

ARCS Instrument Budget Estimates - Early Detector Installation

WBS	Task/Component	Total Cost (k\$)	Procurement Cost (k\$)	Effort Cost (k\$)	Effort (hours)	Estimated Contingency (k\$)	Estimated % Contingency
1.2	System Interface/Project Management Tasks	1,030	51	979	10,880	0	0
1.3	Instrument Installation	799	86	713	13,256	267	33
2	Data Acquisition	242	108	133	1,350	58	24
3	Detectors	2,456	2,179	277	4,488	786	32
4	Choppers	877	750	127	1,720	144	16
5	Sample Environment	290	243	47	592	65	22
6	Optical Elements	622	422	200	2,792	172	28
7	Shielding	1,222	889	332	4,344	356	29
8.1	Vacuum Chamber	1,690	1,474	215	3,172	476	28
8.2	Vacuum Systems	239	166	73	974	59	25
8.3	Instrument Services	299	196	104	1,369	75	25
	Total	9,764	6,564	3,200	44,937	2,457	25

Actual DOE budget for the instrument = 12,059 k\$

Actual contingency = 2,295 k\$

Actual percentage contingency = 24%

Note: This budget does not conform to the budget authority given by DOE for the project.

ARCS Instrument Budget Estimates - Late Detector Installation

WBS	Task/Component	Total Cost (k\$)	Procurement Cost (k\$)	Effort Cost (k\$)	Effort (hours)	Estimated Contingency (k\$)	Estimated % Contingency
1.2	System Interface/Project Management Tasks	1,030	51	979	10,880	0	0
1.3	Instrument Installation	799	86	713	13,256	267	33
2	Data Acquisition	242	108	133	1,350	58	24
3	Detectors	2,576	2,295	281	4,488	827	32
4	Choppers	881	753	128	1,720	144	16
5	Sample Environment	298	250	48	592	67	22
6	Optical Elements	622	422	200	2,792	172	28
7	Shielding	1,222	889	332	4,344	356	29
8.1	Vacuum Chamber	1,698	1,482	216	3,172	479	28
8.2	Vacuum Systems	239	166	73	974	59	25
8.3	Instrument Services	299	196	104	1,369	75	25
	Total	9,905	6,698	3,207	44,937	2,502	25

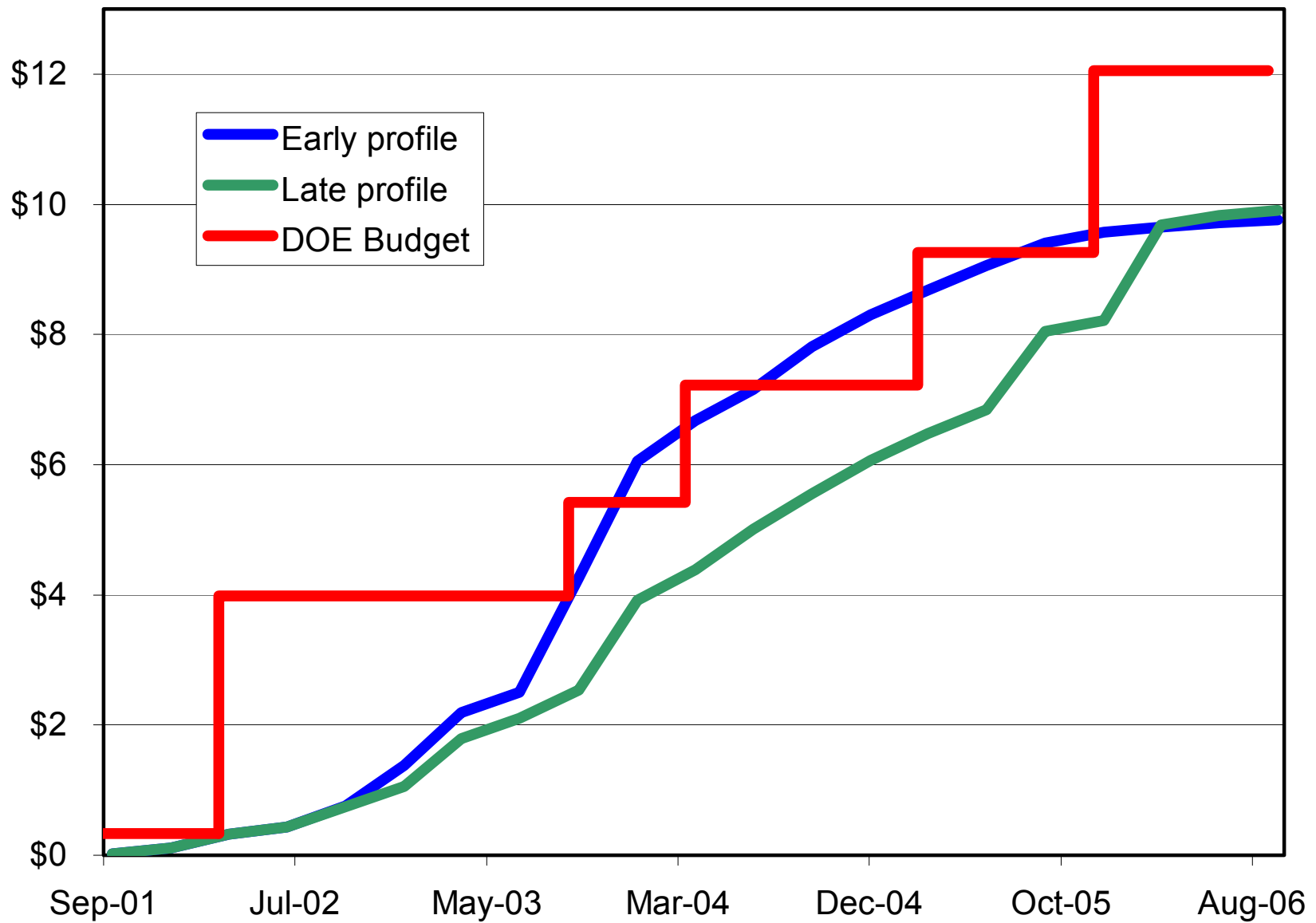
Actual DOE budget for the instrument = 12,059 k\$

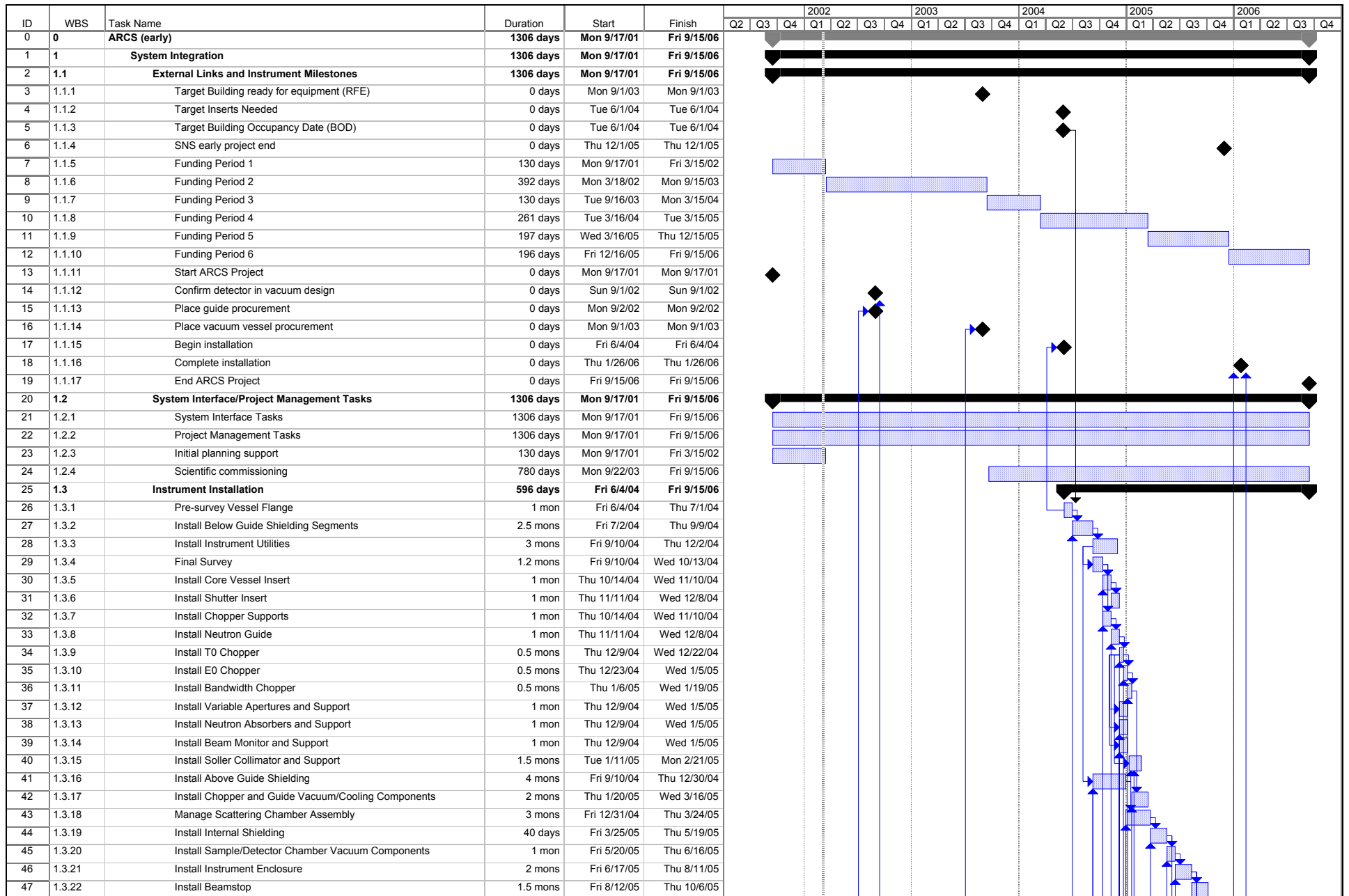
Actual contingency = 2,154 k\$

Actual percentage contingency = 22%

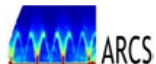
Note: This budget conforms to the budget authority given by DOE, but the detectors are purchased and installed in the last year of the project.

Budget Profiles (M\$)

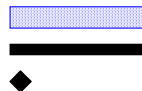




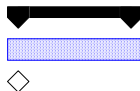
Project: ARCS (early)
Date: Tue 3/5/02



Task
Progress
Milestone



Summary
Rolled Up Task
Rolled Up Milestone



Rolled Up Progress
Split
External Tasks



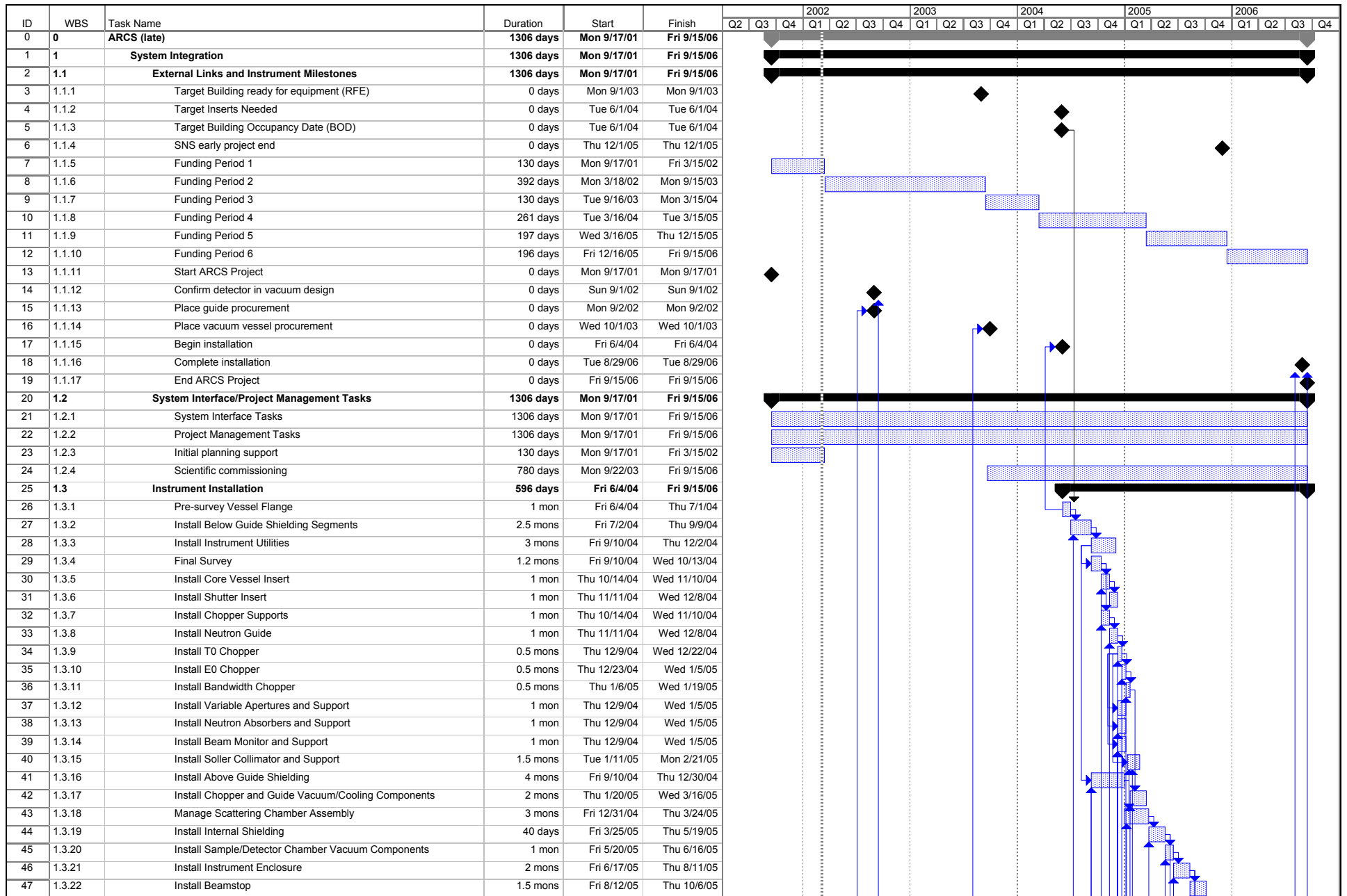
Project Summary
Group By Summary



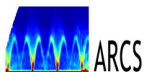
ID	WBS	Task Name	Duration	Start	Finish	2002				2003				2004				2005				2006			
						Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
48	1.3.23	Install PPS and Beamline Interlocks	1 mon	Fri 8/12/05	Thu 9/8/05																				
49	1.3.24	Install Sample Environment Handling Equipment	1 mon	Fri 8/12/05	Thu 9/8/05																				
50	1.3.25	Install Mezzanine	2 mons	Fri 8/12/05	Thu 10/6/05																				
51	1.3.26	Install Goniometer	1 mon	Fri 10/7/05	Thu 11/3/05																				
52	1.3.27	Install Radial Collimator	1 mon	Fri 10/7/05	Thu 11/3/05																				
53	1.3.28	Install Instrument Hutch	1 mon	Fri 10/7/05	Thu 11/3/05																				
54	1.3.29	Install and Calibrate Detector Mounting System	2 mons	Fri 5/20/05	Thu 7/14/05																				
55	1.3.30	Install and Calibrate Detectors	2 mons	Fri 7/15/05	Thu 9/8/05																				
56	1.3.31	Install DAS/Control Computer	3 mons	Fri 11/4/05	Thu 1/26/06																				
57	1.3.32	System Testing	8 mons	Mon 2/6/06	Fri 9/15/06																				
58	2	Data Acquisition	240 days	Mon 11/1/04	Fri 9/30/05																				
59	2.1	Data Acquisition Design	120 days	Mon 11/1/04	Fri 4/15/05																				
60	2.1.1	Data Acquisition System Cable Design	3 mons	Mon 11/1/04	Fri 1/21/05																				
61	2.1.2	Instrument Data Acq. System Controls Design	6 mons	Mon 11/1/04	Fri 4/15/05																				
62	2.2	Data Acquisition Procure./Fab.	120 days	Mon 4/18/05	Fri 9/30/05																				
63	2.2.1	Internal Data Acq. System Specification Review	1 mon	Mon 4/18/05	Fri 5/13/05																				
64	2.2.2	Procure Data Acq. System Components	4 mons	Mon 5/16/05	Fri 9/2/05																				
65	2.2.3	DAS Components QA-Procure Acceptance Period	1 mon	Mon 9/5/05	Fri 9/30/05																				
66	2.3	Data Acquisition Software	120 days	Fri 4/1/05	Thu 9/15/05																				
67	2.3.1	Modify Version 1.0 Software	6 mons	Fri 4/1/05	Thu 9/15/05																				
68	3	Detectors	855 days	Fri 2/15/02	Wed 5/25/05																				
69	3.1	Detector Module Prototype Testing Plan	140 days	Fri 2/15/02	Thu 8/29/02																				
70	3.1.1	Develop Testing Plan	1 mon	Fri 2/15/02	Thu 3/14/02																				
71	3.1.2	Design Testing Equipment	3 mons	Fri 3/15/02	Thu 6/6/02																				
72	3.1.3	Order and Receive Testing Equipment	3 mons	Fri 3/15/02	Thu 6/6/02																				
73	3.1.4	Conduct Testing	3 mons	Fri 6/7/02	Thu 8/29/02																				
74	3.2	Detector Array Design	200 days	Fri 8/30/02	Wed 6/4/03																				
75	3.2.1	Determine Detector Requirements and Calibration Scheme	3 mons	Fri 8/30/02	Thu 11/21/02																				
76	3.2.2	Write Detector Specifications	1 mon	Fri 11/22/02	Thu 12/19/02																				
77	3.2.3	Design Detector Mounting	6 mons	Fri 12/20/02	Wed 6/4/03																				
78	3.3	Detector Modules Procurement and Fabrication	474 days	Fri 8/1/03	Wed 5/25/05																				
79	3.3.1	Detector Tube Procurement 1	3 mons	Fri 8/1/03	Thu 10/23/03																				
80	3.3.2	Detector Tube Procurement 2	3 mons	Mon 12/1/03	Fri 2/20/04																				
81	3.3.3	Detector Tube QA/Procurement Acceptance	12 mons	Fri 10/24/03	Thu 9/23/04																				
82	3.3.4	Detector Electronics Procurement	150 days	Mon 12/1/03	Fri 6/25/04																				
83	3.3.5	Detector Electronic QA/Procurement Acceptance	150 days	Mon 5/17/04	Fri 12/10/04																				
84	3.3.6	Neutron Absorber Procurement	100 days	Mon 2/2/04	Fri 6/18/04																				
85	3.3.7	Detector Mounting Mechanics Procurement	4 mons	Thu 4/1/04	Wed 7/21/04																				
86	3.3.8	Detector Mounts QA/Procurement Acceptance	3 mons	Thu 7/22/04	Wed 10/13/04																				
87	3.3.9	Detector Module Assembly and Testing	8 mons	Thu 10/14/04	Wed 5/25/05																				
88	3.4	Beam Monitors	278 days	Mon 6/2/03	Wed 6/23/04																				
89	3.4.1	Specify Beam Monitor Design Requirements	1 mon	Mon 6/2/03	Fri 6/27/03																				
90	3.4.2	Procure Beam Monitors	8 mons	Tue 7/1/03	Mon 2/9/04																				
91	3.4.3	Beam Monitor QA/Procurement & Acceptance	1 mon	Tue 2/10/04	Mon 3/8/04																				
92	3.4.4	Design Beam Monitor Support	2 mons	Thu 4/1/04	Wed 5/26/04																				
93	3.4.5	Procure Beam Monitor Support	1 mon	Thu 5/27/04	Wed 6/23/04																				
94	4	Choppers	426 days	Fri 11/1/02	Thu 6/17/04																				
95	4.1	T0 Chopper	369 days	Mon 12/2/02	Wed 4/28/04																				

ID	WBS	Task Name	Duration	Start	Finish
96	4.1.1	Modify Standard T0 Design	1 mon	Mon 12/27/02	Fri 12/27/02
97	4.1.2	T0 Choppers Procurement	10 mons	Mon 12/30/02	Thu 10/2/03
98	4.1.3	T0 Choppers Assembly/Testing	2 mons	Fri 10/3/03	Thu 11/27/03
99	4.1.4	Ship T0 Choppers Assembly to SNS	1 mon	Thu 4/1/04	Wed 4/28/04
100	4.2	E0 Chopper	405 days	Mon 12/2/02	Thu 6/17/04
101	4.2.1	Modify Standard E0 Design	1 mon	Mon 12/2/02	Fri 12/27/02
102	4.2.2	Design E0 Chopper Translation Table	1 mon	Mon 12/30/02	Fri 1/24/03
103	4.2.3	E0 Chopper Translation Table Procurement	3 mons	Mon 1/27/03	Thu 4/17/03
104	4.2.4	E0 Choppers Procurement	15 mons	Sat 2/1/03	Thu 3/25/04
105	4.2.5	E0 Choppers Assembly/Testing	2 mons	Fri 3/26/04	Thu 5/20/04
106	4.2.6	Ship E0 Choppers Assembly to SNS	1 mon	Fri 5/21/04	Thu 6/17/04
107	4.3	Bandwidth Chopper	367 days	Fri 11/1/02	Fri 3/26/04
108	4.3.1	Modify Standard Bandwidth Design	1 mon	Fri 11/1/02	Thu 11/28/02
109	4.3.2	Bandwidth Choppers Procurement	10 mons	Sat 2/1/03	Thu 11/6/03
110	4.3.3	Bandwidth Choppers Assembly/Testing	2 mons	Fri 11/7/03	Thu 1/1/04
111	4.3.4	Ship Bandwidth Choppers Assembly to SNS	1 mon	Mon 3/1/04	Fri 3/26/04
112	4.4	Chopper Support Equipment	60 days	Fri 8/1/03	Thu 10/23/03
113	4.4.1	Design Chopper Support Equipment	1 mon	Fri 8/1/03	Thu 8/28/03
114	4.4.2	Procure Chopper Support Equipment	2 mons	Fri 8/29/03	Thu 10/23/03
115	5	Sample Environment	507 days	Sat 2/1/03	Mon 1/10/05
116	5.1	Thimble	160 days	Mon 2/2/04	Fri 9/10/04
117	5.1.1	Design Thimble	2 mons	Mon 2/2/04	Fri 3/26/04
118	5.1.2	Procure Thimble	6 mons	Mon 3/29/04	Fri 9/10/04
119	5.2	Cryofurnace	160 days	Sat 2/1/03	Thu 9/11/03
120	5.2.1	Specify Cryofurnace	2 mons	Sat 2/1/03	Thu 3/27/03
121	5.2.2	Procure Cryofurnace	6 mons	Fri 3/28/03	Thu 9/11/03
122	5.3	Closed Cycle Refrigerator	160 days	Wed 10/1/03	Tue 5/11/04
123	5.3.1	Specify Closed Cycle Refrigerator	2 mons	Wed 10/1/03	Tue 11/25/03
124	5.3.2	Procure Closed Cycle Refrigerator	6 mons	Wed 11/26/03	Tue 5/11/04
125	5.4	Furnace	160 days	Tue 6/1/04	Mon 1/10/05
126	5.4.1	Specify Furnace	2 mons	Tue 6/1/04	Mon 7/26/04
127	5.4.2	Procure Furnace	6 mons	Tue 7/27/04	Mon 1/10/05
128	6	Optical Elements	768 days	Fri 2/1/02	Mon 1/10/05
129	6.1	Core Vessel Insert	245 days	Mon 3/3/03	Fri 2/6/04
130	6.1.1	Determine Core Vessel Insert Design Requirements	2 mons	Mon 3/3/03	Fri 4/25/03
131	6.1.2	Design Core Vessel Insert	1 mon	Mon 4/28/03	Fri 5/23/03
132	6.1.3	Core Vessel Insert Procurement	6 mons	Mon 6/2/03	Fri 11/14/03
133	6.1.4	Core Vessel Insert QA/Procurement Acceptance	1 mon	Mon 11/17/03	Fri 12/12/03
134	6.1.5	Pre-test Core Vessel Insert	2 mons	Mon 12/15/03	Fri 2/6/04
135	6.2	Shutter Insert	329 days	Mon 3/3/03	Thu 6/3/04
136	6.2.1	Determine Shutter Insert Design Requirements	2 mons	Mon 3/3/03	Fri 4/25/03
137	6.2.2	Design Shutter Insert	1 mon	Mon 4/28/03	Fri 5/23/03
138	6.2.3	Shutter Insert Procurement	6 mons	Mon 5/26/03	Fri 11/7/03
139	6.2.4	Shutter Insert QA/Procurement Acceptance	1 mon	Mon 11/10/03	Fri 12/5/03
140	6.2.5	Pre-test Shutter Insert	2 mons	Mon 12/8/03	Fri 1/30/04
141	6.2.6	Assemble Neutron Guide into Shutter Insert	2 mons	Fri 4/9/04	Thu 6/3/04
142	6.3	Neutron Guide System	571 days	Fri 2/1/02	Thu 4/8/04
143	6.3.1	Specify Guide Design Requirements	2 mons	Fri 2/1/02	Thu 3/28/02

ID	WBS	Task Name		Duration	Start	Finish	2002				2003				2004				2005				2006						
							Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
144	6.3.2	Prepare Guide Specification		2 mons	Fri 3/29/02	Thu 5/23/02																							
145	6.3.3	Guides Procurement Bid Period and Review		2 mons	Fri 5/24/02	Thu 7/18/02																							
146	6.3.4	Guide Procurement		18 mons	Mon 9/2/02	Thu 1/15/04																							
147	6.3.5	Guide QA/Procurement Acceptance		3 mons	Fri 1/16/04	Thu 4/8/04																							
148	6.4	Neutron Beam Attenuator		140 days	Mon 5/3/04	Fri 11/12/04																							
149	6.4.1	Design Attenuator System and Supports		2 mons	Mon 5/3/04	Fri 6/25/04																							
150	6.4.2	Absorber System Procurements		3 mons	Mon 6/28/04	Fri 9/17/04																							
151	6.4.3	Attenuator System Pretesting		2 mons	Mon 9/20/04	Fri 11/12/04																							
152	6.5	Variable Apertures		160 days	Thu 1/1/04	Wed 8/11/04																							
153	6.5.1	Design Aperture System and Supports		3 mons	Thu 1/1/04	Wed 3/24/04																							
154	6.5.2	Aperture System Procurements		3 mons	Thu 3/25/04	Wed 6/16/04																							
155	6.5.3	Aperture System Pretesting		2 mons	Thu 6/17/04	Wed 8/11/04																							
156	6.6	Soller Collimator		160 days	Tue 6/1/04	Mon 1/10/05																							
157	6.6.1	Design Soller Collimator and Support		3 mons	Tue 6/1/04	Mon 8/23/04																							
158	6.6.2	Procure Soller Collimator System		4 mons	Tue 8/24/04	Mon 12/13/04																							
159	6.6.3	Soller Collimator System Pretesting		1 mon	Tue 12/14/04	Mon 1/10/05																							
160	7	Shielding		712 days	Mon 9/2/02	Mon 5/23/05																							
161	7.1	Incident Beamline Shielding		321 days	Sat 2/1/03	Fri 4/23/04																							
162	7.1.1	Design Beamline Shielding		8 mons	Sat 2/1/03	Thu 9/11/03																							
163	7.1.2	Incident Shielding Design Review		3 mons	Fri 9/12/03	Thu 12/4/03																							
164	7.1.3	Procure Incident Beamline Shielding		3 mons	Mon 2/2/04	Fri 4/23/04																							
165	7.2	Instrument Enclosure Shielding		466 days	Mon 9/2/02	Fri 6/11/04																							
166	7.2.1	Design Instrument Enclosure Shielding		4 mons	Mon 9/2/02	Fri 12/20/02																							
167	7.2.2	Instrument Enclosure Design Review		6 mons	Mon																								



Project: ARCS (late)
Date: Tue 3/5/02



Task



Summary



Rolled Up Progress



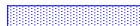
Project Summary



Progress



Rolled Up Task



Split



Group By Summary



Milestone



Rolled Up Milestone

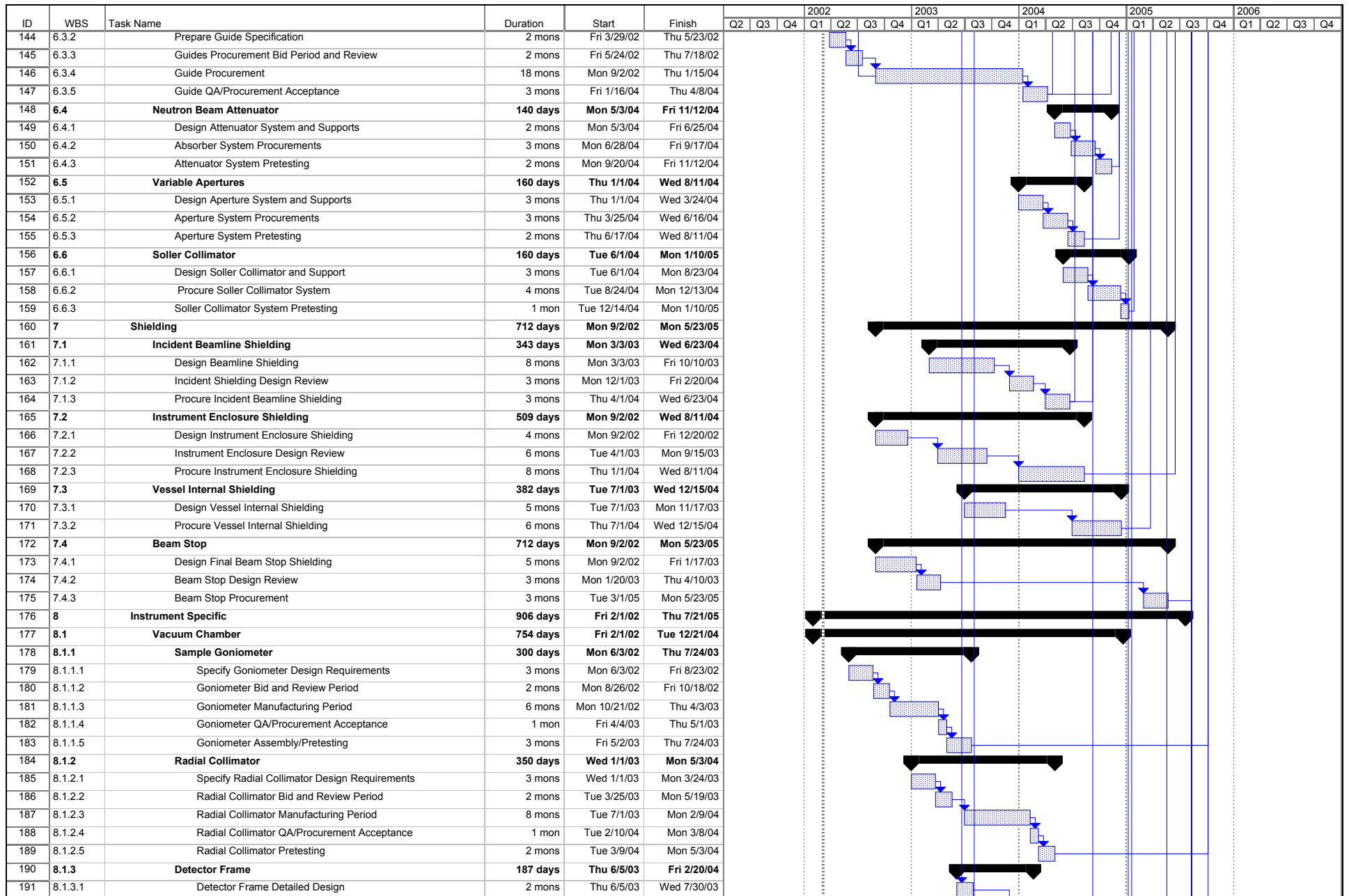


External Tasks



ID	WBS	Task Name		Duration	Start	Finish	2002				2003				2004				2005				2006						
							Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
48	1.3.23	Install PPS and Beamline Interlocks		1 mon	Fri 8/12/05	Thu 9/8/05																							
49	1.3.24	Install Sample Environment Handling Equipment		1 mon	Fri 8/12/05	Thu 9/8/05																							
50	1.3.25	Install Mezzanine		2 mons	Fri 8/12/05	Thu 10/6/05																							
51	1.3.26	Install Goniometer		1 mon	Fri 10/7/05	Thu 11/3/05																							
52	1.3.27	Install Radial Collimator		1 mon	Fri 10/7/05	Thu 11/3/05																							
53	1.3.28	Install Instrument Hutch		1 mon	Fri 10/7/05	Thu 11/3/05																							
54	1.3.29	Install and Calibrate Detector Mounting System		2 mons	Fri 5/20/05	Thu 7/14/05																							
55	1.3.30	Install and Calibrate Detectors		2 mons	Wed 7/5/06	Tue 8/29/06																							
56	1.3.31	Install DAS/Control Computer		3 mons	Fri 11/4/05	Thu 1/26/06																							
57	1.3.32	System Testing		8 mons	Mon 2/6/06	Fri 9/15/06																							
58	2	Data Acquisition		240 days	Mon 11/1/04	Fri 9/30/05																							
59	2.1	Data Acquisition Design		120 days	Mon 11/1/04	Fri 4/15/05																							
60	2.1.1	Data Acquisition System Cable Design		3 mons	Mon 11/1/04	Fri 1/21/05																							
61	2.1.2	Instrument Data Acq. System Controls Design		6 mons	Mon 11/1/04	Fri 4/15/05																							
62	2.2	Data Acquisition Procure./Fab.		120 days	Mon 4/18/05	Fri 9/30/05																							
63	2.2.1	Internal Data Acq. System Specification Review		1 mon	Mon 4/18/05	Fri 5/13/05																							
64	2.2.2	Procure Data Acq. System Components		4 mons	Mon 5/16/05	Fri 9/2/05																							
65	2.2.3	DAS Components QA-Procure Acceptance Period		1 mon	Mon 9/5/05	Fri 9/30/05																							
66	2.3	Data Acquisition Software		120 days	Fri 4/1/05	Thu 9/15/05																							
67	2.3.1	Modify Version 1.0 Software		6 mons	Fri 4/1/05	Thu 9/15/05																							
68	3	Detectors		1152 days	Fri 2/15/02	Fri 7/14/06																							
69	3.1	Detector Module Prototype Testing Plan		140 days	Fri 2/15/02	Thu 8/29/02																							
70	3.1.1	Develop Testing Plan		1 mon	Fri 2/15/02	Thu 3/14/02																							
71	3.1.2	Design Testing Equipment		3 mons	Fri 3/15/02	Thu 6/6/02																							

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