MANAGING CONTRACTOR SAFETY

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SUMMARY

The last decade has seen an enormous increase in the use of contractors in the mining industry. From tentative beginnings in the mid 1980's, the contracting sector has grown to the point where it now straddles the mining industry right across the country. So much so that contractors now operate 43 of the 78 underground metalliferous mines around Australia. While not on the same scale, contractors are making significant inroads into iron ore in the west and coal in the east. Ten years ago, safety considerations were a low priority for many contractors. Nowadays, this picture has changed dramatically, with many contractors taking a professional approach to safety management. This paper examines the requirements for effectively managing safety in a contracting environment.

INTRODUCTION

Growth of contracting in the mining industry

Mining contractors were practically non-existent in the Australian mining industry until the 1950s. Most mining companies sank their own shafts and undertook any other capital development that they required. Major mines started to use contractors for shaft sinking projects from the 1950s onwards. Examples of this include Mt Isa, Mt Lyell, Leinster and Mt Charlotte in the metalliferous sector and the shafts sunk on the NSW and Queensland coalfields. The unions in Broken Hill kept contractors out of all the major shaft sinks there.

The gold boom in WA transformed thinking on the use of contractors in the mining industry. During the 1980s, many small gold mining companies started their operations with minimal capital. In order to preserve their small capital base, these companies engaged earth moving contractors to mine their open pits, usually at lower prices than they could have worked at themselves had they had the capital. Intense competition between the contractors helped to keep rates down.

During this decade, many of the gold mines have reached the lower limit of their open pits and have commenced underground mining. The use of contractors has continued as these mines have gone underground. As a result, the majority of underground mines in WA are now using contractors to carry out their mining work.
Based on the success with contractors in the gold sector, mining companies introduced contractors into the newest generation of iron ore mines in the Pilbara region of WA. Some of these mines are producing up to 10 million tonnes per annum.

Other very large scale open pit operations are also using contractors now. Some of the most notable include the Super Pit at Kalgoorlie, Lihir Island in Papua New Guinea, Mt Keith, Boddington and Ernest Henry.

WMC provides one of the most striking examples of the mining industry's embrace of contractors. They led the way with the introduction of contractors to their new nickel mines in the 1980s. This had the effect of changing the prevailing work practices in these new mines at Kambalda and focussed mine site managements and their workers on productivity and costs. Following the early successes at Kambalda, WMC used contractors exclusively at the Leinster Nickel Operations and Agnew Gold Operations when these were started in the late 1980s. In 1996, the wheel turned full circle when WMC introduced contractors to all their Kambalda and St Ives mines.

The eastern Australian coal industry has also grasped the contracting nettle in the 1990's. The use of contractors in both surface and underground mining is increasing. Allied Mining has underground mining contracts at Oaky Creek and Moranbah North. Thiess did extensive development at MIM's new Newlands colliery and now has surface coal mining contracts at Collinsville, Burton Downs, South Walker Creek and Mt Owen. There are now several other surface mines using contract mining in the Hunter Valley and in Queensland. In most cases, the mining companies have achieved significant productivity gains and cost reductions.

In 1997 Anaconda Nickel introduced BOOT (Build - Own - Operate - Transfer) contracts to the mining industry. They are using BOOT contracts to provide fixed plant for the Murrin Murrin laterite nickel project in WA. Outside of the mining industry, these types of contracts are gaining in popularity with State governments around Australia for the provision of infrastructure.

Current roles of contractors in the mining industry

Similar patterns in the use of contractors are evident across Australia. The Guidelines for contractor OHS management for New South Wales Mines (NSW Guidelines) define the range of contracts in use in the Australian mining industry as set out below.

1. **Major Contracts**

   Contracts involving very large expenditure and a long period on site. Examples include mining contracts in open cut mines and decline development contracts in underground mines

2. **Medium/minor Contracts**

   Contracts with substantial expenditure. Examples include medium size construction projects, diamond drilling and raise drilling.

3. **Casual Contracts**

   Contracts involving low expenditure over short periods.

4. **Labour Hire Contracts**

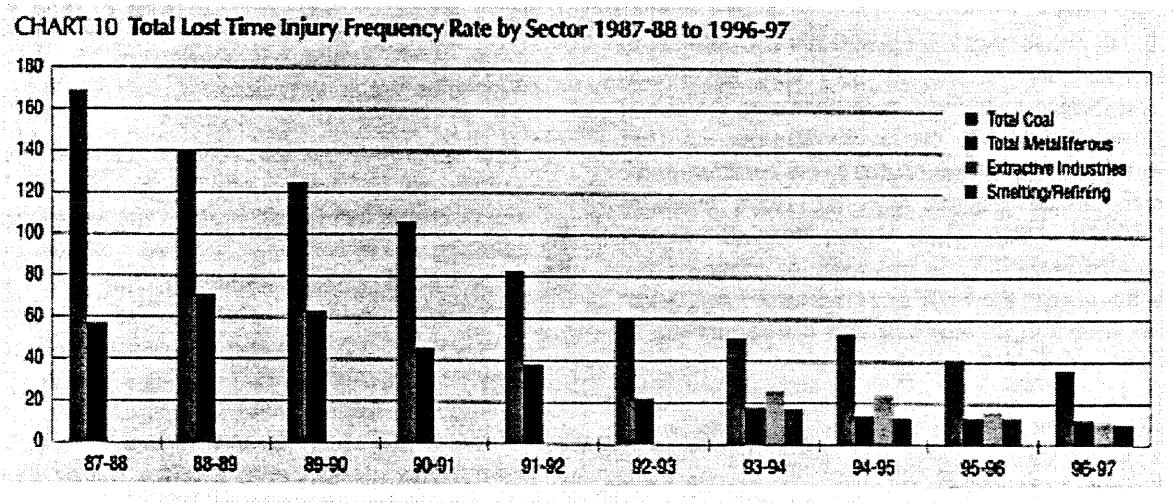
   Labour hire only with Principal organising and managing the work task. Examples include maintenance labour for shut downs

5. **Restricted Site Work**

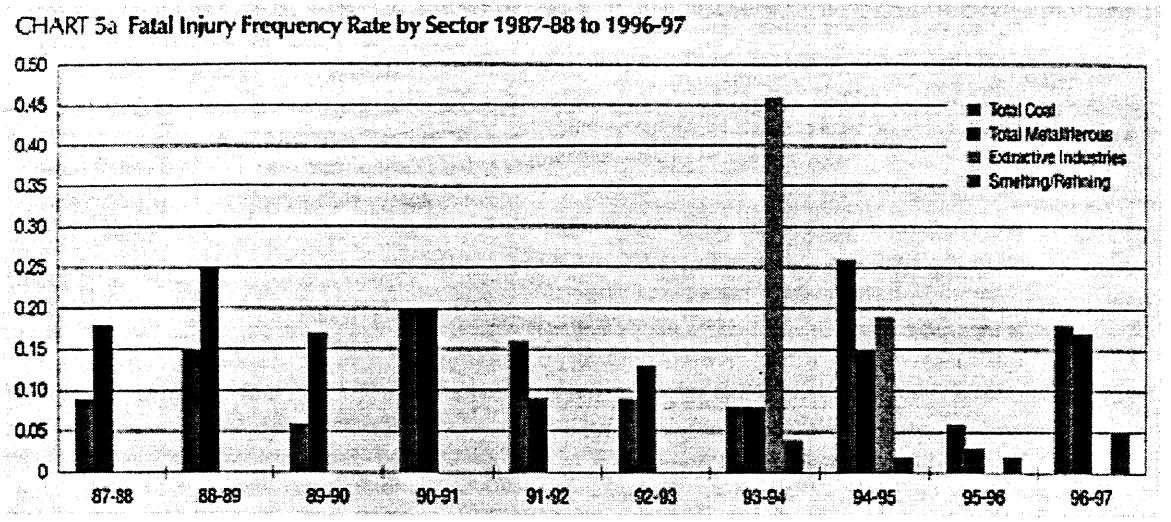
   Access to site is brief and restricted. Examples include goods deliveries, minor office equipment repairers, professional consultants

General safety performance in the mining industry

Lost time injury frequency rates (LTIFR) in the mining industry trended downwards until the mid 90's when they appear to have plateaued. The following graph from the Minerals Council of Australia Safety and Health Performance Report for 1996-7 illustrates this trend.



The next graph from the same Minerals Council report paints a disturbing picture of too many fatalities in the mining industry. Unlike the LTIFR graph, the rate of fatalities in the mining industry is not reducing.



One might conclude from these two graphs that the mining industry's injury management methods have improved, but the risks in the underground environment have not been reduced, as evidenced by the continuing pattern of fatalities.

Contractors safety record

The author's experiences

My experience in managing (as the client's representative) or observing most of the main contractors in both the metalliferous and coal sectors is that they reflect the general standards in the industry. Some contractors have very impressive safety documentation in their tenders that is not matched in the field. However, most of the major contractors that I have dealt with have a professional approach to managing safety that flows all the way from the chief executive to the miner working on the face. Not only do these contractors have a strong commitment to safety, they commit the resources to make it happen. This applies to the engineering and construction contractors as well as the mining contractors.

When it comes to medium sized contractors, my experience is mixed. The raise drilling and diamond drilling contractors are now fairly professional because they work in many mines and have developed systems and high standards in response to client demands. The smaller engineering and construction contractors who have little or no mining industry experience often lack a professional approach to safety. Unless they are closely supervised, these contractors may tend to have a poor safety record.

Casual and labour hire contracts likewise require close supervision if acceptable safety outcomes are to be achieved.

Recent experiences in WA

By September last year, there had been eight fatalities in underground mines in WA. The disastrous pattern of fatalities in WA in 1997 prompted the WA Minister for Mines to institute a special inquiry by that state's Mines Occupational Safety and Health Advisory Board (MOSHAB). One of the principal findings of the inquiry was that:

> *"The deterioration of the safety and health performance in the underground sector has coincided with the transition to contractor management. The onus to overcome these problems remains with the principal employer. The solution depends on the involvement and commitment of everyone at the workplace."*

There has been a tendency in some quarters to blame the contractors for the problems. As noted here, the MOSHAB inquiry has linked the contractors to the problem, but has categorically concluded that the final responsibility lies with the mine owners. All of my experience in recent years supports this conclusion. I have always found that contractors will ultimately work to whatever standards the principal sets. Even talking to people who have worked overseas confirms this view that wherever one goes in the world, people will work to the standards set by management.

SAFETY MANAGEMENT PLANS

The management of contractor OH&S is a sub-component of effective contractor management and effective OH&S management. If a company's OH&S systems are sub-standard, the use of contractors will generally exacerbate the potential problems. This section examines what best practice in the mining industry currently suggests should be in a mining company's (and contractor's) safety management plan.

Duty of care

The concept of duty of care has been around for quite a while. The elements of that duty dictate that mining companies provide:

- A safe working place
- Safe methods of work
- Tools, plant etc that are fit for purpose and safe to use
- Appropriate training for the tasks to be undertaken
- Adequate supervision to ensure the work is carried out safely

In my experience, mining companies cannot satisfy their duty of care to their employees unless they have an appropriate safety management plan in place and it is rigorously applied.

Principal's safety management plan

Most of the effective safety management plans that I have seen recently include all or most of the following components:

- Safety policy
- Induction
- Training
- Inspections and audits of:
  - Safety systems
  - Workplaces
  - Procedures and work methods
  - Equipment
  - Ladders and lifting equipment
- Registers of lifting equipment
- Emergency procedures and preparedness
- PPE
- Hazardous substances
- Reporting of:
  - Accidents and incidents
  - Hazards
- Meetings
- OH&S committee
- Rehabilitation
- Drugs & alcohol
- Disciplinary action
- Record keeping
- Permits and isolation procedures
- Risk management including:
  - Hazard analysis
  - Major hazard studies
  - Job safety analysis (JSA)
- Standard work procedures

The safety management plan, while referencing rules, procedures, standards etc, should not contain these other stand alone documents. Otherwise the safety management plan will become cumbersome and boring to read. In other words, it will not be an effective document that grabs the reader's attention. This was a significant problem in the past when safety management plans were little more than collections of safety rules and procedures that no one ever read.

In addition to a management plan that addresses all of these issues, sufficient resources are required to put it into practice. By this, I mean adequate numbers of people who are trained in the various aspects listed above, including training, auditing, job safety analysis etc.

Contractor's safety management plan

Until quite recently, only major contractors had developed safety management plans along the lines described above. Even then, up until only two or three years ago, many of these management plans were little more than collections of rules and safe working practices. I am now seeing safety management plans from contractors that take a systematic risk based approach to managing safety. In the last year, I have become aware of at least one smaller contractor who is developing a comprehensive safety management plan.

PREPARING THE CONTRACT DOCUMENT

Effective contractor management starts with an effective contract document.

An effective contract document establishes the ground rules for the project. When eventually signed off by both the parties, it will represent the agreement between the mining company and the contractor with regard to:

- What will be built
- How it will be built
- The standard it will be built to

- What each party is responsible for
- The rules each party will work to

Some of the literature on this subject is still rooted in the "master - servant" approach to the principal - contractor relationship. In this literature, one will read about *"Ensuring power to impose appropriate safety standards"* One often notices this approach in comments and advice from lawyers on managing contractors. The adversarial relationships that flow from principals preoccupied with their "power" run counter to effective management of contractor safety. Principals don't have to be dictatorial to get a contractor to do what they want. They do have to produce a contract document that is clear, simple, easily understood and that explains to the contractor what is required. Contractors will deliver whatever the principal requires provided they:

- Are a professional contractor to start with
- Know what the principal wants and have priced the work accordingly

In saying this, it is still very important that principals proactively manage safety once the contract is underway. This is discussed in detail later in the paper.

The two best documents that I have seen on the subject, and that I highly recommend to anyone charged with managing contractor safety, are the NSW Minerals Council Guidelines: Contractor OHS management for NSW Mines (NSW Guidelines) and the Guide to Contractor Occupational Health and Safety Management for Western Australian Mines distributed by the Chamber of Minerals and Energy of WA (WA Guidelines). Both of these references cover all the items that should be included in contract documents to facilitate effective management of contractor safety.

Structuring the document

I cannot state strongly enough the importance of structuring the contract document in a simple easy to follow format. So many of the contracts that I have had to work with over the years have been difficult to use. If principals want contractors' staff to know the requirements of the job, then they need to make it easy for people to find things in their contract. This is done by:

- Numbering all pages
- Complete tables of contents
- Including an index
- Saying things once and in the right place in the document
- Using plain English
- Avoiding ambiguity, conflicts and contradictions
- Providing the following structure
  - Formal agreement
  - General conditions of contract
  - Special conditions of contract
  - Scope
  - Specification
  - Drawings
  - Special reports

When discussing safety in contracts, it is tempting to focus only on what goes into the special conditions of contract. While the specific safety items are located here, there are many other aspects of the job that will have a bearing on safety. High standards of safety are inextricably bound up in an overall professional approach to the work. A well-structured document is an important first step in laying the foundation for a professional job.

One point from the list above that has been a real problem with some of the contracts that I have had to administer is that of ambiguities, conflicts and contradictions. Safety requirements must be spelt out in plain English, without repetition, in the special conditions of contract. More than a few principals succumb to the temptation to repeat the safety requirements in the specifications as well. Not only are the requirements repeated, the wording will be changed just enough to generate all manner of ambiguity and contradiction into the document. This makes it very difficult at times for the people trying to work under that contract.

What to put in the document

A tender document that is well laid out, clear and easy to understand and that addresses all the important issues will achieve the following outcomes:

- The obligations of each party under the contract are clearly understood by all concerned
- Consistent bids that can be fairly compared will be received from tenderers
- The low bidder who has saved money by shaving corners on resources or what is to be supplied will be excluded

The important issues to be addressed in the tender document and subsequent contract are discussed below.

Conditions of contract

The general conditions of contract are usually based on one of the Australian Standards. Most construction and mine development contracts use the AS 2124 or the new AS 4000 series standards. These general conditions define the general legal and commercial conditions of the contracts. They require support from site specific special conditions of contract.

The special conditions will spell out clearly what the principal requires in terms of safety management. Generally they will stipulate provision of all the items mentioned in the section on safety management plans. In addition to addressing all the items in the safety management plan, the special conditions must stipulate that all the following are in place prior to:

1. **The contractor arriving on site:**
   - The contractor's safety management plan has been approved
   - All of the systems, forms, spreadsheets, databases, procedures etc are approved and in place

2. **The contractor commencing activities as prescribed in the special conditions:**
   - A full risk analysis is done and/or
   - Job Safety Analyses are done
   - Safe work procedures are prepared

Assuming that the principal does have a thorough safety management plan in place, there are two options available to principals, depending on the size and nature of the contract. If the contract is for a new mine development project, then the safety aspects of the work may be managed under the contractor's safety management plan. On the other hand, if the contract is for work on an existing mine site, then the contractor would work under the principal's existing safety management plan. There are too many difficulties in working with two different safety management systems on one mine site.

Specifications

The specifications define the standards applying to the work. If the specifications are deficient, there is a chance that the results may match. Some of the most important standards to be addressed in typical underground mine development contracts include:

- Dimensional tolerances on excavations
- Dilution limits in coal development
- Ventilation
- Ground support
- Dewatering
- Roadway pavements

As a general rule, the specifications must ensure that not only is the finished product fit for purpose, it also must enhance the safe operation of the mine site.

CONTRACTOR PRE SELECTION

The single most important step that any principal will take is to select the right contractor. By this, I mean a contractor who can execute the work:

- To the standard required
- In a safe manner
- Without accidents or incidents
- On time and within budget

Some principals invite far too many contractors to bid their work. I personally have been involved in one tender evaluation where 12 contractors had bid the job. I am aware of another major contract that was recently let where 13 contractors were invited to bid. In these cases, the tender evaluators will quickly reject most of the bids and zero in on the three or four contractors who were in favour to start with. This is not fair to the other contractors because of the considerable costs involved in tendering.

Many tender documents call for copies of the contractors' safety and training schemes, work procedures etc. The results of this are vast volumes of material submitted in tenders that is hardly ever read and that often bears little resemblance to what actually happens on the project site after the job has been awarded.

The fairest approach, in my opinion, is to pre-select the contractors to be invited to tender. By all means, seek expressions of interest from any number of contractors who are interested in bidding for the work to be contracted. Evaluate the contractors against a range of criteria and then invite five of them to tender the work. This approach saves the principal having to wade through a mountain of sometimes dubious information when evaluating the tenders since the tenderers will have already demonstrated their capability on their current projects during the pre qualification process.

Selection criteria

A whole range of criteria will be considered when evaluating contractors. Even though we are only concerned with safety issues in this paper, the reality is that many factors will govern a contractor's ability to achieve high standards of safety on a project. Contractors should have a demonstrated track record of bringing the following to projects they undertake:

- Competent and adequate numbers of people at all levels
- Adequate numbers of well maintained plant and equipment
- Professional management systems appropriate to the work

Contractors should also be able to demonstrate a track record on their past projects of:

- Resolving differences with their clients in a professional manner
- Delivering high standard work on time and budget
- Achieving high standards of safety performance

Assessing contractors

When assessing contractors, there is no substitute for visiting their current sites, inspecting their work and talking to their clients and own people in the field. Prior to visiting sites, all of the potential contractors' current clients and those for the past five years should be called for comment on the contractors under consideration. In all of this, principals must exercise caution when interpreting viewpoints on jobs where projects have run off the rails and ended in acrimonious conflict. The contractor is inevitably blamed for all the problems by their aggrieved clients, however the actual responsibility for the problems usually lies as much with the client as with the contractor involved.

The appendices in both the NSW and WA Guidelines offer detailed advice on what to look for in contractor safety management. Using audit forms based on these guidelines, principals should audit at least two current projects for each contractor being evaluated for inclusion on the bid list.

NEGOTIATING THE CONTRACT AGREEMENT

The negotiation phase is the strongest position that the principal will ever be in when dealing with the contractor. The principal is holding all the goodies and the bidding contractors want them. Assuming that the principal has clearly set out all the requirements for safety systems and management in the tender document, the negotiation phase is where the safety requirements are nailed down and committed to.

Aims of the negotiation

The traditional aim of contract negotiations from the principal's side has always been to beat the contractors down to the lowest possible price. If principals want to achieve high standards of safety on their projects and mine sites, then I would advocate a slightly different approach. More often than not, the low bidder is the contractor who has left something out of their bid and will subsequently struggle to make money once on the job. At the other end of the spectrum, the high bidder will usually either not want the job anyway, but has put a bid in to keep faith with the principal concerned, or like the low bidder, has made a mistake in pricing the work. In my view, the aim of the negotiation phase should be to select the contractor who can deliver the highest quality result for a fair price. More often than not, this will not be the lowest price. A fair price is one that provides:

- Around 15 per cent gross margin
- Reasonable contingency for the things that are likely to go wrong on the job
- Adequate resources of people, plant and materials to do the work safely

In addition to selecting the best contractor with a fair price, there are several other aims that principals should aim for in contract negotiations. These are discussed below.

Understanding the contractor's bid

Most contract management literature seems to talk about how contractors have to understand the principal's business. While this is important, it is just as important that principals understand their contractor's business and particularly how the contractor has priced the work. This will be very helpful during the project if latent conditions problems arise. It is also helpful to ensure that the contractor has priced all the resources needed to meet the safety requirements under the contract.

During the tender evaluation, one often finds it difficult to see from the tenders whether or not the contractor has allowed for everything the principal wants. During tender evaluations, I have often sent

back 10 to 20 pages of questions to tenderers in order to clarify their bids. Some principals take the view that this is unnecessary and that this is all the contractor's problem. Strictly speaking it is. However, if principals want to establish a project based on open communication and trust, then I strongly recommend spending as much time as is needed during the contract negotiations to ensure that the contractor understands exactly what the principal wants and that the contractor has priced these requirements into the rates.

IMPLEMENTING THE AGREEMENT

What the principal has to do

Starting a project is like making a first impression. You only get one chance. So it is very important that the principal has the systems and resources in place to vigorously monitor and audit the contractor's compliance with their own safety management plan, particularly during mobilisation and establishment. This applies to issues such as equipment standards, induction, training and certification of operators. Most specifications stipulate that contractors' installations will comply with current Australian Standards in the absence of particular specifications. Therefore, principals need to have identified all the Australian Standards relevant to the work under the contract and have ready access to them. The best way of doing this now is to obtain the Australian Standards on CD. Not only does this CD have all the standards, it is updated several times a year.

What the contractor needs to do

The issues raised above apply equally to the contractors. Many of the main contractors now have QA management systems in place. It is essential that those QA systems address all of the issues raised above and that the contractor has the systems in place prior to mobilising to site.

One area where I have seen problems is in training and certification. The contract must be explicit, and everyone on site must understand that anyone operating equipment without appropriate authorisations will be instantly dismissed. The risks are enormous under duty of care to the mine manager if this is not enforced and an untrained or unauthorised person is involved in a serious accident.

ONGOING MANAGEMENT OF CONTRACTOR SAFETY

Ongoing management of safety is easy to specify but takes an enormous amount of work to put into practice. In particular, the principal and contractor together must vigorously implement and enforce the safety management plan. This involves:

- Systematic workplace auditing every week
- Systematic auditing of induction and training schemes and operator certification
- Involving the crews in preparing JSA studies
- Senior management getting out in the workplace every day demonstrating and talking, if not preaching. safety to the troops
- All management people enforcing the safety requirements on the job
- Involving all sub contractors in weekly toolbox meetings and dedicated safety meetings
- Maintaining equipment to high standards to minimise fire or runaway risks

The principal must anticipate what resources are required prior to awarding the contract to ensure that the above requirements are met. Then the principal must ensure that the resources are applied to the job.

CONCLUSIONS

1. The mining industry is getting very good at injury management and prevention as reflected in the steadily reducing LTIFR
2. The mining industry is not reducing the major risks associated with underground mining as reflected in the continuing unacceptable fatality rates
3. Safety management systems have been developed that do reduce the risks in mining
4. Effective management of contractor safety depends on:
   - 4.1 Structuring an easy to read contract document
   - 4.2 Ensuring that all the necessary requirements are included in the document
   - 4.3 Ensuring the contractor understands what the principal wants
   - 4.4 Selecting a contractor who has priced the work sensibly and has allowed for everything the principal requires
   - 4.5 Ensuring that all the necessary systems are in place prior to starting work on site
   - 4.6 Ensuring that all the necessary resources are in place prior to starting work
5. At the end of the day, principals get what they are prepared to pay for.

ACKNOWLEDGMENTS

I have quoted in a number of places throughout the text from the NSW Minerals Council Guidelines: Contractor OHS management for NSW Mines. I would like to acknowledge these guidelines as the best reference material that I have seen on the subject of managing contractor safety and would highly recommend them to any person planning to bring contractors onto their mine site.

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