

PROJECT MANAGEMENT IN THE CONSTRUCTION INDUSTRY

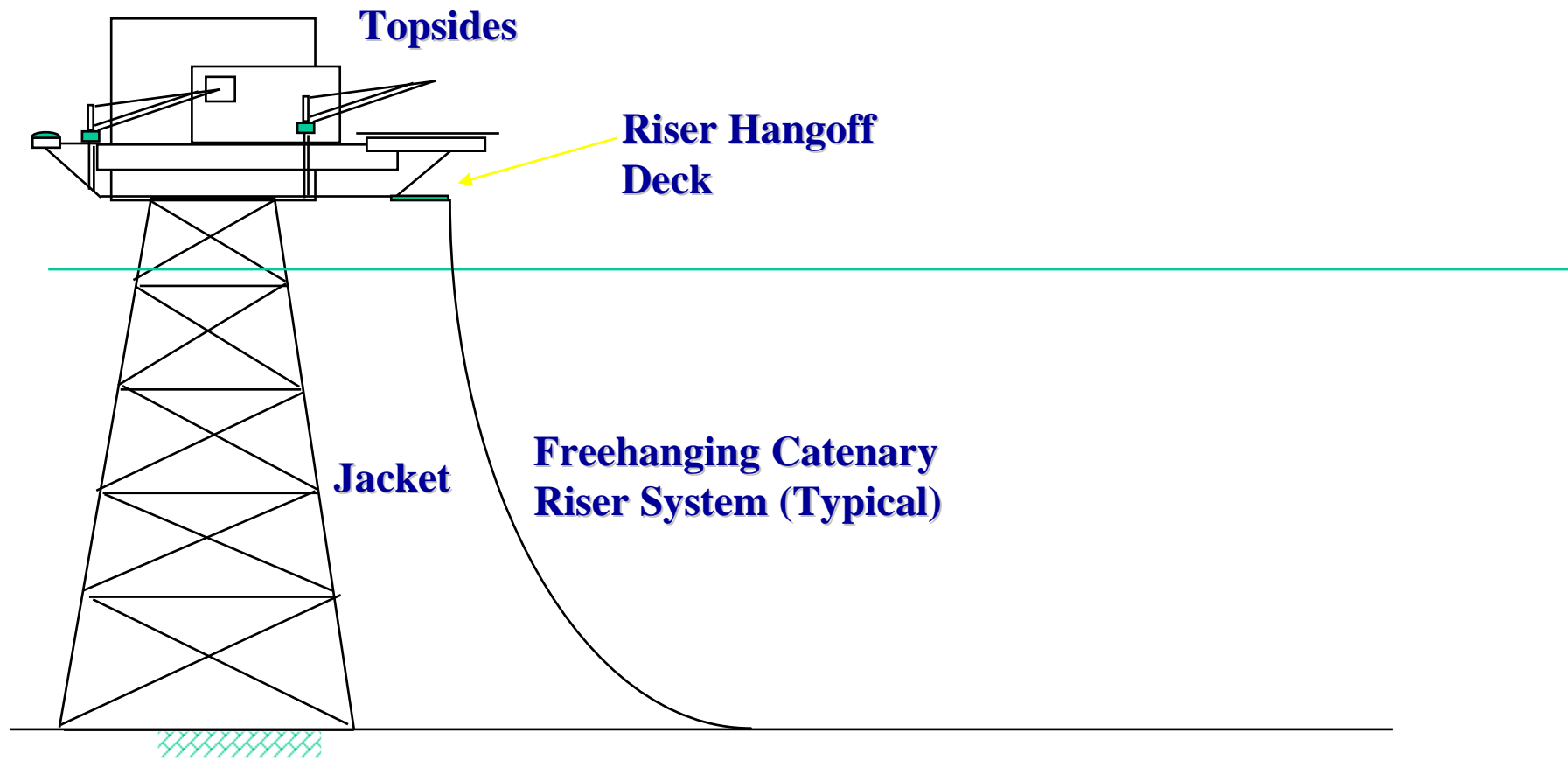
- Life of a project
- Project Team Organisation
- Project Control Management

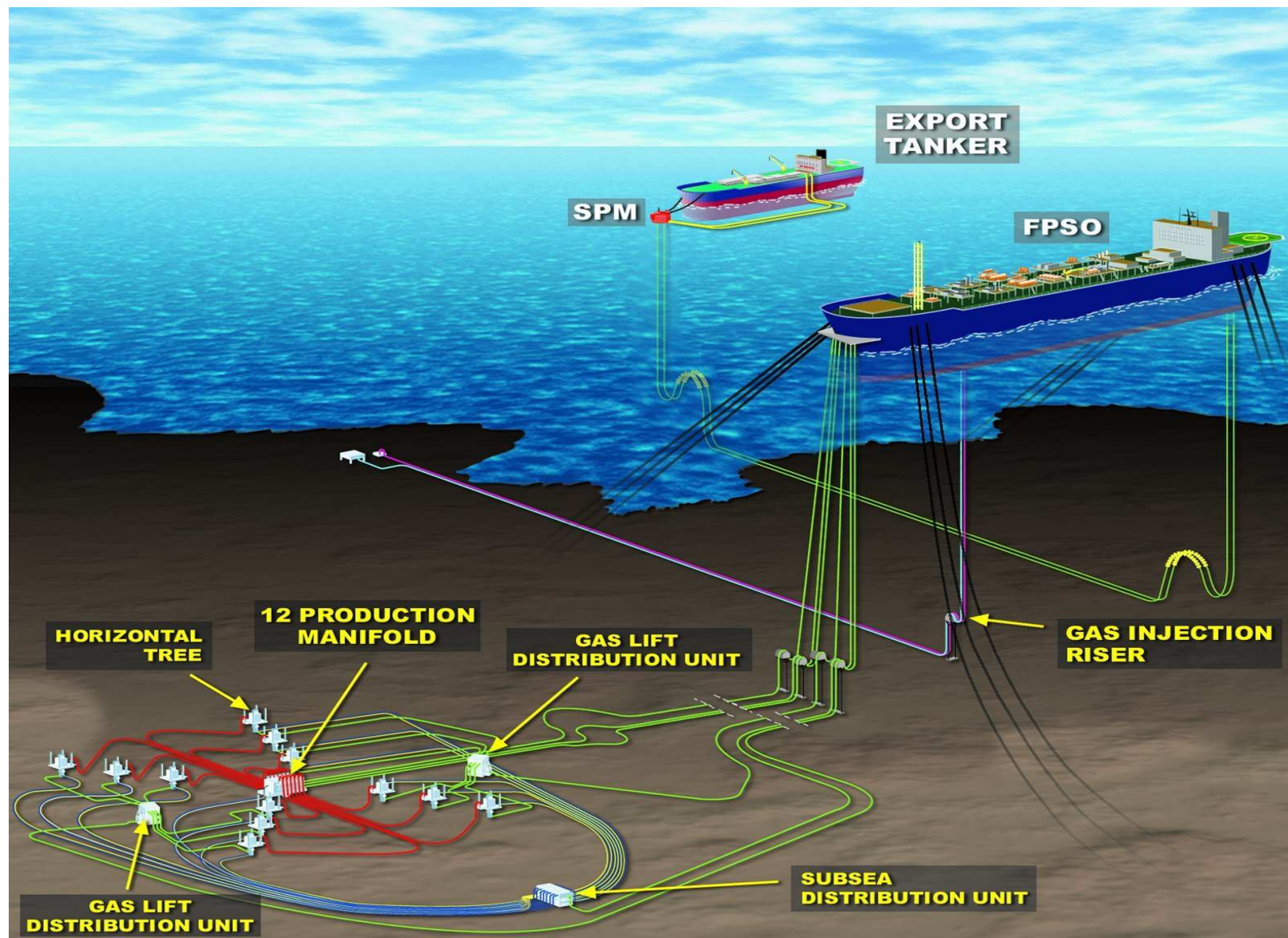
PROJECT MANAGEMENT IN THE CONSTRUCTION INDUSTRY

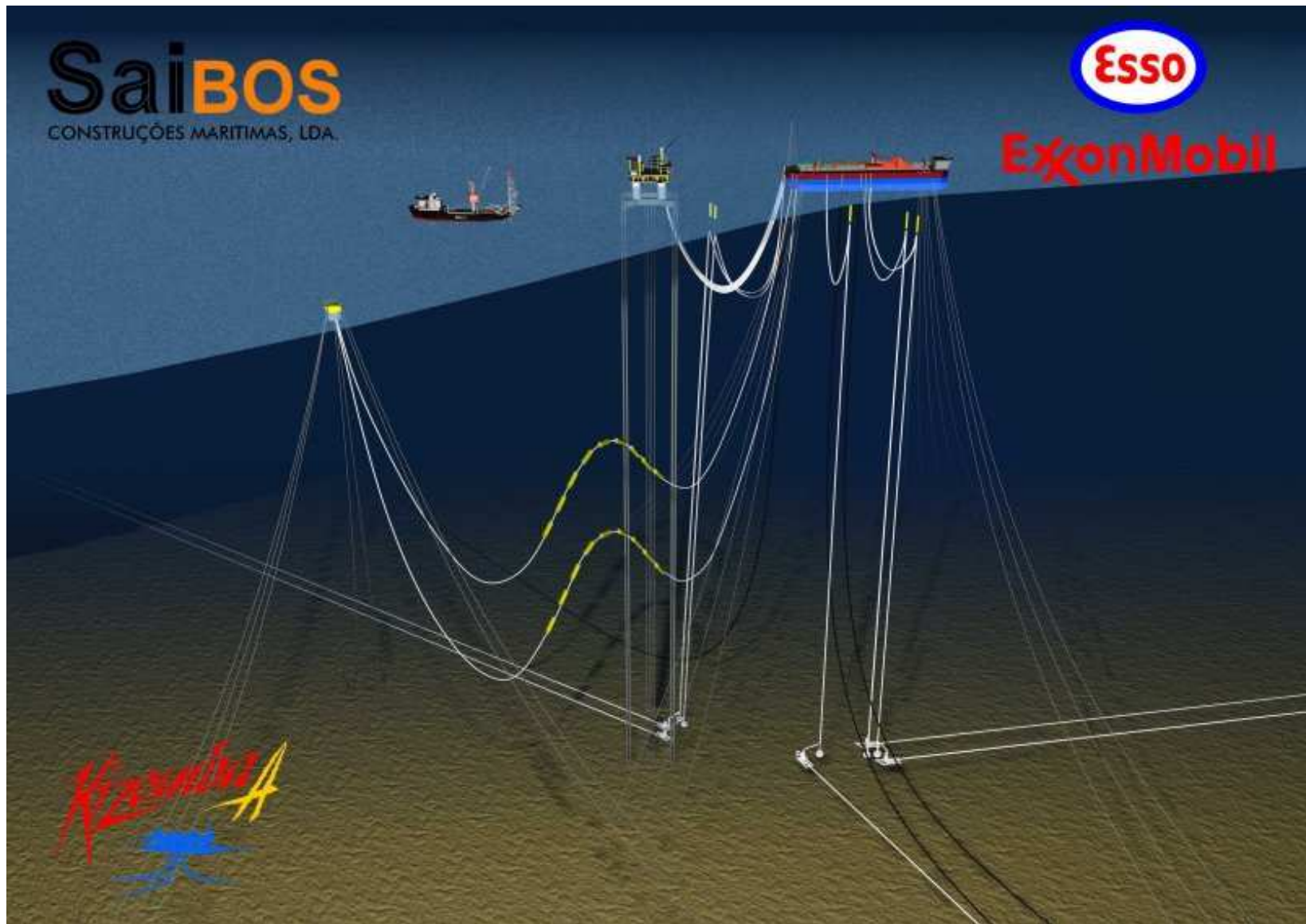
- Life of a project
- Project Team Organisation
- Project Control Management

- Definition of a project:
 - an object to be constructed from an award date up to a completion date
- Type of objects built in the offshore exploration and production of the Oil & Gas industry
 - FPSO and jackets / Umbilical Flowline Risers / Subsea Production System / Drilling

- Type of objects built in the onshore Oil & Gas industry
 - Refinery
 - LNG tank
 - Gas compression station























Definition of the main participants

- Company: TOTAL / EXXON / BP / CHEVRON TEXACO ...
- Contractors: SAIPEM / TECHNIP / ACERGY / HALLIBURTON ...
- Subcontractors / suppliers

- **E.P.C.I.C. project:**
 - **Engineering** (approx. 10 % of the project price)
 - **Procurement** (approx. 40 % of the project price)
 - **Construction / Installation / Commissioning** (approx. 50 % of the project price)

- Pre-project - FEED phase:
 - study performed by the Company or on behalf of the Company : Front End Engineering Design or Basic Engineering Design (eg Doris Engineering or the main Contractors)
 - in the same time study by the Company of the planning / main milestones / payment

- Pre-project - FEED phase:
 - The purpose of the FEED is to check the technical feasibility of the project, to identify the critical points and to submit a technical solution in order to prepare the Invitation To Tender (ITT) from technical point of view
 - During the FEED phase: elaboration of main project procedures by the Company, elaboration of a draft of the project contract

- Pre-project – Invitation To Tender (or Invitation To Bidder) phase:
 - at the same time, Contractors receive from Company the full dossier including FEED results and project management procedures to be applied during the course of the project
 - BID / NO BID decision to be taken by Contractors
 - the purpose of the ITT phase is for Company to received the price of a qualified technical solution within a qualified project management frame (planning / payment / milestones)

- ITT phase:
 - Competition between Contractors during a defined period of time.
 - Technical Competition: review / endorsement of the FEED / Proposal of other technical solutions / Execution scheme
 - Commercial competition: price estimation / planning / project management

- ITT phase:
 - mobilisation of Contractor commercial service (dedicated Business Unit) in direct link with the Client. Communication with the Clients exclusively done through commercial service
 - mobilisation of all other services of the Contractors (engineering, procurement, subcontract, construction, planning, price estimation) within a dedicated proposal team

- ITT phase:
 - during ITT phase: permanent clarifications with Company
 - Price is always given with qualifications
 - At the end of the ITT phase: the contract award

- Type of contract:
 - lump sum contract: payment by the Client based on deliverables (documents for engineering, equipment for procurement, progress for the construction phase)
 - reimbursable contract: each spent hour is reimbursable within a defined budgeted target

- LIFE OF A PROJECT

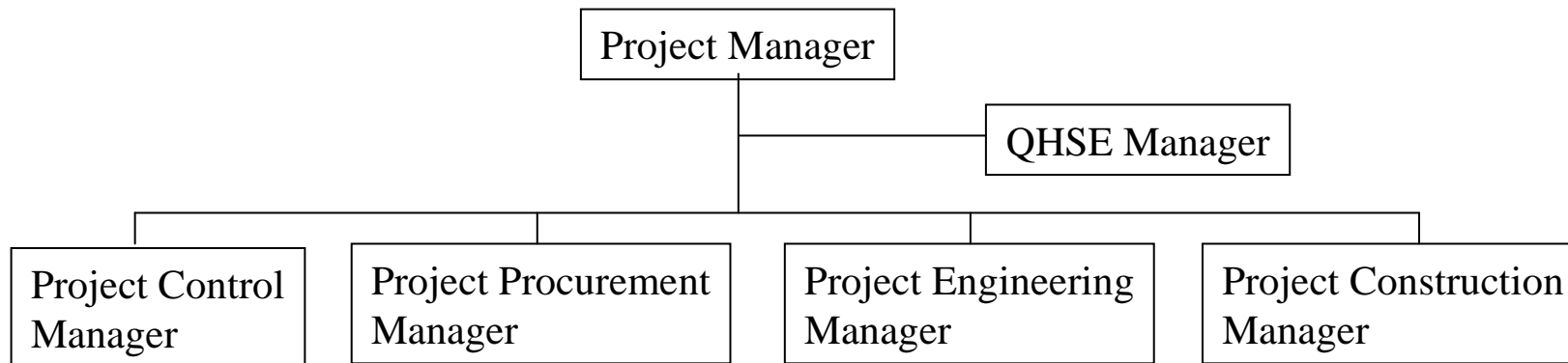


PROJECT MANAGEMENT IN THE CONSTRUCTION INDUSTRY

- Life of a project
- Project Team Organisation
- Project Control Management

- Project phase
 - beginning of the project by the contract award and the reception of the contract.
 - Mobilisation of the project team
 - meeting between proposal team / corporate / project team

- Project Management Team

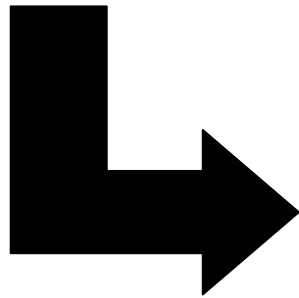


- Project Engineering Manager
 - in charge of co-ordination of all engineering disciplines (structural / piping / process / instrumentation / electrical / mechanical / safety / installation)
 - in charge of managing the engineering budget

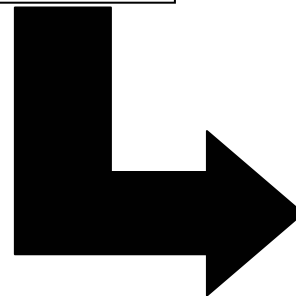
- Project Procurement Manager
 - in charge of buying Equipment / Bulk
 - in charge of purchase order and follow-up of the purchase
 - include Quality Control / Quality Assurance / Inspection services

- Link Engineering / Procurement:
 - for each discipline the purpose of the engineering is to deliver to the procurement :
 - a Specification
 - a Requisition
 - Based on these documents, consultation process can begin within procurement
 - Engineering team to advise the appropriate supplier based on technical criteria (evaluation table)

Engineering
Specification &
Requisition



Consultation
& Evaluation
of Suppliers



Placement of
Purchase Order

PROJECT MANAGEMENT IN THE CONSTRUCTION INDUSTRY

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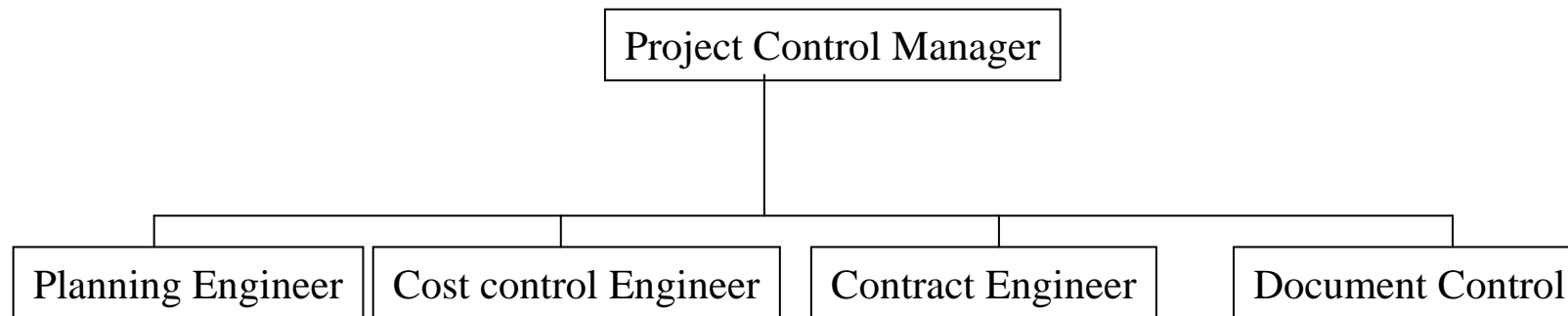
PROJECT MANAGEMENT IN THE CONSTRUCTION INDUSTRY

- Project Control Management
 - Why a project control management?
 - the organisation of the project control team
 - the planning
 - the progress
 - the cost

- Project Control Management:
 - Difficulty to drive a car without knowing the car speed, the number of rounds/min, or if a fuel shutdown is being to occur
 - Difficulty for a project manager to manage a project without knowing if the project is in schedule (or not) nor the project expenses status.
 - Project Control Management: help the project manager to take decision by monitoring and controlling the project

- Project Control Manager
 - in charge of the planning
 - in charge of the progress
 - in charge of the cost control (with respect to the Client and with respect to each discipline leader)
 - in charge of the contract and the change orders
 - in charge of the document control

- Project Control Management Team

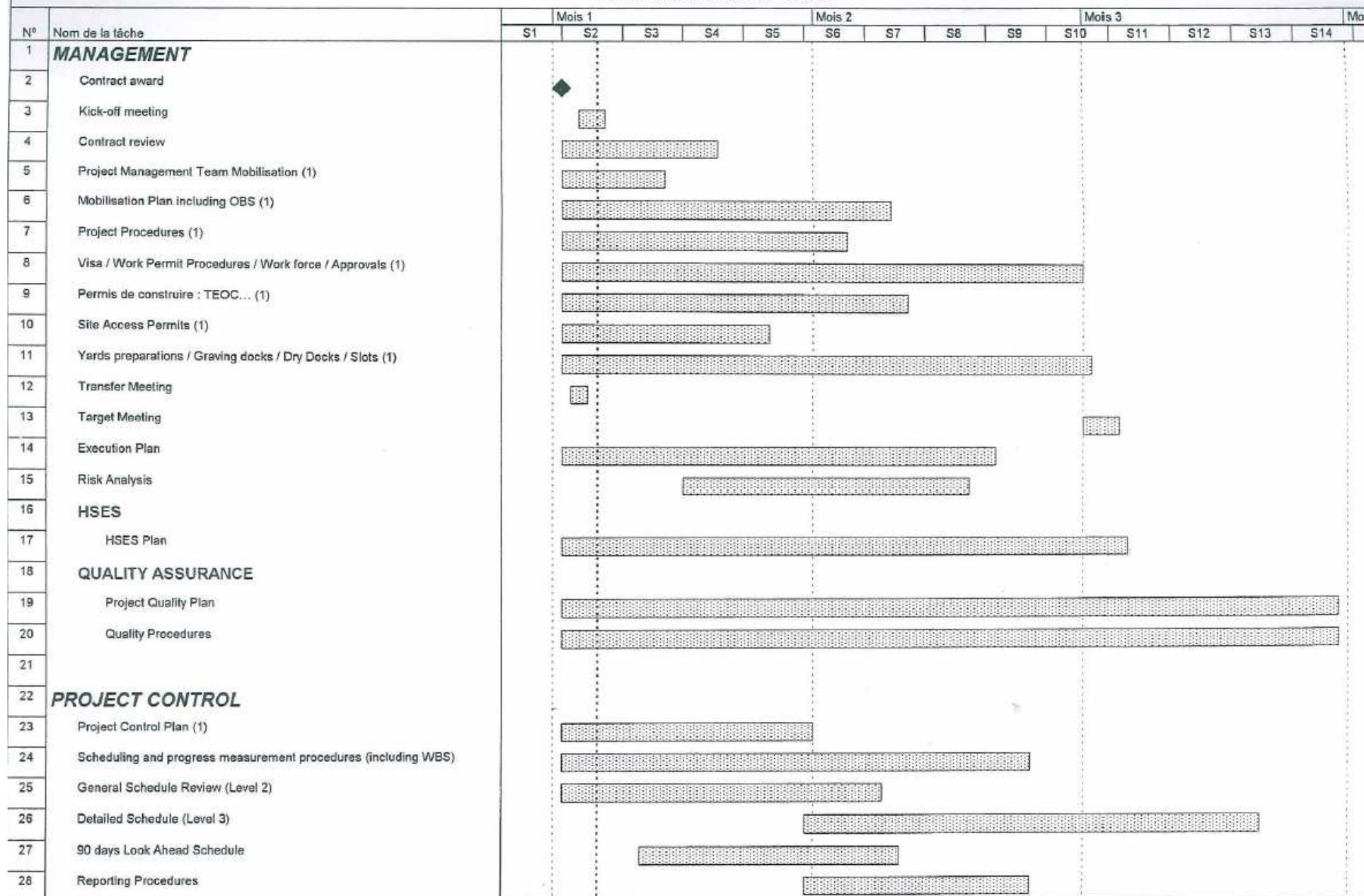


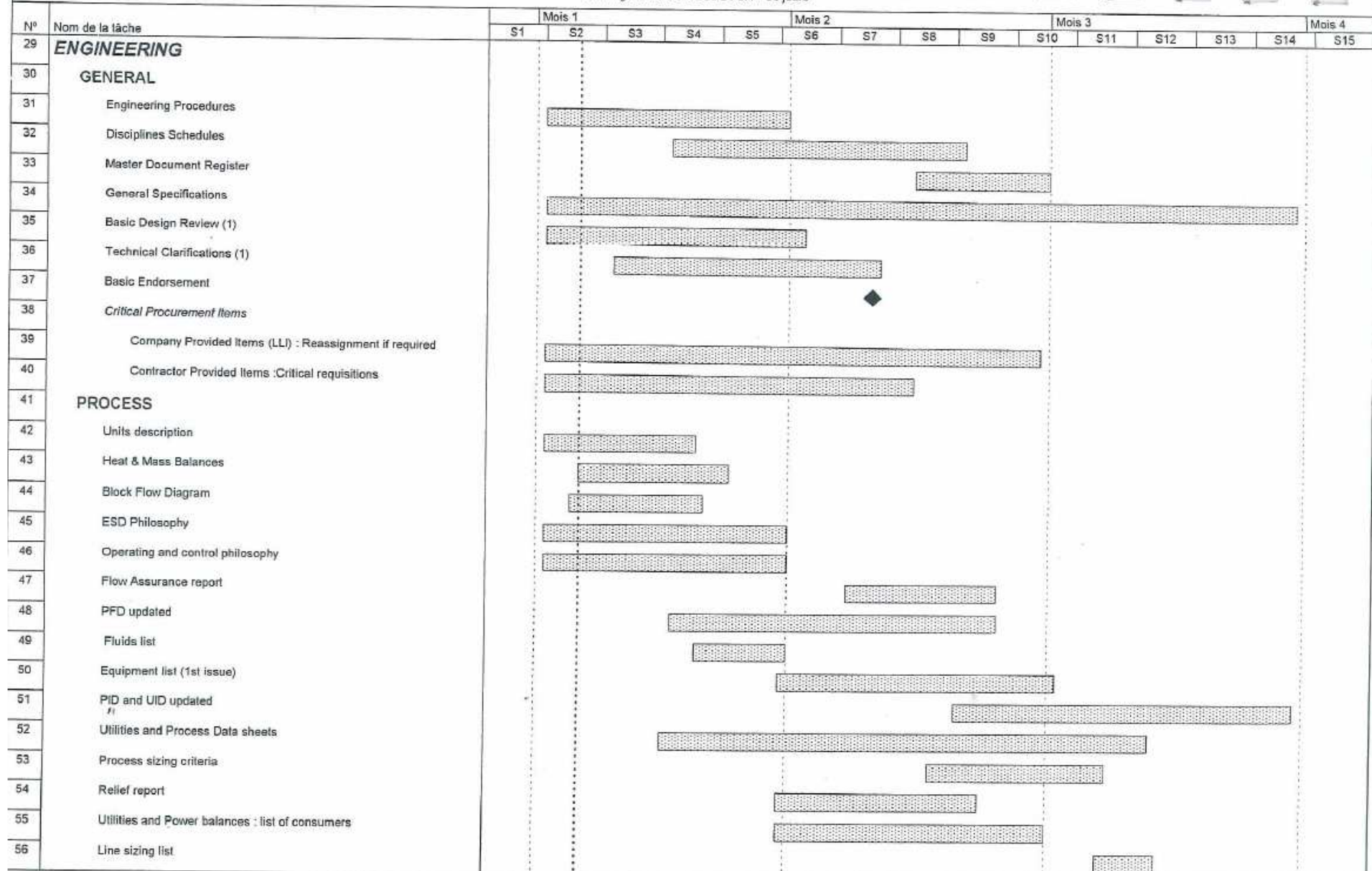
- Contract management:
 - manage the contractual aspects with respect to the Client / subcontractors / suppliers
 - manage the changes submitted/accepted/refused/on going
 - monitor the potential change (trend)
 - Check list of contract review
 - Forecasted invoice for the main contract and the changes

- Document control
 - control and follow-up of the contractual documentation
 - sometimes control and follow-up of the technical documentation

- Project procedures
 - Invoicing procedure
 - Man hours monitoring procedure
 - Project change procedure
 - Project cost control procedure
 - Scheduling, progress measurement and reporting procedure
 - Correspondence and communication procedure
 - ...

Planning Standard Niveau 2 : CA + 90 jours



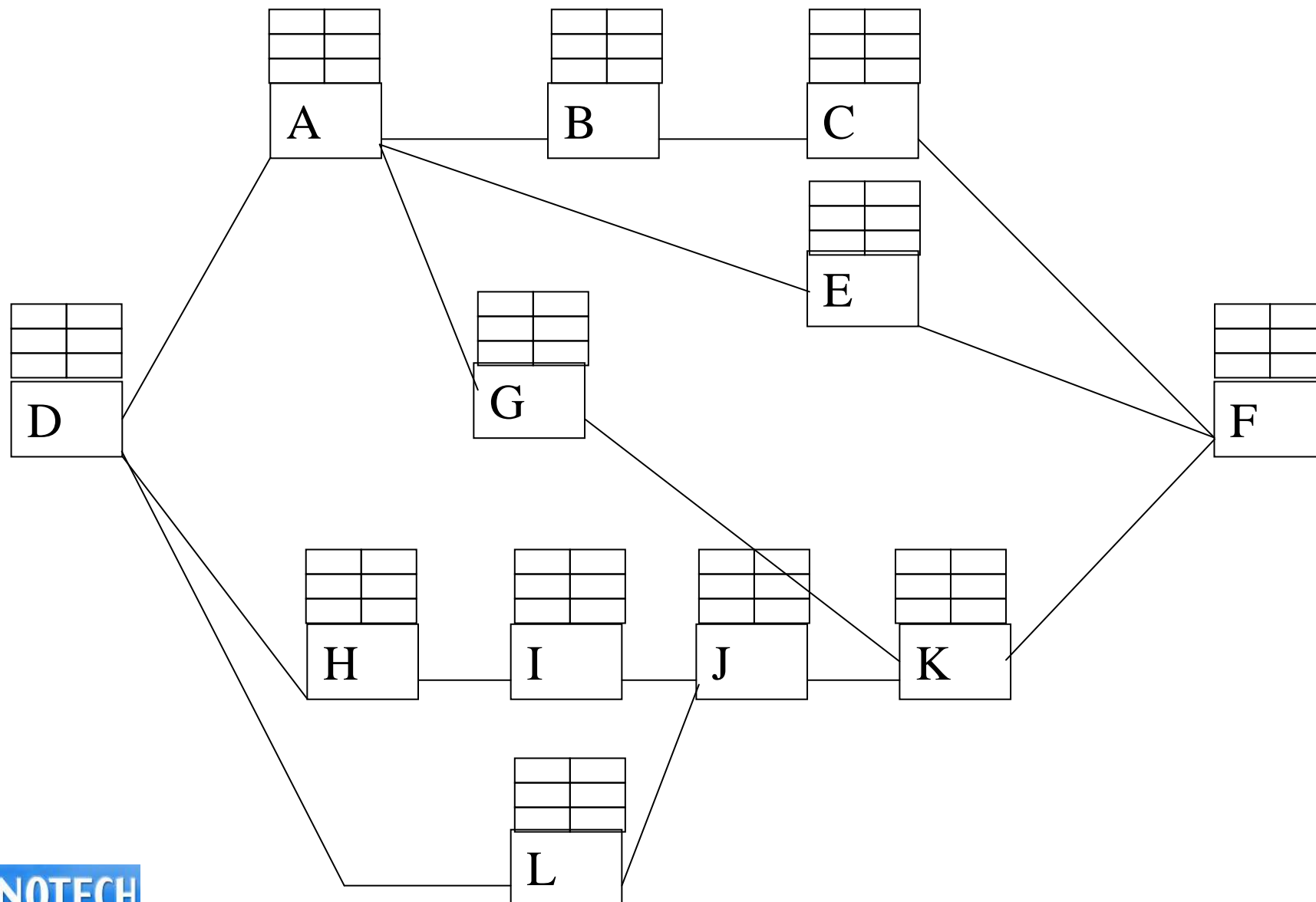


PLANNING

WORKSHOP 1

Identification	Durée	Prédécesseur	Type de lien	Observation
D	0			Jalon début
A	10	D	FD	
B	4	A	FD	
C	1	B	FD	
E	6	A	FD	
G	8	A	FD	
H	3	D	FD	
I	7	H	FD	
J	2	I,L	FD	
K	12	G,J	FD	
L	6	D	FD	
F	0	C,E,K	FD	Jalon fin

Total Float	Free Float
Late Start	Late Finish
Early Start	Early Finish
Action Number	

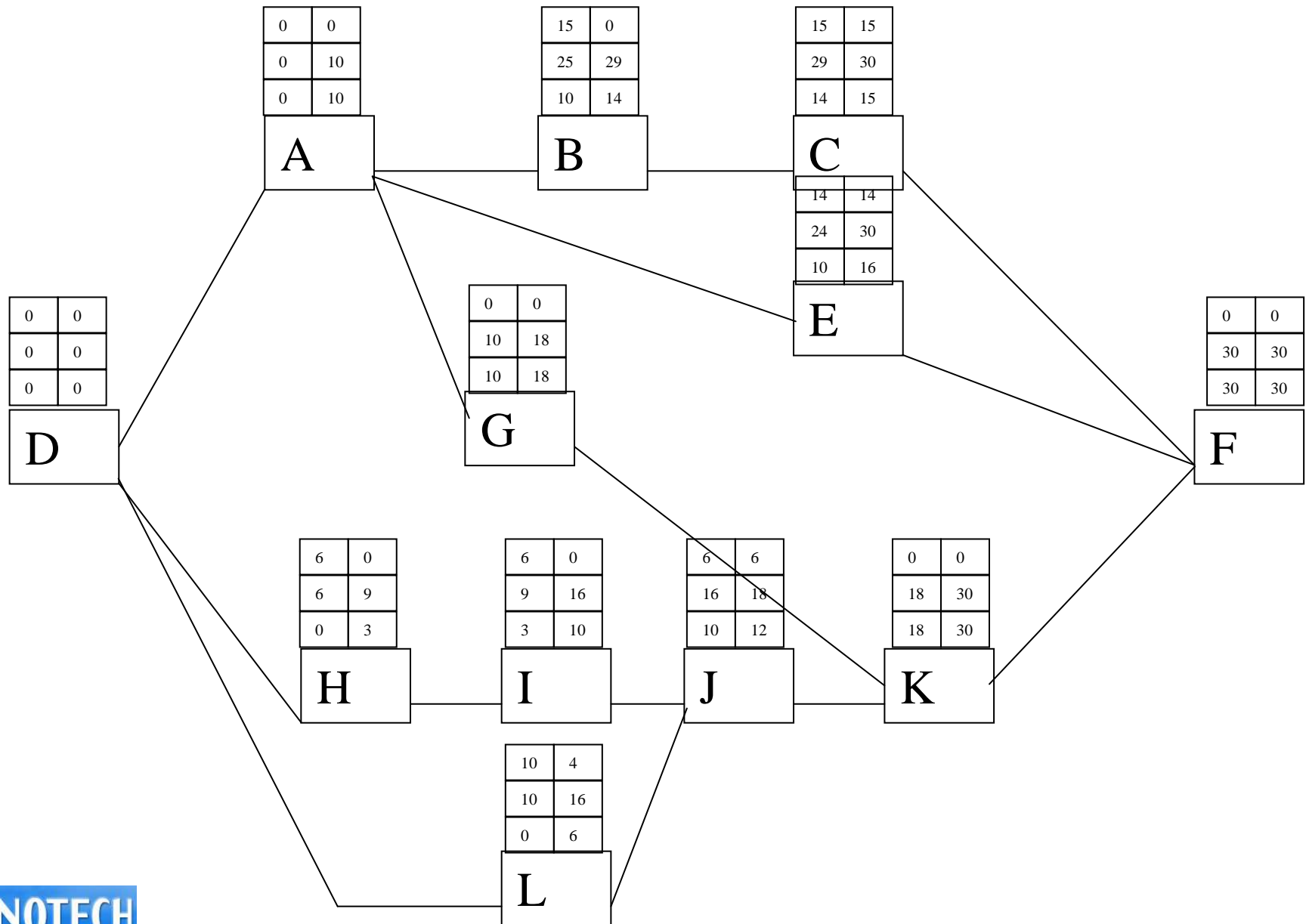


- Planning calculation
 - First step: calculation at early start and early finish date starting from the beginning of the project to the end (forward)
 - Second step: calculation at late start and late finish starting from the end of the project to the beginning (backward)

Total Float	Free Float
Late Start	Late Finish
Early Start	Early Finish
Action Number	

- Total Float, Critical Path, Free Float
 - Total Float = Late Start - Early Start = Late Finish - Early Finish
 - Critical path = the task path where the total float is the minimum
 - Free Float = this is the delay that a task could take without affected the early start of one of these following tasks ie $(\text{Free Float})_n = (\text{Early Start})_{n+1} - (\text{Early Finish})_n$

- Modification of Total Float affects all the associated tasks
- Modification of the Free Float affects only the associated task



- The planning:
 - the purpose of the planning is to supplied the critical path
 - the purpose of the planning is to allow the progress measurement
 - the progress is directly linked with the invoice process and therefore Client payment
 - the purpose of the planning is to optimise the resources
 - the tool used in the Oil & Gas industry is Primavera

- Different planning levels:
 - level 0: incorporating macro activities and contract dates. Progress curves and histograms are developed at this level using information from level 2
 - level 1: list of project macro activities divided up according to disciplines for engineering, main/critical items for procurement, work areas for construction

- Different planning levels:
 - level 2: list of project activities connected by logical links describing their sequence in the project. Allow to determine the critical path
 - level 3: planning including all elements (all engineering document, job cards and work task for construction, all procured items)

Key Dates & Milestones					
0000	contract award	0	07MAY01A	◆ contract award	
0100	Construction subcontractor award	0	21JUN01A	◆ Construction subcontractor award	
0205	Construction yard sail out	0	23JUN02		◆ Construction yard sail out
0210	Mechanical completion	0	06SEP02		◆ Mechanical completion
Engineering					
0010	Engineering mobilization	7	13MAY01A	■ Engineering mobilization	
0020	basic engineering frozen	0	21JUN01A	◆ basic engineering frozen	
0030	1st MTO for main structure	0	28JUL01A	◆ 1st MTO for main structure	
0035	1st requis for critical equipment	0	12AUG01A	◆ 1st requis for critical equipment	
0040	1st AFC for main structure	0	26OCT01A	◆ 1st AFC for main structure	
0050	1st AFC for E/I	0	09DEC01A	◆ 1st AFC for E/I	
0060	Last AFC (all disciplines)	0	10DEC01	◆ Last AFC (all disciplines)	
0220	Process engineering	45	27JUN01A	■ Process engineering	
0230	Mechanical engineering	120	13JUN01A	■ Mechanical engineering	
0240	Piping engineering	90	12AUG01A	■ Piping engineering	
0250	E/I engineering	90	11SEP01A	■ E/I engineering	
Procurement					
0070	Structural procurement (including	120	28JUL01A	■ Structural procurement (including transportation	
0080	Equipment procurement (inc.	240	12AUG01A	■ Equipment procurement (inc. transportation)	
0090	Piping procurement (including	120	11OCT01A	■ Piping procurement (including transportation)	
Fabrication / Construction					
0110	Construction subcontractor	5	21JUN01A	■ Construction subcontractor mobilization	
0120	welders qualifications	15	26JUN01A	■ welders qualifications	
0130	Main structure fabrication	180	11JUL01A	■ Main structure fabrication	
0140	Secondary structure fabrication	120	08NOV01A	■ Secondary structure fabrication	
0150	equipment integration	120	08FEB02	■ equipment integration	
0160	E/I	60	24APR02	■ E/I	
Transportation / Installation					
0170	Transportation to installation site	30	23JUN02	■ Transportation to installation site	
0180	Installation	15	23JUL02	■ Installation	
Commissioning					
0190	Commissioning	30	07AUG02	■ Commissioning	
Operating					
0200	Operating (optional)	90	06SEP02	■ Operating (optional)	
Dismantle					
0260	Dismantle old infrastructure &	80	05DEC02	■ Dismantle old infrastructure & equipment	

Start Date 07MAY01
Finish Date 04JUN03
Data Date 30NOV01



SYN1

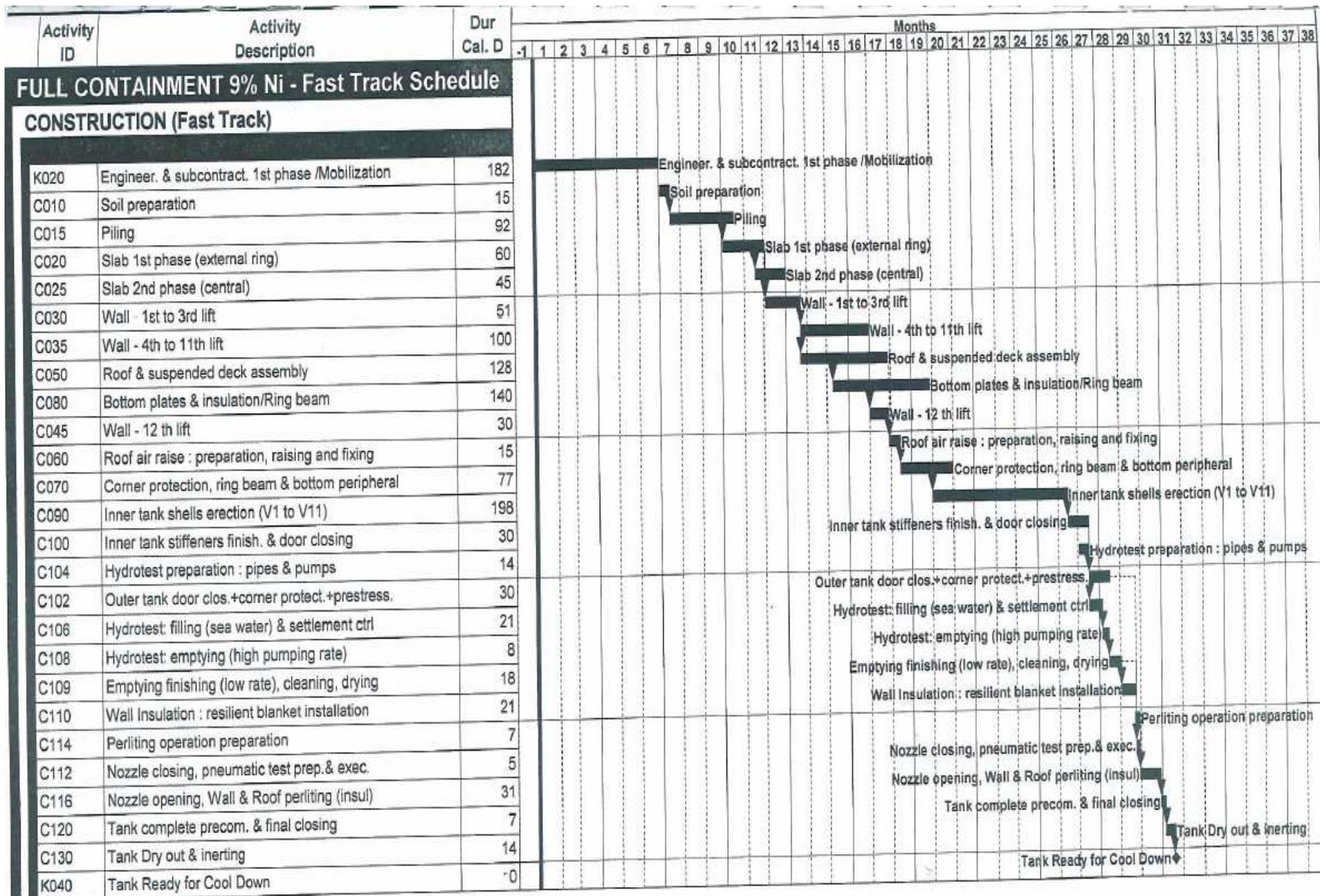
Bouygues Offshore
TXXXXX - NOMDUPOROJET
Classic Schedule Layout

Sheet 1 of 1

Date	Revision	Checked
	Month 7 Level 1 Schedule	SE

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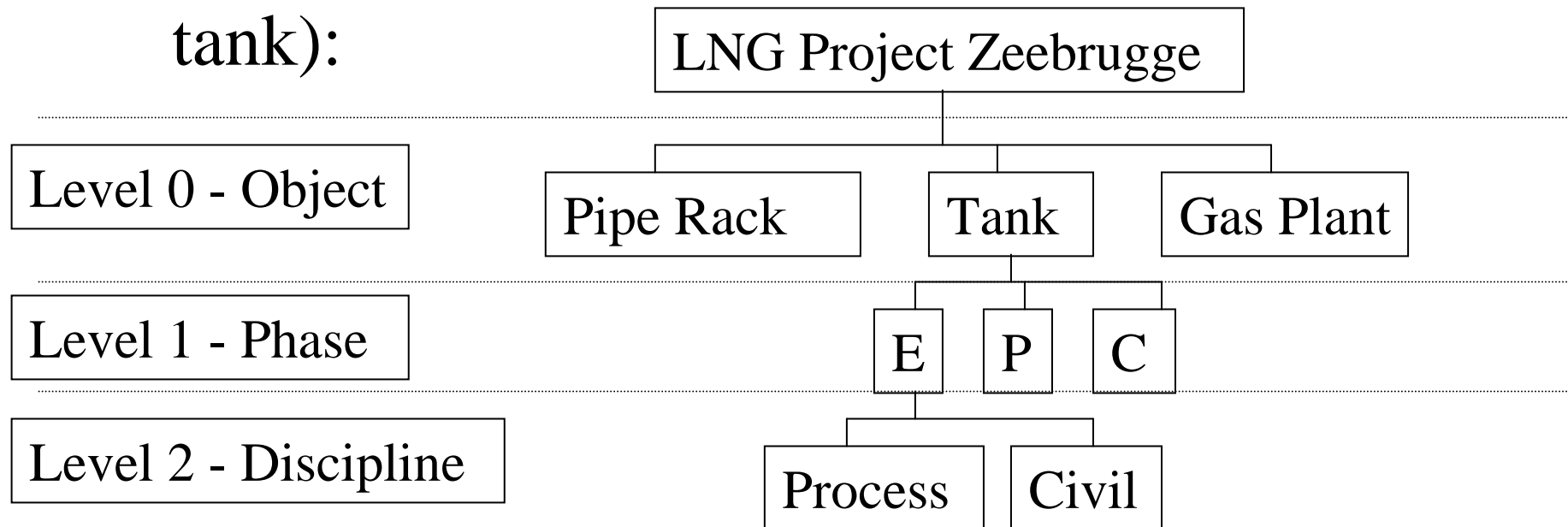


- Elaboration of the planning in tender phase:
 - elaboration of the Work Breakdown Structure (WBS) of the project
 - critical path analysis in planning level 0 or 1
 - forecasted planning (level 0 or 1)
 - forecasted histogram
 - forecasted progress curve

- The Work Breakdown Structure:
 - planning architecture / decomposition in Object/Phase/Discipline
 - standardisation and coherence (wrt to the corporate cost control, suppliers, cost, progress, physical quantities...)
 - lessons learnt and ratios consolidation

- The Work Breakdown Structure (eg LNG tank):
 - Object: site preparation, temporary facilities, jetty & marine facilities, LNG tank, Gas plant, Offsite, Others
 - Phase: Project management & general services, engineering, procurement, construction, commissioning & start-up, others
 - Discipline: civil works, piping, structural, electrical, instrumentation ...

- The Work Breakdown Structure (LNG tank):



- Elaboration of the planning in project phase:
 - Inputs: contract, WBS, CBS, deliverables list (engineering documents), purchase order list, construction sequence, commissioning sequence, reference ratios
 - Output: reference planning and up to date planning, start-up planning, histogram, progress

PROGRESS

- The progress:
 - it is the measurement in % of earned value of the activities
 - it includes the following functions:
 - progress curves (S curves...)
 - productivity ratio (te/day, mm/min for a weld...)

- Progress measurement: why?
 - To know the actual production and the remaining one
 - to compare the actual production with the planned one
 - to compare the earned values with the resource expenses and the budgeted ones
 - to invoice
 - to anticipate and re-estimate the future of the project

- Evaluation of Project Progress:
 - The unit is the money as this is the common value to each work (EPCIC)
 - each element of the planning is weighted on the basis of man hours or cost. The weights at the various WBS levels are calculated by subsequent groupings

- Engineering Evaluation Progress:
 - on the basis of specifications, requisitions, drawings, data sheets...
 - each document is weighted. The weight must be based on the estimated quantity of man-hours needed for the document preparation
 - Key tool of engineering progress: Master Document Register with the whole project documents to be issued and the associated dates (early and late date)

- Engineering Evaluation Progress:

Status	Percentage
Not started	0%
Started	15%
Preliminary issue	40%
Interdisciplin e check	65%
Issue for Client approval	80%
Comments received from Client	90%
Clients approval for acquisition/c onstruction	100%

- Procurement Evaluation Progress:
 - each element to be purchased is weighted. The weight must be based on the estimated budget of the purchased element
 - Key tool of procurement progress: Material Status Report with the whole elements to be purchased the associated dates (early and late date)

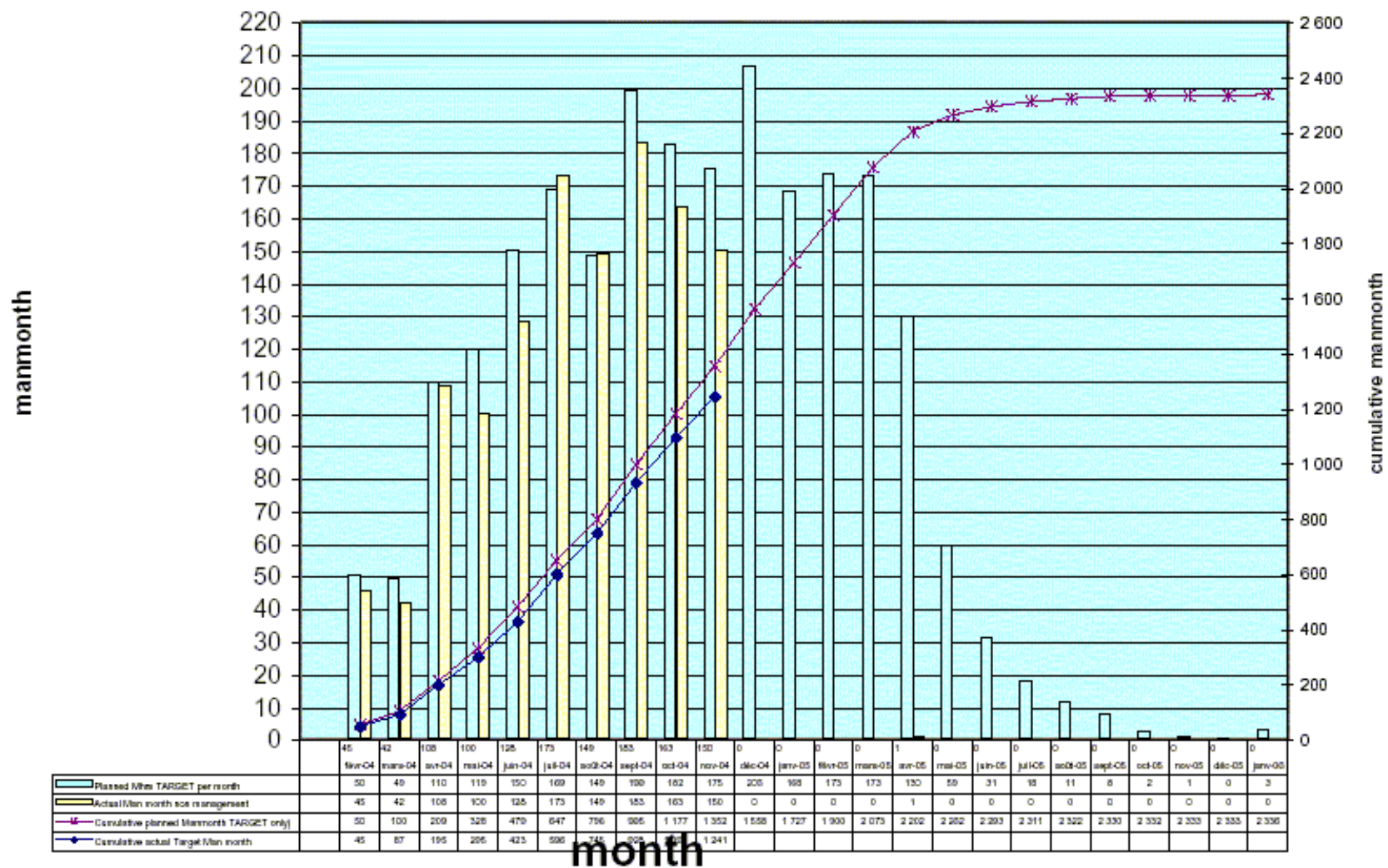
- Procurement Evaluation Progress:

Category	Status	Percentage
Iron structures	Not started	0%
	Request for bid issued	10%
	Purchase order issued	25%
	Sent by supplier	95%
	On site arrival	100%
Machinery	Not started	0%
	Request for bid issued	10%
	Purchase order issued	40%
	Sent by supplier	80%
	On site arrival	100%
Loose Materials	Not started	0%
	Request for bid issued	10%
	Purchase order issued	20%
	Sent by supplier	70%
	On site arrival	100%

- Construction Evaluation Progress:
 - the guideline for weighing and evaluating the progress is obtained by giving the various activities weights proportional to the estimated man-hours
 - the progress percentage for each of the major activities is evaluated on the basis of:
 - quantity
 - completion

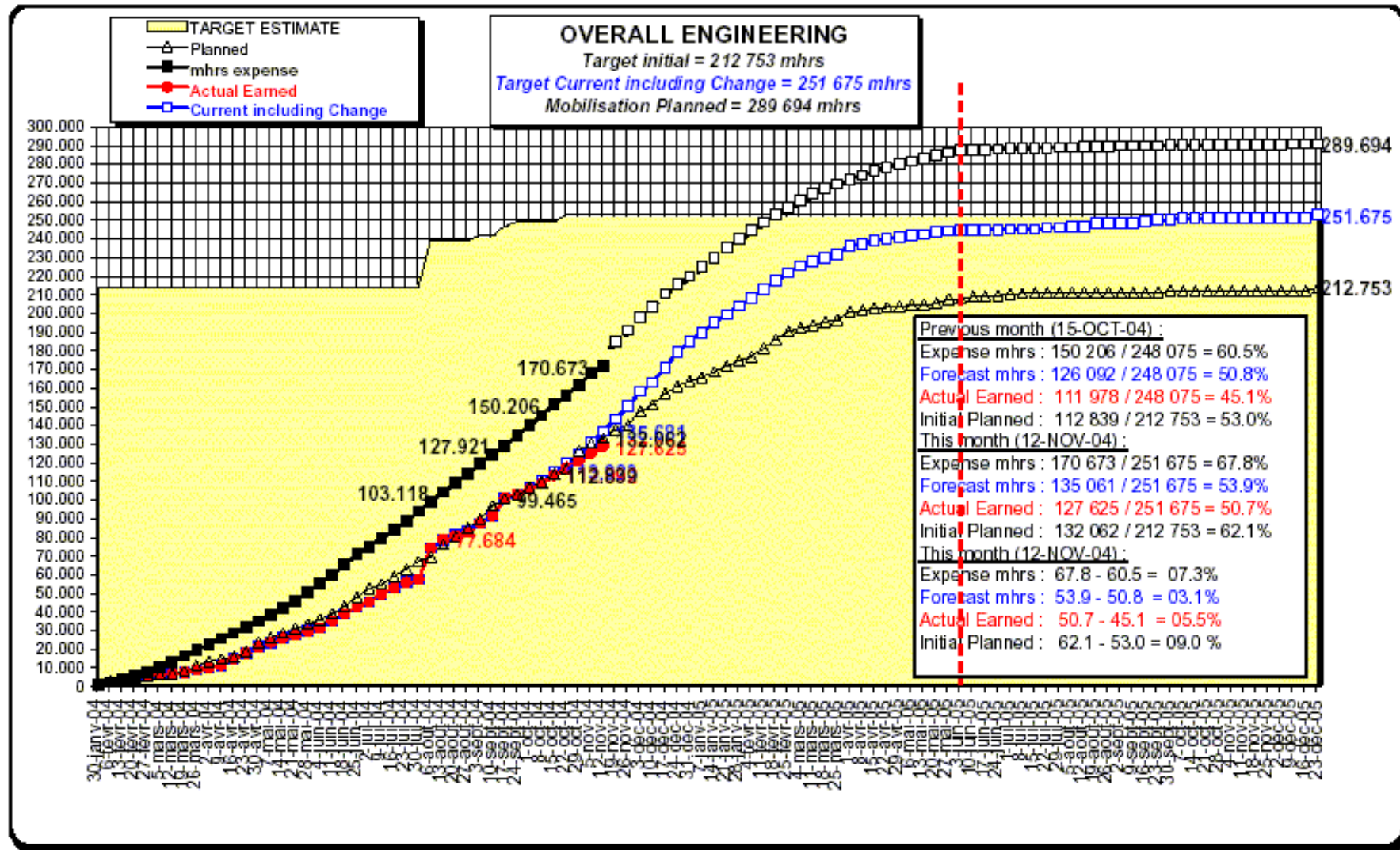
- To perform the progress:
 - What is the date at which the task has been started?
 - What is the progress of each on going task?
 - What is the starting date of the coming task?
 - What is the end of each completed task?

FULL TIME EQUIVALENT MANPOWER CHART PHASE 3 -TARGET (PLANNED/ACTUAL)



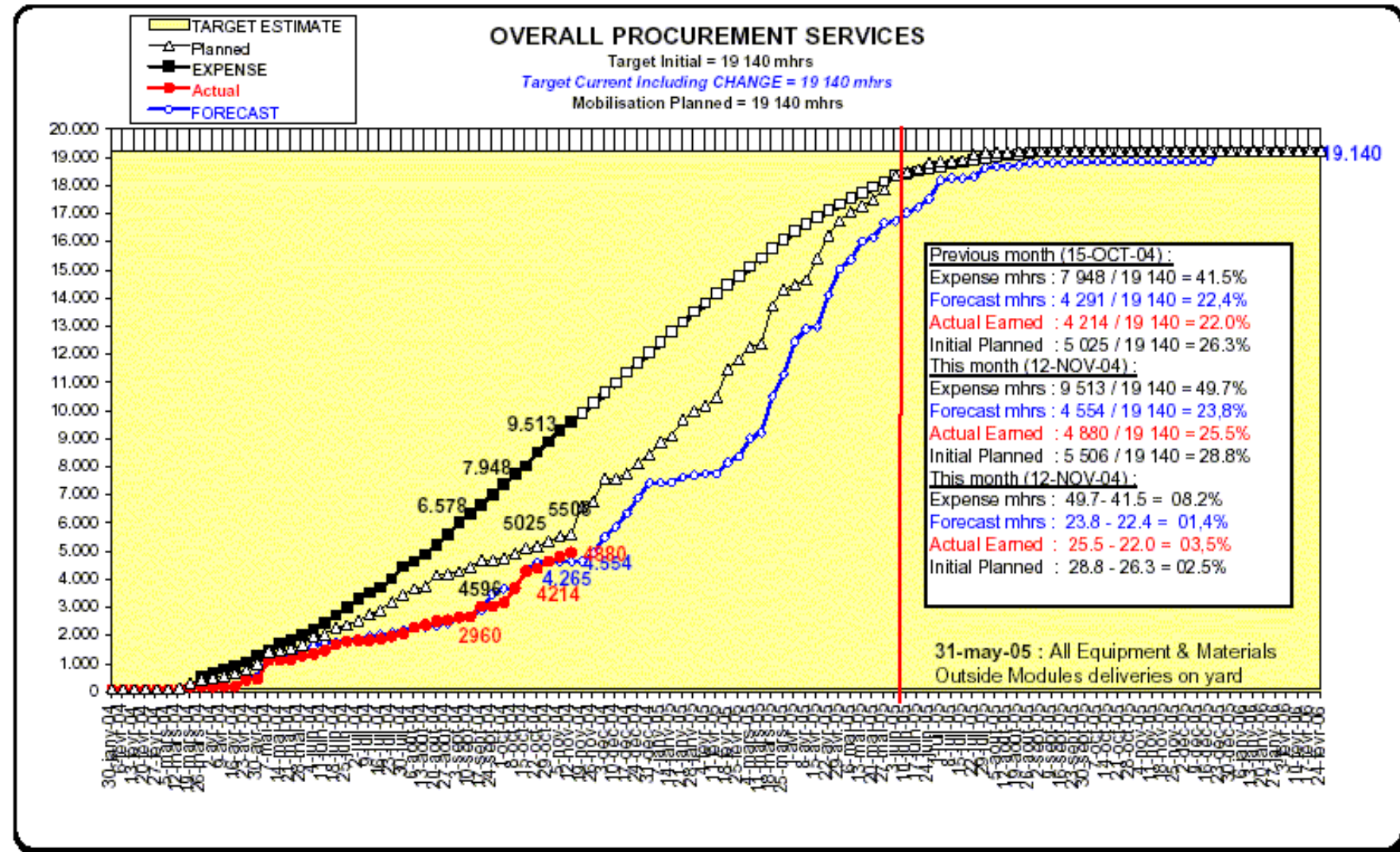
ROSA DEVELOPMENT PROJECT - FPSO MODIFICATION

ENGINEERING PROGRESS as of : 12-NOV-04



ROSA DEVELOPMENT PROJECT - FPSO MODIFICATION

PROCUREMENT PROGRESS as of : 12-NOV-04

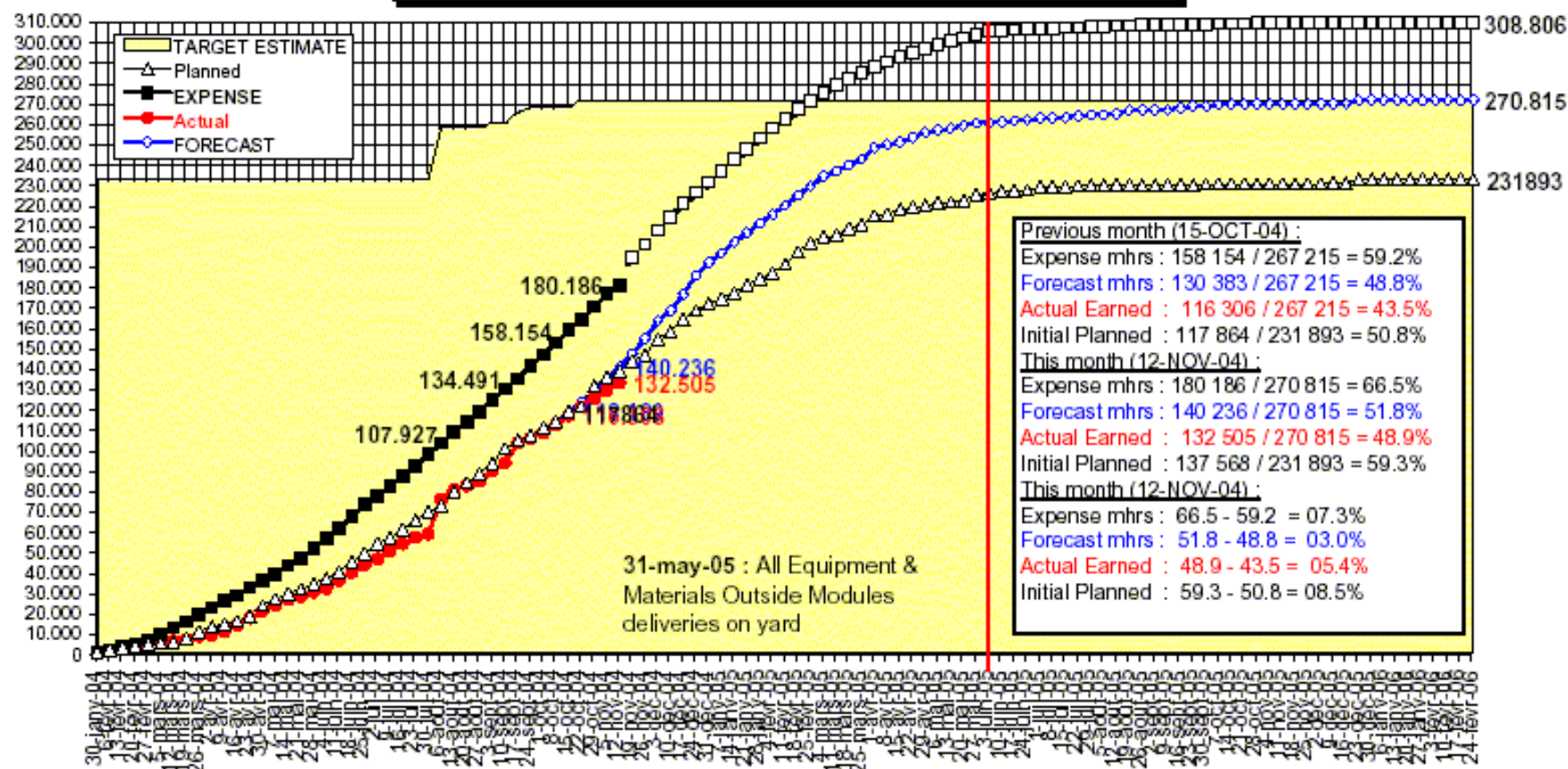


ROSA DEVELOPMENT PROJECT - FPSO MODIFICATION

PROCUREMENT PROGRESS as of : 12-NOV-04

OVERALL EP CONTRACT

Target initial = 212 753 mhrs + 19 140 mhrs = 231 893 mhrs
 Target Current including Change = 251 675 mhrs + 19 140 mhrs = 270 815 mhrs
 Mobilisation Planned = 289 694 mhrs + 19 112 mhrs = 308 806 mhrs



Progress control, control of expensed hours and of productivity in an engineering project

- **PRODUCTION** (in points, in documents, in €) should be distinguished from **RESOURCES** (in Hours, in €) required for this production.
- The valuation of the PRODUCTION is in points. For the engineering, documents are weighted by points which are proportional to the estimated hours (resources) required for the production of these documents.
- Point value in € remains the same during all the project life whatever is the centre of production.
- The reference (for the calculation in %) is always the column (1)
Target budget

Input data in red

Project XXXXX		ENGINEERING				Status on :		DD-MMM-AAAA		(Cut-off date)
Ref. 000000		First production center : FRANCE								
		Target Budget ^(a)	Changes ^(b)	Revised Budget	To Date ^(a)	To Go ^(d)	Final Expenses			Comments
Point value in €	65					From PEM	From PEM	From PMS		
Point value in man hour	1	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
Production	A			= (1) + (2)			= (4) + (5)		Measured on Document Register	
In Points	A1	45 000	9 000	54 000	28 000	26 000	54 000	54 000	As per weighted documents	
In % (vrt points)	A2	100,0%	20,0%	120,0%	62,2%	57,8%	120,0%	120,0%	With respect to col.(1)	
In Documents (FOR INFO ONLY)	A3	1 000	180	1 180	612	568	1 180	1 180	Col.(4) = col.(3) A3 / A2 x col.(4) A2	
In Value (€)	A4	2 925 000	585 000	3 510 000	1 820 000	1 690 000	3 510 000	3 510 000	Col.(4) = Earned Value	
Resources	B			= (1) + (2)			= (4) + (5)		Observed expenses	
In Man Hours	B1	45 000	9 000	54 000	31 540	23 500	55 040	60 827	Col.(7) = col.(4) B1 / A2 x col.(3) A2	
In % (vrt man hours)	B2	100,0%	20,0%	120,0%	70,1%	52,2%	122,3%	135,2%	With respect to col.(1)	
In Value (€)	B3	2 925 000	585 000	3 510 000	1 853 800	1 381 240	3 235 040	3 575 186	Col.(4) = Expended Value	
Resources / Production	C								Efficiency	
Man Hours per Document	C1	45,0	50,0	45,8	51,5	41,4	46,6	51,5	= B1 / A3	
Production / Resources	D								Productivity	
In progress (%/%)	D1	1,00	1,00	1,00	0,89	1,11	0,98	0,89	= A2 / B2	
In Value (Earned Val/Expenses)	D2	1,00	1,00	1,00	0,98	1,22	1,08	0,98	= A4 / B3	
Cost Ratios	E								Cost per product or per resource	
Document Cost (€/Doc)	E1	2 925	3 250	2 975	3 030	2 431	2 742	3 030	= B3 / A3	
Man Hour Cost (€/H)	E2	65,00	65,00	65,00	58,78	58,78	58,78	58,78	= B3 / B1	

Caption :

Input data are in red and bold. Others are calculated.

Data in *italic* come directly from Cost Control.

Column (7) is an arithmetical forecast.

Note:

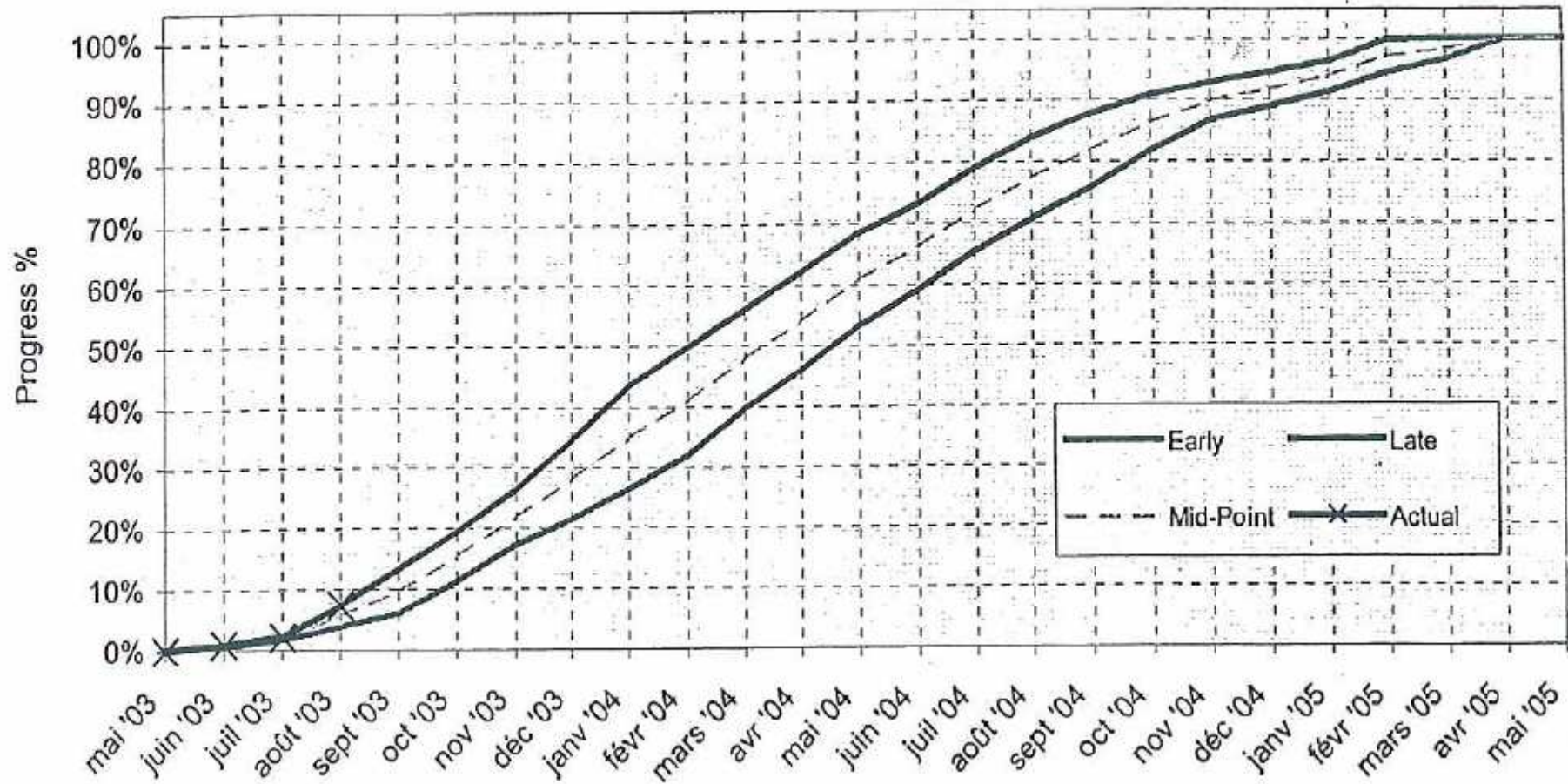
- a or initial budget
- b internal variations (or changes) and vis à vis client
- c status to date or committed
- d to commit to complete

exemples de mesures d'avancement basées sur COST ou sur PRIX de VENTE : ECARTS possibles en cours de réalisation sur Total								
	valeurs basees sur cost			coeff vente COL4	valeurs basees sur vente			ecart COL6-COL3 COL8
	points propor- tionnels aux couts COL1	avancement % calcule = COL2	avancement points COL3		points propor- tionnels aux prix de vente COL5	avancement % calcule = COL2 COL6	avancement points COL7	
ENGINEERING avt calculé av Maninge	15	60%	9	1.6	24	60%	14.4	0
PROCUREMENT avt calculé av Procur	40	30%	12	1.3	52	30%	15.6	
CONSTRUCTION	45	10%	4.5	1	45	10%	4.5	
TOTAL	100	25.5	25.5		121	28.51	34.5	3.01

L'ecart est ds ce cas de + de 10% des valeurs nominales ce qui affecte la representativité

- The planning:
 - Notion of reference (or forecasted) planning
 - Early / Late curves

Single Buoy Moorings (SBM)
Overall Progress S-Curve
August '03



COST

- The Cost Breakdown Structure:
 - allow to consolidate the whole cost of the project
 - very important that up to a certain level CBS = WBS to know the price of the physical progress and the associated ratio

- The cost control:
 - Productivity control
 - it consists in measuring the physical progress (Te, m3...) with respect to the expenses of the associated resources and with respect to the production ratio and productivity.
 - The knowledge of the productivity allow the estimation of the hour budget, the elaboration of the resources curves (histogram) from the planning and the progress

- The cost control:
 - it allows to know the actual expenses
 - it allows the elaboration of ratio (eg Hrs/te, Euro/hr, Euro/te)
 - it allows to control the budget by comparison of typical ratio with similar projects

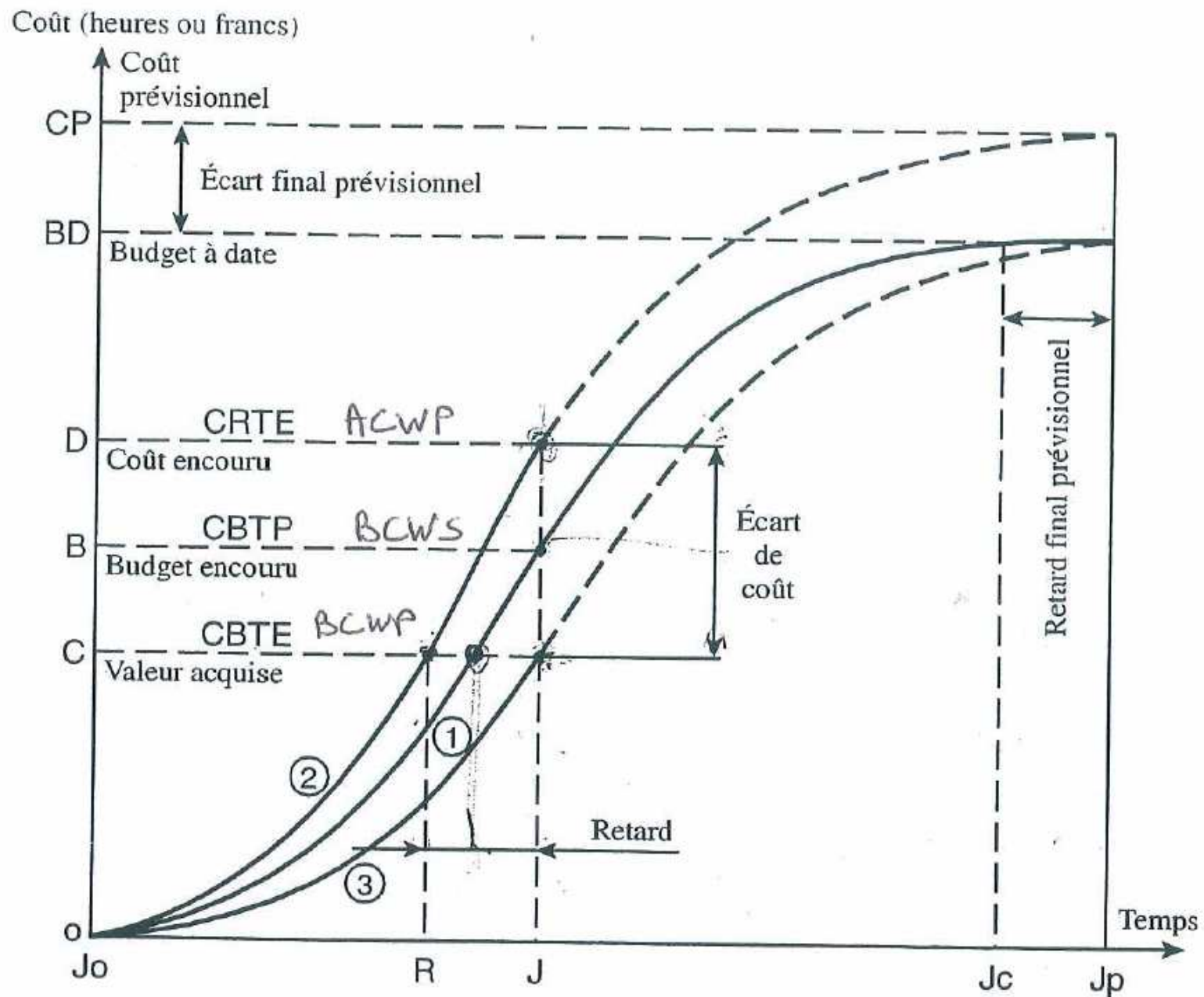


Figure 2 : Principes de suivi d'une affaire.

- CRTE (Coût Réel du Travail Effectué)= ACWP = Actual Cost of Work Performed = is the amount of money (or hours) expended so far in performing the work on the package.
- CBTE (Coût Budgété du Travail Planifié) = BCWS = Budgeted Cost of Work Schedule = is that portion of the budget that corresponds to the work that has been scheduled to be done so far on the work package.

- CBTE (Coût Budgété du Travail Effectué) =
BCWP = Budgeted Cost of Work Performed =
earned value
- Cost variance = BCWP - ACWP
- Schedule variance = BCWP - BCWS

- As an earned value example, suppose we have six items of work that all have to be done (started and completed) in the current period.
- At the end of the current period, suppose we have completed the first three items (spending **600**, **200**, and **100** respectively), half finished the next two (spending **350** and **250** respectively), and not started work on J006. The total scheduled budget (BCWS) is **1700**. These information are displayed in the following table:

ITEMS	BCWS	%Complete	Actual	BCWP
J001	500	100	600	500
J002	200	100	200	200
J003	100	100	100	100
J004	300	50	350	150
J005	100	50	250	50
J006	500	0	0	0
TOTAL	1700		1500	1000

- When we compare the **Actual** costs to the **BCWP**, we are comparing money for the same work, namely the work performed this period. The actual is **1500**, but the corresponding budget (BCWP) is only **1000**. Thus we have a negative **cost variance** of **500**. This shows we are over budget.

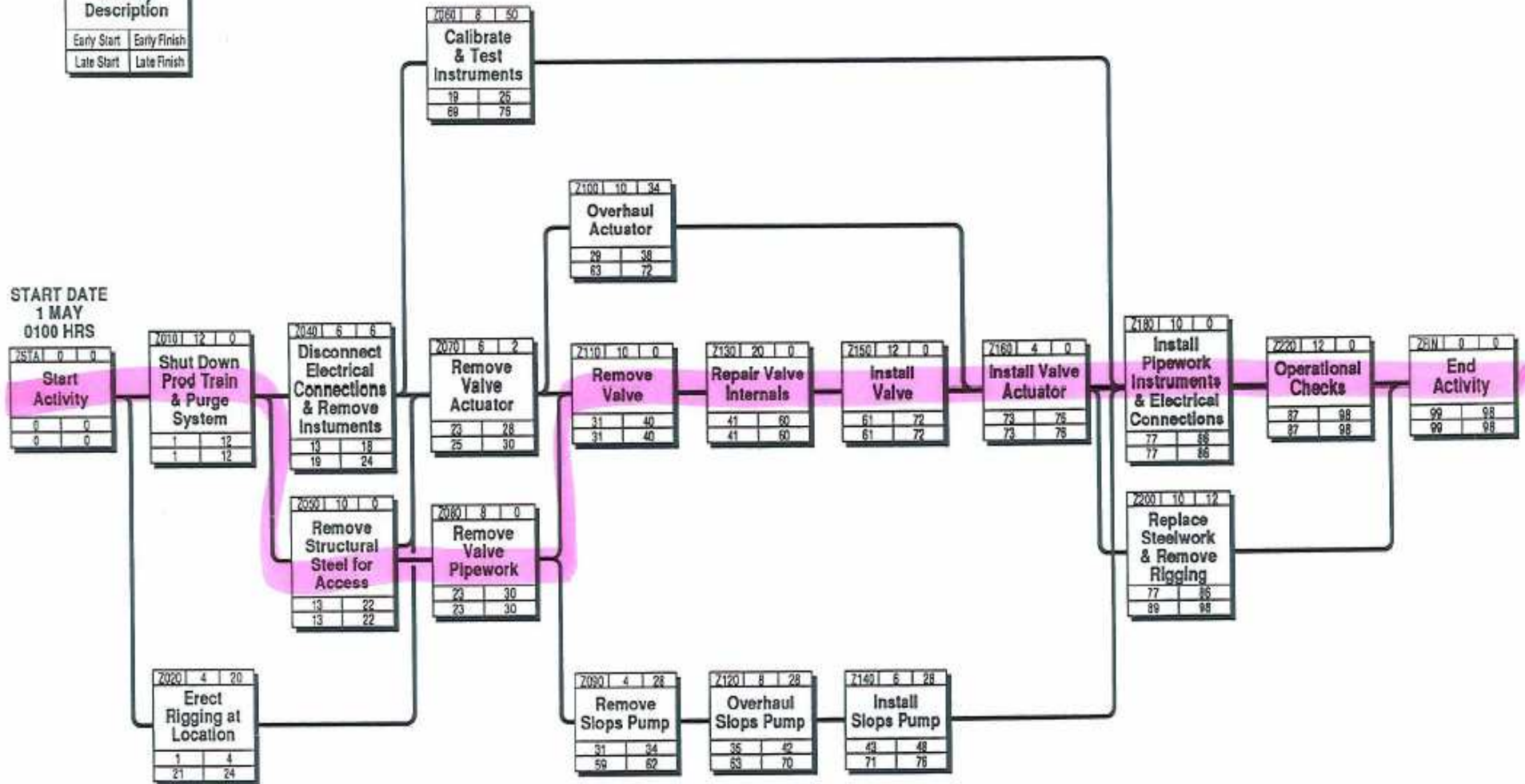
- Similarly, we can compare the **BCWS** to the **BCWP**. The BCWS is **1700**, but the corresponding budget that was achieved (BCWP) is only **1000**. Thus we have a negative **schedule variance** of **700**. This shows we are behind schedule (as we have not been credited with all the scheduled budget).

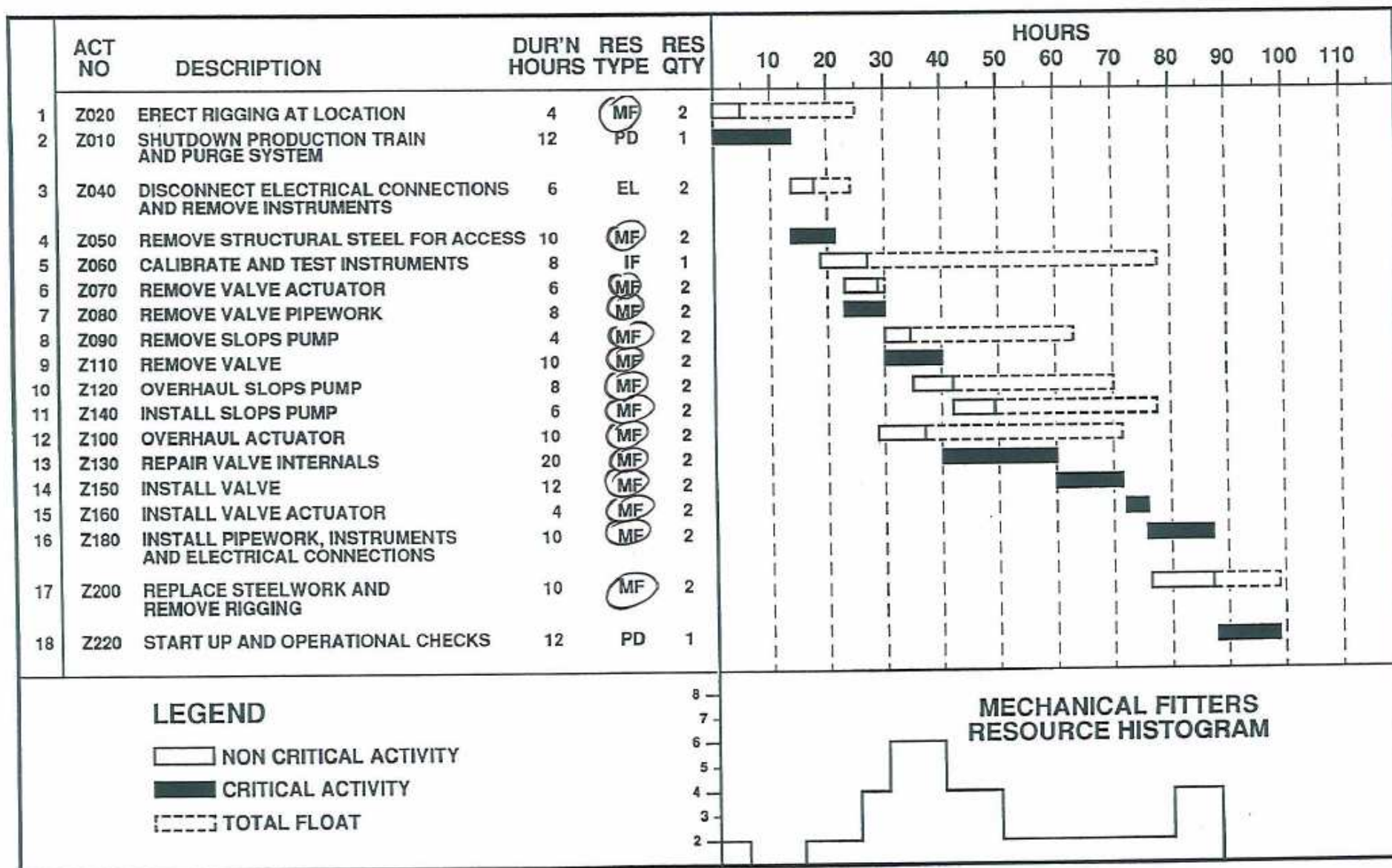
WORKSHOP 2

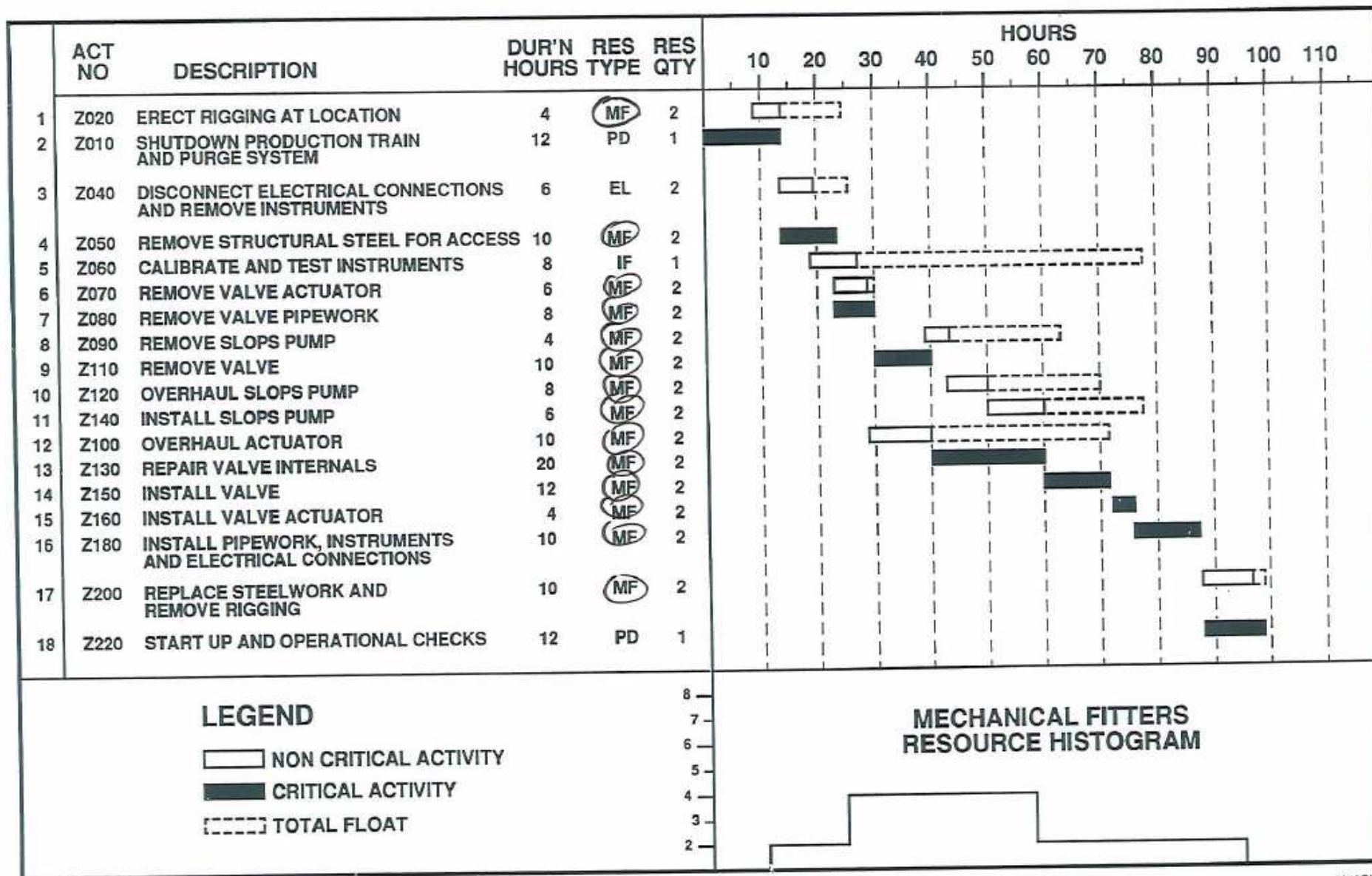
ACTIVITY LEGEND

Number	Duration	Total Float
Activity Description		
Early Start	Early Finish	
Late Start	Late Finish	

QUESTION 1







- Reporting:
 - depending on the work could be per day / per week / per month

1.9 Project Control

1.9.1 Summary of Progress

1.9.1.1 Progress Level 0

MONTH Award + x
Cut-off date : DD/MM/YY

	A		B		C		Difference with Planned % cumulative
	Original Budget Weight	Revised Budget Weight	Planned (internal, revised)		Actual (internal)		
			% physical progress		% physical progress		
			% month	% cumulative	% month	% cumulative	
0 PROJECT OVERALL	100.00%	104.02%		28.28%		28.66%	0.38%
1 Management (PMT & SMT)	3.59%	3.77%		28.28%		28.66%	0.38%
2 Engineering	10.35%	10.53%		88.45%		88.27%	-0.18%
3 Procurement	4.31%	4.38%		68.43%		70.00%	1.57%
4 Construction & Load out	21.02%	21.02%		42.82%		43.00%	0.18%
5 Installation	57.49%	61.09%		9.49%		10.00%	0.51%
6 Commissioning & Start-up	3.23%	3.23%		3.09%		2.00%	-1.09%

Original Budget weights : 100 000

The internal progress is calculated according to the breakdown of the phases, weighted on the cost basis

The actual (expenses) comes from the cost control split in phases. (Only if Column D)

Revised budget = Original Budget + variations (internal & external) = Revised Scope Of Work.

For the percentages, the basis 100 is the Original Budget value as a reference.

1.9.1.2 Progress according to the CBS of the Client

MONTH Award + x
Cut-off date : DD/MM/YY

	Original Contract Weight	Actual Contract Weight	E		F		Difference with Planned % cumulative
			Planned (Client, revised)		Actual (Client)		
			% physical progress		% physical progress		
			% month	% cumulative	% month	% cumulative	
0 PROJECT OVERALL	100.00%	100.12%		29.78%		30.15%	0.36%
1 Management (PMT & SMT)	4.47%	4.50%		29.78%		30.54%	0.76%
2 Engineering	13.40%	13.43%		88.45%		88.27%	-0.18%
3 Procurement	4.36%	4.36%		68.43%		70.00%	1.57%
4 Construction & Load out	19.16%	19.16%		42.82%		43.00%	0.18%
5 Installation	55.67%	55.73%		9.49%		10.00%	0.51%
6 Commissioning & Start-up	2.95%	2.95%		3.09%		2.00%	-1.09%

Points at the Award : 120 693

The Client progress is calculated according to the breakdown of the Client, weighted on the Selling Prices Basis

For the percentages, the basis 100 is the Original Contract value as a reference.

1.9.1.3 Variations

* Identified Variation of the total of S.O.W

* Ratio = (Revised Budget / Original Budget) -1

4,02%

* Identified Variation of the Selling Price

* Ratio = (Actual Contract / Original Contract) -1

0,12%

3. PROGRESS

3.1. Overall

3.1.1. Progress

Project Area	Weighting (%)	August (%)		Cumulative (%)	
		Target	Actual	Target	Actual
Engineering	4.7	6.9	5.3	33.9	32.5
Procurement	37.6	3.6	3.4	26.9	27.2
Construction	20	1.5	6.3	2.7	6.3
Offshore Operation	37.7	0	0	0	0
Total	100	2	2.8	12.2	13

▪ EPC Split detail explanation :

E : Engineering : Progress includes Design, Installation, & Welding engineering activities.

P : Procurement : Progress incorporates Procurement Services (from RFQ issue to PO) and International Fabrication. OOB is considered to be a part of it.

C : Construction : Progress consists of Angolan scope activities, from RFQ issue to PO as well as Angolan fabrication. PETROMAR & SONAMET packages are part of it. Progress also comprises Offshore Operations, & Mechanical Completion.

- At month end, cumulative actual engineering progress is slightly behind target (32.5% actual versus 33.9% target) mostly due to summer holidays. Contractor is reinforcing his design & installation engineering team to recover progress.

3.1.2 Engineering

Engineering	Change this Month	Current Number Required	August		Cumulative	
			Target	Actual	Target	Actual
Documents IFA	+ 17	1 157	62	39	216	175
Documents IFC	+ 17	1 157	19	9	87	43
Design verification	---	24	1	1	1	1

- Only 50% of documents are IFC versus planned. This is due to summer holidays and that only 41 out of 175 documents issued in IFA have been sent back to Contractor for comments implementation.
- Company comments to the Design Verification Plan have been incorporated and the Plan has been issued in Rev. 0 this month.

SAFETY MANAGEMENT

Safety	August Incidents	Incidents to date
LTI	0	0
NLTMTTC	0	0
HPNM	0	0
TRI	0	0

RISK MANAGEMENT

Risk	August Assessments	Assessments to date
HAZID's	0	6
FMECA	0	0

COST SUMMARY

Summary	USD equivalent		
	C-58342	C-58343	Project
Base Price	198,708,978	166,918,372	365,625,350
CO / Cumulative	237,842	0	237,642
New Contract Price	198,944,820	166,918,372	365,862,992
Total invoiced	24,985,767	3,300,000	28,285,767
Total paid	24,985,767	3,300,000	28,285,767
Outstanding	0	0	0
Overdue	0	0	0

QUALITY MANAGEMENT

	Planned	Actual	Forecast next Month	Total Raised	Total Closed	Total Outstanding
Audits	2	2	2	-	-	0
CAR's	0	1	-	6	5	1
Inspections / Surveillance	0	0	0	0	0	0
NCR's Raised	0	0	-	-	-	0

CUMULATIVE PROGRESS

Project Area	Aug Target (%)	Aug Actual (%)	Sept Target (%)
Engineering	33.9	32.5	40.2
Procurement & Fabrication	26.9	27.2	30.6
Construction & Offshore Operations	0.9	2.1	1.8
Overall Project	12.2	13	14.5

DEFINITIONS:

LTI = Lost Time Injury
 NLTMTTC = Non Loss Time Medical Treatment Case
 HPNMI = High Potential Near Miss Incident
 TRI = Time Restricted Injury

HAZID = Hazard Identification
 FMECA = Failure Mode and Effect Critically Analysis
 CAR's = Corrective Action Requests
 NCR's = Non Conformance Reports

3.1.3 Procurement

Procurement	Total Number Required	August		Cumulative	
		Planned	Actual	Planned	Actual
Purchase Orders Awarded	43	4	0	6	2
Construction Subcontracts Awarded	2	0	1	2	2
Other Subcontracts Awarded	6	1	1	6	5

- The Cumulative actual procurement progress is slightly ahead of target (27.2% actual versus 26.9% targeted). Even though, the actual number of purchase orders is behind planned, Contractor has been able to early issue RFQ packages due to procurement opportunities. These RFQ packages are driving the progress ahead.
- Subcontract has been awarded to Petromar on July 31, 2003 for the supply of 5 buoyancy tanks, 5 riser foundations, 17 FLETs and 22 jumpers .
- Negotiations continued with Sonamet for the supply of FPSO Piles. Award of this subcontract is planned for September, 2003, which is ahead of schedule. The delay versus the forecast last month is due to ongoing resolution of insurance, liability and other contractual terms.
- Negotiations continued with 2H, Contractor's engineering subcontractor for the SHRs design, to finalize the contract. This has no impact on the Project progress.
- Construction subcontracts placed to date are :
 - SONAMET (FPSO suction piles)
 - PETROMAR (Buoyancy tanks / FLET & ITA fabrication / Riser foundations / Riser rigid jumpers)
- Other subcontracts placed to date are :
 - Enereco (FLET design)
 - HVR (Safety software)
 - Halliburton (Coil Tubing)
 - DNV (Certification)
 - 2H (Riser design)
 - Scandpower (Design software)

7.2 Critical Path

- As a Primary concern for Company, Installation Plans deliverables are now linked and scheduled for compulsory completion 120 days prior to Effective Field Start, hence showing critical, along with various installation engineering activities.
- Project Execution Schedule to date is showing sub-critical paths based upon and procurement assumptions that Contractor will alleviate in the forthcoming periods. Focus is on:
 - Flowlines quad-joints fabrication and related procurement tasks that do not benefit from a tight schedule, resulting in a 22-day float, mainly as a consequence from buckle arrestor lead procurement time.
 - SHR Foundations delivery date is of a major focus and PETROMAR planning update will confirm it can match Contractor contractual requirements.
 - SHR Upper Assemblies delivery appear to be late at the moment, but uncertainties have to be clarified regarding Top Assembly special pieces procurement time (hanger spool...), Contractor does not forecast any schedule impact for now.

7.3 CHANGES

			Total Pending \$1 776 241										Total Agreed \$203 113		
			Change Pending Value USD eq	Change Inquiry		Change Proposal / Requests				Change Order			CO Value USD Eq.	Status	
Cat.	System	WORK DESCRIPTION		CI N°	Date of reception by CONTRACTO R	CR / CP N°	Date of submission to EMDC	Date of approval / Rejection by EMDC	EMDC Status (Approval / Rejection)	C 58342 CO N°	C 58343 CO N°	Schedule Impact			
1a	Oil Offloading	<u>Specification revision</u> EMDC-ED-S-US-0540-1026 & 1027 rev 2 compared to Rev 0	1270741			CR-001	30-juin-03							Pending	
1a	All Systems	<u>Global Flow Assurance analysis</u> Revision of the flow assurance analysis for the FPSO				CP-001 CP-001 rev.2	14 May 2003 04 Jun 2003	23 Jun 2003	Approval	CO-002 CO-002 rev.1		None	185118	Closed, CO signed	
1a	Subsea Tieback	<u>Rigid jumpers</u> Rigid jumpers to connect Production and Test riser bottom assemblies to the FLETs	468380			CR-004, rev.0	28/08/03							COMPANY to revert	
1a	Oil Offloading	<u>Heading of the Buoys</u> Change in the heading of the buoys to achieve the same heading as on FPSO								CO-001 Rev.1	CO-001 Rev.1	None	0	Closed, CO signed	
1a	Subsea Tieback	<u>Hot Fluid Specifications for PIP-SHR</u> CONTRACTOR to conduct the flow assurance work necessary to define Hot Fluid Medium Specifications for the PIP- SHR riser	28766	CI-001	02-mai-03	CP-002 CP-002, rev.1	7/1/2003 8/21/2003							CR/CP submitted	
1c	Project Mgr	<u>COMPANY access to documentation</u>				CP-002	24-mai-03	7 Jun 2003	Approval	CO-003 Rev.0		None	6504	Closed, CO signed	
1c	All Systems	<u>Production Profiles</u> Engineering review				CP-001	10-11-03	13-11-03	Approval	CO-004 Rev.0		None	11114	Closed, CO signed	
1a	Subsea Tieback	<u>Future SCR gas export line</u> Assess the Not to exceed loads at the FPSO hang-off	18354			CP-003 rev.0	17-jul-03	07-aout-03	Rejection					Rejected	
1c	Subsea Tieback	<u>Kissanje East Umbilical relocation</u>	0							CO-005, Rev.0	CO-002, Rev.0	none		Under evaluation	
1a	Subsea Tieback	<u>Internal inhibitor coating of injection lines and riser pipe</u> Atmospheric coating of the internal surfaces of the injection lines and riser pipe		CI-002, rev.1	07-aout-03									Under evaluation	

- Client Expectation with respect to the Project Control Management:
 - the delay
 - the progress linked with the invoice
 - the re-forecasted in term of cost at the end of the project