

Manufacturing Documentation

Project Overview

Objective(s)	2
Possible Constraints.....	2
Leads.....	2
Project Description	3
Project Objective(s).....	3
Work Breakdown Structure.....	3
Resource Requirements.....	7

Manufacturing Documentation

Project Overview

Objective(s)

Create a set of modular work instructions to be used during the production of Aristocrat's Crown Slant, MAVSlim, and MAVSCX.

Documents

Work Instructions	Work Order	Doc. Number	Writer	Deadline (imposed by J. Walbridge)	Est. TOT (hours @ 80% usage)
Crown Slant ¹	TP-1707	24-00020-00	Mary McDaniel	Dec 15, 2006	160
Slim Line Video ²	TP-2050	24-00038-00	Mary McDaniel	Feb 16, 2007	320
MAV500 Stepper ³	TP-2046	24-00037-00	Mary McDaniel	March 16, 2007	320

Possible Constraints

- Availability of writer(s)
- Availability of resources
- Availability of equipment
- Availability of Subject Matter Experts (SME)
- Availability of facilities
- Time allotment
- Delays in product design
- Delays in shipment of cabinets and/or parts
- Availability of Production crewmember
- Date and duration of Production floor remodel

Leads

Technical Publications	Mary McDaniel/Project Manager
Operations:	Dan DeBeau/Avinash Gupta/Dean Denlay
Manufacturing:	Rene Anders
R&D:	Don Bauer/Scott Stewart/Mike Bristol
NPI/Eng:	Jimmy Carter/Cole Grundstedt

¹ * 65% complete as of Dec. 12, 2006

² Need cabinet and parts by 12/22/07 to meet deadline

³ Need cabinet and parts by 01/19/07 to meet deadline

Manufacturing Documentation

Project Overview

Project Description

Create modular work instructions to be used by Aristocrat assembly crews during EGM production.

Project Objective(s)

Create a set of Work Instructions for the Crown Slant, MAVSlim, and MAVSCX to be used during production and as a baseline for future documentation.

Work Breakdown Structure

1. Upon assignment of project and receipt of Technical Publications (TP) Work Order:
 - 1.1. Create files/folders
 - 1.1.1. *Manila*: to contain hard copies of the following:
 - TP work order;
 - Draft documentation;
 - Correspondence;
 - Hard copies of graphics, images, drawings; and
 - Document Release Authorizations
 - 1.1.2. *Electronic*: network directory, with sub-directories to contain:
 - Foundation documents, such as manufacturer images and manuals;
 - Preliminary (draft) Parts Manual files;
 - Supporting documents, such as ATI-generated BOM(s) and
 - Images, logo drawings, photographs, graphics and exploded view drawings.
 - 1.1.3. Microsoft Outlook Personal file folder to contain email relating to project.
 - 1.2. Collect Branding
 - Obtain the EGM logo in electronic form.
 - If the EGM logo is not in electronic form, scan logo and create an electronic copy.
 - Manipulate logo using appropriately functional graphic software, such as a full-version Adobe Photoshop, Adobe Illustrator or similar.
 - Save a copy of the logo in Images sub-directory.
2. Identify Subject Matter Experts (SMEs)
 - 2.1. Hold kick-off meeting – establish goals, objectives, deadlines, responsibilities, constraints, potential roadblocks, etc.
3. Review/Assess Product Design
 - 3.1. Photographs and Illustrations
 - Photograph the EGM internally and externally.
 - Photograph EGM components and sub-assemblies.
 - View and manipulate the photographs using photograph manipulation software.
 - Save copies of the EGM photographs in Images sub-directory.

Manufacturing Documentation

Project Overview

WBS (continued)

- 3.2. Obtain complete BOM from manufacturing department and save an electronic copy in the Supporting Docs sub-directory.
 - Convert or download the complete BOM into electronic spreadsheet software for analysis.
 - Save a copy of the spreadsheet BOM in the Supporting Docs sub-directory.
 - Identify and categorize EGM parts and assemblies
- 3.3. Using the spreadsheet BOM, identify parts and assemblies to be documented in the Manufacturing Instructions. Parts and assemblies include, but are not limited to:
 - Cabinet, door and top box
 - Bill Acceptor
 - Printer
 - Wiring Harnesses (Cables)
 - Button panels
 - Locks, key switches and cams
 - Lamps and LEDs
 - MPU
 - Input/Output (I/O) Board
 - Backplane
 - Power assembly
 - Fan(s)
 - Player Marketing Module hardware
 - Logic cage
4. Manufacturing Instructions sections
 - 4.1. Of the parts and assemblies identified from the BOM, organize parts and assemblies into logical sections. Sections include, but are not limited to
 - Cabinet
 - Main Door
 - Top Box
 - Peripherals
 - Wiring Harnesses (Cables)
 - Schematics
 - Player Marketing Module (PMM) components
 - Game-specific components (glass, decals, inserts)
5. Assembly/Disassembly Demonstration - Photograph
 - 5.1. Photograph assembly (or disassembly)
 - Show tools required in the assembly (or disassembly - assembly specific)
 - Show parts and components in the assembly (or disassembly) - assembly specific
 - Discuss total time of assembly (or disassembly)
 - Discuss and demonstrate total steps for assembly (or disassembly)
 - Discuss and demonstrate safety equipment and precautions in the assembly (or disassembly)
 - Discuss special notes and/or instructions

Manufacturing Documentation

Project Overview

WBS (continued)

6. Exploded view drawings, photographs, illustrations
 - 6.1. Exploded View Drawings
 - Locate exploded view drawings of the parts and assemblies in electronic format.
 - If the exploded view drawings are not in electronic format, scan exploded view drawings and create an electronic copy.
 - Save electronic copies in the Images sub-directory.
 - View and revise the electronic exploded view drawings using an AutoCAD-like software program or similar to make exploded view drawings print-ready, for example:
 - 6.2. Add or remove dimensions as necessary
 - 6.3. Rotate and adjust angle and view to achieve optimal display of target components
 - 6.4. Darken lines for better visibility
 - 6.5. Compress or enlarge (zoom) to target components as necessary
 - 6.6. Move image as necessary
 - 6.7. Add call-outs (arrows) identifying components comprising assembly as necessary
 - 6.8. Add sub-assembly BOMs per exploded view drawings detailing parts and components comprising the assemblies
 - 6.9. Save drawing(s) as native format file format (Illustrator) to be imported into Manufacturing Instruction template.
7. Parts and assemblies photographs
 - Photograph parts and assemblies where no exploded view drawings are available.
 - If the photographs are not in electronic form, scan the photographs to create an electronic copy.
 - Save electronic copies in the Images sub-directory.
 - View and modify the photographs with photograph manipulation software to make parts and assemblies print-ready; software must be able to:
 - 7.1. Convert image from full color to grayscale
 - 7.2. Brighten or darken image as necessary
 - 7.3. Compress or enlarge (zoom) image as necessary
 - 7.4. Add dimensions as necessary
 - 7.5. Add call-outs (arrows) identifying components comprising assembly as necessary
 - 7.6. Add sub-assembly BOMs per exploded view drawings detailing parts and components comprising the assemblies.
8. Document assembly (or disassembly) steps using manufacturing instruction template
 - 8.1. Insert formatted electronic images where appropriate into manufacturing instructions template
 - 8.2. Verify manufacturing instructions steps with test subject (usability study) and implement revisions as required
 - Images
 - Formatting
 - Content

Manufacturing Documentation

Project Overview

WBS (continued)

8.3. Illustrations

- If neither exploded view drawings nor photographs are available, illustrations are required, preferably in electronic format, to properly document parts and assemblies.
- If the illustrated drawings are not in electronic format, scan illustrated drawings to create an electronic copy.
- Save electronic copies in the Images sub-directory.
- View and revise the illustrated drawings with image manipulation software to make the parts and assemblies print-ready, for example:
 - 8.3.1. Convert image to from full color to grayscale
 - 8.3.2. Brighten or darken image as necessary
 - 8.3.3. Compress or enlarge (zoom) image as necessary
 - 8.3.4. Add dimensions as necessary
 - 8.3.5. Add call-outs (arrows) identifying components comprising assembly as necessary
 - 8.3.6. Add sub-assembly BOMs per exploded view drawings detailing parts and components comprising assemblies
 - 8.3.7. Save image(s) as native file format (Illustrator) to be imported into Manufacturing Instructions template

9. Release preliminary draft, and save copy of the draft document to the Work in Progress directory.

9.1. After each review cycle:

- 9.1.1. Obtain markup from SMEs
- 9.1.2. Review markups
- 9.1.3. Coordinate and combine markups
- 9.1.4. Insert text and/or image changes
- 9.1.5. Notify SMEs of missing information as required
- 9.1.6. Ask SMEs to clarify inconsistent or incomprehensible information
- 9.1.7. Identify the additional images needed
- 9.1.8. Clean up images as required
- 9.1.9. Insert images
- 9.1.10. Edit text and images as required
- 9.1.11. Review changes

9.2. Edits – consistency check (search and replace), spell check

9.3. Send updated text to SMEs

10. Upon completion of all review cycles with SMEs:

- 10.1. Send document to Technical Publications Reviewer (TPR) if other than SMEs; repeat review cycle with TPR as required
- 10.2. Upon completion of TPR review cycle, compile all approvals and related texts
- 10.3. Send final approved document to Document Control Specialist (DCS)
- 10.4. Submit release package to DCS
- 10.5. Fix inconsistencies as notified by DCS
- 10.6. Return to DCS

Manufacturing Documentation

Project Overview

Resource Requirements

1. Bill of Materials
 - 1.1. Someone knowledgeable in the BOM compiler software program (M2K) that can either compile a complete manufacturing BOM of the EGM, or provide training on how to compile a complete manufacturing BOM, should be available for approximately one day, and on an as-needed basis thereafter.
 - 1.2. A spreadsheet software program, such as Microsoft Excel or similar capable of converting the manufacturing BOM compiled from the BOM compiler program.
 - 1.3. Someone knowledgeable in the spreadsheet software program that can manipulate, query and/or filter the converted manufacturing BOM should be available.
2. Manufacturing Instructions template
 - 2.1. As a foundation, use an existing Manufacturing Instructions template, such as the Crown Slant Manufacturing Instructions.
 - 2.2. A desktop publishing software program, such as Adobe InDesign or similar to format the Manufacturing Instructions.
 - 2.3. Someone knowledgeable in the desktop publishing software program to format, revise and/or write as necessary should be available for the duration of the project.
3. Logo
 - 3.1. A graphic manipulation software program, such as Adobe Illustrator or Adobe Photoshop to manipulate the EGM logo as necessary.
 - 3.2. Someone knowledgeable in the graphic manipulation software program to manipulate the EGM logo as necessary should be available.
4. Cabinet Photographs and Video
 - 4.1. Access to the EGM cabinet, both internally and externally, to (preferably) videotape or (optionally) take digital photographs of the cabinet for approximately five days for each assembly, and then on an as-needed basis thereafter.
 - 4.2. (Preferable method) A videotape recorder capable of taking high-end motion video of the EGM, both internally and externally.
 - 4.3. (Optional method) A digital camera capable of taking high-end photographs of the EGM, both internally and externally.
 - 4.4. (Preferable method) Someone knowledgeable in taking high-end motion video to take, transfer, and save images of the EGM should be available.
 - 4.5. (Optional method) Someone knowledgeable in taking high-end digital photographs to take photographs, transfer, and save images of the EGM should be available.
 - 4.6. (Preferable method) A method to download the high-end motion video images (cables, docking station, etc.) from the videotape recorder to the PC.
 - 4.7. (Optional method) A method to download photographed images (cables, docking station, etc.) from the digital camera to the PC.
 - 4.8. (Preferable method) A method to capture still photographs from the high-end motion video to transfer and save images to the PC.
 - 4.9. Photograph manipulation software capable of manipulating the photographed images into print-ready format.
 - 4.10. Someone knowledgeable in the photograph manipulation software to manipulate the photographs into print-ready format should be available.

Manufacturing Documentation

Project Overview

Resource Requirements (continued)

5. Parts and assemblies exploded view drawings, photographs, and illustrated drawings
 - 5.1. Exploded view drawings
 - Access to the exploded view drawings, preferably in electronic format (dwg).
 - If exploded view drawings are not in electronic form access to a high-end image scanner to scan the images into electronic format.
 - If the use of a high-end image scanner is required, accompanying software to manipulate the scanned electronic image(s) into print-ready format.
 - Someone knowledgeable in the high-end scanner to scan the image(s) should be available.
 - Someone knowledgeable in the scanner software to manipulate the scanned electronic image(s) into print-ready format should be available.
 - If the exploded view drawings are in electronic format, an AutoCAD-like software program or similar to view and manipulate acquired exploded view drawings.
 - Someone knowledgeable in an AutoCAD-like software program or similar to manipulate the exploded view drawings into print-ready images should be available.
 - 5.2. Parts and assemblies photographs
 - Access to the EGM cabinet, both internally and externally, to take digital photographs of the cabinet's parts and assemblies.
 - A digital camera capable of taking high-end photographs of the EGM's parts and assemblies, both internally and externally.
 - Someone knowledgeable in taking high-end digital photographs to capture appropriate images of the EGM's parts and assemblies should be available.
 - A method to download photographed images (cables, docking station, etc.) from the digital camera to the PC.
 - Photograph manipulation software capable of manipulating the photographed images into print-ready format.
 - Someone knowledgeable in the photograph manipulation software to manipulate the photographs into print-ready format should be available.
6. Documentation standards
 - 6.1. Someone knowledgeable in technical publications standards to explain and answer questions on technical publications standards should be available.
 - 6.2. Someone knowledgeable in technical publications standards to review the preliminary documentation and ensure it conforms to ATI's standards.
7. Subject Matter Experts (SME)
 - 7.1. Someone knowledgeable in assembly (or disassembly) of the relevant parts and components of the EGM must be available for approximately five days per assembly, and then on an as-needed basis thereafter to demonstrate assembly (or assembly) of the relevant parts and components of the EGM.
 - (Preferable method) manufacturing floor personnel
 - (Alternate method) lab personnel – note: individual must be able to duplicate exact assembly (or disassembly) procedure(s) to accurately document
 - 7.2. A test subject must be available for use in a usability study to verify each Manufacturing Instruction. This individual must not have any prior knowledge of the parts or components, nor of the assembly (or disassembly) of the parts or components documented in the Manufacturing Instruction must be available.

Manufacturing Documentation

Project Overview

Resource Requirements (continued)

8. Facilities and tools

8.1. A location for which demonstration of the assembly (or disassembly) of the parts or components must be provided for the duration of the procedure, and follow-up usability study.

- (Preferable method) manufacturing floor station
- (Alternate method) lab setting - note: conditions must be as closely matched to accurately document assembly (or disassembly) procedure(s)