Spring 5-1993

Application of dBASE IV to the Production scheduling System at Sea Ray Boats, Inc.

Julia L. Morse

University of Tennessee - Knoxville

Follow this and additional works at: https://trace.tennessee.edu/utk_chanhonoproj

Recommended Citation
https://trace.tennessee.edu/utk_chanhonoproj/23

This is brought to you for free and open access by the University of Tennessee Honors Program at Trace: Tennessee Research and Creative Exchange. It has been accepted for inclusion in University of Tennessee Honors Thesis Projects by an authorized administrator of Trace: Tennessee Research and Creative Exchange. For more information, please contact trace@utk.edu.
Application of dBASE IV to the Production Scheduling System at Sea Ray Boats, Inc.

Presentation of Tennessee Scholars Senior Project

by Julia L. Morse

May 3, 1993

Industrial Engineering Conference Room

University of Tennessee, Knoxville
Acknowledgements

I wish to thank the following persons for contributions related to this project:

Mr. David Conley, Engineering Manager, and Ms. Marie Sharpe, Office Assistant, of Sea Ray Boats, Inc., Knoxville, Tennessee.

Dr. W.W. Claycombe for arranging the initial cooperative project with Sea Ray Boats.

Dr. E.L. DePorter for sponsoring my continuation of this work as an independent project.

Danny Bradshaw, Robert Osborne, and Jamie Pittman, who, as the other members of the group project team, helped examine the facility's production scheduling system, define goals, and explore software alternatives. Mr. Osborne provided additional assistance in debugging the dBASE application program.
APPLICATION OF dBASE IV TO THE PRODUCTION SCHEDULING SYSTEM AT SEA RAY BOATS, INC.

I. The Production Scheduling System at Sea Ray Boats, Inc.
   A. Production Lines
   B. Schedules
      1. Lamination
      2. Assembly/Woodshop Assembly

II. Automating the Scheduling System (Group Project)

III. Further Program Development
   A. Goals for a Friendlier, More Flexible System
   B. Actions Taken

Appendix A: Using the Schedule Program: An Operator’s Guide
Appendix B: Screen Options Flowchart for Schedule Program
Appendix C: Notes for Advanced Program Maintenance (Including file descriptions, program module schematic, hard copy of schedule programs)
Introduction

In September, 1992, I participated in an Industrial Engineering small-group project. We were introduced to the production scheduling system at Sea Ray Boats facility in Knoxville, Tennessee, and were assigned the task of computerizing some of the scheduling system. We presented a dBASE IV scheduling applications program on December 10. Because this initial program had room for improvement, I accepted the task of further developing its flexibility and ease of use.

Statement of Project Originality

I have taken what had its roots as a group project and expanded upon it. All work on this project following the presentation of the initial application program on December 10, 1992, is entirely my own. Furthermore, the selection of the dBASE software package and all dBASE programming--including program logic, procedures, and menu design--were my contributions to the group project. Therefore, the entire application program is my own work.

All members of the Fall 1992 project group are aware that I have taken on the further development of this application program as my own personal project, and they have given me their consent.
The Production Scheduling System at Sea Ray Boats

A simple schematic of the relevant production processes are depicted in Figure 1. Lamination is the process in which the fiberglass boat hulls are produced. Because of the limited number of molds available for each model, all models are run through this line in a rotating order. The lamination schedule is carefully made so that the order of model numbers will provide the assembly lines with a continuous supply of the hulls they require.

Assembly lines are divided into three different product lines. Three woodshop assembly lines provide the main assembly lines with such items as cushioned seats, etc. A The woodshop router area feeds both woodshop assembly and lamination. Because of the complicated nature of scheduling this area to feed both lines, the router schedule was not considered for inclusion into the automated scheduling system.

Figure 2 is an example of the lamination schedule. All other production schedules are based on this schedule. Each boat is identified by its model number and its hull number. Color and engine specifications are included so that each boat can be built with the appropriate features.

Boats are placed on the assembly schedule, Figure 3, such that the hulls will be ready at that time. Since the assembly lines are fed by woodshop assembly products, the woodshop assembly schedule is based on the lamination schedule as well, even though the woodshop assembly process does not depend on having a hull as one of its component parts.
Figure 1. Production Schematic (Processes Considered for Scheduling Automation)
**SEARAY BOATS - KNOXVILLE**

**LAMINATION SCHEDULE**

September 28, 1992

<table>
<thead>
<tr>
<th>MON</th>
<th>270DA</th>
<th>1254</th>
<th>T-5.7L</th>
<th>V/D</th>
<th>TRUDEAUS MARINA</th>
<th>AW/GR</th>
<th>MARINA AW/CORAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>290DA</td>
<td>1273</td>
<td>S-7.4L</td>
<td>W/BR I/O</td>
<td>SKIPPER MARINE</td>
<td>AW/BL</td>
<td>MARINA AW/BL</td>
</tr>
<tr>
<td>3</td>
<td>300DA</td>
<td>1244</td>
<td>T-4.3LX</td>
<td>I/O</td>
<td>RUMBO MARINO DE VENEZUELA</td>
<td>AW/BL</td>
<td>MARINA AW/BL</td>
</tr>
<tr>
<td>4</td>
<td>330DA</td>
<td>1255</td>
<td>T-7.4L V/D</td>
<td>FLEURAGE MARINE</td>
<td>AW/BL</td>
<td>MARINA AW/BL</td>
<td></td>
</tr>
<tr>
<td><strong>5</strong> 290DA</td>
<td>1275</td>
<td>T-4.3L I/O</td>
<td>NUINMAKER YACHTS</td>
<td>AW/BL</td>
<td>MARINA AW/BL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>270DA</td>
<td>1253</td>
<td>S-7.4L W/BR I/O</td>
<td>HARRISON'S MARINE</td>
<td>AW/GR</td>
<td>MARINA AW/BL</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>300WE</td>
<td>1223</td>
<td>T-5.7L V/D</td>
<td>SKIPPER MARINE</td>
<td>AW/BL</td>
<td>MARINA AW/BL</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TUE</th>
<th>270WE</th>
<th>1227</th>
<th>S-7.4L W/BR I/O</th>
<th>SUNSET MARINE</th>
<th>AW/RD</th>
<th>MARINA AW/BL</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>330DA</td>
<td>1256</td>
<td>T-5.7L V/D</td>
<td>ANCHORAGE MARINA</td>
<td>AW/BL</td>
<td>MARINA AW/BL</td>
</tr>
<tr>
<td>9</td>
<td>290DA</td>
<td>1274</td>
<td>BLANK D254TA</td>
<td>SEIBU MOTOR SALES</td>
<td>AW/BL</td>
<td>MARINA AW/BL</td>
</tr>
<tr>
<td>10</td>
<td>300DA</td>
<td>1245</td>
<td>T-5.7L I/O</td>
<td>OSBORN SERVICE</td>
<td>AW/GR</td>
<td>MARINA AW/BL</td>
</tr>
<tr>
<td>11</td>
<td>330DA</td>
<td>1257</td>
<td>T-7.4L V/D</td>
<td>BASSETT/FLORIDA</td>
<td>AW/BL</td>
<td>MARINA AW/BL</td>
</tr>
<tr>
<td><strong>13</strong> 290DA</td>
<td>1276</td>
<td>S-7.4L W/BR I/O</td>
<td>IRWIN MARINE</td>
<td>AW/BL</td>
<td>MARINA AW/BL</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WED</th>
<th>270DA</th>
<th>1254</th>
<th>S-7.4L W/BR I/O</th>
<th>COLONY MARINE</th>
<th>AW/GR</th>
<th>MARINA AW/BL</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>300WE</td>
<td>1224</td>
<td>T-5.7L V/D</td>
<td>TREASURE COVE</td>
<td>AW/RD</td>
<td>MARINA AW/BL</td>
</tr>
<tr>
<td>15</td>
<td>270WE</td>
<td>1228</td>
<td>S-7.4L W/BR I/O</td>
<td>PARKER BOAT</td>
<td>AW/BL</td>
<td>MARINA AW/BL</td>
</tr>
<tr>
<td><strong>17</strong> 330DA</td>
<td>1258</td>
<td>T-5.7L I/O</td>
<td>IRWIN MARINE</td>
<td>AW/BL</td>
<td>MARINA AW/BL</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>330DA</td>
<td>1223</td>
<td>D &amp; R BOATS</td>
<td>D &amp; R BOATS</td>
<td>AW/GR</td>
<td>MARINA AW/BL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>THU</th>
<th>330EC</th>
<th>1216</th>
<th>T-7.4L I/B</th>
<th>MERIT MARINE</th>
<th>AW/GR</th>
<th>MARINA AW/BL</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>290DA</td>
<td>1277</td>
<td>S-7.4L W/BR I/O</td>
<td>11502 DUMAS</td>
<td>AW/GR</td>
<td>MARINA AW/BL</td>
</tr>
<tr>
<td>21</td>
<td>270DA</td>
<td>1255</td>
<td>S-7.4L W/BR I/O</td>
<td>LAKEFLITE</td>
<td>AW/BL</td>
<td>MARINA AW/BL</td>
</tr>
<tr>
<td>22</td>
<td>300WE</td>
<td>1225</td>
<td>T-5.7L V/D</td>
<td>IMPERIAL MARINE</td>
<td>AW/GR</td>
<td>MARINA AW/BL</td>
</tr>
<tr>
<td>23</td>
<td>270DA</td>
<td>1255</td>
<td>S-7.4L W/BR I/O</td>
<td>SUBURBAN BOATWORKS</td>
<td>AW/BL</td>
<td>MARINA AW/BL</td>
</tr>
<tr>
<td>24</td>
<td>310SS</td>
<td>1213</td>
<td>T-454 MAGNUS</td>
<td>SEASHORE COMPANY</td>
<td>AW/BL</td>
<td>MARINA AW/BL</td>
</tr>
</tbody>
</table>

*NOTE: 290DA (B) PLAN*

<table>
<thead>
<tr>
<th>270DA</th>
<th>270WE</th>
<th>290DA</th>
<th>300DA</th>
<th>300WE</th>
<th>330DA</th>
<th>330EC</th>
<th>310SS</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>2</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**NOTE:** (I/B) = INBOARDS  (V/D) = V-DRIVES  (I/O) = STEERDREVES

**LAM STARTS:** 25  **RACK COUNT:** 25

**NOTE:** THIS 290 WILL GO DOWN THR 300 LINK.

---

Figure 2. Example of Lamination Schedule (Original)
<table>
<thead>
<tr>
<th>START BOAT</th>
<th>FINISH BOAT</th>
<th>IN PHCS.</th>
<th>HULL 1 DECK 1</th>
<th>HULL 2 DECK 2</th>
<th>3RD STATIONS</th>
<th>5TH STATIONS</th>
<th>6TH TEST TANK</th>
<th>IN PHCS.</th>
<th>FIRST FINISH</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 MON. 6:00</td>
<td>10:00</td>
<td>260</td>
<td>1274</td>
<td>1274</td>
<td>260</td>
<td>1273</td>
<td>1266</td>
<td>1266</td>
<td>1261</td>
</tr>
<tr>
<td>2 MON. 10:00</td>
<td>2:30</td>
<td>260</td>
<td>1254</td>
<td>1254</td>
<td>260</td>
<td>1253</td>
<td>1253</td>
<td>1253</td>
<td>1251</td>
</tr>
<tr>
<td>3 MON. 2:30</td>
<td>8:00</td>
<td>260</td>
<td>1258</td>
<td>1258</td>
<td>260</td>
<td>1257</td>
<td>1257</td>
<td>1257</td>
<td>1253</td>
</tr>
<tr>
<td>4 TUE. 8:00</td>
<td>12:30</td>
<td>260</td>
<td>1252</td>
<td>1252</td>
<td>260</td>
<td>1251</td>
<td>1251</td>
<td>1251</td>
<td>1249</td>
</tr>
<tr>
<td>5 TUE. 12:30</td>
<td>4:30</td>
<td>260</td>
<td>1248</td>
<td>1248</td>
<td>260</td>
<td>1247</td>
<td>1247</td>
<td>1247</td>
<td>1245</td>
</tr>
<tr>
<td>6 WED. 6:00</td>
<td>10:00</td>
<td>260</td>
<td>1252</td>
<td>1252</td>
<td>260</td>
<td>1251</td>
<td>1251</td>
<td>1251</td>
<td>1251</td>
</tr>
<tr>
<td>7 WED. 10:00</td>
<td>2:30</td>
<td>260</td>
<td>1252</td>
<td>1252</td>
<td>260</td>
<td>1251</td>
<td>1251</td>
<td>1251</td>
<td>1251</td>
</tr>
<tr>
<td>8 WED. 2:30</td>
<td>8:00</td>
<td>260</td>
<td>1252</td>
<td>1252</td>
<td>260</td>
<td>1252</td>
<td>1252</td>
<td>1252</td>
<td>1252</td>
</tr>
<tr>
<td>9 THR. 8:00</td>
<td>12:30</td>
<td>260</td>
<td>1252</td>
<td>1252</td>
<td>260</td>
<td>1252</td>
<td>1252</td>
<td>1252</td>
<td>1252</td>
</tr>
<tr>
<td>10 THR. 12:30</td>
<td>4:30</td>
<td>260</td>
<td>1252</td>
<td>1252</td>
<td>260</td>
<td>1252</td>
<td>1252</td>
<td>1252</td>
<td>1252</td>
</tr>
<tr>
<td>11 MON. 6:00</td>
<td>10:00</td>
<td>260</td>
<td>1252</td>
<td>1252</td>
<td>260</td>
<td>1252</td>
<td>1252</td>
<td>1252</td>
<td>1252</td>
</tr>
<tr>
<td>12 MON. 10:00</td>
<td>2:30</td>
<td>260</td>
<td>1252</td>
<td>1252</td>
<td>260</td>
<td>1252</td>
<td>1252</td>
<td>1252</td>
<td>1252</td>
</tr>
<tr>
<td>13 MON. 2:30</td>
<td>8:00</td>
<td>260</td>
<td>1252</td>
<td>1252</td>
<td>260</td>
<td>1252</td>
<td>1252</td>
<td>1252</td>
<td>1252</td>
</tr>
</tbody>
</table>
### Woodshop Assembly Schedules

**Boat-Model 290 Line**  
*Week-Beginning: 10-5-92*

<table>
<thead>
<tr>
<th>Start Times</th>
<th>Material Cutters</th>
<th>W/S Assembly</th>
<th>Wiring Vinyl</th>
<th>Hull-1 Sewers</th>
<th>Hull-2 Cushions</th>
<th>Hull-3 Aft-Seats</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:00</td>
<td>290 DA (8)</td>
<td>270 WE</td>
<td>270 DA</td>
<td>290 DA</td>
<td>270 WE</td>
<td>270 DA</td>
</tr>
<tr>
<td></td>
<td>1292</td>
<td>1228</td>
<td>1234</td>
<td>1274</td>
<td>1227</td>
<td>1253</td>
</tr>
<tr>
<td>10:00</td>
<td>290 DA (8)</td>
<td>290 DA</td>
<td>270 WE</td>
<td>270 DA</td>
<td>290 DA</td>
<td>270 WE</td>
</tr>
<tr>
<td></td>
<td>1271</td>
<td>1272</td>
<td>1328</td>
<td>1254</td>
<td>1274</td>
<td>1227</td>
</tr>
<tr>
<td>12:30</td>
<td>290 DA (8)</td>
<td>290 DA</td>
<td>290 DA</td>
<td>270 WE</td>
<td>270 DA</td>
<td>290 DA</td>
</tr>
<tr>
<td></td>
<td>1255</td>
<td>1277</td>
<td>1272</td>
<td>1228</td>
<td>1254</td>
<td>1274</td>
</tr>
<tr>
<td>8:00</td>
<td>270 DA</td>
<td>270 DA</td>
<td>290 DA</td>
<td>270 WE</td>
<td>270 DA</td>
<td>270 DA</td>
</tr>
<tr>
<td></td>
<td>1256</td>
<td>1255</td>
<td>1277</td>
<td>1272</td>
<td>1228</td>
<td>1254</td>
</tr>
<tr>
<td>12:30</td>
<td>290 DA (8)</td>
<td>290 DA</td>
<td>290 DA</td>
<td>270 WE</td>
<td>270 DA</td>
<td>290 DA</td>
</tr>
<tr>
<td></td>
<td>1282</td>
<td>1256</td>
<td>1255</td>
<td>1277</td>
<td>1272</td>
<td>1228</td>
</tr>
<tr>
<td>6:00</td>
<td>270 WE</td>
<td>290 DA</td>
<td>270 DA</td>
<td>270 DA</td>
<td>290 DA</td>
<td>290 DA</td>
</tr>
<tr>
<td></td>
<td>1229</td>
<td>1282</td>
<td>1256</td>
<td>1255</td>
<td>1277</td>
<td>1272</td>
</tr>
<tr>
<td>10:00</td>
<td>270 DA</td>
<td>270 WE</td>
<td>290 DA</td>
<td>270 DA</td>
<td>290 DA</td>
<td>290 DA</td>
</tr>
<tr>
<td></td>
<td>1257</td>
<td>1229</td>
<td>1282</td>
<td>1256</td>
<td>1255</td>
<td>1277</td>
</tr>
<tr>
<td>12:30</td>
<td>290 DA (8)</td>
<td>270 DA</td>
<td>270 WE</td>
<td>290 DA</td>
<td>270 DA</td>
<td>270 DA</td>
</tr>
<tr>
<td></td>
<td>1279</td>
<td>1257</td>
<td>1229</td>
<td>1282</td>
<td>1256</td>
<td>1255</td>
</tr>
<tr>
<td>8:00</td>
<td>270 WE</td>
<td>290 DA</td>
<td>270 DA</td>
<td>270 WE</td>
<td>290 DA</td>
<td>270 DA</td>
</tr>
<tr>
<td></td>
<td>1230</td>
<td>1279</td>
<td>1257</td>
<td>1229</td>
<td>1282</td>
<td>1256</td>
</tr>
<tr>
<td>12:30</td>
<td>270 DA</td>
<td>290 DA</td>
<td>270 DA</td>
<td>270 WE</td>
<td>290 DA</td>
<td>290 DA</td>
</tr>
<tr>
<td></td>
<td>1258</td>
<td>1230</td>
<td>1279</td>
<td>1257</td>
<td>1229</td>
<td>1282</td>
</tr>
<tr>
<td>6:00</td>
<td>290 DA</td>
<td>270 DA</td>
<td>270 WE</td>
<td>390 DA</td>
<td>270 DA</td>
<td>270 WE</td>
</tr>
<tr>
<td></td>
<td>1281</td>
<td>1258</td>
<td>1230</td>
<td>1279</td>
<td>1257</td>
<td>1229</td>
</tr>
<tr>
<td>10:00</td>
<td>290 DA</td>
<td>290 DA</td>
<td>270 DA</td>
<td>270 WE</td>
<td>290 DA</td>
<td>270 DA</td>
</tr>
<tr>
<td></td>
<td>1283</td>
<td>1281</td>
<td>1258</td>
<td>1230</td>
<td>1279</td>
<td>1257</td>
</tr>
<tr>
<td>2:30</td>
<td>290 DA</td>
<td>290 DA</td>
<td>290 DA</td>
<td>270 DA</td>
<td>270 DA</td>
<td>290 DA</td>
</tr>
<tr>
<td></td>
<td>1259</td>
<td>1283</td>
<td>1281</td>
<td>1258</td>
<td>1230</td>
<td>1279</td>
</tr>
</tbody>
</table>

*Figure 4: Example of Woodshop Assembly Schedule (Original)*
Automating the Scheduling System

Our goal was to develop a computer application that would partially automate this scheduling system. Key requirements for this program were that it be user-friendly and flexible enough to accommodate changes in the manufacturing environment, including:

- Number of boats produced per week
- Stations on each assembly line
- "Roll times" (scheduled times for boats to advance to the next station)
- Standard model numbers dedicated to each line
- Order of boat models on lamination schedule

After initial efforts with Lotus 1-2-3, we determined that spreadsheet applications could not give us the flexibility, nor the ease of use we required. At this point, I suggested that we develop a dBASE applications program which would print out the desired line schedules, but also allow user interface to facilitate adjustments in standard schedule format.

The program which I developed constructed assembly and woodshop assembly schedules from lamination schedules input into database files. Other files held assembly station names and roll times; these define the rows and columns required when the schedule is built. The program pulled boats with the appropriate model numbers from the lamination queue and placed them on the assembly schedule after verifying which boat should be placed first on the schedule. All other boats were checked with placement on the lamination schedule before being placed on the assembly schedule. These checks prevented boats from being scheduled before the hulls might actually be ready for assembly.

A sequence of menus was set up to guide the user in inputting the necessary data into
### LAMINATION SCHEDULE

**1/28/92**

<table>
<thead>
<tr>
<th>Record#</th>
<th>MODEL</th>
<th>HULL_NO</th>
<th>CUSTOMER</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>330DA</td>
<td>1254</td>
<td>TRUDEAUS MARINA</td>
</tr>
<tr>
<td>2</td>
<td>290DA</td>
<td>1273</td>
<td>SKIPPER MARINE</td>
</tr>
<tr>
<td>3</td>
<td>300DA</td>
<td>1244</td>
<td>RUMBO MARINO DE VENEZUELA</td>
</tr>
<tr>
<td>4</td>
<td>330DA</td>
<td>1255</td>
<td>FLERLAGE MARINE</td>
</tr>
<tr>
<td>5</td>
<td>290DA</td>
<td>1275</td>
<td>NUNMAKER YACHTS</td>
</tr>
<tr>
<td>6</td>
<td>270DA</td>
<td>1253</td>
<td>HARRISON'S MARINE</td>
</tr>
<tr>
<td>7</td>
<td>300WE</td>
<td>1223</td>
<td>SKIPPER MARINE</td>
</tr>
<tr>
<td>8</td>
<td>270WE</td>
<td>1227</td>
<td>SUNSET MARINE</td>
</tr>
<tr>
<td>9</td>
<td>330DA</td>
<td>1256</td>
<td>ANCHORAGE MARINA</td>
</tr>
<tr>
<td>10</td>
<td>290DA</td>
<td>1274</td>
<td>SEIBU MOTOR SALES</td>
</tr>
<tr>
<td>11</td>
<td>300DA</td>
<td>1245</td>
<td>OSBORN SERVICE</td>
</tr>
<tr>
<td>12</td>
<td>330DA</td>
<td>1257</td>
<td>BASSETT/FLORIDA</td>
</tr>
<tr>
<td>13</td>
<td>290DA</td>
<td>1276</td>
<td>IRWIN MARINE</td>
</tr>
<tr>
<td>14</td>
<td>270DA</td>
<td>1254</td>
<td>COLONY MARINE</td>
</tr>
<tr>
<td>15</td>
<td>300WE</td>
<td>1224</td>
<td>TREASURE COVE</td>
</tr>
<tr>
<td>16</td>
<td>270WE</td>
<td>1228</td>
<td>PARKER BOAT</td>
</tr>
<tr>
<td>17</td>
<td>330DA</td>
<td>1258</td>
<td>IRWIN MARINE</td>
</tr>
<tr>
<td>18</td>
<td>290DA</td>
<td>1272</td>
<td>SPORTS MARINE</td>
</tr>
<tr>
<td>19</td>
<td>300DA</td>
<td>1246</td>
<td>D &amp; R BOATS</td>
</tr>
<tr>
<td>20</td>
<td>330EC</td>
<td>1216</td>
<td>MERIT MARINE</td>
</tr>
<tr>
<td>21</td>
<td>290DA</td>
<td>1277</td>
<td>11502 DUMAS</td>
</tr>
<tr>
<td>22</td>
<td>270DA</td>
<td>1255</td>
<td>LAKELITE</td>
</tr>
<tr>
<td>23</td>
<td>300WE</td>
<td>1225</td>
<td>IMPERIAL MARINE</td>
</tr>
<tr>
<td>24</td>
<td>270DA</td>
<td>1256</td>
<td>SUBURBAN BOATWORKS</td>
</tr>
<tr>
<td>25</td>
<td>310SS</td>
<td>1213</td>
<td>SEASHORE COMPANY</td>
</tr>
</tbody>
</table>
## LAMINATION SCHEDULE

10/05/92

<table>
<thead>
<tr>
<th>Record</th>
<th>Model</th>
<th>Hull No</th>
<th>Customer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3300A</td>
<td>1259</td>
<td>TREASURE COVE</td>
</tr>
<tr>
<td>2</td>
<td>2900A</td>
<td>1282</td>
<td>DUNHANS BAY BOAT</td>
</tr>
<tr>
<td>3</td>
<td>3000A</td>
<td>1247</td>
<td>HARDIN MARINE</td>
</tr>
<tr>
<td>4</td>
<td>3300A</td>
<td>1260</td>
<td>S/R OF LAS VEGAS</td>
</tr>
<tr>
<td>5</td>
<td>2900A*</td>
<td>1278</td>
<td>DUCE MARINE</td>
</tr>
<tr>
<td>6</td>
<td>2700E</td>
<td>1229</td>
<td>NUNMAKER YACHTS</td>
</tr>
<tr>
<td>7</td>
<td>3000E</td>
<td>1226</td>
<td>D &amp; R BOATS</td>
</tr>
<tr>
<td>8</td>
<td>2700A</td>
<td>1257</td>
<td>ROCK HARBOR MARINE</td>
</tr>
<tr>
<td>9</td>
<td>3300A</td>
<td>1261</td>
<td>SMITH BOYS</td>
</tr>
<tr>
<td>10</td>
<td>2900A</td>
<td>1279</td>
<td>DAY ISLAND MARINA</td>
</tr>
<tr>
<td>11</td>
<td>3000A</td>
<td>1248</td>
<td>SUBURBAN BOATWORKS</td>
</tr>
<tr>
<td>12</td>
<td>3300A</td>
<td>1262</td>
<td>SKIPPER MARINE</td>
</tr>
<tr>
<td>13</td>
<td>2900A*</td>
<td>1280</td>
<td>KENNEY'S MARINE</td>
</tr>
<tr>
<td>14</td>
<td>2700E</td>
<td>1230</td>
<td>PORT ARROWHEAD MARINA</td>
</tr>
<tr>
<td>15</td>
<td>3000E</td>
<td>1227</td>
<td>MERIT MARINE</td>
</tr>
<tr>
<td>16</td>
<td>2700A</td>
<td>1258</td>
<td>NEEDHAM SPORT &amp; MARINE</td>
</tr>
<tr>
<td>17</td>
<td>3300A</td>
<td>1263</td>
<td>MUNSON MARINE</td>
</tr>
<tr>
<td>18</td>
<td>2900A</td>
<td>1281</td>
<td>FOX CHAPEL YACHT</td>
</tr>
<tr>
<td>19</td>
<td>3000A</td>
<td>1249</td>
<td>SUBURBAN BOATWORKS</td>
</tr>
<tr>
<td>20</td>
<td>3300E</td>
<td>1217</td>
<td>GULFWIND MARINE</td>
</tr>
<tr>
<td>21</td>
<td>2900A</td>
<td>1283</td>
<td>KENNEY'S MARINE</td>
</tr>
<tr>
<td>22</td>
<td>2700A</td>
<td>1259</td>
<td>ROCHESTER MARINE</td>
</tr>
<tr>
<td>23</td>
<td>3000E</td>
<td>1228</td>
<td>TREASURE COVE</td>
</tr>
<tr>
<td>24</td>
<td>2700A</td>
<td>1260</td>
<td>BILL MCMACHEN</td>
</tr>
<tr>
<td>25</td>
<td>310SS</td>
<td>1214</td>
<td>MARINA FORTIN</td>
</tr>
<tr>
<td>START TIMES</td>
<td>In Process</td>
<td>Hull 1 Deck 1</td>
<td>Hull 2 Deck 2</td>
</tr>
<tr>
<td>-------------</td>
<td>------------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Mon 6:00</td>
<td>2900A</td>
<td>270WE</td>
<td>2700A</td>
</tr>
<tr>
<td></td>
<td>1274</td>
<td>1227</td>
<td>1253</td>
</tr>
<tr>
<td>Mon 10:00</td>
<td>2700A</td>
<td>2900A</td>
<td>270WE</td>
</tr>
<tr>
<td></td>
<td>1254</td>
<td>1274</td>
<td>1227</td>
</tr>
<tr>
<td>Mon 2:30</td>
<td>270WE</td>
<td>2700A</td>
<td>2900A</td>
</tr>
<tr>
<td></td>
<td>1228</td>
<td>1254</td>
<td>1274</td>
</tr>
<tr>
<td>Tue 8:00</td>
<td>2900A</td>
<td>270WE</td>
<td>2700A</td>
</tr>
<tr>
<td></td>
<td>1272</td>
<td>1228</td>
<td>1254</td>
</tr>
<tr>
<td>Tue 12:30</td>
<td>2900A</td>
<td>270WE</td>
<td>2700A</td>
</tr>
<tr>
<td></td>
<td>1277</td>
<td>1272</td>
<td>1228</td>
</tr>
<tr>
<td>Wed 6:00</td>
<td>2700A</td>
<td>2900A</td>
<td>270WE</td>
</tr>
<tr>
<td></td>
<td>1255</td>
<td>1277</td>
<td>1272</td>
</tr>
<tr>
<td>Wed 10:00</td>
<td>2700A</td>
<td>2700A</td>
<td>2900A</td>
</tr>
<tr>
<td></td>
<td>1256</td>
<td>1255</td>
<td>1277</td>
</tr>
<tr>
<td>Wed 2:30</td>
<td>2900A</td>
<td>2700A</td>
<td>2700A</td>
</tr>
<tr>
<td></td>
<td>1282</td>
<td>1256</td>
<td>1255</td>
</tr>
<tr>
<td>Thu 8:00</td>
<td>270WE</td>
<td>2900A</td>
<td>2700A</td>
</tr>
<tr>
<td></td>
<td>1229</td>
<td>1282</td>
<td>1256</td>
</tr>
<tr>
<td>Thu 12:30</td>
<td>2700A</td>
<td>270WE</td>
<td>2900A</td>
</tr>
<tr>
<td></td>
<td>1257</td>
<td>1229</td>
<td>1282</td>
</tr>
</tbody>
</table>
### STA_1_AS

<table>
<thead>
<tr>
<th>Record#</th>
<th>FIRST WORD</th>
<th>SECND WORD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>In</td>
<td>Process</td>
</tr>
<tr>
<td>2</td>
<td>Hull 1</td>
<td>Deck 1</td>
</tr>
<tr>
<td>3</td>
<td>Hull 2</td>
<td>Deck 2</td>
</tr>
<tr>
<td>4</td>
<td>3rd</td>
<td>Station</td>
</tr>
<tr>
<td>5</td>
<td>4th</td>
<td>Station</td>
</tr>
<tr>
<td>6</td>
<td>5th</td>
<td>Station</td>
</tr>
<tr>
<td>7</td>
<td>6th</td>
<td>Station</td>
</tr>
<tr>
<td>8</td>
<td>Test</td>
<td>Tank</td>
</tr>
<tr>
<td>9</td>
<td>In</td>
<td>Process</td>
</tr>
<tr>
<td>10</td>
<td>Final</td>
<td>Finish</td>
</tr>
</tbody>
</table>

### TIM_1_AS

<table>
<thead>
<tr>
<th>Record#</th>
<th>DAY</th>
<th>START TIME</th>
<th>FINISH TIME</th>
<th>LAMLIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mon</td>
<td>6:00</td>
<td>10:00</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>Mon</td>
<td>10:00</td>
<td>2:30</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td>Mon</td>
<td>2:30</td>
<td>8:00</td>
<td>17</td>
</tr>
<tr>
<td>4</td>
<td>Tue</td>
<td>8:00</td>
<td>12:30</td>
<td>19</td>
</tr>
<tr>
<td>5</td>
<td>Tue</td>
<td>12:30</td>
<td>4:30</td>
<td>22</td>
</tr>
<tr>
<td>6</td>
<td>Wed</td>
<td>6:00</td>
<td>10:00</td>
<td>23</td>
</tr>
<tr>
<td>7</td>
<td>Wed</td>
<td>10:00</td>
<td>2:30</td>
<td>25</td>
</tr>
<tr>
<td>8</td>
<td>Wed</td>
<td>2:30</td>
<td>8:00</td>
<td>28</td>
</tr>
<tr>
<td>9</td>
<td>Thu</td>
<td>8:00</td>
<td>12:30</td>
<td>32</td>
</tr>
<tr>
<td>10</td>
<td>Thu</td>
<td>12:30</td>
<td>4:30</td>
<td>34</td>
</tr>
</tbody>
</table>

### AS1_VARS.MEM

- **MEMMODL** priv C "290DA"
- **MEMHULL** priv C "1274"
- **MEMMODN** priv C "290DA"
- **MEMHULN** priv C "1279"
- **MEMDATE** priv D 10/05/92

5 variables defined, 37 bytes used

251 variables available, 5963 bytes available
the database and in selecting the desired schedules for output. Therefore, the only knowledge of dBASE IV required of the user is an understanding of data-entry and editing commands within these menus, plus knowledge of how to start-up the application.

This initial scheduling program accomplished its task: it produced assembly schedules and it provided inherent flexibility. However, procedures necessary to implement flexibility were somewhat complicated and time-consuming. Because Sea Ray was currently undergoing changes in production standards, the implementation of this program was extremely difficult.

I therefore took on the task of attempting to develop the program to be more flexible and straight-forward.
Further Program Development

Goals for Implementing a Friendlier, More Flexible System

In the continued development of this program, goals emphasized increasing program reliability and ease of operation in the face of fluxuating production flow and other production standards. Targeted efforts included:

- Streamlining process for making changes to the standard schedule format (station names and roll times)
- Establishing a more straightforward and reliable method of assuring that the boat is not placed on the assembly schedule until the hull is ready.
- Orienting the program for operation by an office assistant.
- Training office assistant to use the program to generate assembly line schedules.
- Developing a program manual to provide:
  (a) Program usage instructions.
  (b) A guide for engineering to facilitate further program development.

Actions Taken in Addressing Goals

(1) Streamlining process for making changes to the standard schedule format (station names and roll times)

- Added "insert" option at the edit menu to allow easier addition of stations or roll times.
- Eliminated the need to establish appropriate "limit" values for each roll time (a result of item (2), discussed below).

(2) Establishing a more straightforward and reliable method of assuring that the boat is not placed on the assembly schedule until the hull is ready.

This problem had been previously addressed by associating "limit" values with each "roll time" row in the assembly schedules. These limits, saved in the roll time format files, referred to the latest spot on the lamination schedule where the hull can be scheduled in order for that boat to be placed on the assembly schedule at that roll time.
If the hull for the next boat available to be scheduled for assembly would not be ready at that roll time, a blank space would be "scheduled" at this time; the program would not place a boat on the schedule unless the hull would be ready at that time.

Without this feature, the next boat in the queue would be placed on the schedule, regardless of whether the next hull would actually be ready at that time.

This feature worked smoothly under normal production, but, with changing numbers of boats produced per week and consequent adjustments in roll times, the "limit" values had to be readjusted with each change. Built-in interpolation of the limit values based on the number of boats on each lamination schedule was a partial and misleading solution; the program had no way of determining whether roll times had been adjusted to the number of boats on the lamination schedule. A set of "universal" limit codes, which would refer to specific time of week on the lamination schedule regardless of the number of boats scheduled, could have overcome this problem, but would have further complicated the assigning of limit values, the meaning of which was already less than obvious to the user. Furthermore, the office assistant assigned to operate this program did not have the process knowledge necessary to make decisions regarding appropriate limit value.

The end effect was that, under changing production flows, attempts to make compensating adjustments were difficult, making these boat placement verification checks unreliable. Blank spots would surface inappropriately into the printed schedules.

Because the program is based on the simple hull lamination queue, the problem in verifying placement of boats on the assembly schedules stems from the difficulty in associating specific lamination times to boats placed in the queue. This problem could have been addressed by assigning boats from the lamination schedule to defined time blocks. However, this would have necessitated extensive changes in the basic structure of the program. Sea Ray personnel were already quite satisfied with the schedules produced, asking only that the problem of blank spaces inserted into the schedules be eliminated.

In the interest of time, we considered the fact that the boats on the lamination schedule are deliberately scheduled such that assembly is not kept waiting for hulls, and that such idle-time should not normally occur. This check feature has therefore been removed. The program now operates under the assumption that the hulls are produced in lamination such that no wait-time occurs in assembly. In the rare event that special circumstances require idle time on an assembly line, adjustments to the schedule will have to be made by hand.
# SEA RAY BOATS - KNOXVILLE
## LAMINATION SCHEDULE
### 05/03/93

<table>
<thead>
<tr>
<th><strong>MON</strong></th>
<th><strong>TUE</strong></th>
<th><strong>WED</strong></th>
<th><strong>THU</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>2 300DA 1315 T-5.7L I/O</td>
<td>8 270DA 1350 S-7.4L W/BR I/O</td>
<td>14 270WE 1286 S-7.4L W/BR I/O</td>
<td>20 330DA 1353 T-5.7L V/D</td>
</tr>
<tr>
<td>4 330DA 1351 T-7.4L V/D</td>
<td>10 300DA 1316 T-5.7L I/O</td>
<td>17 290DA 1425 S-7.4L W/BR I/O</td>
<td>22 270DA 1352 S-7.4L W/BR I/O</td>
</tr>
<tr>
<td><strong>5</strong> 300WE 1260 T-5.7L V/D</td>
<td><strong>6</strong> 270WE 1201 S-7.4L W/BR I/O</td>
<td><strong>18</strong> 310SS 1201 T-454 MAGNUMS</td>
<td><strong>19</strong> 50EC 270WE 1201 &amp; 310SS 1201 - 1994 MODEL PHOTO BOATS</td>
</tr>
<tr>
<td><strong>6</strong> 270WE 1201 S-7.4L W/BR I/O</td>
<td><strong>6</strong> 270WE 1201 S-7.4L W/BR I/O</td>
<td><strong>15</strong> 330EC 1252 T-5.7L I/B</td>
<td><strong>21</strong> 250EC 1260 S-7.4L W/BR I/O</td>
</tr>
<tr>
<td><strong>6</strong> 270WE 1201 S-7.4L W/BR I/O</td>
<td><strong>6</strong> 270WE 1201 S-7.4L W/BR I/O</td>
<td><strong>15</strong> 330EC 1252 T-5.7L I/B</td>
<td><strong>21</strong> 250EC 1260 S-7.4L W/BR I/O</td>
</tr>
<tr>
<td><strong>6</strong> 270WE 1201 S-7.4L W/BR I/O</td>
<td><strong>6</strong> 270WE 1201 S-7.4L W/BR I/O</td>
<td><strong>15</strong> 330EC 1252 T-5.7L I/B</td>
<td><strong>21</strong> 250EC 1260 S-7.4L W/BR I/O</td>
</tr>
<tr>
<td><strong>6</strong> 270WE 1201 S-7.4L W/BR I/O</td>
<td><strong>6</strong> 270WE 1201 S-7.4L W/BR I/O</td>
<td><strong>15</strong> 330EC 1252 T-5.7L I/B</td>
<td><strong>21</strong> 250EC 1260 S-454 MAGNUMS</td>
</tr>
</tbody>
</table>

**NOTE:** 270WE 1201 & 310SS 1201 - 1994 MODEL PHOTO BOATS
330EC 1252 - 1993 MODEL PHOTO BOAT

<table>
<thead>
<tr>
<th><strong>50EC</strong></th>
<th><strong>270DA</strong></th>
<th><strong>270WE</strong></th>
<th><strong>290DA</strong></th>
<th><strong>300DA</strong></th>
<th><strong>300WE</strong></th>
<th><strong>310SS</strong></th>
<th><strong>330DA</strong></th>
<th><strong>330EC</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

**NOTE:** - (I/B) = INBOARDS
(V/D) = V-DRIVES
(I/O) = STERNDRIVES

LAM STARTS: 22
RACK COUNT: 22
<table>
<thead>
<tr>
<th>START TIMES</th>
<th>Wire</th>
<th>HULL 1</th>
<th>HULL 2</th>
<th>HULL 3</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
<th>6th</th>
<th>Test</th>
<th>In</th>
<th>Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon 6:00</td>
<td>270WE</td>
<td>270DA</td>
<td>270WE</td>
<td>270DA</td>
<td>270DA</td>
<td>250EC</td>
<td>270DA</td>
<td>270WE</td>
<td>270DA</td>
<td>270WE</td>
<td>250BC</td>
</tr>
<tr>
<td></td>
<td>1256</td>
<td>1346</td>
<td>1283</td>
<td>1345</td>
<td>1282</td>
<td>1255</td>
<td>1344</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mon 12:15</td>
<td>270DA</td>
<td>250EC</td>
<td>270DA</td>
<td>270WE</td>
<td>270DA</td>
<td>270DA</td>
<td>270DA</td>
<td>270WE</td>
<td>270DA</td>
<td>270WE</td>
<td>250BC</td>
</tr>
<tr>
<td></td>
<td>1201</td>
<td>1257</td>
<td>1284</td>
<td>1346</td>
<td>1283</td>
<td>1256</td>
<td>1345</td>
<td>1282</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tue 7:30</td>
<td>250EC</td>
<td>270WE</td>
<td>250EC</td>
<td>270DA</td>
<td>270WE</td>
<td>270DA</td>
<td>270DA</td>
<td>270WE</td>
<td>250BC</td>
<td>270DA</td>
<td>270WE</td>
</tr>
<tr>
<td></td>
<td>1258</td>
<td>1285</td>
<td>1257</td>
<td>1284</td>
<td>1347</td>
<td>1346</td>
<td>1283</td>
<td>1256</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tue 1:15</td>
<td>270DA</td>
<td>270DA</td>
<td>270DA</td>
<td>270WE</td>
<td>250EC</td>
<td>270DA</td>
<td>270DA</td>
<td>270WE</td>
<td>250BC</td>
<td>270DA</td>
<td>270DA</td>
</tr>
<tr>
<td></td>
<td>1349</td>
<td>1201</td>
<td>1285</td>
<td>1257</td>
<td>1284</td>
<td>1347</td>
<td>1346</td>
<td>1283</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wed 9:00</td>
<td>270WE</td>
<td>250EC</td>
<td>270DA</td>
<td>270WE</td>
<td>250EC</td>
<td>270DA</td>
<td>270DA</td>
<td>270WE</td>
<td>250BC</td>
<td>270DA</td>
<td>270WE</td>
</tr>
<tr>
<td></td>
<td>1201</td>
<td>1258</td>
<td>1201</td>
<td>1285</td>
<td>1257</td>
<td>1284</td>
<td>1347</td>
<td>1346</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wed 3:15</td>
<td>270DA</td>
<td>270DA</td>
<td>250EC</td>
<td>270DA</td>
<td>270WE</td>
<td>250EC</td>
<td>270DA</td>
<td>270WE</td>
<td>270DA</td>
<td>270DA</td>
<td>270WE</td>
</tr>
<tr>
<td></td>
<td>1350</td>
<td>1349</td>
<td>1258</td>
<td>1201</td>
<td>1285</td>
<td>1257</td>
<td>1348</td>
<td>1284</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thr 11:00</td>
<td>250EC</td>
<td>270WE</td>
<td>270DA</td>
<td>250EC</td>
<td>270DA</td>
<td>270WE</td>
<td>250EC</td>
<td>270DA</td>
<td>270WE</td>
<td>270DA</td>
<td>270DA</td>
</tr>
<tr>
<td></td>
<td>1259</td>
<td>1201</td>
<td>1349</td>
<td>1258</td>
<td>1201</td>
<td>1285</td>
<td>1257</td>
<td>1348</td>
<td>1284</td>
<td>1347</td>
<td>1346</td>
</tr>
</tbody>
</table>
(3) Orienting the program for operation by an office assistant.

- Simplified starting boat selection and verification.

The original program selected the first boat to place on a schedule by comparing what it expected from memory (determined from the previous week's schedule) with the boat's expected location on the lamination schedule, and prompting the operator to confirm the selected boat or enter an alternative.

By establishing a routine in which the office assistant requests the starting boat number from each line manager each week, she can verify the starting boat which the program offers.

Under normal conditions, the boat provided by program memory should be correct, but verification and the possibility of correction is helpful in instances in which:

- Changes in production have occurred since the printing of the previous week's schedules, resulting in memory data which is not up-to-date.
- The previous week's schedules were not printed, and therefore the memory data for the starting boats was not updated.

- Enhanced the printout for the lamination schedules to generate a schedule printout identical to the schedule previously produces through a separate software package.

This capability enables the office assistant to accomplish the maintenance of the program's main data files through the creation of the weekly lamination schedule. The ability to produce an official lamination schedule printout through this program minimizes the amount of additional work which the operation of this schedule program places on her weekly workload.

- Added modules to the program to assist in building and printing "rack lists" (schedules of boats which are to be completed on given days).

These rack lists are generated independently of the lamination and assembly schedule data files, but the data entry, editing, and output options are assisted through the schedule program menus. Ms. Marie Sharpe, office assistant at Sea Ray, requested that this capability be added after working with the lamination list and assembly schedule portions of the program.

(4) Training office assistant to use the program to generate assembly line schedules.

- Worked with Ms. Sharpe on a weekly basis, walking her through the process of entering lamination schedules and producing assembly line schedules.
This time was also valuable in helping me to see where changes to the program and its menus could improve ease of use.

(5) Developing a program manual to provide:
(a) Program usage instructions. (Appendix A)
(b) A guide for engineering to facilitate further program development. (Appendix C)
What This Scheduling Program Contributes

- Saves line managers a minimum of 20 minutes a week which the previously had to devote to writing out the schedules.

- Provides the possibility of quick changes in the schedules when lamination scheduling is changed. The office assistant can simply edit the lamination schedule and print out the revised schedules.

- Provides clean, easy to read schedules.

- Minimizes the possibility of making an error in assigning boat order on the assembly schedule.

- Provides the office assistant with a quick way to produce master lamination schedules.

In Conclusion

This schedule program has been developed to meet the needs of its user. In this case, it was important that the program could be run smoothly by an office assistant who has limited knowledge of day-to-day changes in production activities and who therefore has a limited basis for making the judgements and decisions required to update formats as standards changed. The technology of a more intelligent system—namely the checks for sufficient hull lamination time before placement on the assembly schedule—has been sacrificed in favor of a ready system with easy flexibility. The end result is a program which can be operated under changing production flows with minimal format adjustments.
APPENDIX A

USING THE SCHEDULE PROGRAM: AN OPERATOR'S GUIDE
USING THE SCHEDULE PROGRAM

1. General Program Description

2. Generating Assembly and Woodshop Schedules
   a. Modify standard roll times or stations (row and column headings) if necessary.
   b. Enter new lamination schedule.
   c. Print schedule.

3. Making Lamination Schedules

4. Making Rack Lists

5. Working with dBASE IV
   a. Starting dBASE IV from DOS
   b. Starting the Schedule Program
   c. Using dBASE IV pop-up menus
   d. Using the dBASE editing functions menu
      (1) Deleting a record
      (2) Inserting a record

6. Dealing with Problems
   a. If you are prompted with an error message
   b. If you accidently press escape at the wrong time
   c. If you accidentally exit from the dBASE IV control center
1. General Program Description

The schedule program stores the four most recent lamination schedules, and then it uses these files to build and print line schedules.

To use this program, the operator must:

- Enter the latest lamination schedule(s).
- Choose the line schedule to be printed.
- Verify the "starting boat" for that schedule--the first boat to be scheduled for that week.

Occasionally, when the stations or start times (column and side headings) that appear on a schedule must be changed, the operator must change this "format" for that particular schedule. This is available as a menu option, and is as simple as changing heading names listed in a file.

In addition to printing line schedules, this program can also print lamination schedules. Totals for each model number scheduled are tallied automatically at the bottom of the lamination schedule. The operator has the opportunity to add or edit notes to appear at the bottom of the lamination schedule.

As an added feature to the program, rack lists can be keyed-in and printed using this program. Like the lamination schedules, rack lists may include notes at the bottom of the list, and totals for each model number are tallied at the bottom of the schedule automatically.

2. Generating Assembly and Woodshop Schedules

a. Modify standard roll times or stations if necessary

If the roll times for the week will be different from standard roll times, this information has to be obtained from line managers and adjusted for each schedule.

(1) To change standard roll times (side headings)

Choose main menu option

(F) Change standard schedule FORMAT.

Select desired schedule to change, then select

(S) Roll times (SIDE headings).
The records listed will be the side headings on the schedule, as in the following example:

<table>
<thead>
<tr>
<th>DAY</th>
<th>START TIME</th>
<th>FINISH TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon</td>
<td>6:00</td>
<td>11:00</td>
</tr>
<tr>
<td>Mon</td>
<td>12:15</td>
<td>3:30</td>
</tr>
<tr>
<td>Tue</td>
<td>7:30</td>
<td>9:30</td>
</tr>
<tr>
<td>Tue</td>
<td>1:45</td>
<td>2:30</td>
</tr>
<tr>
<td>Wed</td>
<td>9:00</td>
<td>8:30</td>
</tr>
<tr>
<td>Wed</td>
<td>3:15</td>
<td>1:30</td>
</tr>
<tr>
<td>Thu</td>
<td>11:00</td>
<td>7:30</td>
</tr>
</tbody>
</table>

Browse C:\dbase\TIM_1_RAS | Rec 1/7 | File |

Edit these records to reflect desired roll times using the editing menu [F10]. (See "Using the dBASE editing functions menu," under "5. Working with dBASE IV".)

After you have made all desired changes, go to the menu [F10] and then move arrow key to select "Exit" option. Press <ENTER> to save changes and exit.

You may choose to change the format of other schedules or press <R> to return to the main menu.

(2) To change standard stations (column headings)

At the main menu, choose

(F) Change standard schedule FORMAT.

Select desired schedule to be changed and then select

(C) Stations (COLUMN headings)

The records look similar to the following example:
where "First_Word" is the top line of the heading, and "Secnd_Word" is the bottom line of the heading.

Use edit features from the menu [F10] to make changes. (See "Using the dBASE editing functions menu," under "5. Working with dBASE IV".)

Note: A blank record is used to designate a "phantom" in-process station; boats scheduled in this column will be "blanked-out" by an empty column. This maintains the proper schedule order, as seen in the following schedule:

<table>
<thead>
<tr>
<th>START TIMES</th>
<th>Wire</th>
<th>HULL 1</th>
<th>HULL 2</th>
<th>HULL 3</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
<th>6th</th>
<th>Test</th>
<th>In</th>
<th>Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon 6:00</td>
<td>270WE</td>
<td>270DA</td>
<td>270WE</td>
<td>270DA</td>
<td>270WE</td>
<td>270DA</td>
<td>270WE</td>
<td>250BC</td>
<td>270DA</td>
<td>270WE</td>
<td>250BC</td>
</tr>
<tr>
<td></td>
<td>1285</td>
<td>1348</td>
<td>1284</td>
<td>1347</td>
<td>1346</td>
<td>1283</td>
<td>1256</td>
<td>1345</td>
<td>1282</td>
<td>1255</td>
<td>1344</td>
</tr>
<tr>
<td>Mon 12:15</td>
<td>270DA</td>
<td>270WE</td>
<td>250BC</td>
<td>270DA</td>
<td>270WE</td>
<td>270DA</td>
<td>270WE</td>
<td>270DA</td>
<td>270WE</td>
<td>250BC</td>
<td>270DA</td>
</tr>
<tr>
<td></td>
<td>1201</td>
<td>1257</td>
<td>1348</td>
<td>1284</td>
<td>1347</td>
<td>1346</td>
<td>1283</td>
<td>1256</td>
<td>1345</td>
<td>1282</td>
<td>1255</td>
</tr>
<tr>
<td>Tue 7:30</td>
<td>250BC</td>
<td>270WE</td>
<td>250BC</td>
<td>270DA</td>
<td>270WE</td>
<td>270DA</td>
<td>270DA</td>
<td>270WE</td>
<td>250BC</td>
<td>270DA</td>
<td>270WE</td>
</tr>
<tr>
<td></td>
<td>1258</td>
<td>1285</td>
<td>1257</td>
<td>1348</td>
<td>1284</td>
<td>1347</td>
<td>1346</td>
<td>1283</td>
<td>1256</td>
<td>1345</td>
<td>1282</td>
</tr>
<tr>
<td>Tue 1:45</td>
<td>270DA</td>
<td>270WE</td>
<td>250BC</td>
<td>270DA</td>
<td>270WE</td>
<td>270DA</td>
<td>270DA</td>
<td>270WE</td>
<td>250BC</td>
<td>270DA</td>
<td>270WE</td>
</tr>
<tr>
<td></td>
<td>1349</td>
<td>1201</td>
<td>1285</td>
<td>1257</td>
<td>1348</td>
<td>1284</td>
<td>1347</td>
<td>1346</td>
<td>1283</td>
<td>1256</td>
<td>1345</td>
</tr>
</tbody>
</table>
When finished, go to the menu [F10] and use the arrow key to select "Exit" option. Press <ENTER> to save changes and exit.

You may choose to change the format of other schedules or press <R> to return to the main menu.

b. Enter new lamination schedule

At the main menu, choose option

(N) Enter NEW Lamination Schedule.

Verify the schedule date.

At the data-entry screen, enter records for the lamination schedule in the order that they should appear.

If you prefer to see the entire table of records as you enter them, press [F2] to switch to that alternate data-entry screen.

In the "WKDAY" field, enter the one-letter code to represent the day of week the boat appears on the lamination schedule. Weekday codes are as follows:

M = Monday
T = Tuesday
W = Wednesday
R = Thursday
F = Friday
S = Saturday

If you enter an inappropriate letter, the day of week for that record will be printed out as "ERR" (error!) on the lamination schedule print-out.

The "NT" field allows for asterisks ("**") or other text to mark special boats.

In order to print line schedules, only the model numbers and hull numbers must be entered. Other fields are used in printing a full lamination schedule.

Once you have completed entering records, go to the menu [F10] and move the arrow key to select the "Exit" option. Press <ENTER> to save this list of records.

You will now have a choice of viewing and/or editing the records you just entered. You may also use this opportunity to insert a record in the middle of the list, if necessary.

If you have any notes to include at the bottom of the lamination schedule, you may choose to enter them. Any records which have a
note marker in the "NT" field have automatically been included in the file for reference. Only information typed in the "NOTE" field will be included on the lamination schedule print-out.

You must verify the date as requested, and then you have the opportunity to back out without saving the new schedule. If, for some reason, the files should not be updated to include the lamination schedule and other information just entered, you may press "X" at this time. Otherwise, simply pressing <ENTER> will save this new lamination schedule and update all files accordingly.

c. Print schedule

From the main menu, choose option

(S) Print SCHEDULE (Assembly or Woodshop Assembly).

Choose particular line schedule to print.

Verify starting boat number. The given boat number comes from memory of the last schedule printed. This boat number should be correct, unless, for example:

- No schedule was printed for this line last week.
- Actual production on this line varied from the schedule printed last week.

In either case, the information in memory is out-of-date, and it might be appropriate to schedule a different boat to start the schedule.

You may set up the printer and press <ENTER> when ready to print.

When a pop-up menu asks you to okay overwriting a file, simply press <ENTER> to accept the overwrite. Failure to do so may result in incorrect data being left in memory.

3. Making Lamination Schedules

The process of entering a new lamination schedule is discussed above.

Printing and editing options for the lamination schedule are also available from the main menu. The editing option allows the user to:

- Edit lamination records
- Insert a blank line in the lamination schedule
- Add/edit notes to be found at the bottom of the printed lamination schedule
4. Making Rack Lists

The rack lists are unrelated to the rest of the files; these files and menu options have been added in order to facilitate the making of these lists.

The creation, editing, and printing of these lists is similar to the process followed in making and maintaining lamination schedules.

5. Working with dBASE IV

a. Starting dBASE IV from DOS

Move to the c:\DBASE\SCHEDULE subdirectory:

Type CD.. and <ENTER> to return to main directory C:.

Type CD DBASE\SCHEDULE and <ENTER>.

Type DBASE and <ENTER> to start dBASE IV.

b. Starting the Schedule Program

Use the arrow keys to highlight the program name, "MENU," seen in the "Applications" column. Press <ENTER>.

At "Run Application," press <ENTER>.

At "Are you sure . . . ?" press "y" for "Yes," or press arrow key to highlight "Yes" and press <ENTER>.

This should bring you into the main menu of the schedule program.

c. Using dBASE IV pop-up menus

Press [F10] to get access to menu options.

The Aqua-colored bar highlights the option you wish to choose. Use arrow keys to move to desired option and press <ENTER> to make this selection.

d. Using the dBASE editing functions menu

(1) Deleting a record

Deletion is a two-step process which involves:

1. Marking the record(s) for deletion ("Mark")
2. Erasing the marked records
To "Mark" the record(s) for deletion:

Move to the record to be deleted.
Press [F10] for access to the menu.
Highlight menu option "Mark record for deletion."
Press <ENTER>.

The "marked" records still appear on the screen, but the notation "Del" will appear in the lower right hand corner of the screen, indicating the record is marked for deletion.

The schedule program will remove the marked records automatically when you save your changes and exit the edit area. However, you may wish to erase the marked records yourself so that you can see that the records have been deleted properly.

To permanently remove marked records:

Press [F10] for access to the menu.
Move to "Organize"
Highlight "Erase marked records" option.
Press <ENTER>.

(2) Inserting a record

Unfortunately, the dBASE IV data entry and editing menus do not include the option of inserting a record between existing records. You may, however, insert a record by exiting from the data-editing menu and selecting option (I), "Insert".

If you choose to insert a record, you will be shown the current list of records. Find the record on this list which should follow the inserted record. Make note of its record number (the number shown to the left of the record), and enter this number as requested. The insertion of a blank record will be made, and you will be returned to the edit menu.

6. Dealing with Problems

a. If you are prompted with an error message while in the schedule program, it is usually best to select the "Ignore" option, if at all possible. This allows you to return to the program and provides a greater possibility for saving important data to memory; if you exit the program in mid-stream because of an error, the program may not have a chance to update files, dates in memory, etc.

Check your data, and try performing the same task again.
b. If you accidently press escape, be careful! Choose "Ignore" to keep from getting booted out of the program and losing up-dated data.

c. If you accidently exit from the dBASE IV control center menu to the dot-prompt menu (blank blue screen with dot before cursor at the base of the screen), you have the following options:

- To exit to DOS, type "QUIT" and press <ENTER>.
- To return to the dBASE control center menu, type "ASSIST" and press <ENTER>
APPENDIX B
SCREEN OPTIONS FLOWCHART FOR SCHEDULE PROGRAM
Choose Schedule to Print:

(1) Line #1 Assembly
(2) Line #1 Woodshop Assembly
(3) Line #2 Assembly
(4) Line #2 Woodshop Assembly
(5) Line #3 Assembly
(6) Line #3 Woodshop Assembly

According to the last schedule printed, the starting boat should be:

270WE 1285

Select Number:

Press <ENTER> to accept 270WE 1285 as start boat
or type (X) to choose other

or type <R> to Return to Main Menu

Set Printer to CONDENSED TYPE

Press <ENTER> when ready ....
or press <R> to return to Line Schedule menu

Printing Line 270DA/WE, 250EC -- Assembly Schedule schedule

---

Be sure to press <ENTER> to ACCEPT OVERWRITE!!!!
Failure to do so will result in incorrect data in memory!
NOTE: SCREEN OPTIONS FOR "RAKENTRY" FOLLOW SAME FLOW AS "LAMENTRY"

Latest Lamination Schedule is dated: 05/03/93
You have selected to enter a new schedule.
Type <R> to Return to Main Menu or press <ENTER> to continue

Would you like to view and/or edit the schedule just entered? (Y/N) : y
(If you need to insert a blank record, press <I> at this time)

You have just entered records for a new lamination schedule for the week starting: 05/03/93
Is this data correct? (Y/N): y

---

To view and/or edit the schedule just entered, press <ENTER>.

---

Weights:
- MT
- MODEL
- BUILD NO
- ENGINES
- CUSTOMER
- COLORS

---

Records Organize Fields Go To Exit

Browse: [Ctrl] (down/arrow) [Disc 1/20] [File] [Run] [Menu]
The following Lamination Schedules are available:

(1) 05/03/93 (Most Recent)
(2) 04/26/93
(3) 04/19/93
(4) 04/12/93

Choose date by pressing 1, 2, 3, or 4, or type <R> to return to main menu.
The following Lamination Schedules are available:

(1) 05/03/93 (Most Recent)
(2) 04/26/93
(3) 04/19/93
(4) 04/12/93

Choose Date by pressing 1, 2, 3, or 4, or type <R> to Return to Main Menu

---

**SEA RAY BOATS - KNOXVILLE LAMINATION SCHEDULE 05/03/93**

<table>
<thead>
<tr>
<th>MON</th>
<th>1 290DA 1421 S-7.4L W/BR I/O</th>
<th>SEA RAY SPORT YACHTS</th>
<th>AM/GR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>300DA 1315 T-5.7L I/O</td>
<td>C &amp; N MARINE</td>
<td>AM/GR</td>
</tr>
<tr>
<td>3</td>
<td>300DA 1422 S-7.4L W/BR I/O</td>
<td>LAKE WYLIE MARINA</td>
<td>AM/SL</td>
</tr>
<tr>
<td>4</td>
<td>330DA 1351 T-7.4L V/D</td>
<td>HARBORS VIEW MARINA</td>
<td>AM/RD</td>
</tr>
<tr>
<td>5</td>
<td>300WE 1266 T-5.7L V/D</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>6</strong></td>
<td>270WE 1201 S-7.4L W/BR I/O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TUE</td>
<td>7 330BC 1251 T-7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 270DA 1461</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Choose Schedule Format to change:
1. Line #1 Assembly
2. Line #1 Workshop Assembly
3. Line #2 Assembly
4. Line #2 Workshop Assembly
5. Line #3 Assembly
6. Line #3 Workshop Assembly

Select Number:
or type <R> to Return to Main Menu

Select Format to Change:
(F) Roll times (SIDE headings)
(C) Stations (COLUMN headings)
or type <R> to Return to Main Menu

Make Selection:

Records Organize Fields Go To Exit

Records Organize Fields Go To Exit
APPENDIX C

NOTES FOR ADVANCED PROGRAM MAINTENANCE

• Instructions for adjusting model numbers assigned to each line
• Database and memory file names and descriptions
• Program module schematic
• Schedule program, hard copy
NOTES FOR ADVANCED PROGRAM MAINTENANCE

To make adjustments in model numbers assigned to each line:

Go to SCHOOSE.prg.

Variables and filenames are assigned to each line number in the DO...CASE loop from lines 36 through 90.

Model numbers included in each line are defined by variables COND1, COND2, and COND3. This allows for up to three model numbers to be assigned to a line. If less than three are needed, set COND3=COND2. If a fourth sort variable is needed, a COND4 can be established for all lines--and must be added to all six cases--and in lines 50 through 53 of SCHEDULE.prg, ".OR. MODEL=COND4" must be added to each line.
DATABASE AND MEMORY FILES USED IN SCHEDULE PROGRAM

Lamination Schedules:

(These files are also referred to as &LAM within the written program. These are the files which are updated whenever the user enters a new lamination schedule.)

LAM3 Most Recent Lamination Schedule
LAM2 Previous Week's Lamination Schedule
LAM1
LAM0

Lamination Notes:

(These files contain the notes that correspond to the lamination schedules.)

LAMNOTE3
LAMNOTE2
LAMNOTE1
LAMNOTE0

Station Names:

(These files are also referred to as &STAFILE within the written program. These are the files which can be edited to change, remove, or delete stations from a given schedule format.)

STA_1_AS Line #1 Assembly
STA_1_WA Line #1 Woodshop Assembly
STA_2_AS Line #2 Assembly
STA_2_WA Line #2 Woodshop Assembly
STA_3_AS Line #3 Assembly
STA_3_WA Line #3 Woodshop Assembly

Roll Time Files:

(These files are also referred to as &TIMFILE within the written program. These are the files which can be edited to change, remove, or delete standard roll times from a given schedule format.)

TIM_1_AS Line #1 Assembly
TIM_1_WA Line #1 Woodshop Assembly
TIM_2_AS Line #2 Assembly
TIM_2_WA Line #2 Woodshop Assembly
TIM_3_AS Line #3 Assembly
TIM_3_WA Line #3 Woodshop Assembly
Temporary Files:

(These are built and used by the program automatically during the program's run.)

TEMP

Compilation of boats for a selected line number

Rack List and Rack List Note Files:

Similar to lamination files and lamination note files.

RACK3        RAKNOTE3
RACK2        RAKNOTE2
RACK1        RAKNOTE1
RACK0        RAKNOTE0

Memory Files (*.mem):

(These files store certain pertinent information about particular schedules.)

LAMDATES       Dates of the four lamination schedules
RAKDATES       Dates of the four rack lists
AS1_VARS       Line #1 Assembly
WA1_VARS       Line #1 Woodshop Assembly
AS2_VARS       Line #2 Assembly
WA2_VARS       Line #2 Woodshop Assembly
AS3_VARS       Line #3 Assembly
WA3_VARS       Line #3 Woodshop Assembly
SCHEDULE PROGRAM FILES

MENU

<table>
<thead>
<tr>
<th>SCHEDULE</th>
<th>Presents main menu.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCHOOSE</td>
<td>Creates assembly schedules from</td>
</tr>
<tr>
<td></td>
<td>lamination schedules in database.</td>
</tr>
<tr>
<td>STRTBOAT</td>
<td></td>
</tr>
<tr>
<td>HEADINGS</td>
<td></td>
</tr>
<tr>
<td>ROWLOOP</td>
<td></td>
</tr>
<tr>
<td>LAMENTRY</td>
<td>Facilitates entry of a new lamination schedule.</td>
</tr>
<tr>
<td>NSERT</td>
<td></td>
</tr>
<tr>
<td>EDLAM</td>
<td>Facilitates editing and viewing of</td>
</tr>
<tr>
<td>LCHOOSE</td>
<td>lamination schedules.</td>
</tr>
<tr>
<td>NSERT</td>
<td></td>
</tr>
<tr>
<td>PRINTLAM</td>
<td>Prints lamination schedule--master</td>
</tr>
<tr>
<td>LCHOOSE</td>
<td>copy.</td>
</tr>
<tr>
<td>NSERT</td>
<td></td>
</tr>
<tr>
<td>CHGSFORM</td>
<td>Allows the user to make changes in</td>
</tr>
<tr>
<td>SCHOOSE</td>
<td>schedule format by editing station</td>
</tr>
<tr>
<td>NSERT</td>
<td>names and roll times.</td>
</tr>
<tr>
<td>RAENTRY</td>
<td>Facilitates the entry of records in</td>
</tr>
<tr>
<td>NSERT</td>
<td>the rack list.</td>
</tr>
<tr>
<td>EDRAK</td>
<td>Facilitates editing and viewing of</td>
</tr>
<tr>
<td>RCHOOSE</td>
<td>rack lists.</td>
</tr>
<tr>
<td>NSERT</td>
<td></td>
</tr>
<tr>
<td>PRINTRAK</td>
<td>Prints rack list.</td>
</tr>
<tr>
<td>RCHOOSE</td>
<td></td>
</tr>
</tbody>
</table>
SCHEDULE PROGRAM
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
1 *
2 * MAIN MENU PROGRAM *
3 * menu.prg *
4 * *
5 * *
6 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
7 *
8 SET TALK OFF
9 SET BEO OFF
10 SET DEVICE TO SCREEN
11 SET CONFIRM ON
12 SET BELL OFF
13 *
14 DO WHILE .T.
15 * *
16 * Print Menu Screen
17 *
18 *
19 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
20 CLEAR ALL
21 RESTORE FROM LAMDATES.MEM ADDITIVE
22 RESTORE FROM LAMDATES.MEM ADDITIVE
23 CLOSE ALL
24 CLEAR
25 @0,0 SAY REPLICATE(CH(205),79)
26 @2,20 SAY "MAIN MENU"
27 @4,10 SAY "Current Lamination Schedule: " + DTOC(LAMDATE3)
28 @5,0 SAY REPLICATE(CH(205),79)
29 @7,6 SAY "(S) Print SCHEDULE (Assembly or Woodshop Assembly)"
30 @9,6 SAY "(N) Enter NEW Lamination Schedule"
31 @10,6 SAY "(E) EDIT and View Existing Lamination Schedule"
32 @11,6 SAY "(F) PRINT Lamination Schedule"
33 @12,6 SAY "(F) Change Standard Schedule FORMAT"
34 @15,6 SAY "(K) Rack List Options"
35 @17,6 SAY "(Q) QUIT (Return to DOS)"
36 @18,6 SAY "(R) Return to dBASE"
37 @19,5 SAY " "
38 WAIT "Choose Option Letter: " TO OPT
39 DO CASE
40 CASE UPPER(OPT)="S"
41 DO SCHEDULE
42 CASE UPPER(OPT)="N"
43 DO LAMENTRY
44 CASE UPPER(OPT)="E"
45 DO EDLAM
46 CASE UPPER(OPT)="F"
47 DO PRINTLAM
48 CASE UPPER(OPT)="F"
49 DO CHSFORM
50 CASE UPPER(OPT)="N"
51 do while .T.
52 CLEAR
53 @7,5 SAY "Choose Option: "
54 @9,10 SAY "(N) Enter NEW Rack List"
55 $10,10 say "(E) EDIT and View Existing Rack List"
56 $11,10 say "(P) PRINT Rack List"
57 $12,10 say "(R) RETURN to Main Menu"
58 $15,10 say = "*
59 wait = " to j1
60 do case
61 case upper(j1)="E"
62 do raketry
63 case upper(j1)="R"
64 do edtrak
65 case upper(j1)="P"
66 do printrak
67 case upper(j1)="R"
68 exit
69 endcase
70 enddo
71 CASE UPPER(OPT)="Q"
72 $22,5 SAY = "*
73 WAIT "Do you really want to quit? (Y/N)" TO Y9
74 IF UPPER(Y9)="Y"
75 QUIT
76 ENDF
77 CASE UPPER(OPT)="R"
78 CLEAR
79 ? "MENU Program has been terminated"
80 ?
81 ? " Enter 'ASSIST' to get Main Menu"
82 ? " Enter 'DO MENU' to restart program"
83 ? " Enter 'QUIT' to exit to DOS"
84 ?
85 RETURN
86 ENDCASE
87 ENDDO
88
89
 Chooses appropriate files and variables for a selected schedule (and line number)

1. Do While .T.
2. @5,7 SAY "(1) Line 1 Assembly"
3. @6,7 SAY "(2) Line 1 Woodshop Assembly"
4. @7,7 SAY "(3) Line 2 Assembly"
5. @8,7 SAY "(4) Line 2 Woodshop Assembly"
6. @9,7 SAY "(5) Line 3 Assembly"
7. @10,7 SAY "(6) Line 3 Woodshop Assembly"
8. @20,5 SAY "or type <R> to Return to Main Menu"
9. @17,1 SAY "*
10. WAIT " Select Number: " TO PM1
11. " ** ** Set Filenames and Skipfiles ** **
12. according to selected assy line
13. PUBLIC TIMFILE
14. PUBLIC STAFILE
15. PUBLIC TITLE
16. PUBLIC SKIPFILE
17. PUBLIC COND1
18. PUBLIC COND2
19. PUBLIC COND3
20. PUBLIC EX2
21. EX2="NO"
22. DO CASE
23. CASE PM1="1"
24. TIMFILE="TIM_1 AS"
25. STAFILE="STA_1 AS"
26. TITLE="Line 270DA/WE, 250EC -- Assembly Schedule"
27. SKIPFILE="ASVAR.SMB"
28. COND1="270DA"
29. COND2="270WE"
30. COND3="250EC"
31. EXIT
32. CASE PM1="2"
33. TINFILE="TIM_1 MA"
34. STAFILE="STA_1 MA"
35. TITLE="Line 270DA/WE, 250EC -- Woodshop Assembly Schedule"
36. SKIPFILE="WAVAR.SMB"
37. COND1="270DA"
38. COND2="270WE"
39. COND3="250EC"
40. EXIT
55 CASE PII=3
56   TFILE="TIF_2.AS"
57   STFILE="STA_2.AS"
58   TITLE="Line 300DA/WE, 290DA -- Assembly Schedule"
59   SHEMFILE="ASL_VARS.MEM"
60   COND1="300DA"
61   COND2="300WE"
62   COND3="290DA"
63   EXIT
64 CASE PII=4
65   TFILE="TIF_2.WA"
66   STFILE="STA_2.WA"
67   TITLE="Line 300DA/WE, 290DA -- Woodshop Assembly Schedule"
68   SHEMFILE="WA2_VARS.MEM"
69   COND1="300DA"
70   COND2="300WE"
71   COND3="290DA"
72   EXIT
73 CASE PII=5
74   TFILE="TIF_3.AS"
75   STFILE="STA_3.AS"
76   TITLE="Line 300DA/BC, 310SS -- Assembly Schedule"
77   SHEMFILE="AS3_VARS.MEM"
78   COND1="330DA"
79   COND2="330BC"
80   COND3="310SS"
81   EXIT
82 CASE PII=6
83   TFILE="TIF_3.WA"
84   STFILE="STA_3.WA"
85   TITLE="Line 300DA/BC, 310SS -- Woodshop Assembly Schedule"
86   SHEMFILE="WA3_VARS.MEM"
87   COND1="330DA"
88   COND2="330BC"
89   COND3="310SS"
90   EXIT
91 CASE UPIER(PII)=8
92    EX2=\\YES\\ 
93    EXIT \n94  OTHERWISE
95    LOOP \n96 *    \n97 END CASE
98 ENDDO
99 return
100
1 ******************************************************************************
2 *
3 *  CHKREAD.prg
4 *
5 *  To make changes to standard stations
6 *  or start times on schedule printouts
7 *
8 ******************************************************************************
9 DO WHILE .T.
10 CLEAR
11 j1= *
12 @3,5 SAY "Choose Schedule Format to change: "
13 DO SCCHOSE
14 IF EX2="YES"
15   EX2="NO"
16   EXIT
17 ENDIF
18 CLEAR
19 @5,5 SAY "Select Format to Change: "
20 @7,7 say *(S) Roll times (SIDE headings)"
21 @8,7 say *(C) Stations (COLUMN headings)"
22 @10,5 SAY "or type <R> to Return to Main Menu"
23 ?
24 ?
25 WAIT " Make Selection: " to j1
26 DO CASE
27   CASE UPPER(j1)="C"
28     CLEAR
29     USE &STAPLIE
30     GOTO TOP
31     BROWSE
32     PACK
33     LOOP
34   CASE UPPER(j1)="S"
35     CLEAR
36     USE &TIMFILE
37     GOTO TOP
38     BROWSE
39     PACK
40     LOOP
41   CASE UPPER(j1)="R"
42     EXIT
43   ENDCASE
44 ENDDO
45 RETURN
46
1. SCHEDULE.PRG
2. "Print Standard Schedule" Option
3. *
4. *
5. *
6. *
7. *
8. *
9. *
10. CLEAR ALL
11. SET DEVICE TO SCREEN
12. SET TALK OFF
13. SET ECHO OFF
14. CLEAR
15. *
16. ** Set initial variables **
17. PUBLIC PRT
18. PUBLIC MOD
19. PUBLIC HRL
20. PRT="OFF"
21. PUBLIC VDNOM
22. VDNOM="NO"
23. *
24. RESTORE FROM LAMDATES.MEM ADDITIVE
25.从 memory
26. *
27. ** Build "Print Standard Schedule" Menu **
28. *
29. DO WHILE .T.
30. *
31. CLOSE ALL
32. CLEAR
33. $3,5 SAY "Choose Schedule to Print:"
34. DO CHOOSE
35. IF EX2="YES"
36. EX2="NO"
37. EXIT
38. ENDIF
39. *
40. RESTORE FROM 65MENFILE ADDITIVE
41. *
42. *
43. ** Build TEMP file of appropriate model numbers **
44. from lamination schedules
45. *
46. *
47. USE TEMP
48. *
49. DELETE ALL
50. PACK
51. APPEND FROM LAM1 FOR MODEL=COND1 .OR. MODEL=COND2 .OR. MODEL=COND3
52. APPEND FROM LAM2 FOR MODEL=COND1 .OR. MODEL=COND2 .OR. MODEL=COND3
53. APPEND FROM LAM3 FOR MODEL=COND1 .OR. MODEL=COND2 .OR. MODEL=COND3
55 * **************************************************
56 * 
57 * Program goes to STARTBOAT.prg as a subroutine *
58 * 
59 * **************************************************
60 DO STARTBOAT
61 *
62 * **************************************************
63 * 
64 * Beginning Printing ... *
65 * 
66 * **************************************************
67 DO WHILE .T.
68 IF UPPER(W21)="R" .OR. EX2="YES"
69 EXIT
70 ELSE
71 STORE MODEL1 TO MOD
72 STORE HULL1 TO HUL
73 @6,5 SAY "Printing " + trim(TITLE) + " schedule"
74 @8,0 say space(80)
75 @10,0 SAY SPACE(80)
76 @16,15 SAY "Be sure to press <ENTER> to ACCEPT OVERWRITE!!!"
77 @17,10 SAY "Failure to do so will result in incorrect data in memory!"
78 SET DEVICE TO PRINT
79 * **************************************************
80 * Program goes to HEADINGS.prg *
81 * to print titles & station names *
82 * **************************************************
83 DO HEADINGS
84 * **************************************************
85 * Program goes to ROWLOOP.prg *
86 * to print rows of schedule *
87 * **************************************************
88 DO ROWLOOP
89 * **************************************************
90 * Storing boat starting next *
91 * schedule & this schedule date *
92 * **************************************************
93 STORE MOD TO MEMMOD
94 STORE HUL TO MEMHUL
95 SELECT TEMP
96 COUNTER TO TCOUNT   " To avoid moving to EOF
97 IF MARKER+1>TCOUNT
98 INSERT BLANK
99 ENDIF
100 GOTO MARKER+1  " Moving to start boat for next
101 STORE MODEL TO MEMMOD  " week's schedule and saving as
102 STORE HULL1 TO MEMHUL   " memory variables.
103 STORE SCHEDULE TO MEMS
104 SAVE ALL LIKE MEM* TO MEMORYFILE
105 SET DEVICE TO SCREEN
106 EXIT
107 ENDIF
108 ENDDO
109 *
110 *
111 ENDDD   ** This final "EndDo" ends the schedule menu loop
112 *       ** This loop is exited only by choosing <E> in the
113 *       ** Do...Case loop in the SCHOOSE.prg subroutine
114 *
115 RETURN
116
1  ***********************************************************************
2  *
3  *         STARTBOAT.PRG                                             *
4  *  *
5  *  Establishing "Starting Boat" on selected line schedule          *
6  *  *
7  ***********************************************************************
8  CLEAR
9  PUBLIC SCHDATE
10 PUBLIC MODEL1
11 PUBLIC HULL1
12 PUBLIC W21
13 PUBLIC BOATCOUNT
14 W21="*
15 j1="*
16 LAMX="LAM2"
17 LAMX="LAM3"
18 SCHDATE=LAMDATE2
19 DO CASE
20 CASE SCHDATE=NEMDATE       // No Update
21   MOD=NEMMOD
22   HUL=NEMHULL
23   UPDOM="NO"
24 CASE SCHDATE=NEMDATE
25   MOD=NEMMOD
26   HUL=NEMHULL
27   UPDOM="YES"
28 OTHERWISE
29      W21="R"               // Returns to schedule print menu
30   @2,5 SAY "ERROR!!!! Current lamination schedule is dated earlier"
31      @3,5 say "  than previous schedules!"
32      RETURN
33 ENDCASE
34 *
35 PUBLIC ACCOUNT
36 PUBLIC BCOUNT
37 USE &LAMX
38    COUNT TO ACCOUNT
39 USE &LAMB
40    COUNT TO BCOUNT
41 BOATCOUNT=BCOUNT
42 CLOSE ALL
43 *
44 SELECT 1
45 USE TEMP
46 SELECT 2
47 USE &STATEFILE
48 SELECT 3
49 USE &TFILE
50 *
51 @2,1 SAY "According to the last schedule printed, the starting boat should be:" 
52 @4,30 SAY MOD + "  *  HUL
53 SELECT TEMP
54 LOCATE FOR MODEL=MOD .AND. HULL=HUL
55 IF BOF()
56   $6,1 SAY "This boat is not found in the lamination schedules."
57   j1="Y"
58 ELSE
59   $7,0 say replicate(chr(205),79)
60   $8,5 say "Press <ENTER> to accept * + MOD + * + HULL + * as start boat"
61   $9,10 say "or type (Y) to choose other"
62   $10,0 say replicate(chr(205),79)
63   wait " *" to j1
64 ENDIF
65 *
66 IF UPPER(j1)="Y"
67   $8,0 SAY SPACE(80) " covers up previous text
68   $9,0 SAY SPACE(80) ""
69   $10,0 SAY SPACE(80) ""
70   STORE SPACE(6) TO MODEL1
71   STORE SPACE(4) TO HULL1
72   $12,5 SAY "Choose Model and Hull numbers for starting boat:"
73   DO WHILE .T.
74     $14,10 SAY "MODEL: " GET MODEL1
75     $14,26 SAY "HULL: " GET HULL1
76     $16,5 SAY "Or enter blanks to Exit"
77     READ
78     STORE UPPER(MODEL1) TO MODEL1
79     IF MODEL1=" " .AND. HULL1=" 
80       EX2="YES"
81       RETURN
82     ENDIF
83     $12,5 SAY "You have chosen * + MODEL + * + HULL + SPACE(25)
84     $13,10 SAY ""
85     j2= " 
86     wait " Is this Correct? (Y/N) *" to j2
87     IF UPPER(j2)="Y"
88       LOOP
89     ENDIF
90     GOTO TOP
91     LOCATE FOR MODEL=MODEL1 .AND. HULL_NO=HULL1
92     IF .NOT. BOF()
93       EXIT
94     ELSE
95       $12,5 SAY MODEL1 + " + HULL + "not found" + SPACE(30)
96     ENDIF
97     ENDDO
98 ELSE
99     STORE MOD TO MODEL1
100    STORE HULL TO HULL1
101 ENDIF
102 *
103 CLEAR
104 $ 5,10 SAY "Set Printer to CONDENSED TYPE"
105 $ 10,15 SAY "or press <P> to return to Line Schedule menu"
106 $ 8,10 SAY " Press <ENTER> when ready . . . . . ."
107 WAIT " *" TO W21
108 *
5
10
15
20
25
30
35
40
45
50

Page I

1 * * * * * * * * * * * * * * * * * * * * * * * * *
2 *
3 * HEADINGS.PRG *
4 *
5 * * * * * * * * * * * * * * * * * * * * * * * * *
6 *
7 PUBLIC COLS
8 PUBLIC ROWS
9 PUBLIC TWIDTH
10 * * * * Initializing values for numbers of * * * * *
11 * columns and rows
12 *
13 SELECT *STAFFILE
14 COUNT TO COLS
15 GOTO TOP
16 SELECT *TIMFILE
17 COUNT TO ROWS
18 GOTO TOP
19 TWIDTH=11+(COLS*10)
20 *
21 * * * * Printing Headings * * * * *
22 *
23 STORE LEN(TITLE) TO TLENGTH
24 @PR sonra+2,([TWIDTH-LENGTH]/2) SAY TITLE
25 @PR sonra+2,([TWIDTH-26]/2) SAY "for week starting " DTOM(SCHDATE)
26 * Following is the printing of the top line:
27 @PR sonra+3,1 SAY REPLICATE(*_,TWIDTH)
28 *
29 * Following is the printing of the first line of station names
30 SELECT *STAFFILE
31 @PR sonra+1,1 SAY "| START |
32 DO WHILE .NOT. EOF()
33 @PR sonra,PCOL() SAY FIRST_word
34 IF RECNO()=COLS
35 @PR sonra,PCOL() SAY "*
36 ELSE
37 @PR sonra,PCOL() SAY "*
38 ENDDIP
39 SKIP
40 ENDDO
41 GOTO TOP
42 *
43 @PR sonra+1,1 SAY "| TIMES |
44 DO WHILE .NOT. EOF()
45 @PR sonra,PCOL() SAY SECOND_word
46 IF RECNO()=COLS
47 @PR sonra,PCOL() SAY "*
48 ELSE
49 @PR sonra,PCOL() SAY "*
50 ENDDIP
51 SKIP
52 ENDDO
53 GOTO TOP
54 * Following is the printing of the straight line below colheadings
55 @PROW( ), 1 SAY REPLICATE(" ", TWIDTH)
56 *
57 return
58
1 * * * * * * * * * * * * * * * * * * * * *
2 *
3 *   ROWLOOP.PRG  *
4 *
5 * Printing the rows of the schedule... *
6 *
7 * * * * * * * * * * * * * * * * * * * * *
8 PUBLIC MARKER
9 SELECT TEMP
10   LOCATE FOR MODEL=MODEL1 .AND. HULL_NO=HULL1  // sets reference point
11   STORE RECNO() TO MARKER
12 *
13 * Beginning of Row-Loop  . . .  *
14 *
15 DO WHILE .NOT. EOF()
16 *
17 * * * * Following is first line above model numbers * * * *
18   @PR0W()+1,1 SAY "|" + SPACE(9) + "|" + SPACE((COLS*10)-1) + "|"
19 *
20 * * * * Following is the line printing model numbers * * * *
21   @PR0W()+1,1 SAY "|" + SPACE(9) + "|
22 SELECT TEMP
23   GOTO MARKER
24   STORE MODEL TO MODEL1
25   STORE HULL_NO TO HULL1
26   STORE 1 TO CC2
27 DO WHILE CC2<COLS   // loop prints row of model numbers
28   SELECT 4STFILE
29   GOTO CC2
30   IF FIRST WORD="  .AND. SECOND WORD="   
31   @PR0W(),PCOL()+2 SAY SPACE(8)
32   ELSE
33     SELECT TEMP
34     @PR0W(),PCOL()+2 SAY MODEL + SPACE(2)
35     ENDIF
36   SELECT TEMP
37   PREVREC=RECNO()-1
38   IF PREVREC<1
39     MODEL="  
40     EXIT
41   ENDIF
42   GOTO PREVREC
43   CC2=CC2+1
44 ENDDO
45 *
46   @PR0W(),PCOL()+2 SAY MODEL + " |"
47 GOTO MARKER   // Sends back to starting boot for this row
48 *
49 * * * * Following is the line printing hull numbers * * * *
50 SELECT 4TIMFILE
51   @PR0W()+1,1 SAY "|" + DAY + " |" + START_TIME + "|"
52 SELECT TEMP
53   STORE 1 TO CC2
54 DO WHILE CC2<COLS
SELECT &STAFILE
GOTO CC2
IF FIRST_W0RD="" .AND. SECOND_W0RD="" 
   \$PROM() ,PCOL()+2 SAY SPACE(8)
ELSE
   SELECT TEMP
   \$PROM() ,PCOL()+2 SAY HULL_NO + SPACE(4)
ENDIF
SELECT TEMP
   PREVREC = RECN0()-1
   IF PREVREC<1
      HULL_NO=""
   EXIT
   ENDIF
   GOTO PREVREC
   CC2=CC2+1
ENDDO
\$PROM() ,PCOL()+2 SAY HULL_NO + " "
*
 *** *** Following is printing the blank line below hull numbers *** ***
   \$PROM()+1,1 SAY "+SPACE(9) + " + SPACE((COLS*10)-1) +""
*
 *** *** Following is the dividing line between time blocks *** ***
   \$PROM(),1 SAY REPLICATE ("-",WIDTH)
SELECT &TIMFILE
IF RECN0()=ROWS
   EXIT
   \$ESCAPE DoWhile.T. Loop (Ends Printout)
ELSE
   MARKER = MARKER + 1
   \$ESCAPE Sets to next start time on &Timefile
   SELECT TEMP
   COUNT TO TCOUNT
   IF MARKER>TCOUNT
      GOTO BOTTOM
      INSERT BLANK
   ENDIF
   SELECT &TIMFILE
   ENDIF
ENDDO
\$ESCAPE back to beginning of row-printing DoWhile.T. Loop
\$ESCAPE End of Schedule Printout *** ***
EXIT
*
**SUbroutine to allow user to choose**

**from existing lamination schedule**

**dates (for use within BLMAX.prg or**

**PRINBLAM.prg, etc.**

---

1 * * * * * * * * * * * * * * * * * * * * * *
2 * 
3 *    LCHOOSE.PRG      * 
4 * 
5 *    Subroutine to allow user to choose      * 
6 *    from existing lamination schedule      * 
7 *    dates (for use within BLMAX.prg or      * 
8 *    PRINBLAM.prg, etc.      * 
9 * * * * * * * * * * * * * * * * * * * * * *
10 *
11 PUBLIC LAM
12 PUBLIC RAX
13 PUBLIC LAMDATE
14 PUBLIC RAXDATE
15 PUBLIC LAMNOTE
16 PUBLIC EX1
17 EXIT='NO'

18 @7,5 say "The following Lamination Schedules are available: "
19 @9,10 SAY "(1) +D TOC(LAMDATE) + "  (Most Recent)"
20 @10,10 SAY "(2) +D TOC(LAMDATE2)
21 @11,10 SAY "(3) +D TOC(LAMDATE1)
22 @12,10 SAY "(4) +D TOC(LAMDATE0)
23 @14,5 SAY " Choose Date by pressing 1, 2, 3, or 4, "
24 @15,5 say " or type <R> to Return to Main Menu "
25 J1=" *

26 DO WHILE .T.
27    WAIT " " TO J1
28    DO CASE
29    CASE J1='4'
30    LAM='LAM0'
31    RAX='RAX0'
32    LAMDATE=LAMDATE0
33    RAXDATE=RAXDATE0
34    LAMNOTE='LAMNOTE0'
35    EXIT
36    CASE J1='3'
37    LAM='LAM1'
38    RAX='RAX1'
39    LAMDATE=LAMDATE1
40    RAXDATE=RAXDATE1
41    LAMNOTE='LAMNOTE1'
42    EXIT
43    CASE J1='2'
44    LAM='LAM2'
45    RAX='RAX2'
46    LAMDATE=LAMDATE2
47    RAXDATE=RAXDATE2
48    LAMNOTE='LAMNOTE2'
49    EXIT
50    CASE J1='1'
51    LAM='LAM3'
52    RAX='RAX3'
53    LAMDATE=LAMDATE3
54    RAXDATE=RAXDATE3
55       LANOTE="LANOTE1"
56       EXIT
57       CASE UPPER(J1)="R"
58           EXIT="YES"
59       EXIT
60       ENDCASE
61       ENDDO
62       RETURN
63
LAMENTRY.prg

Facilitates entry of new lamination schedule (A choice on Main Menu)

* * * * * * * * * * * * * * * * * * * *

do while .T.
clear
$2,5 SAY "Latest Lamination Schedule is dated: "+dtoc(lamdate3)
$4,10 SAY "You have selected to enter a new schedule."
$5,15 SAY "Type <> to Return to Main Menu"
$6,15 SAY "or press <ENTER> to continue"
wait * = to j1
if upper(j1)="R"
  exit
endif
ndate=dtoc(lamdate3+7)
$5,0 say space(80)
$6,15 SAY "New schedule date: "+ ndate
j1= *
Wait *
  Is this date correct? (Y/M): * to j1
do while upper(j1)="W"
store space(8) to ndate
$10,1 SAY "New schedule date: " get ndate
read
if ctod(ndate)>lwate3
  j1= "Y"   & ndate is acceptable
else
  $11,21 SAY "New schedule date must be after "+ dtoc(lamdate3)
endif
enddo
use lmax
delete all
pack
append
j1= *
do while .T.
$14,8 SAY "(If you need to insert a blank record, press <> at this time)"
$12,1 SAY "*"
wait *
  Would you like to view and/or edit the schedule just entered? (Y/N) * to j1
do case
  case upper(j1)="Y"
    DO INSERT
  case upper(j1)="T"
    GOTO TOP
  case upper(j1)="M"
    browse
  otherwise
    exit
loop
55 endcase
56 enddo
57 clear
58 @1,3 say "You have just entered records for a new lamination schedule"
59 @2,3 say " for the week starting: " ndate
60 @3,3 say space(1)
61 j1=' "
62 Wait " Is this date correct? (Y/N): " to j1
63 do while upper(j1)='N'
64 store space(8) to ndate
65 @5,5 say "New schedule date: " get ndate
66 read
67 if ctod(ndate)>laJdate1
68 j1='Y'
69 else
70 @6,10 say "New schedule date must be after "+ dtoc(laJdate1)
71 endif
72 enddo
73 store laJdate1 to laJdate0
74 store laJdate2 to laJdate1
75 store laJdate3 to laJdate2
76 laJdate3=ctod(ndate)
77 @7,0 say replicate(chr(205),79)
78 @15,0 say replicate(chr(205),79)
79 @9,10 say "WARNING! If you wish to return to the main menu without"
80 @10,10 say " saving this new schedule, you must cancel it by"
81 @11,10 say " typing the letter 'Y' now!"
82 @13,10 say "To SAVE this new lamination schedule, press <ENTER> "
83 j1=' "
84 wait " " to j1
85 if upper(j1)='Y'
86 restore from lamdates.mem additive
87 else
88 use lam0
89 delete all
90 pack
91 append from lam1
92 use lamnote0
93 delete all
94 pack
95 append from lamote1
96 use lam1
97 delete all
98 pack
99 append from lam2
100 use lamnote1
101 delete all
102 pack
103 append from lamote2
104 use lam2
105 delete all
106 pack
107 append from lam3
108 use lamote2
109   delete all
110   pack
111   append from lamnotes
112   use lam3
113   delete all
114   pack
115   append from lamx
116   use lamnotes
117   delete all
118   pack
119   append from lam3 for NT>1 *
120   goto top
121   count to ntct
122   @9,10 say "Be sure press <ENTER> to ACCEPT the OVERWRITE!!!"
123   @20,1 say "Failure to do so will result in incorrect dates on lamination schedules!"
124   save all like LAM* to lamdates.mem
125   goto top
126   clear
127   @2,5 say "To add notes to the lamination schedule,
128   @8,10 say "(or press (R) to return to the menu)"
129   @3,10 say "*
130   wait " Press <ENTER> to continue " to j1
131   if upper(j1)="R"
132       exit
133   else
134       if ntct=0
135       append
136       pack
137   else
138       browse
139       pack
140       endif
141   endif
142 endif
143 exit
144 enddo
145 return
**EDLAM.prg**

Edit Selected Lamination Schedules

Do While .T.
CLEAR
10 $2,25 say "LAMINATION SCHEDULE"
11 $4,28 say "View and Edit"
12 DO LCLOSE
13 IF EX1="YES"
14  EX1="NO"
15 EXIT
16 ENDIF
17 do while .T.
18 CLEAR
19 USE 4IAM
20 GOTO TOP
21 $3,5 SAY "Please choose from the following options:"
22 $7,10 say "(E) EDIT"
23 $8,10 say "(I) INSERT a blank line"
24 $9,10 SAY "(W) Add/Edit NOTES"
25 $11,10 SAY "(R) to RETURN to menu"
26 wait ** to iopt
27 do case
28 case upper(iopt)="E"
29 browse
30 pack
31 case upper(iopt)="I"
32 do insert
33 CASE UPPER(IOPT)="W"
34 USE 4IAMNOTE
35 COUNT TO MTCT
36 GOTO TOP
37 IF MTCT=0
38 APPEND
39 PACK
40 ELSE
41 BROWSE
42 PACK
43 ENDIF
44 USE 4IAM
45 case upper(iopt)="R"
46 EXIT
47 endcase
48 ENDDO
49 ENDDO
50 RETURN
**PRINTLAM.prg**

Program to Print Lamination Schedules as stored in Database

DO WHILE .T.
CLEAR
2 \#2,25 SAY "LAMINATION SCHEDULE"
3 \#4,31 SAY "Print"
4 \#5,0 SAY REPLICATE(CHR(205),79)
5 DO LCHEME
6 IF EX1="YES"
7 EX1="NO"
8 EXIT
9 ENDIF
10 CLEAR
11 USE MODCOUNT
12 SELECT 2
13 DELETE ALL
14 SELECT 1
15 USE \#LAM
16 SET DEVICE TO PM
17 \#4,29 SAY "SEA RAY BOATS - KNOXVILLE"
18 \#5,32 SAY "LAMINATION SCHEDULE"
19 \#6,37 SAY LAMDATE
20 \#7,0 SAY REPLICATE(\#*,80)
21 CDAY="XXX"
22 The following loop prints records in the lamination schedule list
23 DO WHILE NOT EOF()
24 IF WKDAY=CDAY
25 @FROW()+1,4 SAY WT
26 ELSE
27 CDAY=WKDAY
28 DO CASE
29 CASE WKDAY="Wk"
30 TDAY="MON"
31 CASE WKDAY="Fk"
32 TDAY="TUE"
33 CASE WKDAY="Wk"
34 TDAY="TUE"
35 CASE WKDAY="Fk"
36 TDAY="THU"
37 CASE WKDAY="Fk"
38 TDAY="FRI"
55 ENDCASE
56 @PRC(*)+2,0 SAY TDAY + " " + MT
57 ENDF
58 @PRW(),6 SAY STR(RECMD()),2)
59 @PRW(),9 SAY MODEL + " " + HULL_NO + " " + ENGINE + " " + CUSTOMER + " " + COLORS
60 SKIP
61 ENDDO
62 GOTO TOP
63 COUNT TO LSTARTS
64 GOTO TOP
65 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
66 *
67 * The following prints notes
68 *
69 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
70 *
71 USE 4LAMNOTE
72 COUNT TO WTCT
73 GOTO TOP
74 IF WTCT=0
75 NTLP=1
76 @PRW(),2 SAY " "
77 DO WHILE .T.
78 @PRC(*)+1,5 SAY NOTE
79 IF NTLP=WTCT
80 EXIT
81 ELSE
82 NTLP=NTLP+1
83 SKIP
84 ENDF
85 ENDDO
86 ENDF
87 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
88 *
89 * The following loop prints model totals at the bottom of the
90 * lamination schedule.
91 *
92 *
93 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
94 USE 4LAM
95 INDEX ON MODEL TAG MODEL
96 SET INDEX TO 4LAM
97 SET ORDER TO MODEL
98 GOTO TOP
99 DECLARE MCOUNT[1,2]
100 XMODEL=MODEL
101 LO=0
102 LOOPCT=0
103 XMOUNT=0
104 DO WHILE .T.
105 IF MODEL=XMOUNT
106 XMOUNT=XMOUNT+1
107 LOOPCT=LOOPCT+1
108 IF LOOPCT<LSTARTS
109  SKIP
110  ELSE
111  LC=LC+1
112  EXIT
113  ENDIF
114  ELSE
115  STORE XMOUNT TO MOUNT[1,2]
116  STORE XMODEL TO MOUNT[1,1]
117  SELECT XMODEL
118  APPEND FROM ARRAY MOUNT
119  SELECT 1
120  STORE XMODEL TO XMOUNT
121  XMOUNT=1
122  LOOPCT=LOOPCT+1
123  LC=LC+1
124  IF LOOPCT<STARTS
125  ELSE
126  EXIT
127  ENDIF
128  ENDIF
129  ENDDO
130  STORE XMOUNT TO MOUNT[1,2]
131  STORE XMODEL TO MOUNT[1,1]
132  SELECT XMODEL
133  APPEND FROM ARRAY MOUNT
134  *
135  GOTO TOP
136  COUNT TO RECCT
137  GOTO TOP
138  $51.0 SAY XMODEL
139  LOOPCT=1
140  SKIP
141  DO WHILE .T.
142  @PROM(),PCOL()+3 SAY XMODEL
143  LOOPCT=LOOPCT+1
144  IF LOOPCT<RECCT
145  SKIP
146  ELSE
147  EXIT
148  ENDIF
149  ENDIF
150  ENDDO
151  GOTO TOP
152  $52.1 SAY STR(SUBTOT,2,0)
153  LOOPCT=1
154  SKIP
155  DO WHILE .T.
156  @PROM(),PCOL()+7 SAY STR(SUBTOT,2,0)
157  LOOPCT=LOOPCT+1
158  IF LOOPCT<RECCT
159  SKIP
160  ELSE
161  EXIT
162  ENDIF
ENDDO
* SAY "NOTE: - (I/O) = INBOARDS"
FROW(),50 SAY "LANSTARTS: " + STR(LSTARTS,2,0)
$56,26 SAY "(V/D) = V-DRIVES"
$57,26 SAY "(I/O) = STEERDREVES"
IF LDATE=RDATE THEN
  USE &RAK
  COUNT TO RCOUNT
  SET DEVICE TO SCREEN
  $5,5 SAY "Rack Count: " + STR(RCOUNT,2,0)
  STORE SPACE(2) TO alt
  $7,2 SAY "Press <ENTER> to accept, or type different value for rack count: " get alt
  READ
  IF ALT=" " THEN
    ELSE
      STORE VAL(alt) TO RCOUNT
  ENDIF
  SET DEVICE TO PRINT
  ELSE
    SET DEVICE TO SCREEN
    STORE SPACE(2) TO RCOUNT
    $5,5 SAY "Enter Rack Count: " GET RCOUNT
    READ
    STORE VAL(RCOUNT) TO RCOUNT
    SET DEVICE TO PRINT
  ENDIF
  ENDDO
  FROW(),50 SAY "RACK COUNT: " + STR(RCOUNT,2,0)
  EJECT
  SET DEVICE TO SCREEN
  ENDDO
  RETURN
  ENDDO
1 * * * * * * * * * * * * * * * * * * * * * * * *
2 *                    *                    *
3 *        RCHOOSE.PRG       *                    *
4 *                    *                    *
5 *        Subroutine to allow user to choose    *                    *
6 *        from existing rack list dates       *                    *
7 *                    *                    *
8 * * * * * * * * * * * * * * * * * * * * * * * *
9 *
10 PUBLIC RAK
11 PUBLIC LAM
12 PUBLIC RAKDATE
13 PUBLIC LAMDATE
14 PUBLIC RAKNOTE
15 PUBLIC EXL
16 EXL='NO'
17 87,5 say "The following rack lists are available:"
18 @9,10 SAY "(1) @UTC(RAKDATE1) + " (Most Recent)"
19 @10,10 SAY "(2) @UTC(RAKDATE2)"
20 @11,10 SAY "(3) @UTC(RAKDATE1)"
21 @12,10 SAY "(4) @UTC(RAKDATE2)"
22 @14,5 SAY "Choose Date by pressing 1, 2, 3, or 4,
23 @15,5 say "or type <R> to Return to Main Menu"
24 J1=''
25 DO WHILE .T.
26    WAIT "" TO J1
27    DO CASE
28    CASE J1='4'
29        RAK='RACK0'
30        LAM='LAM0'
31        RAKDATE=RAKDATE0
32        LAMDATE=LAMDATE0
33        RAKNOTE='RAKNOTE0'
34        EXIT
35    CASE J1='3'
36        RAK='RACK1'
37        LAM='LAM1'
38        RAKDATE=RAKDATE1
39        LAMDATE=LAMDATE1
40        RAKNOTE='RAKNOTE1'
41        EXIT
42    CASE J1='2'
43        RAK='RACK2'
44        LAM='LAM2'
45        RAKDATE=RAKDATE2
46        LAMDATE=LAMDATE2
47        RAKNOTE='RAKNOTE2'
48        EXIT
49    CASE J1='1'
50        RAK='RACK3'
51        LAM='LAM3'
52        RAKDATE=RAKDATE3
53        LAMDATE=LAMDATE3
54        RAKNOTE='RAKNOTE3'
55 EXIT
56 CASE UPPER(J1)="H"
57 EXIT="YES"
58 EXIT
59 ENDCASE
60 ENDDO
61 RETURN
62
**RAKENTRY.prg**

Facilitates entry of new rack list.

---

10 do while .T.
11 clear
12 @2,5 SAY "Latest Rack List is dated: "+dtoc(rakdate3)
13 @4,10 SAY "You have selected to enter a new schedule."
14 @5,15 SAY "Type <CR> to return to Main Menu"
15 @6,15 SAY "or press <ENTER> to continue."
16 wait # to j1
17 if upper(j1)='R'
18 exit
19 endif
20 ndate=dtoc(rakdate3+7)
21 @5,0 say space(80)
22 @6,15 say "New schedule date: "+ ndate
23 j1=""
24 Wait "Is this date correct? (Y/N): " to j1
25 do while upper(j1)="N"
26 store space(8) to ndate
27 @10,1 say "New schedule date: "+ get ndate
28 read
29 if ctod(ndate)>rakdate3
30 j1="Y"
31 endif
32 if upper(j1)='Y'
33 endif
34 endwhile
35 use raca
36 delete all
37 pack
38 append
39 if upper(j1)='Y'
40 do while .T.
41 @14,8 SAY "(If you need to insert a blank record, press <CR> at this time)"
42 @12,1 SAY "".
43 wait "Would you like to view and/or edit the schedule just entered? (Y/N): " to j1
44 do case
45 case upper(j1)='Y'
46 DO NSERT
47 case upper(j1)='Y'
48 GOTO TOP
49 case upper(j1)='Y'
50 GOTO TOP
51 exit
52 otherwise
53 loop
54 endcase
55 enddo
56 clear
57 $1,3 say "You have just entered records for a new rack list,"
58 $2,3 say "for the week starting: " + ndate
59 $3,3 say space(1)
60 j1=" "
61 Wait " Is this date correct? (Y/N): " to j1
62 do while upper(j1)="Y"
63 store space(8) to ndate
64 $5,5 say "New schedule date: " get ndate
65 read
66 if ctod(ndate)>rakdate3
67 j1="Y"
68 else
69 $6,10 say "New schedule date must be after " + dtoc(rakdate3)
70 endif
71 enddo
72 store rakdate1 to rakdate0
73 store rakdate2 to rakdate1
74 store rakdate3 to rakdate2
75 rakdate3=ctod(ndate)
76 $7,0 say replicate(chr(205), 79)
77 $15,0 say replicate(chr(205), 79)
78 $9,10 say "WARNING! If you wish to return to the main menu without"
79 $10,10 say "saving this new schedule, you must cancel it by"
80 $11,10 say "typing the letter 'X' now!"
81 $13,10 say "To SAVE this new rack list, press <ENTER> "
82 j1=" "
83 wait " " to j1
84 if upper(j1)="Y"  // This option cancels changes, returns files and dates
85 restore from rakdates.mem additive
86 else
87 use rack0
88 delete all
89 pack
90 append from rack1
91 use raknote0
92 delete all
93 pack
94 append from raknote1
95 use rack1  // Moves rack list records to their
96 delete all  // updated filenames
97 pack  // (i.e. the former RACK3 schedule records can
98 append from rack2  // now be found under the RACK2 filename)
99 use raknote1
100 delete all
101 pack
102 append from raknote2
103 use rack2
104 delete all
105 pack
106 append from rack3
107 use raknote2
108 delete all
pack
append from rack3
use rack3
delete all
pack
append from rackx
use rack3
delete all
pack
append from rack3 for WT
goto top
count to ntct
@19,10 say "Be sure press <ENTER> to ACCEPT the OVERWRITE!!"
@20,1 say "Failure to do so will result in incorrect dates on rack lists!"
save all like RAK* to rakedates.mem
goto top
clear
@2,5 say "To add notes to the rack list,"
@6,10 say "(or press (R) to return to the menu)"
@3,10 say ""
wait "Press <ENTER> to continue " to j1
if upper(j1)="R"
exit
else
  if ntct=0
    append
    pack
  else
    browse
    pack
  endif
endif
disable
exit
delete
endif
enddo
return
1
2  * Edit Selected Rack List *
3  *
4  *
5  *
6  *
7  *
8  Do While .T.
9  CLEAR
10  @2,30 say "RACK LIST"
11  @4,28 SAY "View and Edit"
12  DO RCHOOSE
13  IF EXI="YES"
14    EXI="NO"
15    EXIT
16  ENDF
17  do while .T.
18  CLEAR
19  USE &RAK
20  GO TO TOP
21  @1,5 SAY "Please choose from the following options: ":
22  @7,10 say "(E) EDIT"
23  @8,10 say "(I) INSERT a blank line"
24  @9,10 SAY "(N) Add/Edit NOTES"
25  @11,10 say "(R) to RETURN to menu"
26  wait ** to iopt
27  do case
28    case upper(iopt)="E"
29      browse
30      pack
31    case upper(iopt)="I"
32      do insert
33    CASE UPPER(IOPT)="N"
34      USE &RAKNOTE
35      COUNT TO WTCT
36      GO TO TOP
37      IF WTCT=0
38        APPEND
39        PACK
40    ELSE
41      BROWSE
42      PACK
43    ENDIF
44    USE &RAK
45    case upper(iopt)="R"
46      exit
47    endcase
48  enddo
49  ENDDO
50  RETURN
**PRINTRAK.prg**

Program to Print Rack Lists

```
* * * * * * * * * * * * * * * * * * * * * 
1 * * * * * * * * * * * * * * * * * * * * 
2 * 
3 * PRINTRACK.prg 
4 * 
5 * Program to Print Rack Lists 
6 * 
7 * * * * * * * * * * * * * * * * * * * * 
8 * 
9 DO WHILE .T.
10 CLEAR
11 &2,30 SAY "RACK LIST"
12 &4,31 SAY "Print"
13 &5,0 SAY REPLICATE(CHR(205),79)
14 DO RCHOOSE
15 IF EXI="YES"
16 EXI="NO"
17 EXIT
18 ENDIF
19 CLEAR
20 SELECT 2
21 USE MOCOUNT
22 DELETE ALL
23 PACK
24 SELECT 1
25 USE GRACK
26 SET DEVICE TO PRINT
27 &4,29 SAY "SEA RAY BOATS - KNOXVILLE"
28 &5,37 SAY "RACK LIST"
29 &6,37 SAY RANKDATE
30 &7,0 SAY REPLICATE(\*,80)
31 CDAY=XXX
32 * * * * * * * * * * * * * * * 
33 * 
34 * The following loop prints records 
35 * in the rack list 
36 * 
37 * * * * * * * * * * * * * * * 
38 DO WHILE .NOT. EOF()
39 IF WKDAY=C>AY
40 IF (PRCH()+1,4 SAY WY
41 ELSE
42 CDAI=WKDAY
43 DO CASE
44 CASE WKDAY="M"
45 TDAY="MON"
46 CASE WKDAY="T"
47 TDAY="TUE"
48 CASE WKDAY="W"
49 TDAY="WED"
50 CASE WKDAY="R"
51 TDAY="THU"
52 CASE WKDAY="F"
53 TDAY="FRI"
54 CASE WKDAY="S"
```
55 TDAY="SAT"
56 OTHERWISE
57 TDAY="ERR"
58 ENDCASE
59 @PRROW()+2,0 SAY TDAY + " + MT
60 ENDF
61 @PRROW(),6 SAY STR(RBNO(),2)
62 @PRROW(),9 SAY MODEL + " + HULL_NO + " + CUSTOMER
63 SKIP
64 ENDDO
65 GOTO TOP
66 COUNT TO RCOUNT
67 GOTO TOP
68 * * * * * * * * * * * * * * * * * * * * *
69 *
70 * The following prints notes *
71 *
72 * * * * * * * * * * * * * * * * * * * * *
73 *
74 USE &RAKNOTE
75 COUNT TO NTCT
76 GOTO TOP
77 IF NTCT>0
78 NTLP=1
79 &42,1 SAY ""
80 DO WHILE .T.
81 IF NTLP=NTCT
82 ELSE EXIT
83 NTLP=NTLP+1
84 ENDIF
85 ENDIF
86 USE &RAK
87 USE &RAKNOTE
88 USE MODEL TAG MODEL
89 USE INDEX TO &RAK
90 USE ORDER TO MODEL
91 GOTO TOP
92 DECLARE McOUNT[1,2]
93 XMODEL=MODEL
94 LC=0
95 LOOPC=0
96 XMOUNT=0
97 USE &RAK
98 USE &RAKNOTE
99 USE MODEL TAG MODEL
100 USE INDEX TO &RAK
101 USE ORDER TO MODEL
102 DECLARE McOUNT[1,2]
103 XMODEL=MODEL
104 LC=0
105 LOOPC=0
106 XMOUNT=0
107 DO WHILE .T.
108 IF MODEL=XMODEL
XMOUNT=XMOUNT+1
LOOPCT=LOOPCT+1
IF LOOPCT<RCOUNT
  SKIP
ELSE
  LC=LC+1
EXIT
ENDIF
ELSE
  STORE XMOUNT TO MCOUNT[1,2]
  STORE XMODEL TO MCOUNT[1,1]
  SELECT MDCOUNT
  APPEND FROM ARRAY MCOUNT
  SELECT 1
  STORE MMODEL TO XMOUNT
  XMOUNT=1
  LOOPCT=LOOPCT+1
  LC=LC+1
  IF LOOPCT<RCOUNT
    SKIP
  ELSE
    EXIT
    ENDIF
    ENDDO
ENDIF
ENDDO
STORE XMOUNT TO MCOUNT[1,2]
STORE XMODEL TO MCOUNT[1,1]
SELECT MDCOUNT
APPEND FROM ARRAY MCOUNT
*
GOTO TOP
COUNT TO RECCT
GOTO TOP
@51,0 SAY MX
LOOPCT=1
SKPol
DO WHILE .T.
  #FROW(),PCOL()+3 SAY MX
  LOOPCT=LOOPCT+1
  IF LOOPCT<RECCT
    SKIP
  ELSE
    EXIT
    ENDIF
ENDDO
GOTO TOP
@52,1 SAY STR(SUBTOT,2,0)
LOOPCT=1
SKIP
DO WHILE .T.
  #FROW(),PCOL()+7 SAY STR(SUBTOT,2,0)
  LOOPCT=LOOPCT+1
  IF LOOPCT<RECCT
    SKIP
  ELSE
    EXIT
    ENDIF
ENDDO
GOTO TOP
@52,1 SAY STR(SUBTOT,2,0)
LOOPCT=1
SKIP
DO WHILE .T.
  #FROW(),PCOL()+7 SAY STR(SUBTOT,2,0)
  LOOPCT=LOOPCT+1
  IF LOOPCT<RECCT
    SKIP
  ELSE
    EXIT
    ENDIF
ENDDO
GOTO TOP
@52,1 SAY STR(SUBTOT,2,0)
LOOPCT=1
SKIP
DO WHILE .T.
  #FROW(),PCOL()+7 SAY STR(SUBTOT,2,0)
  LOOPCT=LOOPCT+1
  IF LOOPCT<RECCT
    SKIP
  ELSE
    EXIT
    ENDIF
ENDDO
ELSE
EXIT
ENDIF
ENDDO
*
IF RAKDATE=LAMDATE
USE 4LAM
COUNT TO LSTARTS
SET DEVICE TO SCREEN
@5,5 SAY "Lam Starts = " + STR(LSTARTS, 2, 0)
STORE SPACE(2) TO ALT
@7,2 SAY "Press <ENTER> to accept, or type different value for lam starts: " get ALT
READ
IF ALT=" "
ELSE
STORE VAL(ALT) TO LSTARTS
ENDIF
SET DEVICE TO PRINT
SET DEVICE TO SCREEN
STORE SPACE(2) TO LSTARTS
@5,5 SAY "Enter Lam Starts: " get LSTARTS
READ
STORE VAL(LAMSTARTS) TO LSTARTS
SET DEVICE TO PRINT
@55,30 SAY "LAM STARTS:  " + STR(LSTARTS,2,0)
@56,30 SAY "RACK COUNT:  " + STR(RCOUNT,2,0)
EJECT
SET DEVICE TO SCREEN
ENDDO
RETURN
**insert.prg**

This is a module that allows the user to insert a blank record in a file.

```
10 CLEAR
11 STORE SPACE(2) TO IRREC
12 COUNT TO ICOUNT
13 DO WHILE .T.
14   @7,10 SAY "Please find the record number of the line you wish"
15   @6,10 SAY "to FOLLOW the blank line:"
16   @9,10 SAY ""
17   WAIT
18   display ALL
19   @21,15 SAY "Enter Record Number: " get IRREC
20   READ
21   DO CASE
22     CASE IRREC=""
23       EXIT
24     CASE VAL(IRREC)<ICOUNT OR. VAL(IRREC)=ICOUNT
25       GOTO VAL(IRREC)
26     OTHERWISE
27       INSERT BLANK BEFORE
28       LOOP
29   ENDCASE
30   BROWSE
31   PACK
32   EXIT
33 ENDDO
34 RETURN
35
```