HH          HH  HH HH          HH          HH HH          HH HH          HH  HH
@15,1 say 'HH          HH  HH HH          HH          HH HH          HH HH          HH  HH
@16,1 say 'HHHHHHH HH  HH HHHHHHH HHHHHHH HHHHHHH HHHHHHH HH  HH          HH          HHHHHHH'

do SEPARATE

```

```
use chon1
sumwork=0
line=1
day=1
nn=recc()
i=0
if nn>=6 &&7
  do cut with i
    c=i
  else
    c=1
  copy to t1
endi

for jj=1 to c
  li=jj
  acti wind mess in wind main
  set colo to w+*/rb+
  clea
  @0,0 say ' Please Wait! '
  @1,0 say '
  do simulate with jj
  do OPTIMUM with li,line,day,lastjob &&,n
  deac wind mess
endf

bf='OPTIMUM1'
acti wind panel1
do result with bf
acti wind main
*_____

use chon2
sumwork=0
line=2
day=2
nn=recc()
i=0
```



```

if nn>=6 &&7
  do cut with i
  c=i
else
  c=1
  copy to t1
endi
for jj=1 to c
  li=jj
  acti wind mess in wind main
  set colo to w+*/rb+
  @0,1 say 'Please Wait!'
  set colo to w+/rb+
  do simulate with jj
  do OPTIMUM with li,line,day,lastjob &&,n
  deac wind mess
endf
bf=' OPTIMUM2'
set colo to
acti wind panel2
do result with bf
show wind panel2
show wind total2

```

\*\_\_\_\_\_

```

show wind panel1
show wind total1
*****
cuoi=secon()
giocuoi=int(cuoi/3600)
phutcuoi=int((cuoi-giocuoi*3600)/60)
giaycuoi=cuoi-(giocuoi*3600+phutcuoi*60)
gio=giodau+giocuoi
phut=phutdau+phutcuoi
if phut>=60
  gio=gio+1
  phut=phut-60
endi
giay=giaydau+giaycuoi
if giay>=60
  phut=phut+1

```

```

    giay=giay-60
endi
setgio=allt(str(gio,2))+ ':' +allt(str(phut,2))+ ':' +allt(str(giay,2))
!time &setgio
set clock off
*****
timeout=seco()
time=timeout-timein
gio=int(time/3600)
phut=int((time-gio*3600)/60)
giay=time-(gio*3600+phut*60)
ACTI WIND BELL
do while .t.
    set colo to w*+/rb+
    ?

?chr(7),chr(7) ,chr(7)
wait 'Press Esc to continue' wind nowa
=inkey(0.5)
read timeout 1/4
if lastkey0=27
    exit
else
    loop
endi
endd
deac wind bell
defi wind mess2 from 10,17 to 13,63 doub shad colo sche 7
acti wind mess2
@0,1 say '          Carried out in '
@1,0 say str(gio,2)+' hour(s) '+str(phut,2)+' minute(s) '+str(giay,2)+' second(s)'
wait 'Press any key' wind
deac wind mess2
set curs off
acti wind panel
move wind panel1 to 0,0
show wind panel1
show wind total1
move wind panel2 to 1,13
show wind panel2
show wind total2

```

```

wait ''
do while .t.
  =inkey(0.5)
  read timeout 1/4 valid !between(lastkey0,32,126)
  if lastkey0=26 or lastkey0=27
    exit
  else
    do case
      case lastkey0=19 or lastkey0=5
        move wind panel2 to 0,12
        move wind panel1 to 1,5
        show wind panel1
        show wind total1
        hide wind total2
      case lastkey0=4 or lastkey0=24
        move wind panel1 to 0,0
        move wind panel2 to 1,8
        show wind panel2
        show wind total2
        hide wind total1
    endcase
  endi
endd
set curs on
exit
endd
do thout
retu
*_____

proc thout
deacti wind main
clos data
clea wind
do delete
retu
*_____ PROC SEPARATE _____

proc SEPARATE
para ffile
sele 0
fname=''
daybegin=0
defi popup popfile from 7,25 to 16,55 margin title 'Select Sale Order';

```

```

prompt files like sale*.dbf colo schem 6
on sele popup popfile do selesale
acti popup popfile
stor ' ' to dd,mm,yy
ok=0
do while .t.
    @5,12 say ' Starting production date (dd/mm/yy): '
    @5,52 get dd pict '99' valid val(dd)>0 and val(dd)<=31 and dd<>' '
    @5,54 say '/'
    @5,55 get mm pict '99' valid val(mm)>0 and val(mm)<=12 and mm<>' '
    @5,57 say '/'
    @5,58 get yy pict '99' valid val(yy)>0 and yy<>' '
    @5,61 get ok func '* \<OK' size 1,1,4
    read cycle
    if lastkey()=27
        loop
    endi
    if ok=1
        fd=dd+'/' +mm+'/' +yy
        firstday=ctod(fd)
        if firstday={ / / }
            wait wind 'Invalid Date !'
            loop
        endi
        exit
    endi
endi
endd
@5,10,5,75 box ' '
sele aa.job,amount,amount/rate/24 as daywork,;
    aa.duedate as ddate,;
    duedate-firstday as duedate, ;
    receno from &fname aa,job bb;
    where aa.job=bb.job into dbf temp1
clos data
create dbf simulate (receno n(3),job N(3),amount n(5),daywork N(5,2),;
    duedate N(5,2),DDATE d(8),slack n(5,2),SLACK2 N (5,2),cleaning n(5,2))
appe from temp1
if recc()<=6
    wait 'A few jobs only, make plan by manual !' wind
    clear all
    clos all
    push key clear

```

```

cancel
endi
acti wind mess in wind main
clea
set colo to w+*/rb+
@0,1 say 'Please Wait!'
set colo to w+*/rb+
copy stru to OPTIMUM1
copy stru to OPTIMUM2

*_____ COUNT STARTING TIME
dau=seco()
giodau=int(dau/3600)
phutdau=int((dau-giodau*3600)/60)
giaydau=dau-(giodau*3600+phutdau*60)
timein=seco()
!time 0
set clock to 0,65
*_____

repl all slack with duedate-daywork
*sort on slack /a,daywork /d to vhhdf
sort on duedate /a,daywork /a to vhhdf
use vhhdf alia vhhd
copy stru to chon1
copy stru to chon2
copy stru to line1
copy stru to line2
sele 0
use chon1 alia chon1
sele 0
use chon2 alia chon2
sele vhhd
stor 0 to work1,work2
go top
do while !eof()
acti wind mess in wind main
set colo to w+*/rb+
@0,1 say 'Please Wait!'
set colo to w+*/rb+
scat memvar
IF WORK1 <=WORK2
sele chon1

```



```

    appe blan
    gath memvar
    repl slack with duedate-(daywork+work1)
    work1=work1+daywork
else
    sele chon2
    appe blan
    gath memvar
    repl slack with duedate-(daywork+work2)
    work2=work2+daywork
endi
sele vhhhd
if !eof()
    skip
endif
endd
SELE CHON1
COPY TO KT1
SELE CHON2
COPY TO KT2
clos data
retu &&giodau,phutdau,giaydau,timein

```

\*—— Select File ——\*

```

PROCEDURE selesale
fname=prompt()
salefile=fname
sele 1
use &fname
fname=alias()
deac popup popfile
rele popup popfile

```

\*————— **PROC SIMULATE** —————\*

```

proc SIMULATE
para jj
sele 0
fnew='t'+allt(str(jj,2))
use &fnew alias new
n=recc()
if n<=1
    clos data

```

```

else
use jtam
copy stru to j1
use j1
  for j=1 to n
    appe blan
    repl job with j
  endf
  for i=2 to n
    bfile='j'+allt(str(i,2))
    copy to &bfile
  endf
use
c1='allt(str(j1.job,2))'
c2='j1'
c3=''
cf=''
  for i=2 to n
    c1=c1+'+str(j'+allt(str(i,2))+'.job,1)'
    c2=c2+',j'+allt(str(i,2))
  * =inkey(10)
  endf
for k=1 to n
  for l=k+1 to n
    c3=c3+'j'+allt(str(k,2))+'.job<>j'+allt(str(l,2))+'.job'+ ' and '
  * =inkey(10)
  endf
endf
c3=left(c3,len(c3)-5)
sele &c1 as job from &c2 where &c3 into dbf fthfth
sort to fth on job
endi
clos data
retu

```

```

*----- PROC OPTIMUM -----
proc OPTIMUM
para li,line,day,lastjob &&,n
*bf='l'+allt(str(li,2))
bf='ll'
sele 0
use clean1 alia c1

```

```
sele 0
use clean2 alia cl2
sele 0
use clean3 alia cl3
sele 0
use clean4 alia cl4
sele 0
use clean5 alia cl5
sele 0
use clean6 alia cl6
bfile='t'+allt(str(li,2))
bflin='line'+str(day,1)
sele 0
  use &bflin alia line
sele 0
  use &bfile alia chon
if recc()=1
bf1='OPTIMUM'+allt(str(line,1))
  use &bf1
  sum daywork to work
  appe from &bfile
  repl slack with duedate-(daywork+work+sumwork)
  clos all
  retu
endi
sele 0
  use fth alia fth
  sotretam=0
  str2=job
  tretoiuu=-365000
  sumclean=9.7
  stepmt=1
  y=1
  acti wind mess in wind main
  set colo to gr+*/rb+
  @1,1 say 'Selecting plan '
  set colo to w/rb+
  @0,1 say '
go top
  swap=0
do while !eof()
  sele fth
```

```

str1=job
sclean=0
sumslack=0

kxd=.f.
if recn()=1
  acti wind mess in wind main
  set colo to r+/w
  @0,1 say ' '
  stepmt=stepmt+1
  set colo to w+/rb+
endi
if recn()=stepmt*int((recc()/12)
  acti wind mess in wind main
  set colo to r+/w
  @0,y+1 say ' '
  y=y+1
  stepmt=stepmt+1
  set colo to w+/rb+
endi
if recn()=recc()
  acti wind mess in wind main
  set colo to r+/w
  @0,y+1 say ' '
  set colo to w+/rb+
endi

for j=1 to len(allt(str1))-1
  soprev=val(allt(substr(str1,j,1)))
  sonext=val(allt(substr(str1,j+1,1)))
  sele chon
  go soprev
  prev=job
  go sonext
  next=job

  if li>1 and j=1 and cltime(lastjob,prev)>=9.7
    stor .t. to kxd
    exit
  endi
  if cltime(prev,next)>=9.7
    stor .t. to kxd

```

```

        exit
    endi
endf
if kxd
    sele fth
    skip
    if !eof()
        loop
        else
            exit
        endi
    endi
sele line
zap
for k=1 to len(allt(str1))
    selechon
        go val(substr(str1,k,1))
        scat memvar
    sele line
        appen blank
        gath memvar
    endf
sele line
work=0
scan
if rean()=1
    repl slack with duedate-daywork-sumwork
    if li>1
        repl cleaning with cltime(lastjob,prev)
    else
        repl cleaning with cltime(prev,next)
    endi

    *****

    if slack<=0
        if ( abs(SLACK)-abs(int(SLACK)))<=.21
            repl SLACK2 with int(slACK)
        else
            repl SLACK2 with ( ( abs(int(SLACK))+1)*SLACK/abs(SLACK) )
        endi
    else
        if (abs(SLACK)-abs(int(SLACK)))<=.79

```



```

        repl SLACK2 with int(SLACK)
    else
        repl SLACK2 with ( abs(int(SLACK))+1)*SLACK/abs(SLACK)
    endi
endif
*****
prev=job
skip
next=job
skip -1
curr=recn()
repl cleaning with ctime(prev,next)
go curr
work=work+daywork+cleaning
else
    prev=job
    skip
    if eof()
        skip -1
        repl slack with duedate-(daywork+work+sumwork)
        *****
    if slack<=0

        if ( abs(SLACK)-abs(int(SLACK)))<=.21
            repl SLACK2 with int(slack)
        else
            repl SLACK2 with ( ( abs(int(SLACK))+1)*SLACK/abs(SLACK) )
        endi
    endif
    if slack>0
        if ( abs(SLACK)-abs(int(SLACK)))<=.79
            repl SLACK2 with int(slack)
        else
            repl SLACK2 with ( abs(int(SLACK))+1)*SLACK/abs(SLACK)
        endi
    endif
    *****
    repl cleaning with 0
    exit
endi
on key label f11 do RETURN
next=job

```

```

skip -1
curr=recn()
repl cleaning with ctime(prev,next)
go curr
repl slack with duedate-(daywork+work+sumwork)
*****
if slack<=0

  if ( abs(SLACK)-abs(int(SLACK)))<=.21
    repl SLACK2 with int(slACK)
  else
    repl SLACK2 with ( ( abs(int(SLACK))+1)*SLACK/abs(SLACK) )
  endi
endif
if slack>0
  if ( abs(SLACK)-abs(int(SLACK)))<=.79
    repl SLACK2 with int(slACK)
  else
    repl SLACK2 with ( abs(int(SLACK))+1)*SLACK/abs(SLACK)
  endi
endif
*****
go curr
work=work+daywork+cleaning
endi
ends
sum slack2 to sumslack for slack2<0
go bott
repl cleaning with 0
sum cleaning to sclean
if (sumslack>tretoiuu) or (sumslack=tretoiuu and sclean<sumclean)
  on key label f11 do RTURN
  copy to &bf
  tretoiuu=sumslack
  sumclean=sclean
  swap=swap+1
  sele fth
endi

sele fth
if !eof()
  skip

```

```

endif
*
=inkey(5)
endd

if swap=0
  sele chon
  copy to tempdb
  sele 0
  use tempdb alia tempdb
  work=0
  scan
    if recn()=1
      repl slack with duedate-daywork-sumwork
      prev=job
      skip
      next=job
      skip -1
      curr=recn()
      repl cleaning with ctime(prev,next)
      go curr
      work=work+daywork+cleaning
    else
      prev=job
      skip
      if eof()
        skip -1
        repl slack with duedate-(daywork+work+sumwork)
        repl cleaning with 0
        exit
      endi
      next=job
      skip -1
      curr=recn()
      repl cleaning with ctime(prev,next)
      go curr
      repl slack with duedate-(daywork+work+sumwork)
      go curr
      work=work+daywork+cleaning
    endi
  ends
copy to &bf
use    && Close Tempdb.dbf

```

```

        endi
    use &bf
    go top
    nextclean=job
    bf1='OPTIMUM'+allt(str(line,1))
    use &bf1
    go bott
    prevclean=job
    repl cleaning with ctime(prevclean,nextclean)
    appe from &bf
    sum daywork to sumdw
    sum cleaning to sumcl
    sumwork=sumwork+sumdw+sumcl
    go bott
    lastjob=job
    clos all
    retu

```

```

*=====
proc cut
para i
DO WHILE recc()>0
i=i+1
FILE='T'+allt(STR(i,2))
IF RECC()<=6 and recc()>0 &&7
    copy to &FILE
* GO TOP
    DELE all &&REST
    PACK
    EXIT
ELSE
    go top
    copy next 6 to &FILE
    go top
    dele next 6
    pack
ENDIF
ENDD
retu i

```

```

*=====
proc RESULT

```



```

para bf
sele 0
use clean1 alia cl1
sele 0
use clean2 alia cl2
sele 0
use clean3 alia cl3
sele 0
use clean4 alia cl4
sele 0
use clean5 alia cl5
sele 0
use clean6 alia cl6
deac wind mess
Sele 0
use &bf alia RESULT
wind='total'+right(bf,1)
window='panel'+right(bf,1)
repl all cleaning with 0
i=1
go top
work=0
do while recn0<=recc0-1
    prev=job
    skip
    next=job
    skip -1
    bn=cltime(prev,next)
    sele RESULT
    repl cleaning with bn
    repl slack with duedate-(daywork+work)
        *****
    if slack<=0
        if ( abs(SLACK)-abs(int(SLACK)))<=.21
            repl SLACK2 with int(slack)
        else
            repl SLACK2 with ( ( abs(int(SLACK))+1)*SLACK/abs(SLACK) )
        endif
    endif
    if slack>0
        if ( abs(SLACK)-abs(int(SLACK)))<=.79

```



```

        repl SLACK2 with int(slACK)
    else
        repl SLACK2 with ( abs(int(SLACK))+1)*SLACK/abs(SLACK)
    endi
endif
*****

    work=work+daywork+cleaning
    skip
endd
go bott
repl cleaning with 0
repl slack with duedate-(daywork+work)
*****
    if slack<=0

        if ( abs(SLACK)-abs(int(SLACK)))<=.21
            repl SLACK2 with int(slACK)
        else
            repl SLACK2 with ( ( abs(int(SLACK))+1)*SLACK/abs(SLACK) )
        endi
    endif
    if slack>0
        if ( abs(SLACK)-abs(int(SLACK)))<=.79
            repl SLACK2 with int(slACK)
        else
            repl SLACK2 with ( abs(int(SLACK))+1)*SLACK/abs(SLACK)
        endi
    endif
*****

sum slack2 to tre for slack2<0
sum cleaning to cleantime
deac wind mess
acti wind &window
??' First day: '+allt(dtoc(firstday))+ ' * Sale order: '+cutstr(salefile)
list receno,job,daywork,duedate,ddate,slack,slack2,cleaning
sotam=recc()
sopa=FAC(sotam)
acti wind &wind
@0,0 say 'Delayed Day(s): '+allt(str(tre,6))
@1,0 say 'Cleaning Time : '+allt(str(cleantime,6,2))

```

```
@2,0 say 'Possible Plans: '+allt(str(sopa,16))
```

```
clos all
```

```
retu
```

```
*_____
```

```
func cltime
```

```
para prev,next
```

```
c=int((next-1)/50)+1
```

```
seleold=alia()
```

```
bsele='cl'+allt(str(c,1))
```

```
sele &bsele
```

```
  loca for job=prev
```

```
  if !foun()
```

```
    wait 'job '+str(prev,3)+' not found in Cleaning file Clean'+str(c,1)+' ! Press any key' wind
```

```
    set clock off
```

```
    do thout
```

```
    cancel
```

```
  endi
```

```
  fn='j'+allt(str(next,3))
```

```
  search=0
```

```
  mcount=1
```

```
  FOR mcount = 1 TO FCOUNT()
```

```
    if uppe(FIELD(mcount))=uppe(fn)
```

```
      search=1
```

```
    endif
```

```
  endfor
```

```
  if search=0
```

```
    wait 'Field '+fn+' not found in Cleaning file Clean'+str(c,1)+' ! Press any key' wind
```

```
    set clock off
```

```
    do thout
```

```
    cancel
```

```
  endi
```

```
  cleantime=&fn
```

```
  sele &seleold
```

```
retu cleantime
```

```
*_____ FAC _____
```

```
Function FAC
```

```
para NN
```

```
RESULT=1
```

```
for i=1 to NN
```

```
  RESULT=RESULT*i
```

```
endfor
retu RESULT
```

```
*—— Cutstr ——
```

```
Function cutstr
```

```
para sfile
```

```
s=0
```

```
stam=""
```

```
strfile=""
```

```
do while substr(sfile,len(sfile)-s,1)<>'\'
  stam=stam+substr(sfile,len(sfile)-s,1)
  s=s+1
enddo
```

```
enddo
```

```
for s=0 to len(stam)
```

```
  strfile=strfile+substr(stam,len(stam)-s,1)
```

```
endf
```

```
retu strfile
```

```
*——
```

```
proc doitam
```

```
use chon2
```

```
line=2
```

```
day=2
```

```
n=recc()
```

```
if n>=6 &&7
```

```
  do cut
```

```
    c=i
```

```
  else
```

```
    c=1
```

```
    copy to t1
```

```
  endi
```

```
for jj=1 to c
```

```
  li=jj
```

```
  acti wind mess in wind main
```

```
  set colo to w+*/rb+
```

```
  @0,1 say 'Please Wait!'
```

```
  set colo to w+*/rb+
```

```
  do SIMULATE with jj
```

```
  do OPTIMUM with li,n,line,day,lastjob
```

```
  deac wind mess
```

```
endf
```

```
bf='OPTIMUM2'
```

```
set colo to
acti wind panel2
do RESULT with bf
show wind panel2
show wind total2
*****

*—— Cancel ——
Procedure RTURN
clear all
on key label F11
clos all
clea all
cancel

*****

proc delete
for x=1 to 20
  deleTfile='T'+allt(str(x,2))+'.dbf'
  deleJfile='J'+allt(str(x,2))+'.dbf'
  if file('&deleTfile')
    eras &deleTfile
  endi
  if file('&deleJfile')
    eras &deleJfile
  endi
endf
eras jtam.dbf
eras ll.dbf
eras fthfth.dbf
eras fth.dbf
eras vhhdf.dbf
eraschon1.dbf
eraschon2.dbf
retu

```



```

clear all
clear
clos all
set talk off
set safe off
set status off
set escape off
set date french
*set color to w+/b
mswap=0
ON KEY LABEL F12 DO DICT with mswap
ON KEY LABEL F11 DO RETURN
DEFI WIND WINDIC FROM 12,40 TO 22,78 TITLE ' Dictionary ' foot ' ESC-Exit ' DOUB SHAD
COLO SCHE 7
STORE 1 TO CHOOSE,CHOOSE1,CHOOSE2,CHOOSE4
STORE 0 TO TCLEAN,TDELAY
public firstday
stor 0 to gio,phut,giay
firstday={ / / }
wait window 'Enter new DATE & Time'
clear
!date
clear
!time
DO WHILE .T.
    CLEAR
    set color to w+/b
    @ 4,32 SAY "MAIN MENU" COLOR GR+/B
    @ 6,26 PROMPT "1. ENTRER SALE ORDER "
    @ 7,26 PROMPT "2. ENTRER BASIC DATA "
    @ 8,26 PROMPT "3. CALCULATE"
    @ 9,26 PROMPT "4. PRINT REPORT "
    @ 10,26 PROMPT "5. QUIT "
    @ 3,23 TO 11,51 DOUBLE
    @ 5,24 TO 5,50
    @ 5,23 SAY "j"
    @ 5,51 SAY "n"
    set color to
    MENU TO CHOOSE
    DO CASE
        CASE CHOOSE=1
            DO WIN1.SPR

```



```
CASE CHOOSE=2
  DO SCR2
CASE CHOOSE=3
  do simulate with firstday
  on key labe f11
CASE CHOOSE=4
  DO SCR4
CASE CHOOSE=5
  EXIT
ENDCASE
ENDDO
on key labe f12
on key labe f11
clos all
clea all
clear
do del
set talk on
set safe on
set date american
set esca on
retu

*—— Cancel ——
Procedure RTURN
on key labe f12
on key label F11
clos all
clea all
do del
set talk on
set date american
set esca on
cancel

*—— Entry Database ——
PROCEDURE SCR2
set color to w+/b
@ 8,29 CLEAR TO 14,56 DOUBLE
@ 7,26 SAY "2. ENTRER BASIC DATA      " COLOR R+/B
@ 9,36 SAY "ENTER BASIC DATA" COLOR GR+/B
@ 11,31 PROMPT "1. PRODUCTION RATES"
```

@ 12,31 PROMPT "2. CLEANING TIMES "

@ 13,31 PROMPT "3. RESTRICTION "

@ 8,29 TO 14,56 DOUBLE

@ 10,30 TO 10,55

@ 10,29 SAY "j"

@ 10,56 SAY "n"

set color to

MENU TO CHOOSE2

DO CASE

    CASE CHOOSE2=1

        DO WIN21.SPR

    CASE CHOOSE2=2

        DO WIN22.SPR

    CASE CHOOSE2=3

        DO WIN23.SPR

ENDCASE

\*—— Print Report ——

PROCEDURE SCR4

set color to w+/b

@ 5,19 CLEAR TO 15,55

@ 7,20 TO 7,54

@ 6,31 SAY "PRINT REPORT" COLOR GR+/B

\*@ 9,24 SAY "2. ANALYTICAL REPORT" COLOR GR+/B

@ 8,24 PROMPT "1. SCHEDULING REPORT "

@ 12,24 SAY "2. DATABASE REPORT" COLOR GR+/B

@ 10,27 PROMPT "- TOTAL DELAY DATE "

@ 11,27 PROMPT "- TOTAL CLEANING TIME "

@ 13,27 PROMPT "2.1 PRODUCTION RATES "

@ 14,27 PROMPT "2.2 RESTRICTIONS "

@ 5,19 TO 15,55 DOUBLE

@ 7,19 SAY "j"

@ 7,55 SAY "n"

MENU TO CHOOSE4

set color to

DO CASE

    CASE CHOOSE4=1 && Scheduling Report

        CLOSE DATA

        sele str(recn(0,3) as No,aa.receno as rece,aa.job,jname as Name,aa.amount,;

        jrate as Rate,daywork,123.45 as prodate,duedate,ddate,SLACK2 AS

SLACK,cleaning;

        from optimum1 aa,job bb where bb.job=aa.job;

```

        into dbf tam1opti order by no
    repl all prodate with 0
    go top
    repl prodate with day(firstday)
    do while !eof()
        dha=prodate+daywork+cleaning
        skip
        repl prodate with dha
    enddo
sum cleaning to cleantime
sum slACK to delay for slACK <0
    lenmax=0
    scan
        if len(allt(name))>lenmax
            lenmax=len(allt(name))
        endi
    ends
    crea dbf report1 (no c(3),rece n(3),job n(3),name c(lenmax),;
        amount n(5),prodate n(6,2), daywork n(5,2),ddate d(8),;
        slACK n(4), cleaning n(5,2))

    use report1
    appe from tam1opti

    clea
        ?'
        ?'

    ?'
        JOB SCHEDULING'
    ?'
        Line1'
    ?'
        Starting production date: '+dtoc(firstday)
list rece,job,name,amount,daywork,prodate,ddate,cleaning,slACK off
?'Total delayed day(s): '+str(delay,6,2)
?'Total cleaning time : '+str(cleantime,6,2)
?'Total Plans      : '+str(gt(recc0),14)
    wait wind 'Turn on Printer'
    set print on

    ?'
        JOB SCHEDULING'
    ?'
        Line1'
    ?'
        Starting production date: '+dtoc(firstday)
list rece,job,name,amount,daywork,prodate,ddate,cleaning,slACK off
?'Total delayed day(s): '+str(delay,6,2)
?'Total cleaning time : '+str(cleantime,6,2)
?'Total Plans      : '+str(gt(recc0),14)

```

```

set print off
clea
* _____
* In|2
      sele str(recc(0,3) as no,aa.receno as rece,aa.job,jname as Name,amount,;
        jrate as Rate,daywork,123.45 as prodate,duedate,ddate,slack2 as
slACK,cleaning;
      from optimum2 aa,job bb where bb.job=aa.job ;
      into dbf tam2opti order by no
repl all prodate with 0
go top
repl prodate with day(firstday)
do while !eof()
      dha=prodate+daywork+cleaning
      skip
      repl prodate with dha
enddo
lenmax=0
scan
  if len(allt(name))>lenmax
    lenmax=len(allt(name))
  endi
ends
crea dbf report2 (no c(3),rece n(3),job n(3), name c(lenmax),;
amount n(5),daywork n(5,2),prodate n(6,2),ddate d(8),;
slACK n(4), cleaning n(5,2))
use report2
appe from tam2opti

      ?'
      ?'

?'          JOB SCHEDULING'
?'          Line2'
?'          Starting production date: '+dtoc(firstday)
list rece,job,name,amount,daywork,prodate,ddate,cleaning,slACK off
sum cleaning to cleantime
sum slACK to delay for slACK <0
?'Total delayed day(s): '+str(delay,6,2)
?'Total cleaning time : '+str(cleantime,6,2)
?'Total Plans      : '+str(gt(recc(0)),14)
      wait wind 'Turn on Printer'

```

```

set print on
      ?' '
      ?' '

?'          JOB SCHEDULING'
?'          Line2'
?'          Starting production date: '+dtoc(firstday)
list rece,job,name,amount,daywork,prodate,ddate,cleaning,slACK off
sum cleaning to cleantime
sum slACK to delay for slACK <0
?'Total delayed day(s): '+str(delay,6,2)
?'Total cleaning time : '+str(cleantime,6,2)
?'Total Plans      : '+str(gt(recc0),14)
*   set printer to
      set print off

*_____

      close data
*   CASE CHOOSE4=2 && Total Delay Date
*   CLOS DATA
*   USE OPTIMUM1
*   SUM SLACK TO TAMDELAY FOR SLACK<0
*   TDELAY=TAMDELAY
*   USE
*   USE OPTIMUM2
*   SUM SLACK TO TAMDELAY FOR SLACK<0
*   TDELAY=TDELAY+TAMDELAY
*   @ 10,27 SAY "- TOTAL DELAY DATE " +STR(TDELAY,5,2)
*   USE
*   =INKEY(0)
*   CASE CHOOSE4=3 && Total cleaning Time
*   CLOS DATA
*   USE OPTIMUM1
*   SUM CLEANING TO TAMCLEAN
*   TCLEAN=TAMCLEAN
*   USE
*   USE OPTIMUM2
*   SUM CLEANING TO TAMCLEAN
*   TCLEAN=TCLEAN+TAMCLEAN
*   @ 11,27 SAY "- TOTAL CLEANING TIME " +STR(TCLEAN,5,2)
*   USE
*   =INKEY(0)
*   CASE CHOOSE4=4 && Production Rate

```



```

DO RATE
CASE CHOOSE4=5 && Exception
DO EXCEPT
ENDCASE

*—— Talking Dictionary ——
PROCEDURE DICT
para mswap
mswap=mswap+1
on key label f12
if mod(mswap,2)=0
do dict2
else
do dict1
endif
on key label f12 do dict with mswap

*—— Dictionary 'Order Job Name' ——
PROCEDURE DICT1
if alias()=''
currsele='1'
else
currsele=alias()
endif
SELE 0
USE JOB AGAIN
sort field job,jname to dict on jname
acti wind windic
use dict
brow field jname:h='Job Name', job:10:h='Grade No.' in wind windic noedit noappe node colo
sche 7
deac wind windic
use
sele &currsele
return

*—— Dictionary 'Order Grade No.' ——
PROCEDURE DICT2
if alias()=''
currsele='1'
else
currsele=alias()

```

```
endif
SELE 0
USE JOB AGAIN
sort field job,jname to dict on job
acti wind windic
use dict
brow field job:10:h='Grade No.', jname:h='Job Name' in wind windic noedit noappe node colo
sche 7
deac wind windic
use
sele &currsele
return
```

\*—— Mark Delete ——

```
procedure Markdel
If dele()
    recall
else
    dele
Endif
```

```
Function gt
para NN
ketqua=1
for i=1 to NN
    ketqua=ketqua*i
endfor
retu ketqua
*****
```

```
proc del

eras tam1opti.dbf
eras tam2opti.dbf
eras temp1.dbf
retu
```

```
sele 1
use clean1
inde to clean1 on job
sele 2
use clean2
inde to clean2 on job
sele 3
use clean3
inde to clean3 on job
sele 4
use clean4
inde to clean4 on job
sele 5
use clean5
inde to clean5 on job
sele 6
use clean6
inde to clean6 on job
```

```
@15,33 CLEAR TO 18,47
```

```
@15,33 TO 18,47 DOUB
```

```
@16,35 GET OK45 FUNC '*RTV \<Record;\<All' DEFA 1
```

```
READ cycle
```

```
DO CASE
```

```
    CASE OK45=1
```

```
        DO ONEJOB
```

```
    CASE OK45=2
```

```
        DO ALLJOB
```

```
ENDCASE
```

```
close data
```

```
*—— Report One Grade No. Exception ——
```

```
PROCEDURE ONEJOB
```

```
sele 7
```

```
USE
```

```
create dbf ONE (jobl N(3), jobll C(4), symbol N(4,2) , causion C(20))
```

```
scat memv blan
```

```
@19,30 say 'Input Grade No. ' get m.jobl defa 0 size 1,3 range 1,300
```

```
read
```

```
do sang
```

```
do xuat
```

\*—— Report One Grade No. Exception ——

PROCEDURE ALLJOB

sele 7

USE

create dbf ONE (jobl N(3), jobll C(4), symbol N(4,2), causion C(20))

scat memv blan

sele 8

use job

inde to job on job

do while !eof()

    m.jobl=job

    do sang

    sele 8

    skip

enddo

do xuat

PROCEDURE SANG

for i=1 to 6

    TENFILE='CLEAN'+STR(i,1)

    sele &tenfile

    seek m.jobl

    if eof()

        loop

    endif

    for j=2 to 51

        tenfield=field(j)

        if &tenfield>=9.7

            m.jobll=tenfield

            m.symbol=&tenfield

            if &tenfield=9.7

                m.Causion='Chemical Reaction'

            endif

            if &tenfield=9.8

                m.causion='Contamination'

            endif

            if &tenfield=9.9

                m.causion='Others'

            endif

        sele 7

```

                appen blank
                gath memv
            endif
        sele &tenfile
    endfor
endfor

```

#### PROCEDURE XUAT

```

DEFINE WINDOW TAM45 FROM 7,13 TO 18,61 TITLE ' Exception ' ;

```

```

    FOOTER ' Ctrl+P Print Ctrl+W Save Ctrl+D Delete ' COLOR SCHEME 10

```

```

acti wind tam45

```

```

on key label Ctrl+P do in

```

```

on key label leftarrow keyb '{backtab}'

```

```

on key label rightarrow keyb '{tab}'

```

```

on key label ctrl+d do markdel

```

```

sele 7

```

```

brow field jobl:h='Grade No.',jobll:h='Grade No.', ;

```

```

    Causion=iif(symbol=9.7,'Chemical Reaction',iif(symbol=9.8,'Contamination','Others')):20 ;

```

```

    in window tam45

```

```

deac wind tam45

```

```

rele wind tam45

```

```

pack

```

```

on key label Ctrl+P

```

```

on key label leftarrow

```

```

on key label rightarrow

```

```

on key label ctrl+d

```

```

*—— Print ——

```

```

Procedure In

```

```

wait wind 'Turn on Printer, Put the Paper'

```

```

If !Prin()

```

```

    ?chr(7)

```

```

    wait window 'Printer Not ready!'

```

```

else

```

```

    list to printer

```

```

endif

```



```

SELE 0
USE JOB
INDE TO JOB ON JOB
@14,33 CLEAR TO 17,47
@14,33 TO 17,47 DOUB
@15,35 GET OK44 FUNC '*RTV \<Record;\<All' DEFA 1
READ cycle
DO CASE
CASE OK44=1
  @19,30 say 'Input Grade No. ' get grade defa 0 size 1,3 rang 1,300
  read
  if seek(grade)
    @20,30 say 'Production Rate: '+str(jrate,3)+' Kg/h'
    =inkey(60)
  else
    ?chr(7)
    wait wind 'Not Found'
  endif
CASE OK44=2
  DEFINE WINDOW TAM44 FROM 7,13 TO 18,61 TITLE ' Production Rate ' ;
  FOOTER ' Ctrl+Pa 
  acti wind tam44
  on key label Ctrl+P do in
  on key label leftarrow keyb '{backtab}'
  on key label rightarrow keyb '{tab}'
  on key label ctrl+d do markdel
  brow field job:h='Grade No.',jname:h='Grade Name',jrate:h='Rate Kg/h' ;
  in window tam44
  deac wind tam44
  rele wind tam44
  pack
  on key label Ctrl+P
  on key label leftarrow
  on key label rightarrow
  on key label ctrl+d
ENDCASE
close data

*—— In Production Rate ——
Procedure In
wait wind 'Turn on Printer, Put the Paper'
if !Prin()
  ?chr(7)
  wait window 'Printer Not ready!'
else
  list to printer
endif

```

```

*
*
*      01/27/96              WIN1.SPR              12:36:38
*
*
*      Author's Name
*
*      Copyright (c) 1996 Company Name
*      Address
*      City,      Zip
*
*      Description:
*      This program was automatically generated by GENSCRN.
*
*

```

```

#REGION 0
REGIONAL m.currarea, m.talkstat, m.compstat

```

```

IF SET("TALK") = "ON"
  SET TALK OFF
  m.talkstat = "ON"
ELSE
  m.talkstat = "OFF"
ENDIF
m.compstat = SET("COMPATIBLE")
SET COMPATIBLE FOXPLUS

```

```

m.currarea = SELECT()

```

```

*
*
*      MS-DOS Window definitions
*
*
*

```

```

*
*
*      WIN1/MS-DOS Setup Code - SECTION 2
*
*
*

```

```

#REGION 1
* Creating initial parameters
addcust=.F.
on key label CTRL+A do taomoi
defi popup popfile from 7,29 to 16,62 margin title 'Select Sale
Order';
  Footer ' Ctrl+A=New ' prompt files like sale*.dbf colo schem 6
on sele popup popfile do popproc
acti popup popfile
sele 2
use customer alias customer
inde to cust on cust
scat memv blan
sele 1
set rela to cust into customer
clear

```

```

*
*
*
*
*
*

```

WIN1/MS-DOS Screen Layout

```

#REGION 1
@ 7,20 SAY "Address:" ;
    SIZE 1,8, 0
@ 8,20 SAY "City  :" ;
    SIZE 1,8, 0
@ 9,20 SAY "Phone  :" ;
    SIZE 1,8, 0
@ 9,44 SAY "Fax:" ;
    SIZE 1,4, 0
@ 5,43 GET m.cust ;
    SIZE 1,5 ;
    DEFAULT " " ;
    PICTURE "@!" ;
    VALID _r7f0r12wz()
@ 6,29 GET m.name ;
    SIZE 1,30 ;
    DEFAULT " " ;
    PICTURE "@!K" ;
    DISABLE
@ 5,33 SAY "Customer:" ;
    SIZE 1,9, 0
@ 6,20 SAY "Name  :" ;
    SIZE 1,8, 0
@ 7,29 GET m.address ;
    SIZE 1,20 ;
    DEFAULT " " ;
    PICTURE "@!K" ;
    DISABLE
@ 8,29 GET m.city ;
    SIZE 1,15 ;
    DEFAULT " " ;
    PICTURE "@!K" ;
    DISABLE
@ 9,29 GET m.phone ;
    SIZE 1,10 ;
    DEFAULT " " ;
    PICTURE "@!K" ;
    DISABLE
@ 9,49 GET m.fax ;
    SIZE 1,10 ;
    DEFAULT " " ;
    PICTURE "@!K" ;
    DISABLE
@ 11,20 SAY "Receive No." ;
    SIZE 1,11, 0
@ 13,20 SAY "Order Amount:" ;
    SIZE 1,13, 0
@ 12,20 SAY "Grade No.  :" ;
    SIZE 1,13, 0
@ 11,31 SAY "  :" ;
    SIZE 1,2, 0
@ 15,20 SAY "Due Date:" ;
    SIZE 1,9, 0
@ 14,20 SAY "Date  :" ;
    SIZE 1,9, 0

```

```

@ 2,17 TO 16,61 DOUBLE
@ 11,34 GET m.reveno ;
  SIZE 1,3 ;
  DEFAULT 0 ;
  PICTURE "@Z" ;
  VALID _r7f0r13me()
@ 12,34 GET m.job ;
  SIZE 1,3 ;
  RANGE 1, 300 ;
  DEFAULT 0 ;
  PICTURE "@KZ"
@ 13,34 GET m.amount ;
  SIZE 1,5 ;
  DEFAULT 0 ;
  PICTURE "@Z" ;
  VALID _r7f0r1409()
@ 14,30 GET m.recedate ;
  SIZE 1,8 ;
  DEFAULT { / / } ;
  WHEN _r7f0r1491() ;
  VALID _r7f0r14g6()
@ 15,30 GET m.duedate ;
  SIZE 1,8 ;
  DEFAULT { / / } ;
  WHEN _r7f0r14o5() ;
  VALID _r7f0r14uy()
@ 4,18 TO 4,60
@ 4,17 SAY "I" ;
  SIZE 1,1, 0
@ 4,61 SAY "I" ;
  SIZE 1,1, 0
@ 10,18 TO 10,60
@ 10,17 SAY "I" ;
  SIZE 1,1, 0
@ 10,61 SAY "I" ;
  SIZE 1,1, 0
@ 3,31 SAY "ENTRY SALE ORDER" ;
  SIZE 1,16, 0 ;
  COLOR GR+/B
@ 11,50 GET ok1 ;
  PICTURE "@*VN \!\<Add;\<Browse;\?\<Exit" ;
  SIZE 1,8,1 ;
  DEFAULT 1 ;
  VALID _r7f0r156w()
@ 11,46 TO 15,46
@ 16,46 SAY "=" ;
  SIZE 1,1, 0
@ 10,46 SAY "T" ;
  SIZE 1,1, 0
@ 13,40 SAY "(Kg)" ;
  SIZE 1,4, 0

```

READ CYCLE

SELECT (m.currarea)

```

#REGION 0
IF m.talkstat = "ON"
  SET TALK ON
ENDIF
IF m.compstat = "ON"
  SET COMPATIBLE ON
ENDIF

```

```
*
*
*
*
*
```

```
WIN1/MS-DOS Cleanup Code
```

```
#REGION 1
CLOSE DATABASE
ON KEY LABEL CTRL+A
```

```
*-----
```

```
*
*
*
*
*
*
```

```
WIN1/MS-DOS Supporting Procedures and Functions
```

```
#REGION 1
PROCEDURE popproc
ten=prompt()
sele 1
use &ten ALIAS SALE
scat memv blan
deac popup popfile
rele popup popfile
```

```
*-----
PROCEDURE TAOMOI
@7,8 CLEAR TO 11,28 DOUB
@7,8 TO 11,28 DOUB
@11,14 say 'ESC:Exit'
@8,10 say 'Enter Week : ' get saleweek pict '99' defa 1 range 1,5
@9,10 say 'Enter Month: ' get salemonth pict '99' defa
month(date()) range 1,12
@10,10 say 'Enter Year : ' get saleyear pict '99' defa
year(date())-1900 valid saleyear<=year(date())-1900
```

```
read valid bbb()
```

```
*-----
Function bbb
```

```
if lastkey()=27
  @7,8 CLEAR TO 11,28 DOUB
  retu .T.
endif
filedbf='SALE'+str(saleweek,1)+iif(salemonth<10,'0'+str(salemonth,1
),0),str(salemonth,2,0))+right(str(saleyear,2,0),1)
if file('&filedbf..dbf')
  ?chr(7)
  wait window 'File &filedbf Already'
  salemonth=month(date())
  saleyear=year(date())-1900
  show gets
  _curobj=1
  return .F.
else
  sele 1
  create &filedbf from taoct
  use
  use &filedbf alias sale
endif
deac popup popfile
rele popup popfile
```









```

sele sale
appe blan
gath memv
* scat memv blan
  if addcust
    sele customer
    appe blan
    gath memv
    scat memv blan
  endif
sele Sale
scat memv blan
addcust=.F.
show get m.name disa
show get m.address disa
show get m.city disa
show get m.phone disa
show get m.fax disa
show gets
_curobj=1
CASE OK1=2
  sele sale
  on key label leftarrow keyb '{backtab}'
  on key label rightarrow keyb '{tab}'
  on key label ctrl+d do markdel
  defi wind tam1 from 2,10 to 22,70 color scheme 10 Footer '
  Ctrl+W=Save Ctrl+D=Delete '
  acti wind tam1
  brow field job:5,receno:8:h='Rece No.',
  customer.name,customer.address,customer.city,customer.phone,cus
  tomer.fax,amount,recedate:12:h='Receive Date',duedate title '*
  Sale Order - Customer *' lock 1 in wind tam1
  deac wind tam1
  rele wind tam1
  on key label leftarrow
  on key label rightarrow
  on key label ctrl+d
  _curobj=14
CASE OK1=3
  clear read
ENDCASE

```





```

#REGION 1
@ 8,23 TO 8,54
@ 6,22 TO 15,55 DOUBLE
@ 11,24 SAY "PRODUCTION RATE:" ;
    SIZE 1,16, 0
@ 7,28 SAY "ENTRY PRODUCTION RATE" ;
    SIZE 1,21, 0 ;
    COLOR GR+/B
@ 8,22 SAY "I" ;
    SIZE 1,1, 0
@ 8,55 SAY "I" ;
    SIZE 1,1, 0
@ 10,24 SAY "NAME:" ;
    SIZE 1,5, 0
@ 12,24 SAY "DATE:" ;
    SIZE 1,5, 0
@ 9,24 SAY "GRADE No. :" ;
    SIZE 1,11, 0
@ 9,35 GET M.JOB ;
    SIZE 1,3 ;
    DEFAULT 0 ;
    PICTURE "@KZ 999" ;
    VALID _r7s0gc92k()
@ 10,30 GET M.JNAME ;
    SIZE 1,24 ;
    DEFAULT " " ;
    PICTURE "XXXXXXXXXXXXXXXXXXXXXXXXXXXX"
@ 11,41 GET M.JRATE ;
    SIZE 1,4 ;
    DEFAULT 0 ;
    PICTURE "@Z 9999"
@ 11,46 SAY "Kg/h" ;
    SIZE 1,4, 0
@ 12,30 GET m.jdate ;
    SIZE 1,8 ;
    DEFAULT { / / } ;
    PICTURE "@D" ;
    WHEN _r7s0gc9te() ;
    VALID _r7s0gca8z()
@ 14,26 GET OK21 ;
    PICTURE "@*HN \!\<ADD;\<BROWSE;\<EXIT" ;
    SIZE 1,8,1 ;
    DEFAULT 1 ;
    VALID _r7s0gcave()
@ 13,22 SAY "I" ;
    SIZE 1,1, 0
@ 13,55 SAY "I" ;
    SIZE 1,1, 0
@ 13,23 TO 13,54

```

READ CYCLE

SELECT (m.currarea)

```

#REGION 0
IF m.talkstat = "ON"
    SET TALK ON
ENDIF
IF m.compstat = "ON"
    SET COMPATIBLE ON
ENDIF

```





```
RELE WINDOW TAM21  
ON KEY LABEL LEFTARROW  
ON KEY LABEL RIGHTARROW  
ON KEY LABEL CTRL+D  
CASE OK21=3  
CLEAR READ  
ENDCASE
```





```

sele 5
use clean5
inde to clean5 on job
sele 6
use clean6
inde to clean6 on job
sele 1

```

```

*
*
*
*
*
*

```

```

WIN22/MS-DOS Screen Layout

```

```

#REGION 1
@ 8,27 SAY "FROM" ;
    SIZE 1,4, 0 ;
    COLOR G+/W
@ 10,27 SAY "TO" ;
    SIZE 1,2, 0 ;
    COLOR G+/W
@ 5,24 TO 15,53 DOUBLE
@ 7,25 TO 7,52
@ 7,24 SAY "||" ;
    SIZE 1,1, 0
@ 7,53 SAY "||" ;
    SIZE 1,1, 0
@ 9,42 GET m.job ;
    SIZE 1,3 ;
    DEFAULT 0 ;
    PICTURE "@KZ 999" ;
    VALID _r7s0gq6zp()
@ 11,42 GET jjj ;
    SIZE 1,3 ;
    DEFAULT 0 ;
    PICTURE "@KZ 999" ;
    VALID _r7s0gq7ry()
@ 12,42 GET ctime ;
    SIZE 1,4 ;
    DEFAULT 0 ;
    PICTURE "@KZ 9.99" ;
    VALID CTIME>=0
@ 13,25 TO 13,52
@ 13,53 SAY "||" ;
    SIZE 1,1, 0
@ 13,24 SAY "||" ;
    SIZE 1,1, 0
@ 9,30 SAY "Grade No. :" ;
    SIZE 1,11, 0
@ 11,30 SAY "Grade No. :" ;
    SIZE 1,11, 0
@ 12,27 SAY "Cleaning Time:" ;
    SIZE 1,14, 0
@ 14,26 GET ok22 ;
    PICTURE "@*HN \\<Add;\<Browse;\?\<Exit" ;
    SIZE 1,8,1 ;
    DEFAULT 1 ;
    VALID _r7s0gq94j()
@ 6,25 SAY "      ENTRY CLEANING TIME" ;
    SIZE 1,23, 0 ;
    COLOR GR+/B

```

READ CYCLE

SELECT (m.currarea)

```
#REGION 0
IF m.talkstat = "ON"
  SET TALK ON
ENDIF
IF m.compstat = "ON"
  SET COMPATIBLE ON
ENDIF
```

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WIN22/MS-DOS Cleanup Code

```
#REGION 1
close database
```

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```
_R7S0GQ6ZP      m.job VALID
Function Origin:
From Platform:   MS-DOS
From Screen:     WIN22,      Record Number:  8
Variable:        m.job
Called By:       VALID Clause
Snippet Number:  1
```

```
FUNCTION _r7s0gq6zp  && m.job VALID
#REGION 1
IF EMPTY(M.JOB)
  _CUROBJ=6
  RETURN .T.
ENDIF
IF M.JOB<=0 OR M.JOB>300
  ?chr(7)
  WAIT WINDOW 'Grade No. From 1 To 300' NOWAIT
  M.JOB=0
  SHOW GET M.JOB
  _CUROBJ=1
  return .F.
ENDIF
```



```
CASE OK22=2
  sele &tenfile
  seek m.job
  on key label leftarrow keyb '{backtab}'
  on key label rightarrow keyb '{tab}'
  on key label Ctrl+D do markdel
  define window tam22 from 2,5 to 23,75 title ' Modify Cleaning
Time ' footer '* Ctrl+W=Save * Ctrl+D=Delete *' color scheme
  10
  acti window tam22
  browse lock 1 in window tam22
  deac window tam22
  rele window tam22
  on key label leftarrow
  on key label rightarrow
  on key label ctrl+d
  pack
CASE OK22=3
  CLEAR READ
ENDCASE
```

```

*
*
*   09/02/96           WIN23.SPR           00:15:13
*
*
*   Author's Name
*
*   Copyright (c) 1996 Company Name
*   Address
*   City,      Zip
*
*   Description:
*   This program was automatically generated by GENSCRN.
*
*

```

```

#REGION 0
REGIONAL m.currarea, m.talkstat, m.compstat

```

```

IF SET("TALK") = "ON"
  SET TALK OFF
  m.talkstat = "ON"
ELSE
  m.talkstat = "OFF"
ENDIF
m.compstat = SET("COMPATIBLE")
SET COMPATIBLE FOXPLUS

```

```

m.currarea = SELECT()

```

```

*
*
*   MS-DOS Window definitions
*
*
*

```

```

*
*
*   WIN23/MS-DOS Setup Code - SECTION 2
*
*
*

```

```

#REGION 1

```

```

clear
sele 1
use clean1
inde to clean1 on job
sele 2
use clean2
inde to clean2 on job
sele 3
use clean3
inde to clean3 on job
sele 4
use clean4
inde to clean4 on job

```



```

sele 5
use clean5
inde to clean5 on job
sele 6
use clean6
inde to clean6 on job
sele 1

```

```

*
*
*
*
*
*

```

WIN23/MS-DOS Screen Layout

```

#REGION 1
@ 6,23 TO 6,54
@ 5,32 SAY "ENTRY EXCEPTION" ;
    SIZE 1,15, 0 ;
    COLOR GR+/B
@ 11,25 SAY "CAN NOT PRODUCE TO:" ;
    SIZE 1,19, 0 ;
    COLOR G+/W
@ 4,22 TO 17,55 DOUBLE
@ 6,22 SAY "I" ;
    SIZE 1,1, 0
@ 6,55 SAY "I" ;
    SIZE 1,1, 0
@ 8,27 SAY "Grade No. :" ;
    SIZE 1,11, 0
@ 10,27 SAY "Grade No. :" ;
    SIZE 1,11, 0
@ 7,25 SAY "FROM" ;
    SIZE 1,4, 0 ;
    COLOR G+/W
@ 9,25 SAY "TO" ;
    SIZE 1,2, 0 ;
    COLOR G+/W
@ 8.39 GET m.job ;
    SIZE 1,3 ;
    DEFAULT 0 ;
    PICTURE "@KZ 999" ;
    VALID _r7s0h7bzi()
@ 10,39 GET JJJ ;
    SIZE 1,3 ;
    DEFAULT 0 ;
    PICTURE "@KZ 999" ;
    VALID _r7s0h7bj()
@ 12,29 GET radio23 ;
    PICTURE "@*RVN Chemical \<Reaction;\<Contamination;\<Other" ;
    SIZE 1,21,0 ;
    DEFAULT 1 ;
    VALID _r7s0h7bzk()
@ 15,23 TO 15,54
@ 15,22 SAY "I" ;
    SIZE 1,1, 0
@ 15,55 SAY "I" ;
    SIZE 1,1, 0
@ 16,26 GET ok23 ;
    PICTURE "@*HN \!\<Add;\<Browse;\?\<Exit" ;
    SIZE 1,8,1 ;
    DEFAULT 1 ;
    VALID _r7s0h7bz1()

```

READ CYCLE

SELECT (m.currearea)

```
#REGION 0
IF m.talkstat = "ON"
  SET TALK ON
ENDIF
IF m.compstat = "ON"
  SET COMPATIBLE ON
ENDIF
```

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\*

WIN23/MS-DOS Cleanup Code

```
#REGION 1
close database
```

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```
_R7S0H7BZI      m.job VALID

Function Origin:

From Platform:   MS-DOS
From Screen:     WIN23,      Record Number:  12
Variable:        m.job
Called By:       VALID Clause
Snippet Number:  1
```

```
FUNCTION _r7s0h7bzi  && m.job VALID
#REGION 1
IF EMPTY(M.JOB)
  _CUROBJ=8
  RETURN .T.
ENDIF
IF M.JOB<=0 OR M.JOB>300
  ?chr(7)
  WAIT WINDOW 'Grade No. From 1 To 300' NOWAIT
  M.JOB=0
  SHOW GET M.JOB
  _CUROBJ=1
  return .F.
ENDIF
```

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|------------------|--------------------------|
| _R7S0H7BZJ       | JJJ VALID                |
| Function Origin: |                          |
| From Platform:   | MS-DOS                   |
| From Screen:     | WIN23, Record Number: 13 |
| Variable:        | JJJ                      |
| Called By:       | VALID Clause             |
| Snippet Number:  | 2                        |

```

FUNCTION _r7s0h7bj    && JJJ VALID
#REGION 1
IF EMPTY(JJJ)
  _CUROBJ=8
  RETURN .T.
ENDIF
IF JJJ<=0 OR JJJ>300
  ?chr(7)
  WAIT WINDOW 'Grade No. From 1 To 300' NOWAIT
  JJJ=0
  SHOW GET JJJ
  _CUROBJ=1
  return .F.
ENDIF

```

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|------------------|--------------------------|
| _R7S0H7BZK       | radio23 VALID            |
| Function Origin: |                          |
| From Platform:   | MS-DOS                   |
| From Screen:     | WIN23, Record Number: 14 |
| Variable:        | radio23                  |
| Called By:       | VALID Clause             |
| Snippet Number:  | 3                        |

```

FUNCTION _r7s0h7bzk  && radio23 VALID
#REGION 1
_CUROBJ=6

```

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|------------------|--------------------------|
| _R7S0H7BZL       | ok23 VALID               |
| Function Origin: |                          |
| From Platform:   | MS-DOS                   |
| From Screen:     | WIN23, Record Number: 18 |
| Variable:        | ok23                     |
| Called By:       | VALID Clause             |
| Snippet Number:  | 4                        |

```

* part FROM Grade No. corresponding to Field J1.J2,....
* part FROM Grade No. corresponding to Field JOB
FUNCTION _r7s0h7bz1    && ok23 VALID
#REGION 1
DO CASE
CASE OK23=1
    tenfile='CLEAN'+str(int((jjj-1)/50)+1,1)
    tenfield='J'+ltrim(str(jjj,3))
    sele &tenfile
*   tenfile='CLEAN'+str(int(M.JOB/50)+1,1)
*   sele &tenfile
*   tenfield=field(mod(m.job,50)+1)
    if seek(m.job)
        repl &tenfield with
            iif(radio23=1,9.7,iif(radio23=2,9.8,9.9))
    else
        appe blank
        repl JOB with m.job, &tenfield with
            iif(radio23=1,9.7,iif(radio23=2,9.8,9.9));
    endif
    _curobj=1
CASE OK23=2
    tenfile='CLEAN'+str(int(M.JOB/50)+1,1)
    sele &tenfile
    tenfield=field(mod(m.job,50)+1)
    tt=tenfield
    locate for &tenfield>=9.7
    if eof()
        ?chr(7)
        wait window 'Grade No. '+ltrim(str(m.job,3))+ ' No
        Exception'
    else
        on key label leftarrow keyb '{backtab}'
        on key label rightarrow keyb '{tab}'
        on key label ctrl+d do markdel
        define window tam23 from 9,30 to 18,60 title ' Modify
        Exception ' footer '*Ctrl+W=Save Ctrl+T=Delete*' color
        scheme 10
        acti window tam23
        browse field job,&tenfield,
            ;
            cause=iif(&tt=9.7,'Chemical
            Reaction',iif(&tt=9.8,'Contamination','Others')):18 ;
            in window tam23 for &tenfield>=9.7
        deac window tam23
        rele window tam23
        on key label leftarrow
        on key label rightarrow
        on key label ctrl+d
        pack
    endif
CASE OK23=3
    CLEAR READ
ENDCASE

```

## ประวัติผู้เขียน

นายวสันต์ รัฐภูมิเดชา เกิดวันที่ 22 ธันวาคม 2509 ที่จังหวัดกรุงเทพมหานคร สำเร็จการศึกษาปริญญาวิศวกรรมศาสตรบัณฑิต (สาขาเทคโนโลยีพลาสติก) จากคณะวิศวกรรมเทคโนโลยี สถาบันเทคโนโลยีนานาชาติ ในปีการศึกษา 2532 และเข้าศึกษาต่อในระดับปริญญาโท สาขาวิชาวิศวกรรมอุตสาหกรรม คณะวิศวกรรมศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย ในปีการศึกษา 2534 ปัจจุบันทำงานที่บริษัทไทยพลาสติกและเคมีภัณฑ์ จำกัด (มหาชน)

