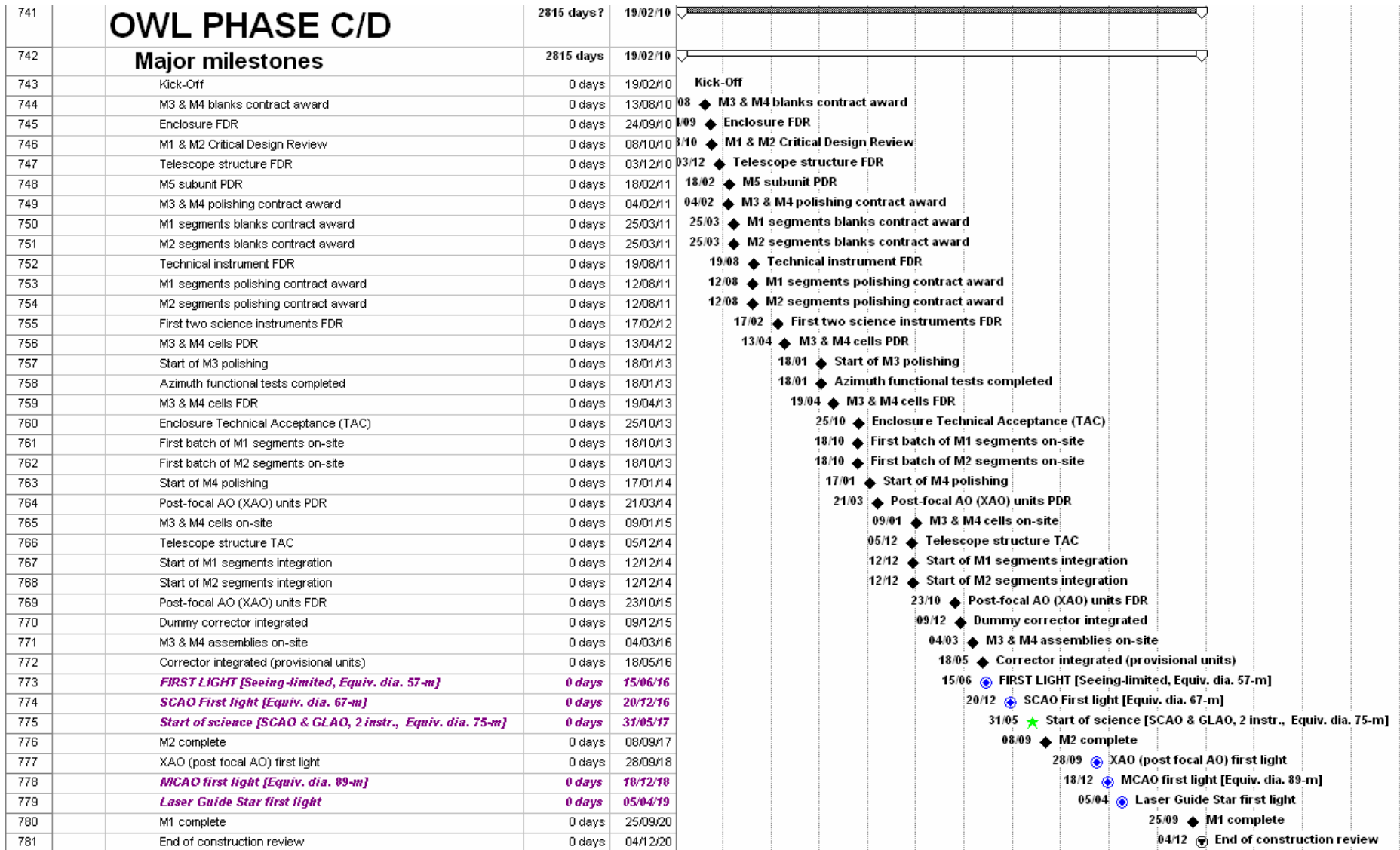


## **Appendix 5. Phase C/D schedule estimate**

ID	Prod. Code	Task Name	Duration	Start	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
					H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1



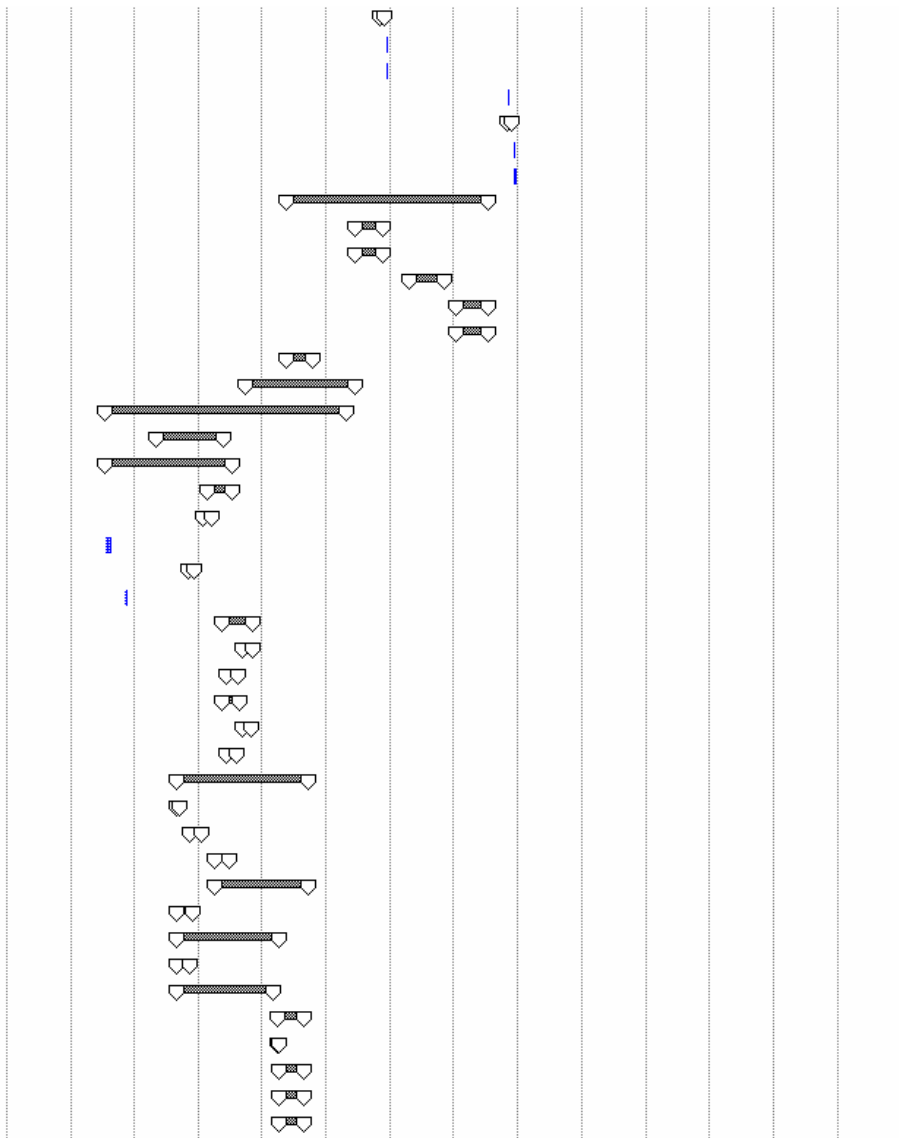
Phase C/D schedule estimate

ID	Prod. Code	Task Name	Duration	Start	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024			
					H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2		
782	010000	<b>Project Management</b>	2815 days	19/02/10	[Gantt bar]																															
783		Project planning, control & reporting	2815 days	19/02/10	[Gantt bar]																															
786		Contingency management	2815 days	19/02/10	[Gantt bar]																															
789		Project reviews	2348 days	01/04/10	[Gantt bar]																															
800	013000	Overheads	2815 days	19/02/10	[Gantt bar]																															
803	020000	<b>Science Objectives</b>	2610 days	19/02/10	[Gantt bar]																															
804		Top Level Requirements Configuration Management	2610 days	19/02/10	[Gantt bar]																															
807		Commissioning plan	75 days	22/02/10	[Gantt bar]																															
808	034000	Commissioning	1605 days	01/07/13	[Gantt bar]																															
821		Science verification plan	130 days	20/02/12	[Gantt bar]																															
822		Science verification	712 days	01/06/17	[Gantt bar]																															
828	030000	<b>Project Engineering</b>	2815 days?	19/02/10	[Gantt bar]																															
829	031000	Overall project engineering	2815 days	19/02/10	[Gantt bar]																															
832	032000	System engineering	2815 days	19/02/10	[Gantt bar]																															
835	033000	AIV	2275 days?	09/01/12	[Gantt bar]																															
836		Site infrastructure (acceptance)	35 days	13/05/13	[Gantt bar]																															
839		Enclosure (acceptance)	75 days	23/09/13	[Gantt bar]																															
843		Telescope structure & kinematics (acceptance)	100 days	29/09/14	[Gantt bar]																															
847		Optomechanical subsystems	2275 days	09/01/12	[Gantt bar]																															
848		M1 & M2 Support preparation	1645 days	26/03/12	[Gantt bar]																															
849		Whiffle trees unpacking, verification & preparation	1590 days	26/03/12	[Gantt bar]																															
856		Actuators unpacking, verification & preparation	1590 days	04/06/12	[Gantt bar]																															
863		Assembling actuators / functional test	1590 days	11/06/12	[Gantt bar]																															
870		Supports storage prior to integration	565 days	15/06/12	[Gantt bar]																															
873		Primary mirror unit	2155 days	25/06/12	[Gantt bar]																															
874		Subcells storage prior to integration	640 days	25/06/12	[Gantt bar]																															
877		Subcells integration into telescope	1060 days	08/12/14	[Gantt bar]																															
882		Segments storage prior to preparation	195 days	14/10/13	[Gantt bar]																															
885		Segments preparation	1617 days	14/07/14	[Gantt bar]																															
886		Unpacking & cleaning	1590 days	14/07/14	[Gantt bar]																															
893		Mounting position sensors / cross-check	1590 days	21/07/14	[Gantt bar]																															
900		Washing & coating	1590 days	04/08/14	[Gantt bar]																															
907		Mounting on whiffle trees & actuators	1590 days	18/08/14	[Gantt bar]																															
914		Functional test	1590 days	20/08/14	[Gantt bar]																															
921		Segments storage prior to integration	78 days	26/08/14	[Gantt bar]																															
924		Segments integration	1510 days	12/12/14	[Gantt bar]																															
925		Blind-1	258 days	12/12/14	[Gantt bar]																															
928		Blind-2	78 days	27/01/16	[Gantt bar]																															
931		Blind-3	20 days	18/05/16	[Gantt bar]																															
934		Phased on-sky -1	97 days	15/06/16	[Gantt bar]																															
937		Phased on-sky -2	126 days	06/12/16	[Gantt bar]																															



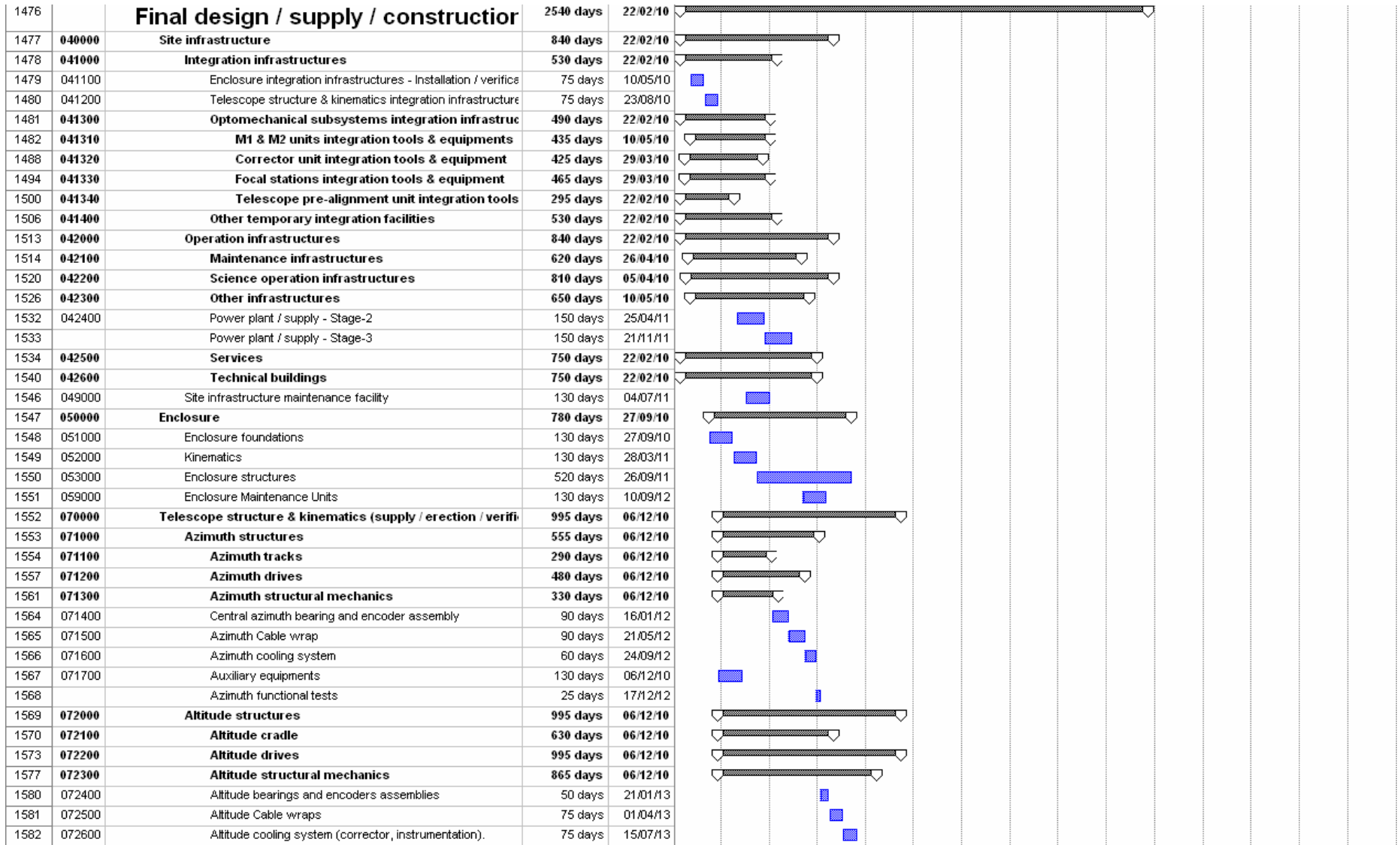
ID	Prod. Code	Task Name	Duration	Start	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024	
					H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2

1115		<b>Corrector preparation for SCAO first light</b>	<b>22 days</b>	<b>03/11/16</b>
1139		Re-integration of corrector into telescope	2 days	05/12/16
1140		Alignment & preparation	10 days	07/12/16
1141		De-integration of corrector from telescope	3 days	29/10/18
1142		<b>Corrector preparation for MCAO first light</b>	<b>22 days</b>	<b>01/11/18</b>
1166		Re-integration of corrector into telescope	2 days	03/12/18
1167		Alignment & preparation	10 days	05/12/18
1168		<b>Focal stations</b>	<b>825 days</b>	<b>18/05/15</b>
1169		<b>Focal station - 1</b>	<b>115 days</b>	<b>13/06/16</b>
1175		<b>Focal station - 2</b>	<b>115 days</b>	<b>13/06/16</b>
1181		<b>Focal station - 3</b>	<b>140 days</b>	<b>24/04/17</b>
1187		<b>Focal station - 4</b>	<b>130 days</b>	<b>15/01/18</b>
1193		<b>Focal station - 5</b>	<b>130 days</b>	<b>15/01/18</b>
1199		<b>Focal station - 6</b>	<b>110 days</b>	<b>18/05/15</b>
1206		<b>Telescope pre-alignment unit</b>	<b>448 days</b>	<b>29/09/14</b>
1215		<b>Opto-mechanical subsystems maintenance facilities</b>	<b>983 days</b>	<b>23/07/12</b>
1216		Clean rooms	275 days	06/05/13
1220		<b>M1 &amp; M2 offline maintenance facility</b>	<b>515 days</b>	<b>23/07/12</b>
1221		Segments washing & coating tanks	100 days	24/02/14
1226		Segments carts and transporters	40 days	27/01/14
1230		Segments support stands (emergency support)	15 days	23/07/12
1231		Segments racks	30 days	04/11/13
1235		Segments storage facility - verification	5 days	05/11/12
1236		<b>M1 &amp; M2 in-situ maintenance devices</b>	<b>125 days</b>	<b>19/05/14</b>
1237		M1 in-situ cleaning robot	45 days	08/09/14
1242		M1 segment assembly in-situ handling robot	45 days	16/06/14
1247		M1 cover in-situ cart holder	75 days	19/05/14
1252		M2 in-situ cleaning device	40 days	08/09/14
1257		M2 segment assembly in-situ handling tool	40 days	16/06/14
1262		<b>Corrector maintenance facility</b>	<b>538 days</b>	<b>02/09/13</b>
1263		Corrector maintenance hall	15 days	02/09/13
1266		Corrector transporters	45 days	18/11/13
1270		M3 & M4 subunits extractor	60 days	07/04/14
1274		M3 & M4 subunits transporters	383 days	07/04/14
1282		M5 subunit extractor	65 days	02/09/13
1288		M5 unit transporters	417 days	02/09/13
1293		M6 subunit extractor	55 days	02/09/13
1299		M6 subunit transporters	395 days	02/09/13
1304		<b>M3 &amp; M4 assemblies maintenance facility</b>	<b>112 days</b>	<b>30/03/15</b>
1305		M3 & M4 assemblies maintenance hall	10 days	30/03/15
1308		M3 & M4 assemblies lifting device	96 days	13/04/15
1315		8-m class washing & coating tanks	102 days	13/04/15
1324		M3 & M4 mirror assemblies washing & coating	100 days	13/04/15





ID	Prod. Code	Task Name	Duration	Start	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024	
					H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2

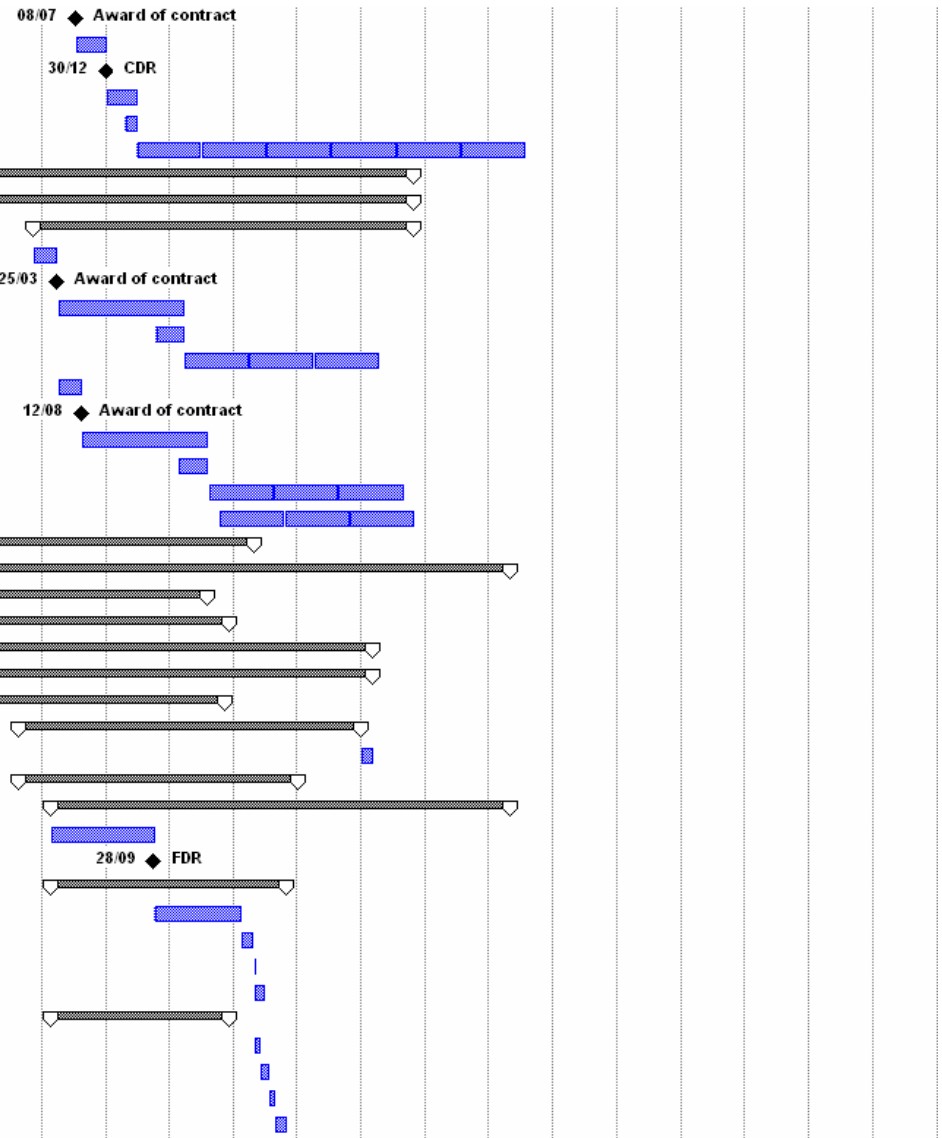






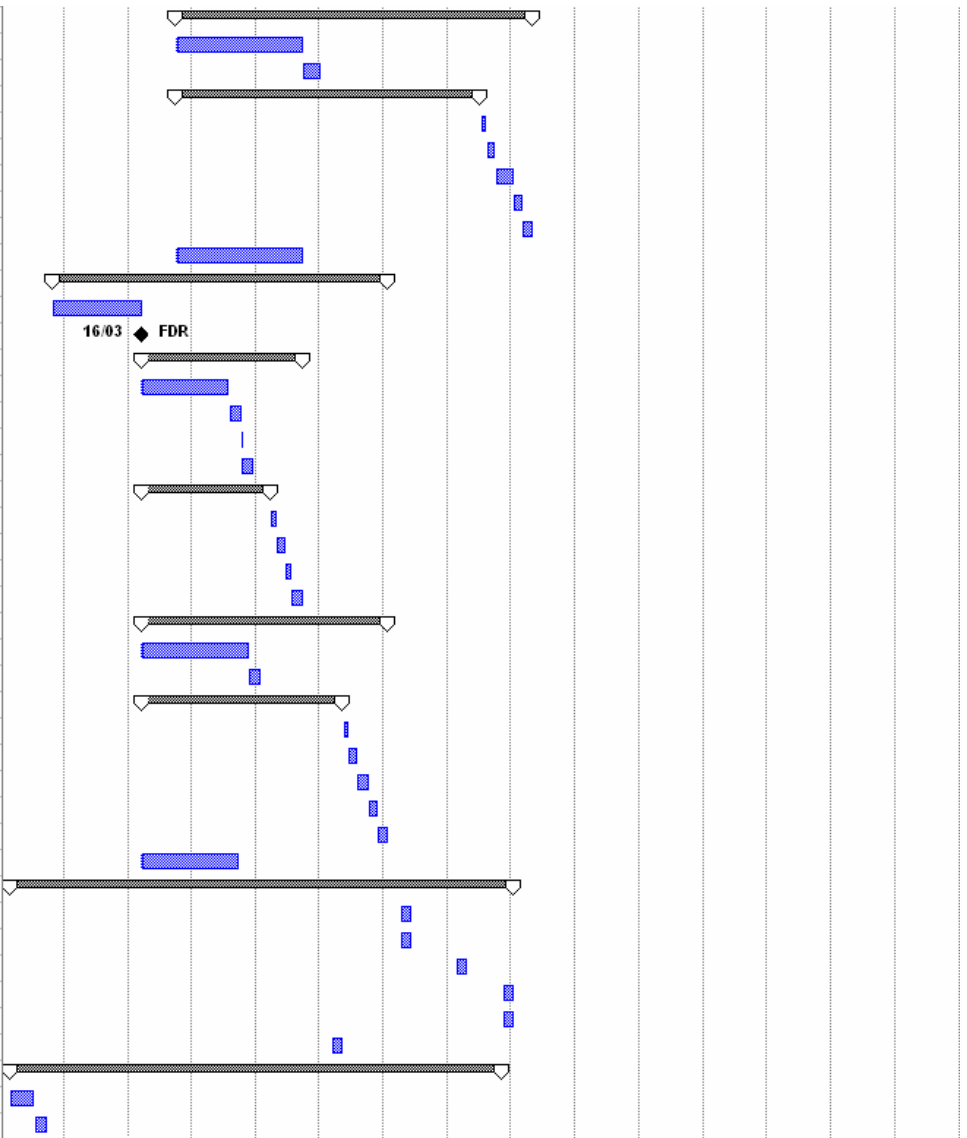
ID	Prod. Code	Task Name	Duration	Start	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024	
					H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2

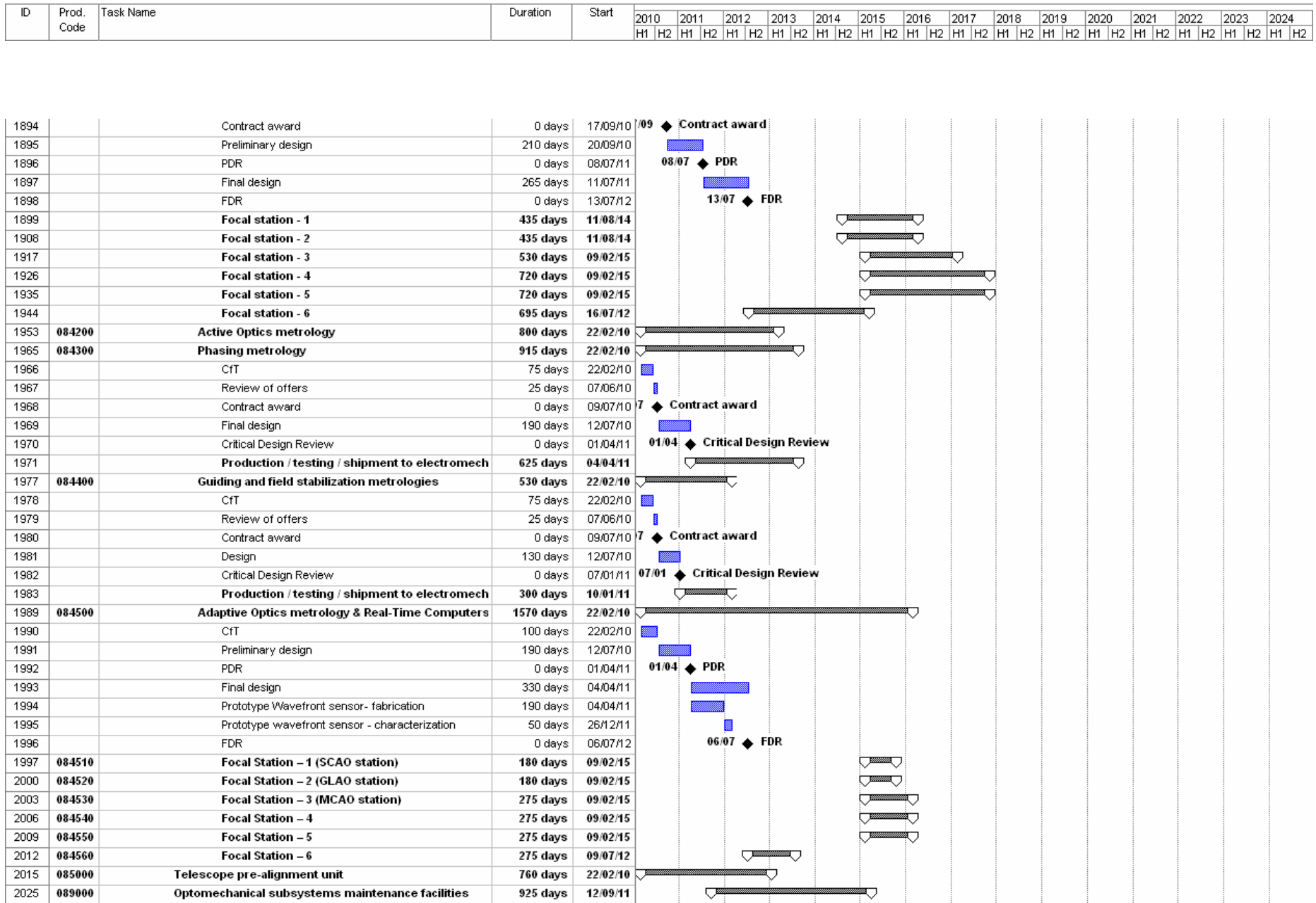
1676		Award of contract	0 days	08/07/11
1677		Design	125 days	11/07/11
1678		CDR	0 days	30/12/11
1679		Tooling & preparation	125 days	02/01/12
1680		Pre-production	50 days	16/04/12
1681		<b>Production &amp; transport to site</b>	<b>1590 days</b>	<b>25/06/12</b>
1688	<b>082000</b>	<b>Secondary mirror unit</b>	<b>1745 days</b>	<b>22/02/10</b>
1689	<b>082100</b>	<b>Segment subunit</b>	<b>1745 days</b>	<b>22/02/10</b>
1690	<b>082110</b>	<b>Segment assembly</b>	<b>1560 days</b>	<b>08/11/10</b>
1691		CfT segments blanks	100 days	08/11/10
1692		Award of contract	0 days	25/03/11
1693		Facilitization	520 days	28/03/11
1694		Pre-production	120 days	08/10/12
1695		<b>Segments blanks production</b>	<b>795 days</b>	<b>25/03/13</b>
1699		CfT polishing	100 days	28/03/11
1700		Award of contract	0 days	12/08/11
1701		Facilitization	520 days	15/08/11
1702		Pre-production	120 days	25/02/13
1703		<b>Segments polishing &amp; IF</b>	<b>795 days</b>	<b>12/08/13</b>
1707		<b>Packing &amp; Transport to site</b>	<b>795 days</b>	<b>14/10/13</b>
1711	<b>082150</b>	<b>Segments subcells</b>	<b>1095 days</b>	<b>22/02/10</b>
1722	<b>083000</b>	<b>Corrector unit</b>	<b>2140 days</b>	<b>22/02/10</b>
1723	<b>083100</b>	<b>Corrector structure &amp; kinematics</b>	<b>905 days</b>	<b>22/02/10</b>
1732	<b>083200</b>	<b>Instruments racks</b>	<b>990 days</b>	<b>22/02/10</b>
1742		<b>M3 &amp; M4 subunits</b>	<b>1575 days</b>	<b>22/02/10</b>
1743		<b>M3 &amp; M4 mirror assemblies</b>	<b>1575 days</b>	<b>22/02/10</b>
1744		<b>Mirror blanks</b>	<b>975 days</b>	<b>22/02/10</b>
1756		<b>Optical figuring</b>	<b>1405 days</b>	<b>16/08/10</b>
1795		M3 & M4 assemblies - transport to site	45 days	04/01/16
1796		<b>M3 &amp; M4 mirror cells</b>	<b>1150 days</b>	<b>16/08/10</b>
1812	<b>083500</b>	<b>M5 subunit</b>	<b>1880 days</b>	<b>21/02/11</b>
1813		Final design	420 days	21/02/11
1814		FDR	0 days	28/09/12
1815	<b>083510</b>	<b>M5 Provisional assembly</b>	<b>962 days</b>	<b>21/02/11</b>
1816		Electromechanical assembly fabrication & preas:	360 days	01/10/12
1817		Functional tests (with dummy mirror)	50 days	17/02/14
1818		Dummy de-integration	2 days	28/04/14
1819		Dummy packing & shipment to site	45 days	30/04/14
1820		<b>M5 provisional mirror</b>	<b>735 days</b>	<b>21/02/11</b>
1823		Provisional M5 mirror integration	25 days	30/04/14
1824		Provisional Acceptance Tests	35 days	04/06/14
1825		De-integration & packing	25 days	23/07/14
1826		Shipment to site	45 days	27/08/14



ID	Prod. Code	Task Name	Duration	Start	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024	
					H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2

1827	<b>083520</b>	<b>M5 adaptive assembly</b>	<b>1460 days</b>	<b>01/10/12</b>
1828		Electromechanical assembly fabrication & preas:	520 days	01/10/12
1829		Functional tests (with dummy mirror)	75 days	29/09/14
1830		<b>M5 adaptive shell</b>	<b>1245 days</b>	<b>01/10/12</b>
1842		M5 shell integration	25 days	10/07/17
1843		Provisional Acceptance Tests	35 days	14/08/17
1844		Additional test / characterization runs	75 days	02/10/17
1845		De-integration & packing	35 days	15/01/18
1846		Shipment to site	45 days	05/03/18
1847	083530	M5 test facility (design & construction)	520 days	01/10/12
1848	<b>083600</b>	<b>M6 subunit</b>	<b>1375 days</b>	<b>25/10/10</b>
1849		Final design	365 days	25/10/10
1850		FDR	0 days	16/03/12
1851	<b>083610</b>	<b>M6 provisional assembly</b>	<b>660 days</b>	<b>19/03/12</b>
1852		Electromechanical assembly fabrication & preas:	360 days	19/03/12
1853		Functional tests (with dummy mirror)	50 days	05/08/13
1854		Dummy de-integration	2 days	14/10/13
1855		Dummy packing & shipment to site	45 days	16/10/13
1856		<b>M6 provisional mirror</b>	<b>530 days</b>	<b>19/03/12</b>
1859		Provisional M6 mirror integration	25 days	31/03/14
1860		Provisional Acceptance Tests	35 days	05/05/14
1861		De-integration & packing	25 days	23/06/14
1862		Shipment to site	45 days	28/07/14
1863	<b>083620</b>	<b>M6 adaptive assembly</b>	<b>1010 days</b>	<b>19/03/12</b>
1864		Electromechanical assembly fabrication & preas:	440 days	19/03/12
1865		Functional tests (with dummy mirror)	50 days	25/11/13
1866		<b>M6 adaptive shell</b>	<b>825 days</b>	<b>19/03/12</b>
1878		M6 shell integration	20 days	18/05/15
1879		Provisional Acceptance Tests	35 days	15/06/15
1880		Additional test / characterization runs	50 days	03/08/15
1881		De-integration & packing	35 days	12/10/15
1882		Shipment to site	45 days	30/11/15
1883	083630	M6 test facility	400 days	19/03/12
1884	<b>084000</b>	<b>Focal stations</b>	<b>2060 days</b>	<b>22/02/10</b>
1885		Focal station - 1 shipment to site	45 days	11/04/16
1886		Focal station - 2 shipment to site	45 days	11/04/16
1887		Focal station - 3 shipment to site	45 days	20/02/17
1888		Focal station - 4 shipment to site	45 days	13/11/17
1889		Focal station - 5 shipment to site	45 days	13/11/17
1890		Focal station - 6 shipment to site (incl. technical instrument	45 days	16/03/15
1891	<b>084100</b>	<b>Electromechanical subunits</b>	<b>2015 days</b>	<b>22/02/10</b>
1892		CfT	100 days	22/02/10
1893		Review of offers	50 days	12/07/10

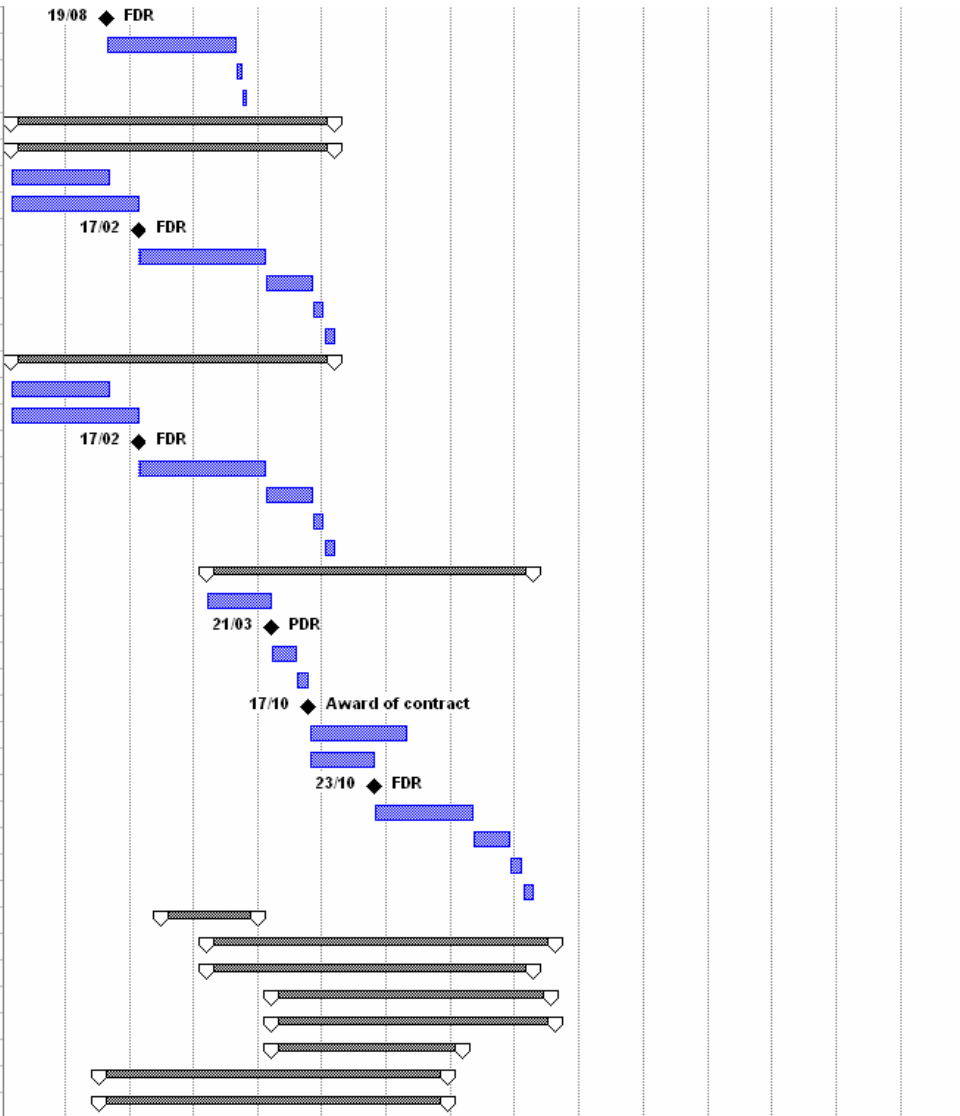




ID	Prod. Code	Task Name	Duration	Start	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024			
					H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2		
2026		Clean rooms	565 days	12/09/11																																
2033	089100	M1 & M2 offline maintenance facility	640 days	12/09/11																																
2034	089120	Segments washing & coating tanks	640 days	12/09/11																																
2045	089130	Segments carts and transporters	620 days	12/09/11																																
2056	089140	Segments support stands (emergency suppor	225 days	12/09/11																																
2060	089150	Segments racks	560 days	12/09/11																																
2071	089160	Segments storage facility	300 days	12/09/11																																
2078	089200	M1 & M2 in-situ maintenance devices	780 days	12/09/11																																
2079	089210	M1 in-situ cleaning robot	780 days	12/09/11																																
2089	089220	M1 segment assembly in-situ handling robot	720 days	12/09/11																																
2099	089230	M1 cover in-situ cart holder	600 days	12/09/11																																
2109	089240	M2 in-situ cleaning device	780 days	12/09/11																																
2119	089250	M2 segment assembly in-situ handling tool	720 days	12/09/11																																
2129	089300	Corrector maintenance facility	670 days	12/09/11																																
2130	089310	Corrector maintenance hall	515 days	12/09/11																																
2137	089320	Corrector transporters	570 days	12/09/11																																
2145	089330	M3 & M4 subunits extractor	515 days	16/04/12																																
2153	089340	M3 & M4 subunits transporters	515 days	16/04/12																																
2161	089350	M5 subunit extractor	515 days	12/09/11																																
2169	089360	M5 subunit transporters	515 days	12/09/11																																
2177	089370	M6 subunit extractor	515 days	12/09/11																																
2185	089380	M6 subunit transporters	515 days	12/09/11																																
2193	089400	M3 & M4 assemblies maintenance facility	770 days	16/04/12																																
2194	089410	M3 & M4 assemblies maintenance hall	515 days	16/04/12																																
2201	089430	M3 & M4 assemblies lifting device	710 days	16/04/12																																
2211	089440	8-m class washing & coating tanks	770 days	16/04/12																																
2222		M3 & M4 mirror assemblies washing & coating	695 days	16/04/12																																
2232		M3 & M4 mirror assemblies support stands (ei	275 days	16/04/12																																
2236	089500	M5 & M6 assemblies maintenance facility	730 days	28/10/11																																
2237	089510	M5 & M6 assemblies maintenance hall	515 days	28/10/11																																
2244	089530	M5 mirror assembly lifting device	730 days	28/10/11																																
2254	089540	M6 mirror assembly lifting device	730 days	28/10/11																																
2264	089550	M5 assembly washing & coating cart	640 days	28/10/11																																
2274	089560	M6 assembly washing & coating cart	640 days	28/10/11																																
2284	089570	4-m class washing & coating tanks	695 days	28/10/11																																
2295	089580	M5 mirror assembly support stand (emergenc	275 days	28/10/11																																
2299	089590	M6 mirror assembly support stand (emergenc	275 days	28/10/11																																
2303	089600	Corrector in-situ cleaning devices	780 days	12/09/11																																
2313	089700	Focal stations maintenance facility	285 days	12/09/11																																
2316	090000	Instrumentation	2125 days	22/02/10																																
2317	091000	Technical instrumentation	840 days	16/08/10																																
2318		Final design	265 days	16/08/10																																

ID	Prod. Code	Task Name	Duration	Start	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
					H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1

2319		FDR	0 days	19/08/11
2320		Construction & testing	530 days	22/08/11
2321		Packing	25 days	02/09/13
2322		Shipment to focal plane electromechanical assemblies con	20 days	07/10/13
2323	<b>092000</b>	<b>Science instrumentation</b>	<b>1320 days</b>	<b>22/02/10</b>
2324		<b>Instrument - 1</b>	<b>1320 days</b>	<b>22/02/10</b>
2325		Procurement of critical parts	400 days	22/02/10
2326		Final design	520 days	22/02/10
2327		FDR	0 days	17/02/12
2328		Fabrication	520 days	20/02/12
2329		Integration & testing	190 days	17/02/14
2330		Packing	45 days	10/11/14
2331		Shipment to site	45 days	12/01/15
2332		<b>Instrument - 2</b>	<b>1320 days</b>	<b>22/02/10</b>
2333		Procurement of critical parts	400 days	22/02/10
2334		Final design	520 days	22/02/10
2335		FDR	0 days	17/02/12
2336		Fabrication	520 days	20/02/12
2337		Integration & testing	190 days	17/02/14
2338		Packing	45 days	10/11/14
2339		Shipment to site	45 days	12/01/15
2340	<b>093000</b>	<b>Post-focal AO units</b>	<b>1325 days</b>	<b>18/03/13</b>
2341		Preliminary design	265 days	18/03/13
2342		PDR	0 days	21/03/14
2343		CiT for final design, fabrication & testing	100 days	24/03/14
2344		Review of offers	50 days	11/08/14
2345		Award of contract	0 days	17/10/14
2346		Procurement of critical parts	400 days	20/10/14
2347		Final design	265 days	20/10/14
2348		FDR	0 days	23/10/15
2349		Fabrication	400 days	26/10/15
2350		Integration & testing	150 days	08/05/17
2351		Packing	50 days	04/12/17
2352		Shipment to site	45 days	12/02/18
2353	<b>099000</b>	<b>Instruments maintenance facility</b>	<b>395 days</b>	<b>02/07/12</b>
2356	<b>100000</b>	<b>Laser Guide Stars Subsystem</b>	<b>1415 days</b>	<b>18/03/13</b>
2357	<b>101000</b>	<b>Laser units</b>	<b>1325 days</b>	<b>18/03/13</b>
2370	<b>102000</b>	<b>Beam Propagation units</b>	<b>1130 days</b>	<b>24/03/14</b>
2383	<b>103000</b>	<b>Control &amp; Metrology units</b>	<b>1150 days</b>	<b>24/03/14</b>
2394	<b>109000</b>	<b>LGS maintenance facility</b>	<b>775 days</b>	<b>24/03/14</b>
2403	<b>110000</b>	<b>Central Control Systems</b>	<b>1420 days</b>	<b>11/07/11</b>
2404	<b>111000</b>	<b>Central Control Environment</b>	<b>1420 days</b>	<b>11/07/11</b>



ID	Prod. Code	Task Name	Duration	Start	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024	
					H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2

2410	112000	IT Systems	1180 days	05/09/11
2416	119000	Central Control maintenance facility	395 days	02/09/13
2419	120000	Site characterization	950 days	06/12/10
2420	121000	Weather stations	520 days	06/12/10
2426	122000	Turbulence monitoring units	950 days	06/12/10
2435	123000	Sky monitoring units	870 days	06/12/10
2444	124000	Operational Forecasts units	520 days	06/12/10
2446	129000	Site characterization maintenance facility	395 days	06/12/10

