

Joint Plan for Developing the Chilean ALMA Sites
M. A. Gordon & D. Hofstadt
2 December 1999

ID	WBS	Task Name	2000				
			Q4	Q1	Q2	Q3	Q4
1	1	Develop ALMA Administration	[Task bar]				
2	2	Develop Chilean ALMA Sites	[Task bar]				
3	2.1	Estimate Development Costs	[Task bar]				
4	2.1.1	Prepare Initial Plan	[Task bar]				
5	2.1.1.1	Conceptualize Operations	[Task bar]				
6	2.1.1.2	Determine personnel on sites	[Task bar]				
7	2.1.1.3	Integrate Array Configuration	[Task bar]				
8	2.1.1.4	Define Physical Plants for OSF & Site	[Task bar]				
9	2.1.1.5	Assess Impact of Altitude on Designs	[Task bar]				
10	2.1.1.6	Assess Utility Needs and Availability	[Task bar]				
11	2.1.1.7	Complete Initial Plan	[Task bar]				
12	2.1.1.8	Identify Land for OSF	[Task bar]				
13	2.1.1.8.1	Find Viable Sites	[Task bar]				
14	2.1.1.8.2	Select Two Candidate Sites	[Task bar]				
15	2.1.1.9	Study Access Routes to OSF and Observing Sites	[Task bar]				
16	2.1.1.10	Plan Construction Phases for OSF & Site	[Task bar]				
17	2.1.1.10.1	Divide OSF Construction Plan into Two Phases	[Task bar]				
18	2.1.1.10.2	Divide Site Construction into Phases	[Task bar]				
19	2.1.1.11	Assemble Overall Plan	[Task bar]				
20	2.1.2	Cost Initial Plan	[Task bar]				
21	2.1.3	Review Development Plan (PDR)	[Task bar]				
22	2.1.4	Modify Plan, if necessary	[Task bar]				
23	2.1.5	Approve Final Plan	[Task bar]				
24	2.1.6	Adjust Costs	[Task bar]				
25	2.2	Complete Agreements for Array Site	[Task bar]				
26	2.3	Acquire Land for OSF	[Task bar]				
27	2.4	Process Environmental Documents (EIA)	[Task bar]				
28	2.4.1	Select Company for EIA Preparation	[Task bar]				
29	2.4.2	Prepare EIA Documents	[Task bar]				
30	2.4.3	Review EIA Documents	[Task bar]				
31	2.4.4	Submit EIA Documents	[Task bar]				
32	2.4.5	Receive EIA Approval	[Task bar]				
33	2.4.6	Obtain Permits for Construction and Rights of Way	[Task bar]				

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ID	WBS	Task Name	2000					
			Q4	Q1	Q2	Q3	Q4	
34	2.5	Develop OSF Site	▶					
35	2.5.1	Design OSF Complex	▶					
36	2.5.1.1	Hire Architect	■					
37	2.5.1.2	Reassess Impact of Altitude on OSF Design	▶					
38	2.5.1.3	Prepare Detailed Design for OSF	▶					
39	2.5.1.4	Review Detailed Design (PDR)	■					
40	2.5.1.5	Modify Detailed Design, if necessary	■					
41	2.5.1.6	Accept Final OSF Design	■					
42	2.5.2	Hire Construction Manager	■					
43	2.5.3	Hire Assistant Construction Managers	■					
44	2.5.4	Award Construction Contract	■					
45	2.5.4.1	Prepare Bid Package	■					
46	2.5.4.2	Ask for and receive bids	■					
47	2.5.4.3	Evaluate Bids	■					
48	2.5.4.4	Award Contract	■					
49	2.5.5	Establish OSF Utilities	■					
50	2.5.6	Establish Temporary ALMA Project Office	■					
51	2.5.7	Start Construction of OSF Complex	■					
52	2.5.8	Complete Phase One of OSF	■					
53	2.5.8.1	Construct Phase One Facilities	■					
54	2.5.8.2	Accept Phase One Construction	■					
55	2.5.8.2.1	Assess Phase One Construction	■					
56	2.5.8.2.2	Deliver "Punch List" to Contractor	■					
57	2.5.8.2.3	Contractor corrects defects	■					
58	2.5.8.2.4	Accept Phase One Construction	■					
59	2.5.8.3	Procure Phase I OSF Equipment and Furnishings to SPdA	■					
60	2.5.8.4	Equip Phase One Facilities	■					
61	2.5.8.5	Move Into Phase One Facilities	■					
62	2.5.8.6	Receive first antenna components	■					
63	2.5.8.7	Remove Temporary OSF Project Office	■					
64	2.5.9	Complete Phase Two of OSF	■					
65	2.5.9.1	Construct Phase Two of OSF	■					
66	2.5.9.2	Accept Phase Two Construction	■					

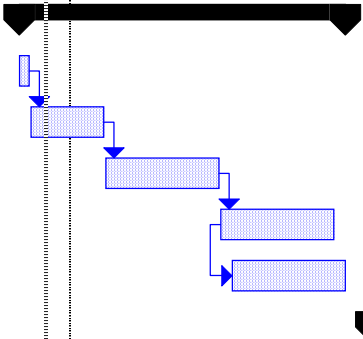
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ID	WBS	Task Name	2000				
			Q4	Q1	Q2	Q3	Q4
67	2.5.9.2.1	Assess Phase Two Construction					
68	2.5.9.2.2	Deliver "Punch List Two" to Contractor					
69	2.5.9.2.3	Contractor Corrects Phase Two Defects					
70	2.5.9.2.4	Accept Phase Two Construction					
71	2.5.9.3	Procure Phase II OSF Equipment & Furnishings					
72	2.5.9.4	Equip Phase Two Facilities					
73	2.5.9.5	Move Into Phase Two Facilities					
74	2.6	Develop Observing Site					
75	2.6.1	Hire Architect-Engineer					
76	2.6.2	Review Array Configuration (PDR)					
77	2.6.3	Discuss Impact of Altitude with the Architect-Engineer					
78	2.6.4	Design and Layout Site Facilities					
79	2.6.4.1	Design Power Supply to ALMA site					
80	2.6.4.2	Locate and Design Antenna Pads					
81	2.6.4.3	Design and Locate Power and Signal Network					
82	2.6.4.4	Design and Layout Interpad Roads					
83	2.6.4.5	Design and Locate Site Buildings					
84	2.6.5	Divide Construction into Phases					
85	2.6.6	Review Design and Layout (PDR)					
86	2.6.7	Modify Design and Layout, if necessary					
87	2.6.8	Accept Final Design and Layout Plan					
88	2.6.9	Award Site Construction Contract					
89	2.6.9.1	Prepare Site Bid Package					
90	2.6.9.2	Ask for and receive bids for site construction					
91	2.6.9.3	Evaluate Bids for site construction					
92	2.6.9.4	Award Contract for Site Construction					
93	2.6.10	Construct Site Facilities					
94	2.6.10.1	Erect Construction Shack at ALMA Site					
95	2.6.10.2	Construct Phase One of Site Facilities					
96	2.6.10.3	Accept Phase One of Site Facilities					
97	2.6.10.3.1	Assess Phase One Site Construction					
98	2.6.10.3.2	Deliver "Phase One Punch List" to Site Contractor					
99	2.6.10.3.3	Correct Phase One Site Defects					



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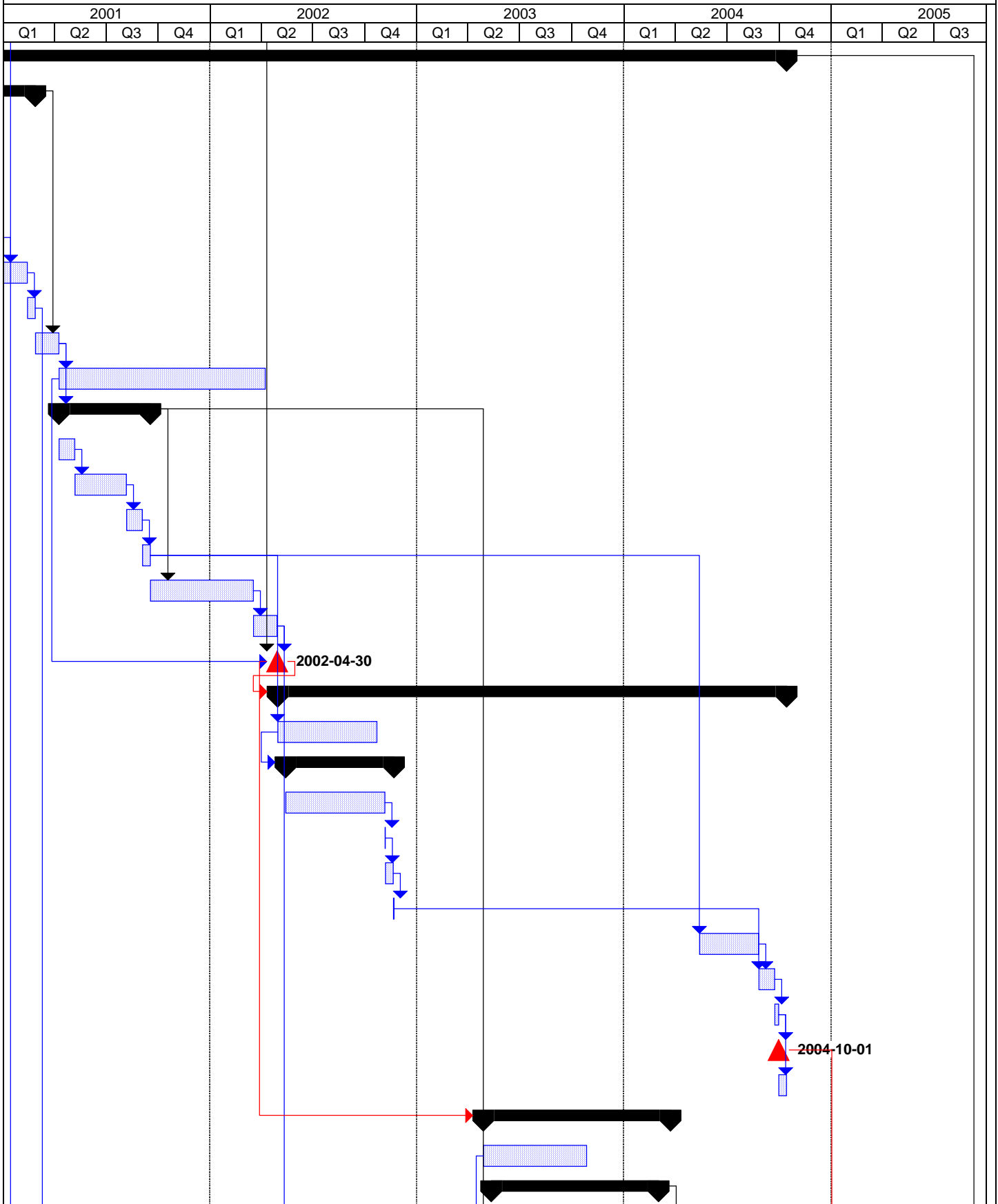
ID	WBS	Task Name	2000				
			Q4	Q1	Q2	Q3	Q4
100	2.6.10.3.4	Accept Phase One Site Construction					
101	2.6.10.4	Equip the Phase One Facilities at the site					
102	2.6.10.5	Install First Antenna at ALMA Site					
103	2.6.10.6	Construct Remaining Phases of Site					
104	2.6.10.7	Accept Remaining Phases of Site Construction					
105	2.6.10.8	Equip the Remaining Phases of Site Construction					
106	2.7	Connect OSF and Array Sites					
107	2.7.1	Construct Access Roads					
108	2.7.1.1	Construct Access Road to OSF					
109	2.7.1.1.1	Design Access Road to OSF					
110	2.7.1.1.2	Contract for construction of OSF Road					
111	2.7.1.1.3	Construct OSF Road					
112	2.7.1.1.4	Monitor and Accept OSF Road					
113	2.7.1.2	Construct Access Road to Site					
114	2.7.1.2.1	Design Access Road to Site					
115	2.7.1.2.2	Contract for construction of Site Road					
116	2.7.1.2.3	Construct Site Road					
117	2.7.1.2.4	Monitor and Accept Site Road					
118	2.7.2	Install Communication Links					
119	2.7.2.1	Review Communications Needs					
120	2.7.2.2	Design Communications Links					
121	2.7.2.3	Contract Links					
122	2.7.2.4	Construct Links					
123	2.7.2.5	Monitor and Accept Links					
124	2.7.3	Consider Option of Power Line from OSF to Array Site					
125	2.7.3.1	Hire power consultant if option has interest					
126	2.7.3.2	Review Report (PDR)					
127	2.7.3.3	Decide whether to proceed					
128	2.8	Connect ALMA to Outside World					
129	2.9	Celebrate Completion of ALMA Site Facilities in Chile					



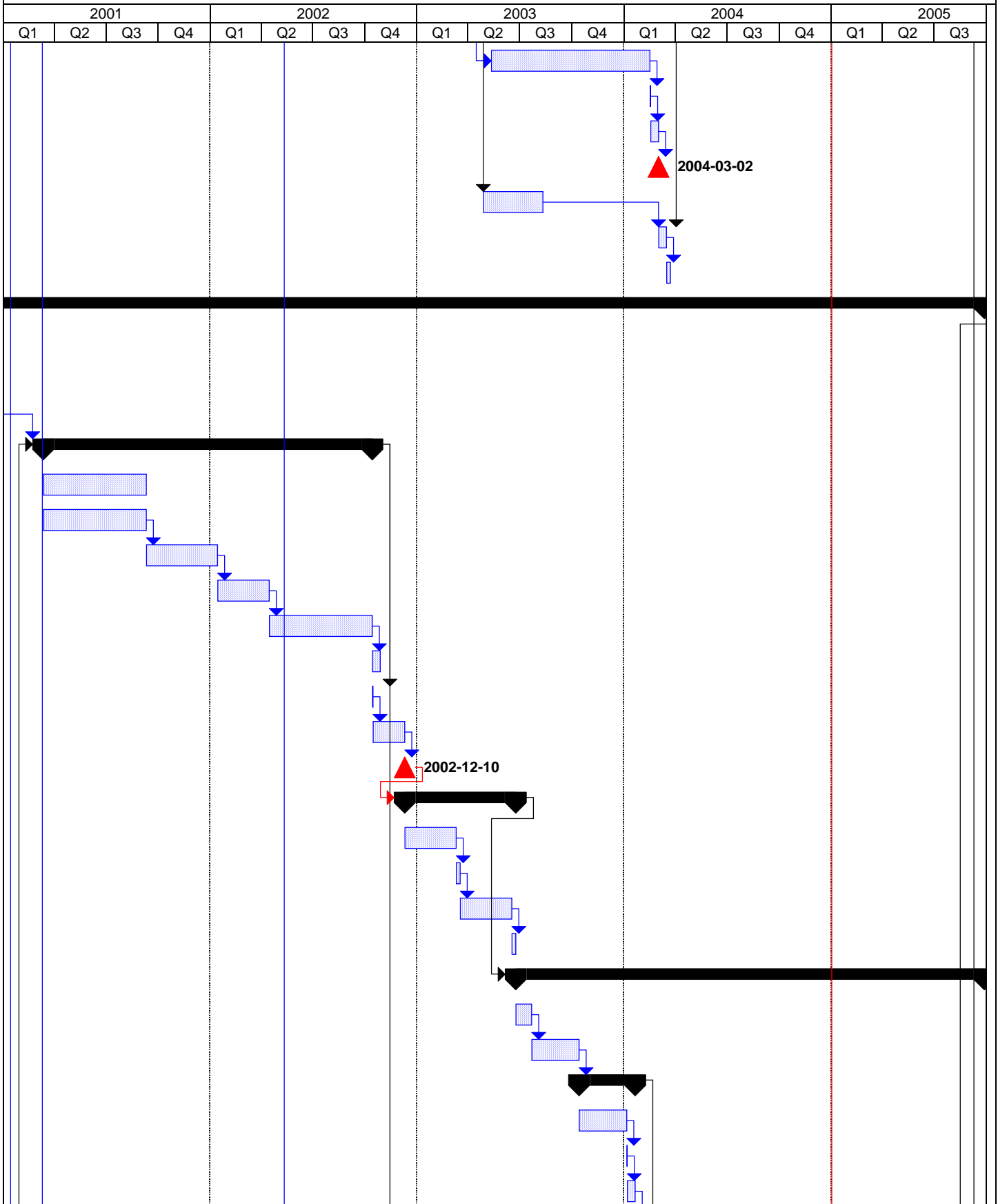
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2001				2002				2003				2004				2005		
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3

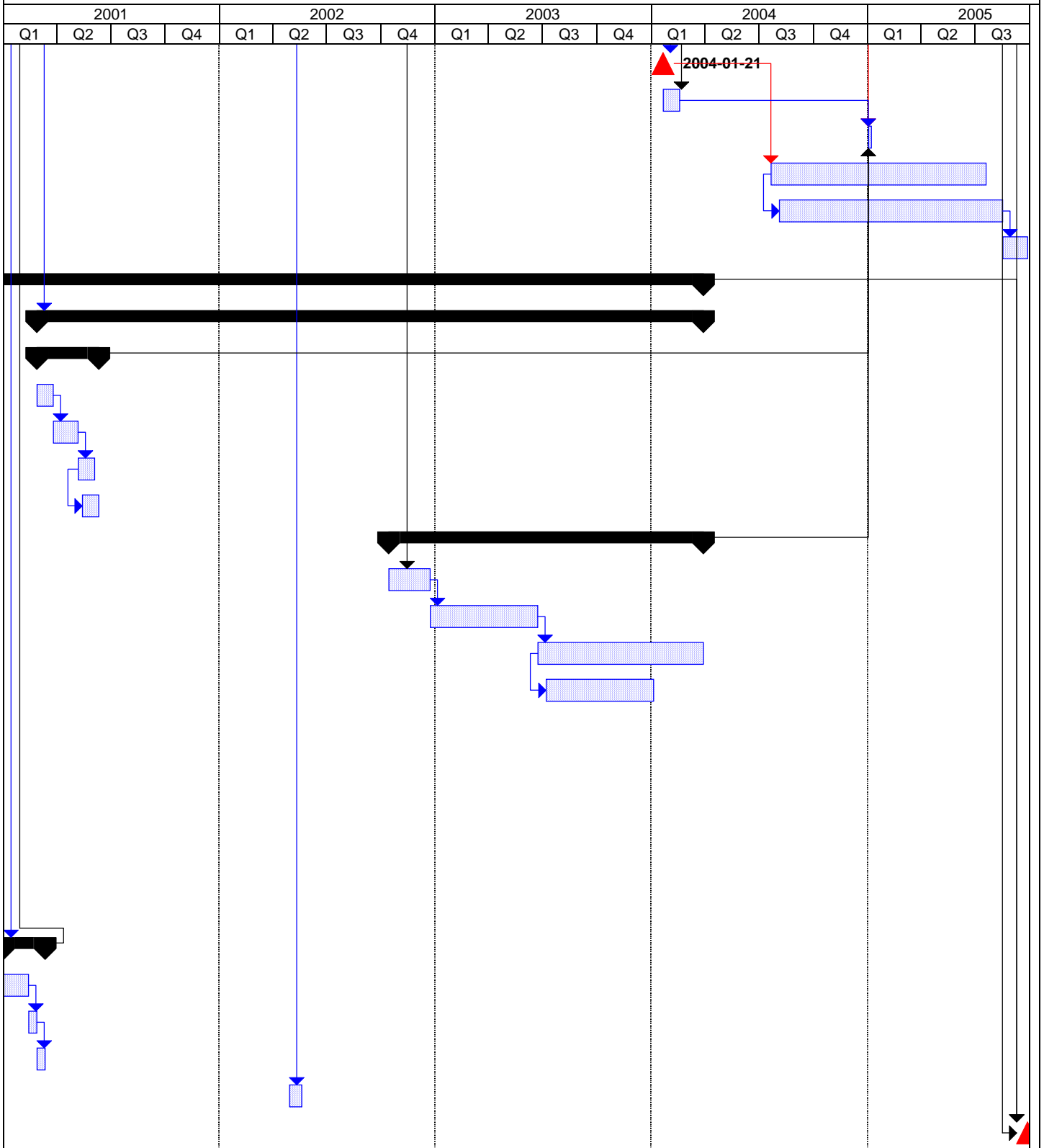
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Project: SD_plan
Date: 1999-12-02

Task		Rolled Up Split	
Split		Rolled Up Milestone	
Progress		Rolled Up Progress	
Milestone		External Tasks	
Summary		Project Summary	
Rolled Up Task	