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Managing a programme under the NEC(ECC) form of contract

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A well thought out, detailed contractor's programme should be used such that is a proactive management tool for both managing the works on a day-to-day basis, and a mechanism to demonstrate the effects and hence entitlement (if any) when change occurs. The NEC contract in terms of programme management is essentially a set of good practice project management requirements that, if followed, should benefit all concerned. This paper considers some of the practical problems in managing such a system and offers some practical advice to both contractor and project manager to help to ensure that the up-to-date accepted programme that the contract is striving towards becomes the reality.

1. INTRODUCTION

There are several main considerations that govern the management of the programme which is required to be reissued for acceptance throughout the duration of the project. In a previous paper (Hide, ????) this author considered the key requirements that the contract imposes upon the parties in producing a contract programme. It considered the key considerations when creating the programme and the contractual significance that the contract places upon it. This paper will consider in more detail the revision of that programme and the management of change under the contract.

Some of the key factors that affect the revisions of programmes are the effects of early warnings, compensation events and acceleration. It is important therefore to understand what these processes are and how they should be managed. This paper will consider some of the practical problems in managing such a system and offer some practical advice to both parties to ensure that the up-to-date accepted programme the contract is striving towards becomes the reality. It will consider some of the key factors that need to be managed by both parties. The processes within the contract are designed to assist both parties to understand the programme and, in particular, the liabilities associated with the movement in contractual completion milestones. It reviews the following factors.

- (a) Acceptance of a programme.
- (b) Early warnings.
- (c) Compensation events.
- (d) Acceleration.
- (e) Z clauses.

- (f) Multiple compensation events.
- (g) Forensic planning.
- (h) Buffered programmes.
- (j) Conclusions.

2. ACCEPTANCE OF PROGRAMME

The accepted programme becomes one of the key fundamental tools on an ECC contract. Both the contractor and project manager have a key part to play in the programme acceptance process. As well as being a key management tool to which the contractor intends to carry out the works, it will form the basis on which to assess any change and entitlement to the contractor in terms of time and prices. Unlike other forms of contract there is a contractual requirement to regularly update the programme, and once accepted, this will become the new 'contract programme' which forms the baseline from which to measure future progress and change.

Both contractor and project manager have a key part to play in the programme acceptance process. The contractor to start with has to provide the detail and the transparency of the programme in such a way that gives the project manager the understanding and the visibility of the updated sequence of work to allow it to be accepted. Equally the project manager has a duty to then consider whether the programme is acceptable or not and communicate this within the timescales of the contract.

The project manager's acceptance is significant under the contract, yet under clause (14.1) it is essential to know that he is not 'signing his life away' every time he accepts a programme. Clause (14.1) states that acceptance of any communication does not transfer liability away from the contractor to comply with his obligations under the contract. The main reason for this is that if the contractor deletes an element of work from the programme, or reduces one of the employer's periods that is stated in the works information, the subsequent acceptance of the programme does not by default overwrite the original works information. The only person who can change the works information on a project is the project manager. Having said that, acceptance under the contract is important as it is recognition that from the project manager's perspective that the programme is realistic, practicable and shows the information that the contract requires.

It should be recognised that the maximum timescales for response within the contract do not practically work on projects

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where there is significant change. The standard timescales within the contract have to be sensible as they cover the whole of the construction industry. They can not be too short as this will not work in numerous circumstances and it is not desirable to have to change them with Z clause amendments for each contract. However, on a practical level most timescales should be looked to be shortened by project teams for the benefit of all concerned, and the programme acceptance period for response within 2 weeks is no exception to this.

What tends to happen in the author's experience is that a project manager will take the full 2 weeks before responding to a contractor whether a programme is accepted or not. During the 2 weeks from when the contractor submitted his update there is often a lot of change, and the danger is that the project manager feels that he subsequently can not accept the programme. The truth is that it should not matter how much change has happened since the programme was issued because by its nature this was not known about at the point it was issued. The project manager should be able to accept this programme as the 'line in the sand' that at time of issue reflected the true representation of completed and programmed works at that point. Any subsequent change to any dates will be picked up and detailed in the next programme. Very quickly it is possible to get out of sync in getting programmes accepted and it becomes increasingly difficult to get back on track. This is a big problem to both parties as the accepted programme is the reference point for all compensation events and change that occur, and if there is not a recent accepted programme in place then commercially the parties are liable to be moving further apart in terms of commercial agreement as a result of these changes.

Historically under other forms of contract the project manager has not had to accept any revisions of the programme during the life of the contract. However, it is very important that the project manager understands that under any NEC contract he has to accept, or not accept (and have a reason for not accepting under the contract otherwise it will be a compensation event). The accepted programme will be just as important to the project manager and the employer, as this will ensure that all parties understand the liability for delays as they occur in relation to the planned completion and completion date milestones. The regular accepted programme will become a live real management tool reflecting all the activities at any one point in time, and will not just be a programme that people stick up on a wall at the start of a project and forget about.

3. EARLY WARNINGS ON THE PROGRAMME

The early warning system is a very simple yet very important aspect of the contract. In simple terms it places a requirement on both parties to notify the other if they become aware of any matter that could affect time, cost or quality. Once formally raised (clause 16 of the contract) the parties can review firstly if it is an issue or not, and if it is an issue then how it can be managed in order to avoid or minimise its effect on the project.

A common question asked associated with managing ECC contracts is 'what should be shown on the programme in terms of early warnings and notified compensation events'. It should be noted that clause 32.1 only explicitly requires the effects of implemented compensation events to be shown (implemented

means quotation accepted or project manager's assessment carried out). Previously ECC2 also stated that you should show 'the effects of notified early warning matters' but was subsequently removed in the ECC3 June 2006 amendments. The reason that this was removed is that many contractors were showing possible effects of matters that were not certain to happen, and in some cases changing planned completion accordingly. The result was that planned completion was moving in and out in time with events and durations that were potential effects rather than certain ones. The main premise of an early warning is that it is an event that *could* affect time or cost, not that it *will*.

It is key to understand that the early warning process is about issues that could affect the project but does not consider whose fault those problems are. The main premise of the system is for parties to raise early warnings where there is an issue. The parties then talk about the problem and collectively minimise (or eradicate altogether) the effects that this event could have. Only when all that is done is it necessary to consider who is liable under the contract for this event. The risk register, which is the summary of all early warnings raised on the project, only requires two pieces of information: a description of the risk, and the actions to be taken to avoid or reduce the risk. It does not require any consideration as to who is liable for the event.

It is important to remember that the programme requirements under the contract are the minimum required and you can always show more. The programme becomes a key tool to aid parties to make decisions, often as a result of notified early warnings. Whether the contract formally asks for them or not, it is practical to show early warnings that are yet to be resolved on the programme. They should be linked into the item(s) that could be affected by the subject of the early warning. This will give an indication as to the amount of float that this early warning has at that point (float being the amount of time that any given activity can be delayed before affecting the critical path). This is, however, purely dependent upon how the early warning may be dealt with, as the response to the early warning, for example, could be to change the specification of a material, which may or may not add additional procurement time to the programme. The float on an early warning does give at least some indication as to how urgent a response is. Should it have negative float, then this would suggest that by default this item is already impacting the project and now should be notified as a compensation event (if it is not something that was not at the contractors risk under the contract).

A practical way to show the effects of an early warning is to add an activity to the programme titled something like 'EW27 - possible change in specification to X'. It would show the start date of that activity as the date that the early warning was issued, and show the activity with as many remaining days that as a minimum you believe to be the period in which the project manager will respond with an answer. This adds the extra focus that there are outstanding early warnings yet to be responded to and gives a feel for the timescales as to when they could become a real issue.

It is the case on some projects that project managers have been heard to say that they no longer wanted early warnings on their project. Unfortunately these people have rather missed

the point and this is certainly not what should happen on a project. They have not understood contractually what these are really intended for in the first place. The perception may be that they are only a money-making scheme, with the contractor only raising issues that will cost the employer time or money or both. However, better that they are raised as soon as possible so that the parties have a chance to review and manage events rather than stick their heads in the sand and hope the problem will go away. It is very important to understand that no early warning will *ever* have a time and cost impact on a project. If the early warning leads to a change in the prices or planned completion and is not something the contractor could/should have allowed for then the mechanism to assess this change will be through the compensation event process.

4. COMPENSATION EVENTS ON THE PROGRAMME

Although early warnings are matters that could affect time cost or quality, if something has affected or will affect time, cost or quality and is something that the contractor should not have allowed for at tender stage then it should be assessed by both parties as a compensation event. This will require consideration of any entitlement to additional cost and/or time. Any delay in planned completion has to be attributable to a specific compensation event; that is, there is no mechanism for a general global claim for an 'extension of time' at the end of the project. It has to be attributable to individual compensation events along the way, hence an assessment of prices *and* time have to be reviewed for each event.

Compensation events go through a cycle of notification, quotation, assessment and conclude with 'implementation', which is where any increase in the 'prices' and delay to the completion date are confirmed. There are two important points of note as listed here.

- (a) Either party can notify (which introduces an extra loop if the contractor notifies as the first decision to be made is whether the project manager agrees that the event is a compensation event).
- (b) The project manager can make his own assessment of an event if he feels the contractor has not assessed it in accordance with the contract.

On many projects there are likely to be numerous compensation events. The contract has mechanisms in place to help ensure that they are agreed in a timely manner. The project manager has 1 week to agree if an event raised by a contractor is a compensation event, the contractor has up to 3 weeks to produce the quotation, the project manager has up to 2 weeks to respond. In practice, however, it can take several weeks and even months to agree the quantum in terms of time and cost of a single event. Only when it is agreed or the project manager has done his final assessment does it become 'implemented' in the terms of the contract (clause 65.1). Sometimes this agreement will be in place well before the works are carried out, but equally there are probably more occasions that the works will have commenced and even completed before the quotation has been agreed.

Whatever stage of the compensation event cycle an event is at, one needs to consider how this is to be demonstrated on any programme issued for acceptance. Clause 32.1 includes one

bullet point that only refers specifically to showing on the revised programme the effects of 'implemented' compensation events. There is no specific reference to what should be done with compensation events that have not been implemented, namely those that have been notified, for which a quotation has been requested or for which a quotation is awaiting the acceptance of the project manager. If a project manager notifies a compensation event or agrees with the contractor's notification, he requests a quotation, which should include any change to the prices and any delay to the completion date (62.2). He could request this quotation under clause 61.1 which states that the 'Contractor puts the instruction into effect'. He could instead request a quotation under 62.1 (alternative quotations) where there could be more than one solution to the problem but with a likely different balance between cost and delay. The last option for the project manager would be a request for the quotation under 61.2 (proposed instructions) in which case the contractor will not start to execute the works as the project manager will decide upon receipt of the quotation whether or not he wants to proceed with this particular proposed instruction.

However, a quotation request under 61.1 (along with an instruction where there is a change to the works in the first place under clause 14.3) is actually the trigger for the contractor to proceed with the works; that is, to get on with it, safe in the knowledge that the contract will ensure suitable recovery to the contractor for that event. The contractor does not need to (and should not) wait for the quotation to be accepted before doing anything. If the compensation event needs materials that, say, have a 6 week lead in, it would be detrimental to the project if contractor and project manager waited for the quotation to be agreed before ordering the material. Contractors might question why they would proceed with something that they do not know ultimately how much they will get paid for? The idea is that the contract ensures that the contractor is due appropriate compensation for the event and so should not lose out financially for an event that they had not and could not have allowed for in the first place. It is quite important to understand these processes as to what should or should not be shown on a programme at any point in time. Figure 1 shows in simple terms the flow of a compensation event:

Some practitioners within the construction industry have previously stated that the contract *requires* you to show *implemented* compensation events on the programme and therefore you do *not* show non-implemented compensation events. Although on the surface of it one might understand why they have made that quick interpretation by looking at the one single bullet within clause 32.1. However, as with any contract it is important to take into account other contract clauses and the contract as a whole when interpreting its meaning and contractual obligations. Very quickly this interpretation of *only* showing implemented compensation events is exposed as being fundamentally wrong and not what the contract intends. The following example considers why this is the case.

4.1. Example

A project manager instructs a contractor to install an additional 200 m of drainage pipework to be installed along the perimeter of the site, notifies the compensation event and requests a quotation under clause 61.1. The pipework is to be steel and

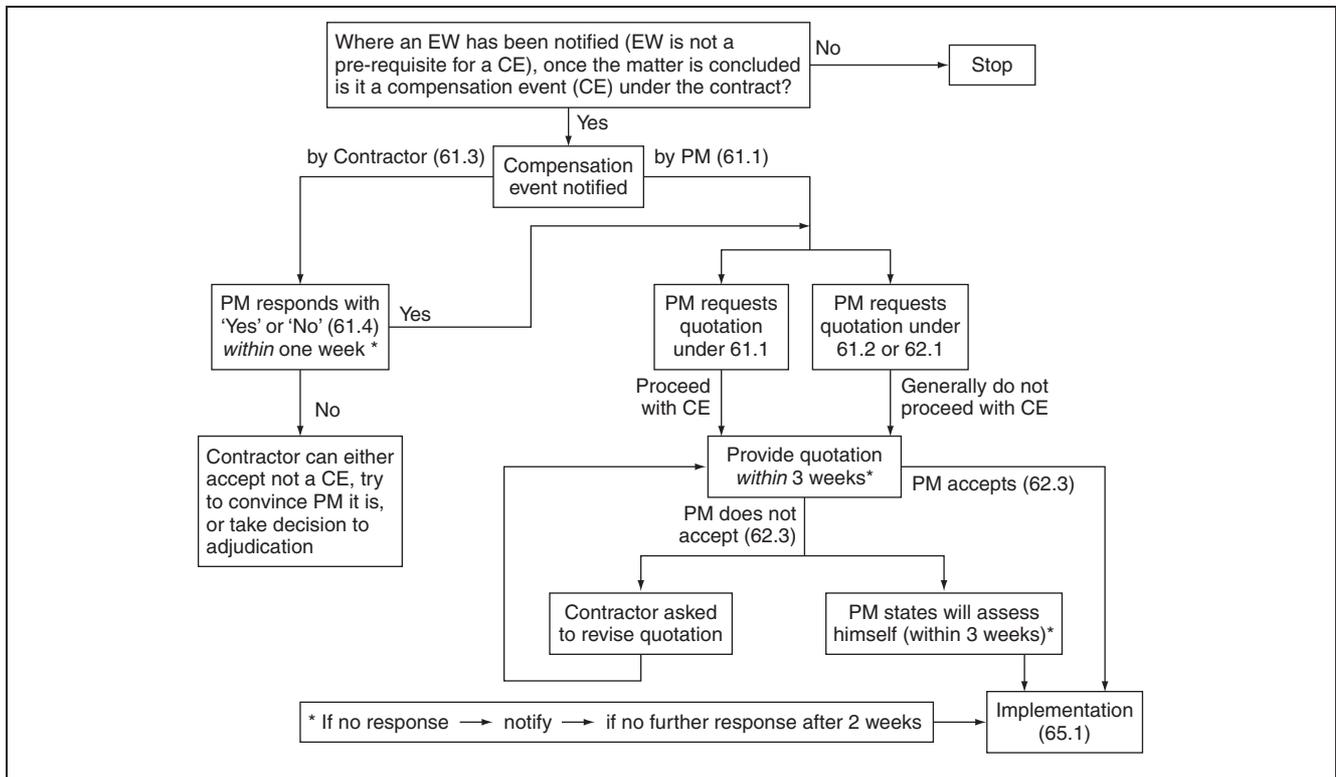


Figure 1. Flow of a compensation event (CE) from notification through to implementation: EW, early warning; PM, project manager

100 mm diameter, which the contractor discovers will require a 4 week 'lead in' period to get it to site. If it were possible to travel forward in time we would find that for this example it takes the parties 8 weeks to agree this quotation and for it to become 'implemented'. The question arises as to what do the contractor and project manager do with this event in the meantime, particular in reference to the programme? Clause 61.1 is very clear that the contractor should proceed with these works as diligently and efficiently as possible. The pipework can be ordered upon notification on day 1 so it could arrive in week 4. The pipework can then be installed which may take 2 weeks, and backfill/commission completed which may take a further week. Therefore, in this example the whole operation could be complete by week 7, whereas the quotation at this point is still yet to be agreed and hence implemented. To consider that this event should not appear on the programme (because it is not implemented) completely undermines the intent of both the programme and the essence of the contract. The programme should be a true realistic reflection of how the contractor plans to complete the remainder of the works, and show the effect upon any remaining activities (first bullet of clause 32.1) and so on planned completion. This compensation event will be using labour and resources, and may also be holding up other activities until it is complete. It could even be on the critical path, which is the ultimate proof of how ridiculous it would be *not* to show it on the current programme. If it was not shown, then the programme would be showing that the remainder of the critical path works will be proceeding, which can not possibly happen until you have completed the pipework and hence that can not possibly be the correct programme to issue for acceptance. A key test on any programme is at the time of issue to run a 'look ahead' filtered programme showing the works scheduled for the next week or two and check that those are the works that you intend and are physically able to do. If

they do not represent the planned works then this simply can not be the right programme.

The programme therefore has to reflect the intended sequence for all events that the contractor is aware of, and the effect that they will have on the remainder of the programmed works at the point in time of the issue of the programme.

5. ACCELERATION

The acceleration provisions (clause 36) are actually very simple under the contract and are the mechanism for bringing forward the completion date at the request of the project manager to encourage an earlier completion. In very simple terms when dealing with compensation events the contractor is obliged to *mitigate* delay (do things differently but at no cost or dis-benefit to the contractor) but is not obliged to *accelerate*. The project manager can request the contractor to provide a quotation for acceleration, and the contractor provides a quotation or gives a reason for not doing so. The whole premise is that you can not force acceleration upon a contractor; however, the contractor should look out for additional changes to the contract (Z clauses) specific to that project that may try to change this concept. The main reason for the contract not allowing acceleration to be imposed is that in reality how can you practically force a contractor to accelerate, and indeed is a principle in law that it can not be imposed. It is also very important to realise that there is no formal requirement on what basis it should be founded or how to present the acceleration quotation. This clause is simply a methodology to agree and formalise an agreement to bring forward the completion date.

Even more importantly there is no mechanism for a project manager to make his own assessment of a contractor's

acceleration quotation, whereas he can assess a compensation event if he feels that the contractor has not valued it in accordance with the contract. A key reason for not allowing the project manager to impose his own assessment of an acceleration is that the biggest component of an acceleration quotation is often not the base cost of providing additional resources or materials, but the amount to compensate the contractor for the increased risk of not completing on time, which would incur liability and possible delay damages. It is perfectly acceptable by agreement to negotiate with a contractor to bring the cost down to a perceived acceptable level, for which the employer would be prepared to pay for the benefit of an earlier completion date. In either case, the only decision for the project manager (whether negotiations have taken place or not) is to accept the quotation for the agreed acceleration period and hence change the completion date, or not accept, in which case the completion date will remain as it was on the last accepted programme.

It is important to realise that a contractor is only obliged to meet the latest completion date if there are no further compensation events with a direct delay to the completion date on the last accepted programme. If a compensation event delays planned completion, then the completion date will be affected however important that date may be. The contractor can then be requested to provide a quotation to accelerate, which should in most cases be possible, generally at an increase to the total of the prices which will ultimately be paid for by the employer within the quotation. This is however a two-stage process, in which the compensation event delays the completion date and the subsequent acceptance of a quotation for acceleration brings it back.

Some project managers may expect the contractor to provide these acceleration measures in a one-stage approach in which they provide the quotation for maintaining the original completion date within the initial compensation event (by asking for alternative quotations, one letting completion date move out and one with a greater increase in the prices to maintain the current completion date). Although this may appear quite practical, it is important to remember that on that basis, the project manager would be able to make his own assessment of the compensation event, which in this instance would include the cost to maintain the current completion date and more importantly the cost of risk to maintain that date. It is highly likely that the employer's view of risk will be lower than that of the contractor. It is equally important to remember that the contractor is obliged to mitigate (reschedule works at no cost or inefficiency to himself to optimise planned completion) but not to accelerate (generally incur cost to do things quicker). Therefore the author would recommend that a quick two-stage approach gives the maximum visibility to both parties and less subjectivity within the assessment; that is, show the effect a compensation event has had on planned completion and then provide a separate quotation

demonstrating the cost to accelerate the completion date to an agreed date.

6. MULTIPLE COMPENSATION EVENTS AND MOVEMENT OF THE COMPLETION DATE

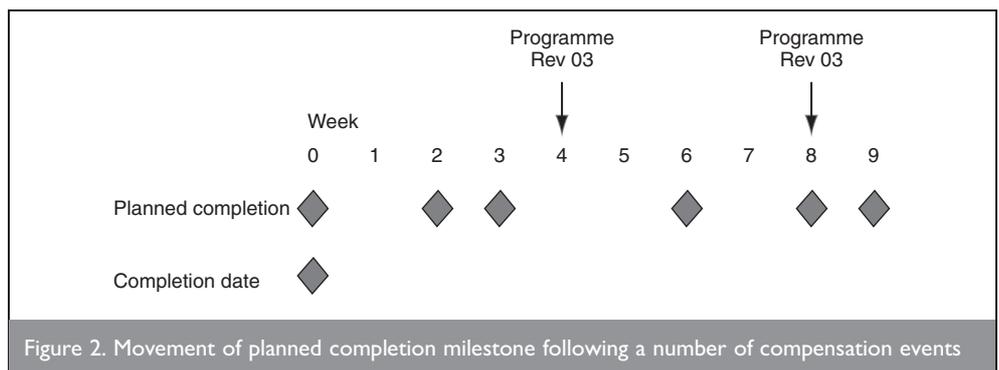
It is very clear within the suite of ECC contracts that in terms of programme there are two distinctly different completion milestones to track and report against, which are planned completion and completion date. The contract is also clear (under clause 63.3) the completion date can be delayed by an agreed amount once a compensation event is implemented (i.e. quotation agreed including time effects). However, this can cause a practical problem for both parties on a project in which

- (a) planned completion is constantly changing
- (b) compensation events take several weeks or even months to be agreed
- (c) there are numerous compensation events occurring, some of which are inevitably critical.

The consequence of the above is that planned completion can be moving out with the completion date not adjusted for several weeks or months. Figure 2 demonstrates this point, where planned completion is moved by a number of notified compensation events on this sample project. In the example shown in Figure 2 the following events occur in the following sequence.

- (a) Programme Rev 01 accepted at week 0.
- (b) CE03 is notified by the contractor due to no access to site which the contractor demonstrates has an affect of 2 weeks on planned completion.
- (c) CE07 notified by contractor due to free issue material not made available to the contractor as per programme date, which has a further one week effect on planned completion.
- (d) Programme Rev 02 issued at week 4 which shows a cumulative 3 week delay to planned completion (2 weeks due to CE03, 1 week due to CE07).
- (e) CE12 notified by contractor in week 5 due to design information for the contractor being late, which has a further 3 week delay to planned completion.
- (f) CE21 notified by contractor due to emergency maintenance works being carried out thus affecting critical path works and planned completion by a further 2 weeks.
- (g) Programme Rev 03 issued at week 8 which shows a cumulative 8 week delay from Rev 01.
- (h) CE24 notified by contractor due to third-party interface which has a further 1 week delay to planned completion.

It is not inconceivable that the quotation for the first compensation event takes 9 or 10 weeks to agree and thus only



at that point is it implemented. At this stage (week 9), the date forecast for planned completion exceeds the completion date by 9 weeks.

Only when the compensation events are implemented does the completion date 'catch up' with planned completion. The big problem is how long this takes and the associated liability/perception in the meantime. If any project team member reviews the above programme in say week 8, all they will see is a disparity between completion date and planned completion. It will not be evident from the programme alone whether the contractor will be due any delay to the completion date, which is not too much help to either party; both the project manager and contractor are unsure of the liability associated with the discrepancy. Planned completion in the meantime is shown beyond completion date.

The following actions provide a pragmatic solution to overcome this issue. The contractor moves the completion date when they believe that planned completion has been moved due to a compensation event, *providing* (and only when) the following conditions have been satisfied.

- (a) Reason/effect of delay are transparent in the current programme and the programme narrative.
- (b) The project manager accepts the fact that the event is a compensation event.
- (c) The project manager accepts that the delay to completion date indicated in the programme is the time for which the employer is liable.

If any of the above is not true then the project manager *does NOT* accept the programme.

In the example above, the contractor could have showed Rev 02 programme with a completion date moved by 3 weeks the same as planned completion. If the project manager accepts a programme, they would only be accepting that the time principle indicated in the programme due to individual compensation events is correct; that is, access was denied for 2 weeks/material not provided for 1 week and neither of these are the contractor's liability. Time is correct and ascertained now, whereas the cost of that event will be ascertained over the coming days/weeks as part of the quotation/assessment process. If it is perceived difficult to agree the time effects of an event at the time of the four-weekly programme issue (4 weeks being a typical contractual interval for programme submission) then it can be assured that it will be significantly more difficult further down the line with further progress (some good, some bad), re-sequencing and other compensation events affecting the programme. Any retrospective assessment of the programme is always subjective. The only time you can get the true picture is by assessing the event when it actually occurs, and agreeing it very quickly thereafter. This is exactly where the ECC contract is trying to steer all parties towards, which, at the end of the day, is also just good practice project management!

In terms of the quotation it is important to note that a week delay on the programme is *not* equal to a predetermined cost; for example, a 1 week delay can not be equated instantly to a fixed amount, for example, £10 000 'preliminaries'. Each compensation event is assessed on its own merits and true effect.

The benefits of agreeing the movement of completion date at the time of programme issue are primarily two fold.

- (a) Massive help to the commercial teams from both sides. When a quotation issued is reviewed – the programme will already have the demonstrated time effect as agreed with the project manager and will not be subjective. At the point the project manager accepts the programme he will in effect be 'treated as having accepted the time element of the associated compensation event quotation'. This takes a little pressure off the commercial teams to finalise the agreement of the associated costs as the accepted programme is not in question. In the example above, CE03 has a 2 week time effect, CE07 has a 1 week time effect, and all other CEs issued up to that date have *no* time effect. All of the commercial teams then have to agree is the direct cost of the compensation event along with any additional cost of the delay to planned completion.
- (b) Clear visibility/transparency to both parties as to the status of the completion date on each programme issued for acceptance.

In the example above, at the time of the first programme re-issue it is a certainty to both parties that the delay to planned completion is 3 weeks for the two delays, one being denied access to site (2 weeks) and the other being delay in providing critical free issue materials (1 week). There is little point to either party in denying now that the completion date will move by 3 weeks – it will be enhancing the visibility and transparency that the programme is trying to bring, hence better to move it now than wait for the commercial teams to agree the detail of the quotation and for it to be implemented.

The ECC contract makes it very clear how important the contract programme is as both a management and a commercial tool. The programme has to reflect everything we know about the works now, which will also give clarity as to the outcome of any future events as and when they happen. The assessment of time and cost are fundamentally two components that can be practically separated out, although in the final assessment they will be brought together. Time invariably should be the relatively easy to agree, and is not directly proportional to any cost assessment. The project manager has to take responsibility for pushing for a quick agreement on the time element to help the project as a whole. If a certain delay to completion date is accepted, the related assessment of the effect on cost will 'be what it will be' in accordance with the rules of the contract.

Assessing and agreeing the time element of compensation events as described above should lead to the better understanding of the project and help the programme acceptance process, with the programme becoming a clearer more transparent management tool for the whole project team. That team can then get on with carrying out the project, which surely has to be both parties prime objective. The contract intends for the programme to become the primary management tool for everyone on the project, not a contractual hindrance.

An alternative to moving the completion date is to add a third milestone on the programme: a 'potential completion date'. This date represents what the contractor believes the completion date will move to once the event is implemented. This at least demonstrates perceived liability but does not represent quite the

same level of intent and understanding between the contractor and project manager as the project manager will not agree to the moving of a completion date lightly. With this alternative approach, whether the project manager agrees with the 'potential completion date' or not would not be a reason to not accept the programme, and hence it would have little contractual stance.

7. Z CLAUSES

It is very important to remember that most contracts include option Z, 'additional conditions of contract' known as 'Z clauses'. Generally these are intended to make the contract specific to the industry, environment and type of work specifically included in that project. Sometimes these changes are minor whereas sometimes they (unfortunately) fundamentally change the original intent of the contract. If there are clauses that a tenderer does not wish to commit to, then the place to identify this is obviously at tender/negotiation stage prior to contract award. Once both parties have signed up to a contract then that is the contract that they have to administer (perceived warts and all!). Should a matter ever go to adjudication then the contract will be what the adjudicator uses to make his decision, not the original un-amended ECC form of contract.

Some amendments transfer risk back to the contractor that would not normally be a contractor risk in an un-amended contract. This is not by any means necessarily wrong and as long as the contractor is aware of the changes and makes allowances at tender stage for this, then fine. However, very little is free in this life, and if you are transferring risk onto the contractor then the employer can expect to pay for it in the tender price. However, employer's should recognise that they have a big responsibility in as much they could be changing the whole balance of the contract with the inclusion of certain Z clauses. The original contract has been created over several years with a massive degree of checking, testing and refinement by hundreds of people within the industry. An employer should consider carefully when they are changing the contract why they are doing it and whether they could be introducing inconsistencies or ambiguities that did not previously exist, which in the author's experience is often the case.

Common Z clauses witnessed that could affect programme management are

- (a) changes in the timescales for acceptances within the contract
- (b) specific requirements in terms of which planning software to use, specific reports required each month etc.
- (c) periods for acceptance
- (d) additional reasons for non-acceptance of programmes by the project manager
- (e) amendments to acceleration clauses, sometimes in effect allowing the enforcement of acceleration upon a contractor
- (f) deletions or additions to list of compensation events in clause 60.1.

These amendments if ignored and not allowed for within the bid could cause significant problems in administering the project and even their ability to meet the completion date. Tenderers have to understand the contract that they are signing up to, and either make allowances within their bid to comply with the specific requirements or seek to get the amended clauses

removed or altered (which the employer may or may not be receptive to).

8. APPROACHES TO TIME RISK ALLOWANCE

Time risk allowances (TRA) are required to be shown on each programme issued for acceptance. These are the specific durations that the contractor has allowed for within an individual activity. In the authors experience the simplest and most effective approach of demonstrating time risk allowance is option 1 below. The amount of time risk allowance that the contractor has allowed within an activity is captured in a column titled 'TRA'. In this example, whereas activity 'A' is 15 days long on the programme the contractor has allowed 3 days for perceived risk which is very likely to occur (i.e. best that could ever be achieved would be 12 days if everything went perfectly, but expect it to take nearer 15 days). This risk allowance is owned by the contractor.

An alternative planning approach considered within the industry (which is not recognised by the NEC contract) is a 'buffered programme' approach which removes the element of time risk allowance from the detailed activities, thus shuffling all these activities and their associated logic forward in time. The cumulative amount of TRA from the critical path is then added as a cumulative time period at the end (known as the buffer), thus setting planned completion at the same point in time as when the TRA was applied to individual elements.

Figure 3 shows the buffered approach principle (option 2) and the simpler approach with TRA applied to individual activities (option 1):

Any process that can enhance the planning process should be considered. The main benefit associated with the approach of option 2 is to encourage the earlier completion of activities. If everyone is working to the later date in option 1 the danger could be that they did not start any earlier, even if the first activity finished earlier than originally planned. However, that is the only really significant benefit of this approach, and can be overcome equally well by simply updating the programme regularly, taking into account the remaining risk to activities.

There are a number of issues that this approach would bring when administering an ECC form of contract. Although none of

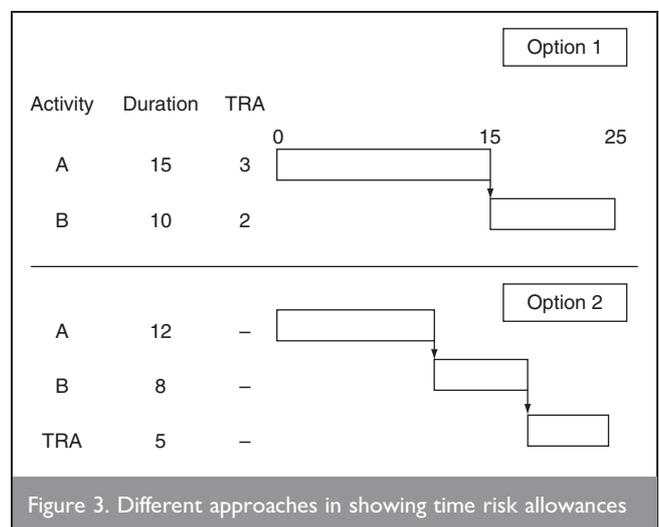


Figure 3. Different approaches in showing time risk allowances

these issues are factors that are impossible to overcome, generally, in the opinion of the author, the extra measures that would need to be taken far outweigh the benefits they are trying to achieve. There is a lot to be said for keeping things simple. Some of the examples of problems that could be caused by adopting this approach are listed here.

- (a) At day one, the TRA at the end of the programme is accurate. Half way through the project, what proportion of TRA should have been used up? The answer is that without a separate audit trail you do not really know. The usage of TRA will never simply be linear as different activities will carry different risks at different times.
- (b) There could be the situation that statutory authority works have been scheduled on an earlier start excluding TRA (i.e. on day 13). If they then arrive expecting to start, who would be liable to pay their cost? The contractor has done nothing wrong, as they have merely used up some of the time they originally expected to use (they originally allowed up to 15 days). It certainly does not fulfil any of the existing categories as to what constitutes a compensation event. The statutory authority has done nothing wrong as they have just arrived on site when they were told to, yet someone has to pay for the cost incurred.
- (c) It is not uncommon for a critical path to actually change mid-project. If this happens, what remaining TRA existed at that point and what remaining TRA should be applied for the remaining works?

In the opinion of the author, the best approach, and that supported by the contract, is option 1; namely to apply TRA to individual programme activities as described within clause 31. The programme should then be updated regularly in accordance with clause 32, which should then lead to the ability to demonstrate the effect on any items that are finishing and the associated bringing forward of follow-on activities where practical and achievable. This would then achieve the benefits that the buffered approach is trying to implement without having to adopt the procedures it describes and providing potential ambiguities or disputes in terms of agreeing the effect of change in particular.

9. RETROSPECTIVE ANALYSIS OF PROGRAMMES

Retrospective analysis of programmes or 'forensic planning' is a common term heard in the industry and is something that should not be necessary on an NEC form of contract if it has been administered properly by both parties. Many industry projects end up in dispute towards the end of the works, and forensic planning is adopted to ascertain retrospectively the entitlement to delays to the contractually required date for completion. The whole premise of the NEC form of contract is that you feed in change as it happens, see what overall affect it has together with any other changes/progress and then track future change against that newly accepted programme. The only time it is easy to identify the true effect of an event is when it occurs, taking into account everything else that is happening at the time.

The big problem with forensic planning is that there are many different methods of carrying out an assessment, and an employer's forensic planner will come up with a different method of assessing than the contractor's method, and no doubt with different results. It will always be subjective, and is always

very time consuming, resource heavy and costly. It is likely that records may be sketchy from the time in question as well, and generally ends up in one big argument that often an adjudicator or the courts have to make a decision on. It is much better use of both parties' resources that change is fed into the programme as it occurs and get the results accepted, which is where the NEC form of contract is leading us.

If the parties are in this position where the programme has not been managed then it is likely that there will have to be retrospective analysis of the programme. However, most of the 'industry accepted methods' of carrying this out have been around for longer than the NEC contract. They do not therefore take into account the ownership of float and the sequence at which events occurred in relation to each other and the status of the accepted programme which are all addressed under the NEC forms. Equally some of the case law and 'precedents' that may be talked about in terms of assessing programmes on previous disputes the author suggests are unlikely to be relevant in the outcome. These analyses, such as the 'dominant delay' (which event would be considered the 'main' delay on a project when more than one has occurred) and the 'but for' analysis (but for something occurring, if it hadn't happened what would have been the effect) will need to be assessed differently due to the nature of the contract. The NEC contract deals with events as they occur, and assesses the resultant effect on subsequent activities taking into account any float that may or may not be generated. Any legal precedents based on other forms of contract would not necessarily apply as they do not consider how the NEC contracts manage programme.

10. CONCLUSIONS

Administering the programme processes described in the contract is not easy on large complex construction projects, particularly when there is a lot of change. Some of the key considerations for the planning of a project are listed here.

- (a) Create sufficient detail on the programme including key activities from all third parties/employer to clearly be able to demonstrate effect of change.
- (b) The project team has to feed in, understand and use the programme – not just the planner who produces the plan using planning software.
- (c) To get maximum benefit and understanding the programme has to be regularly updated, as a minimum weekly if not daily.
- (d) Compensation events have to be fed in and assessed at the time they occur to assess their true effect. Not assessing these at the time will mean that they will only become more subjective to both parties with time and other ongoing events.
- (e) Resources form an integral part of understanding and determining if a programme is realistic or not.
- (f) Put suitable effort in at tender stage, as that is when you really need confidence that you can carry out the activities in the timeframe and to the requirement included within the tender document.
- (g) The project manager has to understand and proactively manage the acceptance of programmes.
- (h) The parties must recognise and manage accordingly the implications of any Z clauses.

The contract is trying to maintain visibility and understanding throughout the project by efficient management of the

programme and it becoming a key management tool for all concerned. This in turn should lead to greater understanding of both parties particularly in terms of entitlement to delays to the completion date, and also the final out-turn cost. Although it may seem to require more administrative effort during the course of the project, this is likely to be much more efficient than the traditional protracted final account negotiations that

commonly occur within the industry. Remember, by agreement almost anything is possible...

REFERENCES

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