

# Session 4 – Effective Use of DRB's

## USE OF SPECIALIST ADVISORS

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# Presentation Agenda

- **What a Specialist Programming Advisor does**
- **Examples of projects where specialist is most effectively used**
- **Overview of Delay Analysis**
- **Example of an delay presentation**

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# The Specialist Advisor

- A person with special knowledge, skills, experience, training and/or education that goes beyond the experience of ordinary members of the public and oftentimes the project staff
- Assist the board to understand the information or determine a fact in issue, such as the amount of delay to the time for completion caused by a particular change.
- Provide an independent opinion based on the information provided to them
- Can be party appointed or expert to the board

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# Programming Expert Explains

- What was the plan,
- What has changed,
- Why it has changed, and
- What has resulted.

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# Programming Analysis

- CPM network analysis is conducted to establish the cause and effect linkage of changes to impacts on the time for completion
- Allows for apportionment of delays and evaluation of responsibility for delay and disruption to the work

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# Delay Analysis

## MAJOR TASKS

- Validation of Baseline Programme
- Collation of contemporaneous progress information
- Narrative of contemporaneous data
- Forward looking analysis
- Delay identification and measurement
- Event review
- Allocation of responsibility / liability

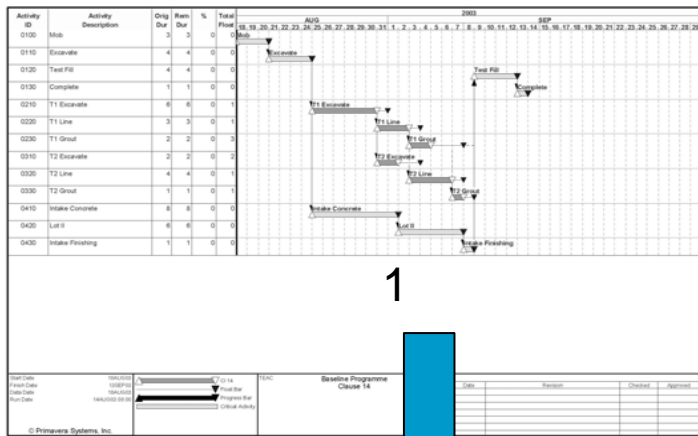
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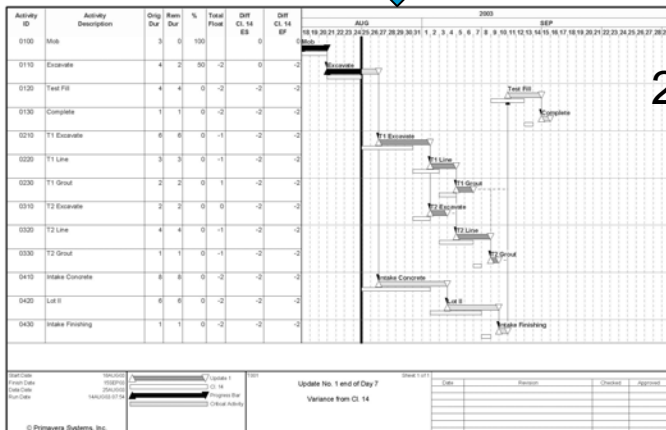
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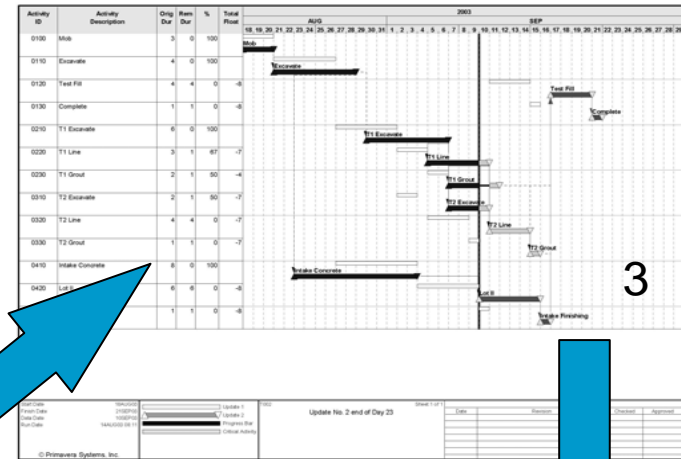
# Progressive Viewing of the Project



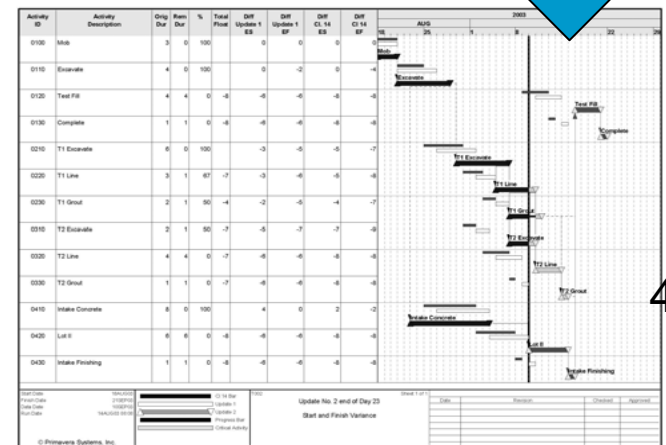
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# Plan v Actual

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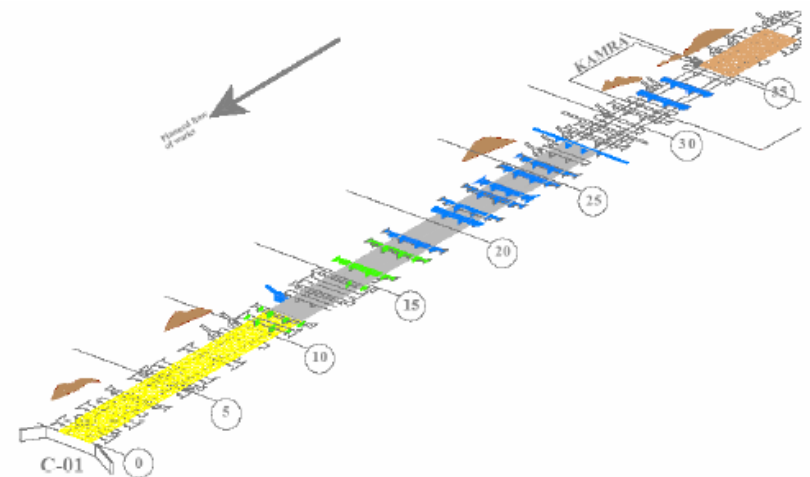
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### Appendices:

- Appendix A Isometric Illustration of Progress and Programme Records
- Appendix B Clause 14.1 Sequence Illustration
- Appendix C Claimed Events in Time Context

Activity ID	Activity Description	Reg. %	Reg. ES	Reg. EF	End %	End ES	End EF
<b>Project Completion</b>							
GE308	Completion Works	0	10MAR00	0		24APR01	
<b>Driving Path No. 1 at Start &amp; End of Period</b>							
GE329	Order to commence	0	10DEC95	100	10DEC95		
1100	Mobilization & Delivery of Equipment	0	18DEC95	01SEP96	0		
25PCE000M	Few Channel Excavation 25+96027+620	0	02SEP96	06OCT96	60	13NOV96	12DEC97
26PCE000M	Few Channel Excavation 26+96029+600	0	07OCT96	16NOV96	4	11DEC96	22JAN98
15PCE000M	Few Channel Excavation 15+96039+600	0	17NOV96	23JAN97	0	22JAN98	06APR98
18PCE000M	Few Channel Excavation 18+96013+600	0	25JAN97	10MAR97	0	05APR98	25MAY98
05PCE000M	Few Channel Excavation 05+96019+600	0	17MAR97	11AUG97	0	20MAY98	22OCT98
08PCE000M	Few Channel Excavation 08+15205+600	0	12AUG97	11NOV97	0	22OCT98	16JAN99
31PCE000M	Few Channel Excavation 31+96039+600	0	23AUG97	22JAN98	7	17NOV97	06APR98
09PCE000M	Few Channel Excavation 09+96039+600	0	28AUG97	28JUN98	0	20NOV97	17SEP99
15PCE000M	Few Channel Excavation 15+96019+600	0	08DEC96	19NOV96	45	02SEP96	29JAN00
40PCE000M	Few Channel Excavation 40+96034+600	0	06JAN98	17FEB98	16	10OCT96	28APR99
<b>Driving Path No. 2 at Start of Period</b>							
C2C2018	C02 Superpass km 25+985 Excavation	0	05JAN97	16JAN97	0	13DEC97	24DEC97
C2C1918	C02 Superpass km 24+485 Excavation	0	16JAN97	27JAN97	0	26DEC97	07JAN98

Delay to Completion: 10 Mar 00 to 24 Apr 01 = 13.5 months



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Planned Work as of 01 December 1997





# Disruption Analysis

- Schedule delays
- Acceleration efforts
- Changes to design documentation
- Extra work
- Interference with design and procurement processes
- Increases in manpower and man-hours
- Standards:

“Measured Mile”, “CII -Business Roundtable”, “Horner/Talhouni – Labour Productivity”, “MCA Productivity Report”, “ACE Draft Protocol”, “NECA”

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# Main Components of Project:

- MOF Jetty:
  - Piling
  - Concrete Structure
  - Equipment
- LNG Jetty:
  - Piling
  - Concrete Structure
  - Equipment

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# Over 50 Delay Events, that PAI classified as follows:

- Preparation for Trial Pile
- Trial Pile/Pile Load Test
- Delays to MOF Jetty construction
- Delays to LNG Jetty construction
- Work Interruptions
- Cathodic Protection Delays
- CWIS (cut-off wall)
- Acceleration

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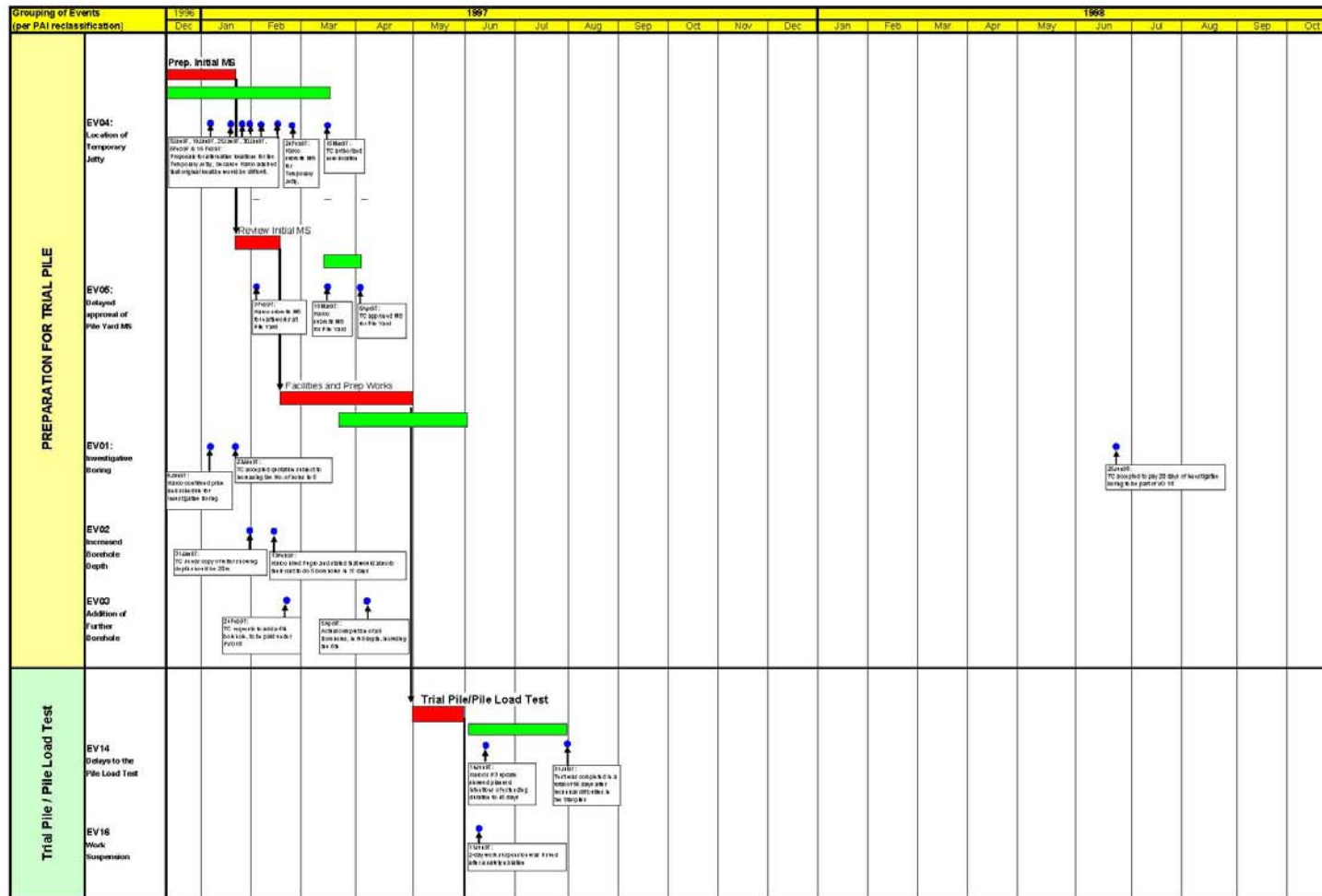


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# Context When Events Occurred

Chronology of Time-Impact ASOC Events  
In the Context of As-Planned vs. As-Built Critical Paths



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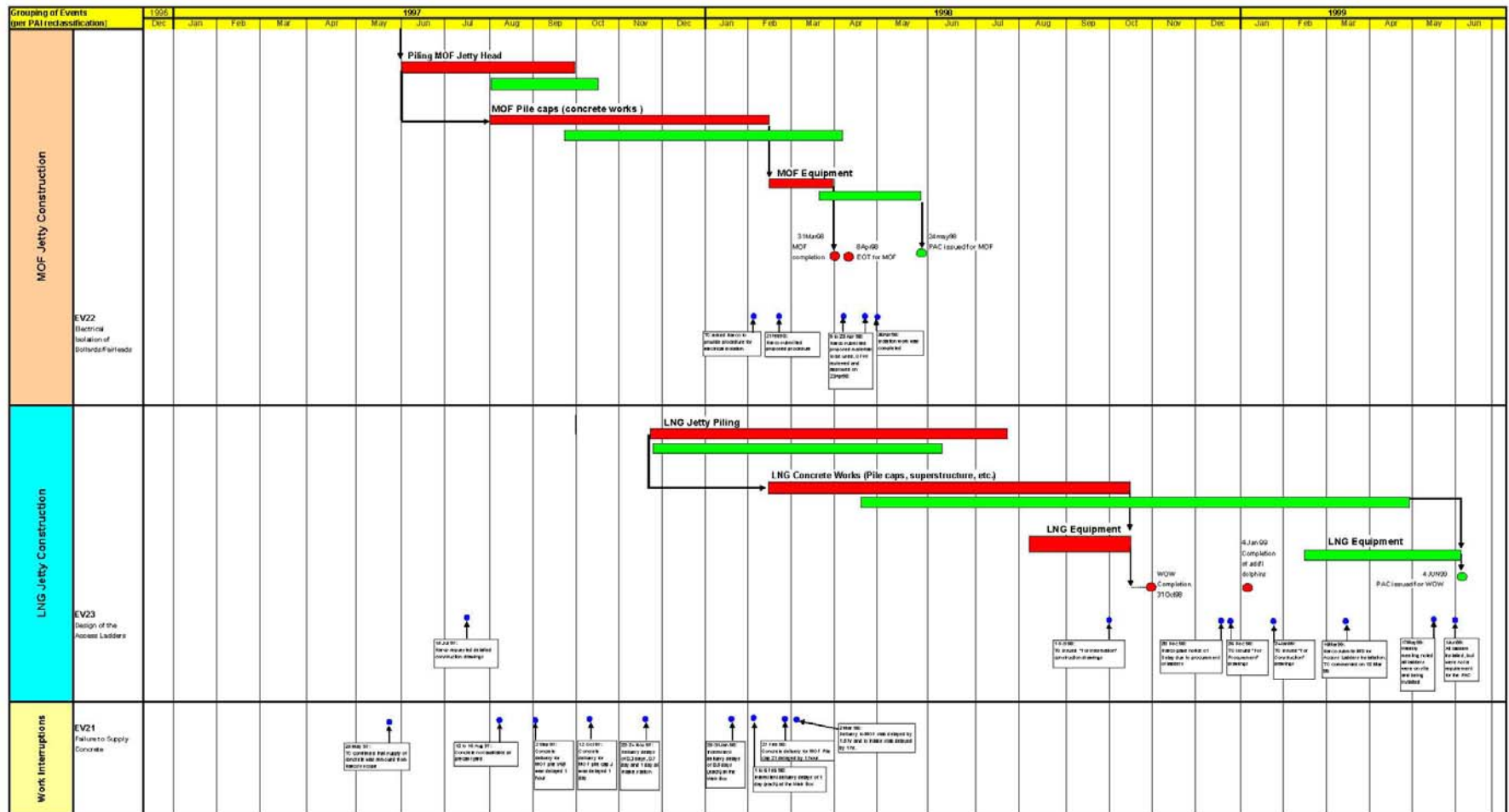


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# Context When Events Occurred

Figure 4.2.10 (1)

Chronology of Time-Impact ASOC Events  
In the Context of As-Planned vs. As-Built Critical Paths



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# Summary of Findings by Period and by Event

Period and event No.	Reason for Delay	Impact to milestones (no. of days)		
		MOF	LNG/WOW	CWIS
<b>Period 1 (20Dec96 to 15Mar97):</b>				
Event 1	Investigative Boring	0	0	0
Event 2	Increased Borehole Depth	0	0	0
Event 3	Addition of Further Boreholes	0	0	0
Event 4	Delayed Approval of Claimant's Proposals for Temporary Jetty	0	0	0
Event 8	Inspection of Equipment	0	0	0
N/A	Harco's delay in submitting the MS for pile yard facilities	56	56	
<b>Period 2 (15Mar97 to 6Jun97):</b>				
Event 5	Delayed Approval of the Method Statements for the Pile Yard	0	0	0
Event 6	Delays to the Construction of the Concrete Batching Plant	0	0	0
Event 7	Camp Facilities and Offices	0	0	0
Event 9	Additional Laboratory Testing and Changes to the Borehole Analysis	0	0	0
Event 10	Delay to Commencement of the Trial Pile	0	0	0
Event 11	Change from Precast to In Situ Concrete on the MOF Jetty	0	0	0
Event 13	Additional Shear Keys to Trial Piles	0	0	0
Event 32	Addition of Work on the Cooling Water Intake Station	0	0	0
Event 34 (part)	Delayed Approval of Method Statement for Dewatering Cutoff System	0	0	0
N/A	Recovery to expedite start of the trial piles	+21	+21	
<b>Period 3 (6Jun97 to 1Aug97):</b>				
Event 14 (*)	Delays to the Pile Load Test	23	23	0
Event 15	Site Investigation	0	0	0
Event 16 (*)	Suspension of the Works	2	2	0
Event 19	Relocation of the Jay Robertson	0	0	0
Event 34 (**)	Delayed Approval of Method Statement for Dewatering Cutoff System	0	0	21
<b>Period 4 (1Aug97 to 21Feb98):</b>				
Event 17	Delays to the Design of the MOF Walkway	0	0	0
Event 18	Additional Bearing Pads	0	0	0
Event 20 (part)	Cathodic Protection	0	0	0
Event 21	Failure to Supply Concrete	0	0	0
Event 35	Change in Design of Cutoff Wall	0	0	0
Event 38 (part)	Idle Time at Pile Pre-Fabrication Yard	0	0	0
N/A	Recovery during piling and concrete at the MOF jetty	+38		
N/A	Recovery during piling works at the LNG jetty		+60	
N/A	Recoveries at the CWIS			+21

Period and event No.	Reason for Delay	Impact to milestones (no. of days)		
		MOF	LNG/WOW	CWIS
<b>Period 5 (21Feb98 to 10May98):</b>				
Event 20 (part)	Cathodic Protection	0	0	0
Event 22	Electrical Isolation of Bollards and Fairleads	0	0	0
Event 38 (part)	Idle Time at Pile Pre-Fabrication Yard	0	0	0
N/A	Harco's delay in welding under water brackets for cathodic protection	65		
N/A	Harco's performance delays in concrete works at the LNG jetty		75	
N/A	Harco's performance delays in concrete works at the CWIS			4
<b>Period 6 (10May98 to 16Jun98):</b>				
Event 12	Additional Dolphins at LNG Jetty	0	0	0
Event 20 (cont)	Cathodic Protection	0	0	0
Event 25	Repairs to Dolphins at the LNG Jetty & Changes in Sequence	0	0	0
Event 26	Errors in Design of Walkway at MOF Jetty	0	0	0
Event 38 (part)	Idle Time at Pile Pre-Fabrication Yard	0	0	0
N/A	Harco's delay in welding under water brackets for cathodic protection	21		
N/A	Harco's performance delays in concrete works at the LNG jetty		6	
N/A	Harco's performance delays in concrete works at the CWIS			16
<b>Period 7 (16Jun98 to 6Oct98):</b>				
Event 27	Alterations to Steel on LNG Jetty	0	0	0
Event 28	Alteration to Submarine Pipeline Anchors	0	0	0
Event 29	Delayed Approval of Method Statements and Temp Work Calcs	0	0	0
Event 30	Additional Temporary Bracing to the Piles on Dolphins at the LNG	0	0	0
Event 38 (part)	Idle Time at Pile Pre-Fabrication Yard	0	0	0
N/A	Suspension of LNG concrete works due to fatal accident		63	
N/A	Harco's performance delays in concrete works at the CWIS			112
<b>Period 8 (6Oct98 to 18Dec98):</b>				
Event 31	Design of the Layout of the Cathodic Protection System	0	0	0
Event 37	Dewatering	0	0	0
N/A	Suspension of LNG concrete works due to fatal accident and Harco's performance delays in concrete works		44	
<b>Period 9 (18Dec98 to 1 May 99):</b>				
Event 23	Delay to the Design of the Access Ladders at the LNG Jetty	0	0	0
N/A	Harco's performance delays in concrete works at the FAR building		57	



# Specialist Advisors Must Bring

- Independence
- Impartial advice
- Balanced views
- Reasoned opinions
- Factually based results
- Recognized expertise
- Multi-national/cultural project experience

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