

INGENUITY TUTORIAL



Making Labour Decisions



Making Labour Decisions

Job 67 (In progress)

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Management consultants report Risk analysis

JOB SUMMARY

JOB PROGRESS

Planned schedule			Job progression								Profit analysis				
Job period	Planned labour	Cumul % complete	Period	Status	Actual progress						By period		Cumulative		
					Actual labour	Ineffect due to delays	Ineffect due to overman	Effective labour	Actual % complete	Completion status	Profit	Profit % of cost	Cumul profit	Cumul profit % of cost	
1	9	30 %	5	Current							About to start				
2	15	80 %													
3	6	100 %													

Total planned labour for this job is 30.

For a Energy job, the effective labour cannot be more than 18% above the planned labour level for the period.

When deciding upon the strategy to be used for completing jobs there are a number of '**sensible**' options :-

- Try and complete all jobs **earlier** than the planned duration (e.g., complete a 3-period job in 2 periods)
- Try and complete all jobs **on time**
- A **mixture** of the above

In all cases the Construction Manager needs to **assess the labour requirements** each period for each job based upon the strategy being used.

Planned labour levels each period were determined by the estimators in order for the job to complete on time, and they can be used as guidelines in setting the labour levels for whichever strategy is adopted.

To complete a job early it is possible to overman above the planned levels. Sector-based overmanning limits are shown in the **Industry parameters**.

OVERMANNING LIMITS

Sector	Effective labour limit above the planned level
Industrial	35 %
Building & Commercial	35 %
Transport	45 %
Energy	18 %
Water & Sewage	25 %



Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 28

Number to layoff:

Number available for jobs in progress: 28

AFTER DECISIONS

Net transfers: 0

Number left in the idle pool: 28

JOBS IN PROGRESS

Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	This period		Own Labour					Subcontract Labour				Total		
						Status	Plan lab	To site		From site			End last	Take on	Lay off	On site			
								Last per	From ILP	New	To ILP	Paid off						On site	
1	UK	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	87	117	0	0	0	0	0	117	0	0	0	0	117
25	US	Transport	2	FINAL planned period	Ahead of schedule	2nd period	84	53	0	0	0	0	0	53	28	0	0	28	81
29	UK	Industrial	3	2 planned periods remaining	Ahead of schedule	2nd period	33	27	0	0	0	0	0	27	0	0	0	0	27
56	UK	Building & Commercial	4	4 planned periods remaining		1st period	33	0	0	0	0	0	0	0	0	0	0	0	0
69	UK	Energy	2	2 planned periods remaining		1st period	29	0	0	0	0	0	0	0	0	0	0	0	0

Consider the following situation. It is the start of period 5, and the company has 5 jobs in progress :-

- **Job 1** is in its 3rd period, and has a planned duration of 4 periods. It is ahead of schedule
- **Job 25** is in its 2nd and final planned period, and **must be completed this period**. It is ahead of schedule
- **Job 29** is in its 2nd period, and has a planned duration of 3 periods. It is ahead of schedule
- **Job 56** was won last period, and is in its first period
- **Job 69** was won last period, and is in its first period



Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 28

Number to layoff:

Number available for jobs in progress: 28

AFTER DECISIONS

Net transfers: 0

Number left in the idle pool: 28

JOBS IN PROGRESS

Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	This period		Own Labour					Subcontract Labour				Total		
						Status	Plan lab	To site		From site			End last	Take on	Lay off	On site			
								Last per	From ILP	New	To ILP	Paid off						On site	
1	UK	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	87	117	0	0	0	0	0	117	0	0	0	0	117
25	US	Transport	2	FINAL planned period	Ahead of schedule	2nd period	84	53	0	0	0	0	53	28	0	0	28	81	
29	UK	Industrial	3	2 planned periods remaining	Ahead of schedule	2nd period	33	27	0	0	0	0	27	0	0	0	0	27	
56	UK	Building & Commercial	4	4 planned periods remaining		1st period	33	0	0	0	0	0	0	0	0	0	0	0	
69	UK	Energy	2	2 planned periods remaining		1st period	29	0	0	0	0	0	0	0	0	0	0	0	

Each job needs sufficient labour to enable it to progress in line with company strategy.

There are two types of labour that can be used :-

- The **company's own labour**; available either in the idle labour pool or on site
- **Subcontract labour** being used on site

Due to the requirements of each job, it is likely that one of two situations may have to be resolved :-

- An overall **labour shortfall**. New recruits into the company's own workforce or subcontractors may have to be taken on
- An overall **labour surplus**. Jobs could be overmanned to aim at early completion, or labour may have to be released



Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 28

Number to layoff:

Number available for jobs in progress: 28

AFTER DECISIONS

Net transfers: 0

Number left in the idle pool: 28

JOBS IN PROGRESS

Job	Country	Sector	Plan Dur	Remaining planned pe	Progress so far	This period		Own Labour					Subcontract Labour				Total			
						Status	Plan lab	To site		From site			End last	Take on	Lay off	On site				
								Last per	From ILP	New	To ILP	Paid off						On site		
1	UK	Building & Commercial	4	2 planned periods remaining	of schedule	3rd period	87	117	0	0	0	0	0	0	117	0	0	0	0	117
25	US	Transport	2	FINAL planned periods	of schedule	2nd period	84	53	0	0	0	0	0	53	28	0	0	0	28	81
29	UK	Industrial	3	2 planned periods remaining	of schedule	2nd period	33	27	0	0	0	0	0	27	0	0	0	0	0	27
56	UK	Building & Commercial	4	4 planned periods remaining		1st period	33	0	0	0	0	0	0	0	0	0	0	0	0	0
69	UK	Energy	2	2 planned periods remaining		1st period	29	0	0	0	0	0	0	0	0	0	0	0	0	0

At the end of the last period, and available at the beginning of period 5, there are :-

- **28** labourers in the idle labour pool
- **225** labourers on jobs; 197 are the company's own operatives and 28 are subcontractors

If we take the combined idle labour and site-based labour, the company has a current workforce of **253** labourers.

KEY POINTS

The **default labour allocations** for each job in progress are the levels from the end of the last period. However, the default levels are **unlikely to be** the required ones for the current period.



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MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 28

Number to layoff:

Number available for jobs in progress: 28

AFTER DECISIONS

Net transfers: 0

Number left in the idle pool: 28

JOBS IN PROGRESS

Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	This period		Own Labour					Subcontract Labour				Total		
						Status	Plan lab	Last per	To site		From site			On site	End last	Take on		Lay off	On site
									From ILP	New	To ILP	Paid off	On site						
1	UK	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	87	117	0	0	0	0	117	0	0	0	0	0	117
25	US	Transport	2	FINAL planned period	Ahead of schedule	2nd period	84	53	0	0	0	0	53	28	0	0	0	28	81
29	UK	Industrial	3	2 planned periods remaining	Ahead of schedule	2nd period	33	27	0	0	0	0	27	0	0	0	0	0	27
56	UK	Building & Commercial	4	4 planned periods remaining		1st period	33	0	0	0	0	0	0	0	0	0	0	0	0
69	UK	Energy	2	2 planned periods remaining		1st period	29	0	0	0	0	0	0	0	0	0	0	0	0

There is no hard and fast rule for deciding upon the order for determining the labour requirements, and the Construction Manager decides to concentrate first on job 25, **as this must be completed in the current period, and is a priority.**

Period 5 is the **second period of the job, and its FINAL planned period.** There are currently 81 labourers on site, 53 are the company's own labour, and 28 are subcontractors. The planned labour requirement is 84.

Normally, allocating the planned level each period is sufficient to complete a job on time, providing a good project manager has been allocated to oversee the job, and all the labour is fully effective. However, since this is the final planned period of the job we should take a closer look at how the job has progressed to date, since other factors may have contributed to the job being behind or ahead of schedule, and we need to allocate sufficient labour to complete the job as efficiently as possible.

Due to a number of factors the job may be behind/ahead of schedule, and require more/less labour than planned.

We can use the **Display details for job 25** option to investigate further.



Making Labour Decisions

Job 25 (In progress)

Management consultants report Risk analysis

JOB SUMMARY

JOB PROGRESS

Planned schedule			Job progression								Profit analysis			
Job period	Planned labour	Cumul % complete	Actual progress								By period		Cumulative	
			Period	Status	Actual labour	Ineffect due to delays	Ineffect due to overman	Effective labour	Actual % complete	Completion status	Profit	Profit % of cost	Cumul profit	Cumul profit % of cost
1	56	40 %	4	Past	81	1.9	0.0	79.1	56.92 %	Ahead of schedule	-73,349	-2.8 %	-73,349	-2.8 %
2	84	100 %	5	Current						FINAL planned period of the job				

Total planned labour needed to complete the job is 140.

For a Transport job, the effective labour on site (after delays) cannot be more than 45% above the planned labour level.

The **Job progress** for the job shows that the job was 56.92% complete at the end of the last period, and ahead of the planned schedule of 40%. There is just **43.08%** of the job left to complete.

The **total planned labour required to complete the job is 140 man periods**. Since there is 43.08% of the job left to complete, in manpower terms this is 43.08% of the total labour of 140, or 60.31 labourers.

60.31 labourers should be sufficient for the job to complete, **BUT there is a key factor that could prevent this from happening, and that is delays caused by risks striking.**

Risks only strike within the planned duration of a job, so risk delays DO NOT need to be considered if a job has over run, and will complete late.

To determine if any risks may delay job the job in its final period we can use the **Risk analysis** option at the top of the screen.

KEY POINTS

There is no need to make an adjustment for risk delays until the period in which the job is likely to finish, as there is time to compensate for delays in earlier periods before a job finishes.



Making Labour Decisions

COST ANALYSIS					DELAY ANALYSIS						
Job details					Risk details			Risk status		Delays	
Job	Status	In	BIM job	Sector	Risk description	Chance	Expected labour reduction	Struck	In period	Affect of Invest	Actual labour reduction
25	In progress	US	No	TRA	Personnel issues	High	2.3 %	Yes	4	0.0 %	2.3 %
					Planning delays	Low	7.0 %	No			

RISK	Likelihood	Chance it hits
	High	70 to 80 %
	Medium	40 to 50 %
	Low	20 to 30 %

The **Risk analysis** for job 25 reveals that there is 1 risk that has not yet struck, and which could delay the job if it were to strike, the delay causing a reduction in the labour on site :-

- 'Planning delays', which has a '**low**' chance of occurring, and an expected labour reduction of 7%

The **Industry parameters** show the chance a risk may strike for each likelihood level.

The Construction Manager has looked at the likelihood of each risk level, and has decided as a strategy to only take action (allow extra labour in case risk(s) strike) for 'medium' and 'high' risks. In this case, because the risk that has not struck is only of 'low' risk, no mitigating action is taken.

Since we cannot have fractions of people, the required labour level of 60.31 is adjusted upwards to 61 labourers.

KEY POINTS

Targeted investments on the Financial Decisions Screen into risk management companies can reduce the delays caused when risks strike, and reduce the amount of additional labour added to compensate for potential delays.



Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 28

Number to layoff:

Number available for jobs in progress: 28

AFTER DECISIONS

Net transfers: 0

Number left in the idle pool: 28

JOBS IN PROGRESS

Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	This period		Own Labour				Subcontract Labour				Total		
						Status	Plan lab	To site		From site		On site	End last	Take on	Lay off		On site	
								Last per	From ILP	New	To ILP							Paid off
1	UK	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	87	117	0	0	0	0	117	0	0	0	0	117
25	US	Transport	2	FINAL planned period	Ahead of schedule	2nd period	84	53	0	0	0	0	53	28	0	0	28	81
29	UK	Industrial	3	2 planned periods remaining	Ahead of schedule	2nd period	33	27	0	0	0	0	27	0	0	0	0	27
56	UK	Building & Commercial	4	4 planned periods remaining		1st period	33	0	0	0	0	0	0	0	0	0	0	0
69	UK	Energy	2	2 planned periods remaining		1st period	29	0	0	0	0	0	0	0	0	0	0	0

We have now determined that **61 labourers** should be enough to complete job 25 as efficiently as possible in period 5.

The planned allocation is 84 labourers, which although guaranteeing to complete the job, would complete the job too early in the period, which would have had the following detrimental affects :-

- Labour is still retained until the end of the period, incurring additional labour costs (ineffective labour)
- Labour could be utilised on other jobs, where it may be more productively used
- Site cost still has to be paid for ineffective labour

To reduce the total labour on site to 61, 20 of the company's "Own" labourers (there are currently 53) are transferred to the idle labour pool using the "To ILP" column, to be used on other jobs. The 28 subcontractors are left on site to help finish the job off.

KEY POINTS

The surplus, full trained own labour is transferred to the idle pool for reallocation to other jobs. If they are not needed on other jobs they may be paid off instead.



Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD
 Number in the idle pool: 28
 Number to layoff: 0
 Number available for jobs in progress: 28

AFTER DECISIONS
 Net transfers: 20
 Number left in the idle pool: 48

JOBS IN PROGRESS

Job	Country	Sector	Plan Dur	Remaining planned	Progress so far	Status	Plan lab	Own Labour					Subcontract Labour				Total		
								This period	To site		From site			On site	End last	Take on		Lay off	On site
									Last per	From ILP	New	To ILP	Paid off						
1	UK	Building & Commercial	4	2 planned periods	2 of schedule	3rd period	87	117	0	0	0	0	117	0	0	0	0	117	
25	US	Transport	2	FINAL planned	1 of schedule	2nd period	84	53	0	0	20	0	33	28	0	0	28	61	
29	UK	Industrial	3	2 planned periods	1 of schedule	2nd period	33	27	0	0	0	0	27	0	0	0	0	27	
56	UK	Building & Commercial	4	4 planned periods	0 of schedule	1st period	33	0	0	0	0	0	0	0	0	0	0	0	
69	UK	Energy	2	2 planned periods	0 of schedule	1st period	29	0	0	0	0	0	0	0	0	0	0	0	

There are now 48 idle labourers available for use in the company's **idle labour pool**. These are the company's own operatives currently not assigned to a job.

If possible, the labour in the idle labour pool should be redeployed to site, since each idle labourer costs an additional 1,500 each period (6,000 per annum), as shown in the **Industry parameters**.

We may be able to make use of the idle labour on jobs 1, 29, 56 and 69 which we have yet to consider.

OWN LABOUR

- New recruits limited to: 70 this period
- Training cost for each new recruit: 2,500 per person
- Labour payoff rate: 750 per person
- Each idle labourer costs: 6,000 per annum



Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE
Number in t
Numl
Number available for jobs
AFTER DI
N
Number left in the idle

The bonus for early job completion is defined in the **Industry parameters**, and varies by client. It is defined as a % of the tender (bid) value

KEY POINTS

Completing a job early means completing before the planned duration e.g., completing a 5-period job in 4 periods, or a 4-period job in 3 periods etc.

JOB COMPLETION Retention, late completion penalty and early completion bonus:

JOBS IN PROGRESS

Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	This period		Own Labour					Subcontract Labour					Total	
						Status	Plan lab	To site			From site		On site	End last	Take on	Lay off	On site		
								Last per	From ILP	New	To ILP	Paid off							
1	UK	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	87	117	0	0	0	0	0	117	0	0	0	0	117
25	UK	Transport	2	FINAL planned period	Ahead of schedule	2nd period	84	53	0	0	20	0	33	28	0	0	0	28	61
29	UK	Commercial	3	2 planned periods remaining	Ahead of schedule	2nd period	33	27	0	0	0	0	27	0	0	0	0	0	27
56	UK	Commercial	4	4 planned periods remaining		1st period	33	0	0	0	0	0	0	0	0	0	0	0	0
69	UK	En...	5	2 planned periods remaining		1st period	29	0	0	0	0	0	0	0	0	0	0	0	0

The Construction Manager now looks to set the labour levels for the other jobs by setting labour levels that **aim to complete the jobs either on time, or ahead of schedule.**

Turning first to job 1, which has a planned duration of 4 periods. Period 5 is the **3rd period** of the job.

The job is currently ahead of schedule, and we will see if it is possible to complete it in period 5. If we can, the job will complete early, before its planned duration, and this will earn a bonus from the client defined in the defined in the **Industry parameters.**

We can use the **Display details for job 1** option to investigate further.



Making Labour Decisions

Job 1 (In progress)

Management consultants report Risk analysis

JOB SUMMARY

JOB PROGRESS

Job progression											Profit analysis			
Planned schedule			Actual progress								By period		Cumulative	
Job period	Planned labour	Cumul % complete	Period	Status	Actual labour	Ineffect due to delays	Ineffect due to overman	Effective labour	Actual % complete	Completion status	Profit	Profit % of cost	Cumul profit	Cumul profit % of cost
1	73	25 %	3	Past	99	0.0	0.4	98.6	34.7 %	Ahead of schedule	514,790	8.6 %	514,790	8.6 %
2	87	55 %	4	Past	117	0.0	0.0	117.0	75.78 %	Ahead of schedule	559,932	7.8 %	1,074,722	8.2 %
3	87	85 %	5	Current						Planned periods of the job left				
4	44	100 %												

Total planned labour needed to complete the job is 291.

For a Building & Commercial job, the effective labour on site (after delays) cannot be more than 35% above the planned.

The **Job progress** for the job shows that the job is currently 75.78% complete, and well ahead of the of the 55% planned completion after two periods.

There is **24.22% of the job left to complete**, or 24.22% of the total labour required for the job (291 man periods), equating to 70.48 labourers (.2422 x 291).

70.48 labourers should be sufficient for the job to complete, **BUT there is a key factor that could prevent this from happening, and that is delays caused by risks striking.**

To determine if any risks may delay job the job in its final period we can use the **Risk analysis** option at the top of the screen.

KEY POINTS

There is no need to make an adjustment for risk delays until the period in which the job is likely to finish, as there is time to compensate for delays in earlier periods before a job finishes.



Making Labour Decisions

COST ANALYSIS					DELAY ANALYSIS						
Job details					Risk details			Risk status		Delays	
Job	Status	In	BIM job	Sector	Risk description	Chance	Expected labour reduction	Struck	In period	Affect of Invest	Actual labour reduction
1	In progress	UK	Yes	B&C	Structural defects	Medium	2.7%	No			
					Personnel issues	High	2.1%	No			
					Scheduling problems	Low	7.9%	No			

RISK	Likelihood	Chance it hits
	High	70 to 80 %
	Medium	40 to 50 %
	Low	20 to 30 %

The **Risk analysis** for job 1 reveals that there are 3 risks that have not yet struck, and which could delay the job if they were to strike, the delay causing a reduction in the labour on site :-

- ‘Structural defects’, which has a **‘medium’** chance of occurring, and an expected labour reduction of 2.7%
- ‘Personnel issues’, which has a **‘high’** chance of occurring, and an expected labour reduction of 2.1%
- ‘Scheduling problems’, which has a **‘low’** chance of occurring, and an expected labour reduction of 7.9%

The **Industry parameters** show the chance a risk may strike for each likelihood level.

Although all the risks could strike, and potentially delay the job, **sticking to the strategy to just mitigate for ‘high’ and ‘medium’ risks**, the Construction Manager decides to take action in case both the ‘Structural defects’ and ‘Personnel issues’ strike.

Since a combined 4.8% delay could occur, the required labour level of 70.48 is adjusted in case of the 4.8% delay, giving a revised labour level of 74.03 labourers (70.48 / 0.952). **Since we cannot have fractions of people, and it is so close to 74, the labour level is adjusted to 74 labourers.**



Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD
 Number in the idle pool: 28
 Number to layoff: 0
 Number available for jobs in progress: 28

AFTER DECISIONS
 Net transfers: 20
 Number left in the idle pool: 48

JOBS IN PROGRESS

Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	This period		Own Labour					Subcontract Labour				Total		
						Status	Plan lab	To site		From site			End last	Take on	Lay off	On site			
								Last per	From ILP	New	To ILP	Paid off						On site	
1	UK	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	87	117	0	0	0	0	117	0	0	0	0	0	117
25	US	Transport	2	FINAL planned period	Ahead of schedule	2nd period	84	53	0	0	0	0	33	28	0	0	0	28	61
29	UK	Industrial	3	2 planned periods remaining	Ahead of schedule	2nd period	33	27	0	0	0	0	27	0	0	0	0	0	27
56	UK	Building & Commercial	4	4 planned periods remaining		1st period	33	0					0	0	0	0	0	0	0
69	UK	Energy	2	2 planned periods remaining		1st period	29						0	0	0	0	0	0	0

We have now determined that **74 labourers** should be enough to complete job 1 as efficiently as possible in period 5.

The planned allocation is 87 labourers, which although guaranteeing to complete the job, would complete the job too early in the period, which would have had the following detrimental affects :-

- Labour is still retained until the end of the period, incurring additional labour costs (ineffective labour)
- Labour could be utilised on other jobs, where it may be more productively used
- Site cost still has to be paid for ineffective labour

There are currently 117 of the company's own labour on site, so to reduce this to the 74 needed, 43 will be transferred to the idle labour pool using the "To ILP" column, to be used on other jobs.



Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 28

Number to layoff: 0

Number available for jobs in progress: 28

AFTER DECISIONS

Net transfers: 63

Number left in the idle pool: 91

JOBS IN PROGRESS

Job	Country	Sector	Plan Dur	Remaining planned per	Progress so far	Status	Plan lab	Own Labour					Subcontract Labour				Total		
								This period	To site		From site		End last	Take on	Lay off	On site			
									Last per	From ILP	New	To ILP						Paid off	On site
1	UK	Building & Commercial	4	2 planned periods remaining	of schedule	3rd period	87	117	0	0	0	43	0	74	0	0	0	0	74
25	US	Transport	2	FINAL planned period	of schedule	2nd period	84	53	0	0	20	0	33	28	0	0	0	28	61
29	UK	Industrial	3	2 planned periods remaining	of schedule	2nd period	33	27	0	0	0	0	27	0	0	0	0	0	27
56	UK	Building & Commercial	4	4 planned periods remaining	of schedule	1st period	33	0	0	0	0	0	0	0	0	0	0	0	0
69	UK	Energy	2	2 planned periods remaining	of schedule	1st period	29	0	0	0	0	0	0	0	0	0	0	0	0

There are now 91 idle labourers available for use in the company's **Idle Labour Pool**. These are the company's own operatives currently not assigned to a job.

We may be able to make use of the idle labour on jobs 29,56 and 69 which we have yet to consider.



Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 28

Number to layoff: 0

Number available for jobs in progress: 28

AFTER DECISIONS

Net transfers: 63

Number left in the idle pool: 91

JOBS IN PROGRESS

Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	Status	Plan lab	Own Labour					Subcontract Labour				Total		
								This period		To site		From site		End last	Take on	Lay off		On site	
								Last per	From ILP	New	To ILP	Paid off	On site						
1	UK	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	87	117	0	0	43	0	74	0	0	0	0	0	74
25	US	Transport	2	FINAL planned period	Ahead of schedule	2nd period	84	53	0	0	20	0	33	28	0	0	0	28	61
29	UK	Industrial	3	2 planned periods remaining	Ahead of schedule	2nd period	33	27	0	0	0	0	27	0	0	0	0	0	27
56	UK	Building & Commercial	4	4 planned periods remaining		1st period	33	0	0	0	0	0	0	0	0	0	0	0	0
69	UK		2	2 planned periods remaining		1st period	29	0	0	0	0	0	0	0	0	0	0	0	0

Turning next to job 29, which has a planned duration of 3 periods. Period 5 is the **2nd period** of the job.

The job is currently ahead of schedule, and we will see if it is possible to complete it in period 5, and earn a bonus from the client for early job completion.

We can use the **Display details for job 29** option to investigate further.



Making Labour Decisions

JOB SUMMARY

JOB PROGRESS

Planned schedule			Job progression								Profit analysis			
Job period	Planned labour	Cumul % complete	Actual progress								By period		Cumulative	
			Period	Status	Actual labour	Ineffect due to delays	Ineffect due to overman	Effective labour	Actual % complete	Completion status	Profit	Profit % of cost	Cumul profit	Cumul profit % of cost
1	20	30 %	4	Past	27	0.8	0.0	26.2	40.54 %	Ahead of schedule	-7,177	-0.6 %	-7,177	-0.6 %
2	33	80 %	5	Current						2 planned periods of the job left				
3	13	100 %												

Total planned labour needed to complete the job is 66.

For a Industrial job, the effective labour on site (after delays) cannot be more than 35% above the planned labour level.

The **Job progress** for the job shows that the job is currently 40.54% complete, and well ahead of the of the 30% planned completion after one period.

There is **59.46% of the job left to complete**, or 59.46% of the total labour required for the job (66 man periods), equating to 39.24 labourers (.5946 x 66).

39.24 labourers should be sufficient for the job to complete, **but on doing the previous risk analysis in case of risks striking that may delay the job**, a revised labour level of 41 labourers is needed to hopefully complete the job.



Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 28

Number to layoff: 0

Number available for jobs in progress: 28

AFTER DECISIONS

Net transfers: 63

Number left in the idle pool: 91

JOBS IN PROGRESS

Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	Status	Plan lab	Own Labour						Subcontract Labour				Total		
								This period		To site		From site		On site	End last	Take on	Lay off		On site	
								Last per	From ILP	New	To ILP	Paid off								
1	UK	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	87	117	0	0	0	43	0	74	0	0	0	0	0	74
25	US	Transport	2	FINAL planned period	Ahead of schedule	2nd period	84	53	0	0	20	0	33	28	0	0	0	0	28	61
29	UK	Industrial	3	2 planned periods remaining	Ahead of schedule	2nd period	33	27	0	0	0	0	27	0	0	0	0	0	0	27
56	UK	Building & Commercial	4	4 planned periods remaining		1st period	33	0		0	0	0	0	0	0	0	0	0	0	0
69	UK	Energy	2	2 planned periods remaining		1st period	29	0			0	0	0	0	0	0	0	0	0	0

We have now determined that **41 labourers** are needed to complete job 29 as efficiently as possible in period 5.

At the moment there are 27 labourers already on site, all of whom are the company's own operatives.

To increase the labour level to 41, an additional 14 labourers are required.

Since there are 91 labourers in the Idle Labour Pool, 14 of them are transferred to job 29 using the "**From ILP**" column.



Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 28

Number to layoff: 0

Number available for jobs in progress: 28

AFTER DECISIONS

Net transfers: 49

Number left in the idle pool: 77

JOBS IN PROGRESS

Job	Country	Sector	Plan Dur	Remaining planned per	Progress so far	Status	Plan lab	Own Labour					Subcontract Labour				Total		
								This period		To site		From site		On site	End last	Take on		Lay off	On site
								Last per	From ILP	New	To ILP	Paid off							
1	UK	Building & Commercial	4	2 planned periods remaining	of schedule	3rd period	87	117	0	0	0	43	0	74	0	0	0	0	74
25	US	Transport	2	FINAL planned period	of schedule	2nd period	84	53	0	0	20	0	33	28	0	0	0	28	61
29	UK	Industrial	3	2 planned periods remaining	of schedule	2nd period	33	27	14	0	0	0	41	0	0	0	0	0	41
56	UK	Building & Commercial	4	4 planned periods remaining		1st period	33	0	0	0	0	0	0	0	0	0	0	0	0
69	UK	Energy	2	2 planned periods remaining		1st period	29	0	0	0	0	0	0	0	0	0	0	0	0

There are now 77 idle labourers available for use in the company's **Idle Labour Pool**. These are the company's own operatives currently not assigned to a job.

We may be able to make use of the idle labour on jobs 56 and 69 which we have yet to consider.



Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 28

Number to layoff: 0

Number available for jobs in progress: 28

AFTER DECISIONS

Net transfers: 49

Number left in the idle pool: 77

OVERMANNING LIMITS

Sector	Effective labour limit above the planned level
Industrial	35 %
Building & Commercial	35 %
Transport	45 %
Energy	18 %
Water & Sewage	25 %

JOBS IN PROGRESS

Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	This period		Own Labour					Subcontract Labour				Total		
						Status	Plan lab	To site			From site		On site	End last	Take on	Lay off		On site	
								Last per	From ILP	New	To ILP	Paid off							
1	UK	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	87	117	0	0	0	43	0	74	0	0	0	0	74
25	US	Transport	2	FINAL planned period	Ahead of schedule	2nd period	84	53	0	0	20	0	33	28	0	0	0	28	61
29	UK	Industrial	3	2 planned periods remaining	Ahead of schedule	2nd period	33	27	14	0	0	0	41	0	0	0	0	0	41
56	UK	Building & Commercial	4	4 planned periods remaining		1st period	33	0	0	0	0	0	0	0	0	0	0	0	0
69	UK	Energy	2	2 planned periods remaining		1st period	29	0	0	0	0	0	0	0	0	0	0	0	0

Job 56 is a 4-period Building and Commercial job, in its first period.

Building and Commercial contracts can be overmanned by up to 35% above the planned level, so the effective labour limit above the planned is 33 (the planned level) x 1.35 = 44 labourers.

In order to try and complete the job in 3 periods, a period earlier than the planned duration, and earn a bonus from the client for early completion, it is decided to allocate the transfer the 44 labourers from the Idle Labour Pool to job 56 using the "From ILP" column.



Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 28

Number to layoff: 0

Number available for jobs in progress: 28

AFTER DECISIONS

Net transfers: 5

Number left in the idle pool: 33

JOBS IN PROGRESS

Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	This period		Own Labour					Subcontract Labour				Total		
						Status	Plan lab	To site			From site		On site	End last	Take on	Lay off		On site	
								Last per	From ILP	New	To ILP	Paid off							
1	UK	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	87	117	0	0	43	0	74	0	0	0	0	74	
25	US	Transport	2	FINAL planned period	Ahead of schedule	2nd period	84	53	0	0	20	0	33	28	0	0	0	28	61
29	UK	Industrial	3	2 planned periods remaining	Ahead of schedule	2nd period	33	27	14	0	0	0	41	0	0	0	0	41	
56	UK	Building & Commercial	4	4 planned periods remaining		1st period	33	0	44	0	0	0	44	0	0	0	0	44	
69	UK	Energy	2	2 planned periods remaining		1st period	29	0	0	0	0	0	0	0	0	0	0	0	

OVERMANNING LIMITS

Sector	Effective labour limit above the planned level
Industrial	35 %
Building & Commercial	35 %
Transport	45 %
Energy	18 %
Water & Sewage	25 %

OWN LABOUR

New recruits limited to: 70 this period
 Training cost for each new recruit: 2,500 per person
 Labour payoff rate: 750 per person
 Each idle labourer costs: 6,000 per annum

Job 69 is a 2-period Energy job, in its first period.

Energy contracts can be overmanned by up to 18% above the planned level, so the effective labour limit above the planned is 29 (the planned level) x 1.18 = 34 labourers.

To allocate the 34 labourers it is decided to :-

- Use the existing 33 labourers from the idle labour pool
- 1 new recruit is taken on into the company's workforce in order to start building up the workforce for the future by entering 1 into the "New" column. **There is currently a limit of 70 new recruits that can be employed in the current period , as defined in the Industry parameters**



Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 28

Number to layoff: 0

Number available for jobs in progress: 28

AFTER DECISIONS

Net transfers: -28

Number left in the idle pool: 0

JOBS IN PROGRESS

Job	Country	Sector	Plan Dur	Remaining planned	Progress so far	Status	Plan lab	Own Labour				Subcontract Labour				Total		
								This period	To site		From site		On site	End last	Take on		Lay off	On site
									Last per	From ILP	New	To ILP						
1	UK	Building & Commercial	4	2 planned periods	of schedule	3rd period	87	117	0	0	43	0	74	0	0	0	0	74
25	US	Transport	2	FINAL planned	of schedule	2nd period	84	53	0	0	20	0	33	28	0	0	28	61
29	UK	Industrial	3	2 planned periods	of schedule	2nd period	33	27	14	0	0	0	41	0	0	0	0	41
56	UK	Building & Commercial	4	4 planned periods		1st period	33	0	44	0	0	0	44	0	0	0	0	44
69	UK	Energy	2	2 planned periods		1st period	29	0	33	1	0	0	34	0	0	0	0	34

SURPLUS LABOUR

After making the labour allocation decisions for each job, there may be a **surplus of labour left in the idle pool**. If this is the case, there are a number of options :-

- Leave them in the pool for use next period, if they are likely to be required.
- Use the **“Number to layoff”** to layoff as much of the surplus as possible prior to any labour allocations.
- Instead of transferring men to the idle labour pool from site, pay them straight off from site using the **“Paid off”** column instead of transferring them to the idle labour pool.

KEY POINTS

Unnecessary idle labour can be costly, as shown in **Industry parameters**, and is an overhead that can adversely affect company operating profit for the period.



Making Labour Decisions

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 28

Number to layoff: 0

Number available for jobs in progress: 28

AFTER DECISIONS

Net transfers: -28

Number left in the idle pool: 0

JOBS IN PROGRESS

Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	Status	Plan lab	Own Labour					Subcontract Labour				Total		
								This period		To site		From site		On site	End last	Take on		Lay off	On site
								Last per	From ILP	New	To ILP	Paid off							
1	UK	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	87	117	0	0	43	0	74	0	0	0	0	74	
25	US	Transport	2	FINAL planned period	Ahead of schedule	2nd period	84	53	0	0	20	0	33	28	0	0	28	61	
29	UK	Industrial	3	2 planned periods remaining	Ahead of schedule	2nd period	33	27	14	0	0	0	41	0	0	0	0	41	
56	UK	Building & Commercial	4	4 planned periods remaining		1st period	33	0	44	0	0	0	44	0	0	0	0	44	
69	UK	Energy	2	2 planned periods remaining		1st period	29	0	33	1	0	0	34	0	0	0	0	34	

LABOUR SHORTAGE

As the company grows a problem the Construction Manager could face is one of an overall labour shortage.

A number of choices are available to make-up the shortfall :-

- **Under allocate** labour on some jobs. This may put the jobs behind schedule, but attempt can be made to bring them back on schedule in later periods. This can adversely affect client relationships.
- Take on **'New' recruits** into the company's own workforce, who each incur a training cost in their first period with the company.
- Use **subcontractors**, who incur an additional premium each period they are with the company. Subcontractor premiums vary between countries, which can influence where they are used.

The choice between new recruits and subcontractors is discussed in the **Key points** section.



Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 28

Number to layoff: 0

Number available for jobs in progress: 28

AFTER DECISIONS

Net transfers: -28

Number left in the idle pool: 0

JOBS IN PROGRESS

Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	This period		Own Labour					Subcontract Labour				Total		
						Status	Plan lab	To site			From site		End last	Take on	Lay off	On site			
								Last per	From ILP	New	To ILP	Paid off						On site	
1	UK	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	87	117	0	0	0	43	0	74	0	0	0	0	74
25	US	Transport	2	FINAL planned period	Ahead of schedule	2nd period	84	53	0	0	20	0	33	28	0	0	0	28	61
29	UK	Industrial	3	2 planned periods remaining	Ahead of schedule	2nd period	33	27	14	0	0	0	41	0	0	0	0	0	41
56	UK	Building & Commercial	4	4 planned periods remaining		1st period	33	0	44	0	0	0	44	0	0	0	0	0	44
69	UK	Energy	2	2 planned periods remaining		1st period	29	0	33	1	0	0	34	0	0	0	0	0	34

The labour allocations have now been made for all the company's jobs in progress. It will not be until next period that a full analysis can be undertaken of just how well the jobs were progressed this period.

Any **profits (or losses)** generated from the jobs will be added to the company's **cash account at the end of period**. Hopefully, overall there will be a profit that will help to increase the company's value.