Preliminary documentation

1. Cornell's Request for Quote for Pointing System
   Vertex Proposal
   Purchase Order
   Acceptance Test Plan

2. Final Design Review

3. Final Design Report, Ed. 1.0, August 95
   Schedule
   Drawing Tree
   Mechanical Design
   Analysis/Simulation (not included in final delivered documentation)
   Servo Concept
   Servo Design
   LAN Interface
   Cable Diagram

Final Delivered Documentation

4. Volume I Mechanical Handbook Rev 2.1 Sept 97
   Section 1.1 General
   Section 1.2.1 Drawing Tree and Table
   Section 1.2.2 Azimuth Drive
   Section 1.2.3 Azimuth Encoder
   Section 1.2.4 Elevation Drive
   Section 1.2.5 Elevation Drive Support
   Section 1.2.6 Elevation Encoder
   Section 1.2.7 Final Limits Mount, Elevation Drive
   Section 1.2.8 Collision Avoidance Mechanism
   Section 2.1 Installation Azimuth Drive
   Section 2.2 Installation Azimuth Encoder
   Section 2.3 Installation Elevation Drive
   Section 2.4 Installation Elevation Encoder
   Section 2.5 Installation Final Limits Mount, Elevation Drive
   Section 2.6 Installation Collision Avoidance Mechanism
   Section 3.1 General Maintenance
   Section 3.2 Inspection and Maintenance Work
   Section 3.3 Maintenance Schedule
   Section 3.4 Vendor Information

   Section 1, Operation, Maintenance & Troubleshooting, Rev. 2.2, Sept. 97
   Section 2, LAN Interface Description, Rev. 2.2, Sept. 97
   Section 3, PLC Description of Internal Interfaces, Rev. 2.2, Sept. 97
   Section 4, Modifications and Adjustments, Rev. 2.2, Sept. 97

   Drawing 950432
   PD (Power Distribution) 29 Sheets
   AZ (Azimuth) 23 Sheets
   GD (Gregorian Dome) 22 Sheets
   CH (Carriage House) 22 Sheets
CC (Control Cabinet) 2 Sheets
PLC (Programmable Logic Controller) 66 Sheets
Drawing 950343, List of Parts, 14 Sheets
Drawing 950344, Interconnection Diagram (Wire List) 69 Sheets
Drawing 950345, Cable List, 15 Sheets
Drawing 950346, Cable Diagram, 7 Sheets
Drawing 950348, Control Cabinet Layout, 2 Sheets

7. Volume IV.1 Vendor Publications, File 1, Rev. 2.0, May 1997
   Section 1.1, Manual for Siemens Simatic S5-135U PLC
   Section 1.2, Manual for CPU928B
   Section 1.3, Manual for CP581
   Section 1.4, Manual for CP524/COM525
   Section 1.5, Position Measuring Module WF705
   Section 1.6 LAN Interface Module
   Section 1.7, Time Code Reader
   Section 2.1, Data Sheets Kollmorgen Motors B604 & B606
   Section 2.2, Manual for Amplifier BDS4A
   Section 2.3, Technical Data for Maccon Regeneration Module
   Section 3.1, Encoders
   Section 4, Vertex Portable Control Unit (PCU)
   Section 5.1, Stromag Rotary Cam Limit Switches
   Section 5.2, Schmersal Limit Switches
   Section 6, Vertex Drive Control System "DCS" (Analog Circuitry)
   Section 6.1, Vertex DCS for Azimuth/Gregorian Dome
   Section 6.2, Vertex DCS for Carriage House

   Section 7, Uninterruptable Power Supply (UPS)
   Section 8, Switchgear Inside Drive Cabinet
   Section 8.1 Dold Voltage Supervision Relays
   Section 8.2, Pilz Current Relays
   Section 8.3 Schiele Over voltage Protection Relay
   Section 8.4, Misc. Components

9. Volume V.1 Software Documentation - PLC Software Rev.2.0 Dec. 99 (Andy's copy)
   Spiral Bound Software Listings
   1. Program Overview
   2. Listing (PLC code from Vol. V.1)
      3.1 OB listing (O blocks)
      3.2 PB listing
      3.3 FB listing (Function blocks)
      3.4 FW listing
      3.9 DB Listing
   4. Reference Tables (spiral bound at top)

10. Volume V.2 Software Documentation - LCU Software Sept. 97
11. Volume V.3 Software Documentation - OCU Software Sept. 97
Documentation for Siemens Crates, CPUs, Modules, and Software

Siemens 1 (large softbound)

Siemens 2 (large softbound)
Siemens Simatic S5-135U/S155U System Manual

Siemens 3 (large 3-ring binder)
Siemens Simatic S5/135U CPU 928B (Versions 3UB11 & 3UB12) Programming Guide
(Vertex delivered system with 928B-3UB11)

Siemens 4 (large softbound)
The spare CPU we purchased is a 928B-3UB21

Siemens 5 (large 3-ring binder)
Siemens Simatic S5-135U/155U CPU928B/CPU948 Communication

Siemens 6 (small 3-ring binder)
Siemens Simatic S5 CP581 Volume 1/2: Hardware

Siemens 7 (small 3-ring binder)
Siemens Simatic S5 CP581 Volume 2/2: Software

Siemens 8 (small softbound)
Siemens Simatic S5 COM 525 Programming Package for CP524 and CP 525 (S5 -DOS)
Vol ½

Siemens 9 (small softbound)
Siemens Simatic S5 COM 525 Programming Package for CP524 and CP 525 (S5 -DOS)
Vol 2/2

Siemens 10 (small softbound)
Siemens Simatic S5 Step 5 Version 6.6 (Step 5 software reference/development manual)
(PC software development installation guide is at the back of Vertex Vol IV.1)

Siemens 11 (even smaller softbound)
Simatic S5 Working with S5-DOS/ST
**Siemens 11a** (small 2-hole binder with plastic cover)  
Simatic S5 Externer Prommer (manual for the external programmer for SIMATIC submodules and memory Cards). This book is kept in a box with the prommer, power supply, connecting cable, and installation disk.

**Siemens 12** (large, fat 3-ring binder)  
Simatic S5 Programming I Training Manual

**Siemens 13** (large, fat 3-ring binder)  
Simatic S5 Programming II Training Manual

**Siemens 14** (spiral bound: green cover, green spiral)  
Simatic S5-135U PC-CPU928B Programming Guide Condensed

**Siemens 15** (spiral bound: blue cover, black spiral)  
S5 Programming I Study Guide Learner

**Siemens 16** (spiral bound: white cover, black spiral)  
S5 Maintenance Course I - Application Workbook

**Siemens 17** (spiral bound: white cover, black spiral)  
S5 Maintenance Course II - Application Workbook

**Siemens 18** (spiral bound: white cover, black spiral)  
S5 Maintenance Course Tutor I Guide Drill 4 Guide Quick Guide