

# Industrial Cost Auditing at ESA

## D. Greves

Cost Analysis Division, ESA Directorate of Industrial Matters and Technology Programmes, ESTEC, Noordwijk, The Netherlands

### What is auditing?

In a wider context, the term auditing is used for a number of different activities, which can be quite different in nature, namely:

- financial statement audits
- operational/management audits
- compliance audits.

Most companies and associations in most countries are required to have their financial statements audited by independent auditors. The auditors will issue a formal statement that the accounts presented are (or are not, as the case may be) in compliance with generally accepted accounting standards, and that they

Compliance audits are for the purpose of determining whether an organisation is properly following specific rules, procedures or regulations laid down.

### The ESA Audit Commission and Internal Audit

In the ESA context, there is the Audit Commission and the Internal Audit Section, as well as the industrial cost-auditing activity. The Audit Commission is appointed by the ESA Council and the Internal Audit Section is responsible to the Director General. The main responsibility of the Audit Commission is auditing the Agency's financial statements and verifying the adequacy of internal controls, including the internal audit. Both the Audit Commission and the Internal Audit Section are concerned with operational and compliance audits, looking at individual aspects of the way ESA conducts its business, reporting on findings and making recommendations for improvements.

---

**The industrial cost audit function is of vital importance for an organisation like ESA, which dispenses of the order of 88% of its annual budget in placing contracts with space-sector contractors. As an intergovernmental organisation spending tax-payers' money, ESA has an obligation to ensure that it has an effective procurement process and to obtain value for money, and the audit activity is an essential part of this process. By obtaining value for money, ESA not only obtains a proper return for its Member States' investments, but also ensures that the maximum can be achieved in terms of the challenging missions that the Agency undertakes.**

---

### Industrial cost auditing

The Industrial Cost Auditing Section is part of Cost Analysis Division, which is now in the recently formed Industrial Policy and Cost Analysis Department, after previously being in the Contracts Department for many years. There are many synergies to be exploited between the industrial-policy and cost-analysis functions and Cost Analysis retains close working relations with the Contracts Services, both being in the Industrial Matters and Technology Directorate. The other main activity of Cost Analysis Division is cost engineering, which is not considered here.

represent (or do not represent) a fair and true view of the situation. In view of recent events in the commercial world, and the unexpected failure of a major US corporation, the performance of auditors in this capacity has been called into the question, in particular because of possible conflicts of interest and the extent to which auditors whose firms also provide consultancy services to the same companies can be said to be able to offer a truly independent audit service to those companies.

Operational/management audits involve an investigation of the operating procedures and processes of an organisation in order to assess their efficiency and effectiveness. This will result in a report of the findings and recommendations to the management for improving the operations.

The industrial cost audit activity differs from that of the Audit Commission and of the Internal Audit Section in that it is totally in support of the procurement function and as such is focused completely on the operations of ESA contractors and their costs. The main tasks of the industrial cost auditors are therefore as follows:

- Verification of contractor cost accounting systems in order to ascertain compliance with generally accepted accounting principles and with the ESA General Clauses and Conditions. Also, where applicable, to establish adequacy of the accounting system for cost-reimbursement contracts.
- Audit of direct expenditure on cost-reimbursement contracts.
- Audit of direct expenditure and verification of sources of company contributions on co-funded contracts.
- Ascertaining the financial viability of contractors (on an ad-hoc basis).
- Special audit and cost-analysis exercises (on an ad-hoc basis).
- Verification/negotiation of industrial hourly labour rates and overheads, other overheads, and unit rates, such as facility charges. This task involves liaison with national authorities, where applicable.
- Where audits are not conducted by ESA or audit results are not available from national authorities, making judgements on request regarding the acceptability of quoted rates and overheads based on an expert-judgement approach.
- Agreement of price variation formulae for contract elements on a 'fixed price with variation basis.
- Advice on the conversion of fixed prices to firm fixed prices.
- General advisory service on financial matters in contracts, e.g. currency-related matters, finance and payment schemes, company cost-allocation structures, business plans, etc.
- Participation in evaluations.
- Inputs to negotiations.

The first five of these tasks are of the traditional auditing kind involving verification and assessment, whereas the remainder are associated with establishing prices, which is rather more of a commercial-type activity.

### Verification of accounting systems

The first task of an auditing nature, the verification of the contractors' accounting system, is akin to the type of quality audit



carried out by our ESA Product Assurance Department colleagues when they check that an adequate system is in place to ensure that certain processes will be carried out properly on a consistent basis. Any such system should have adequate controls and safeguards, and this is certainly true of accounting systems.

### Audits of cost-reimbursement contracts

For cost-reimbursement contracts, audits are performed at the end of the contract, or in the case of major contracts on an annual basis. The audit is usually carried out by a team comprised of the industrial cost auditor and project representatives, usually a project controller. The involvement of project personnel is usually regarded as being essential as they are familiar with the work that has been performed under the contract. However, the formal audit does not in any way obviate the need for active cost control during the contract on the basis of regular cost reports submitted by the contractor. This can be expected to give rise to queries, which should be investigated at the time to obtain satisfactory explanations from the contractor or, in some cases, to permit remedial action to be taken in good time. In such cases, if queries are not pursued, it will normally be too late to do anything if it is left until the time of the audit to raise the matter with the contractor. Nevertheless, some project related queries have to be dealt with at the time of the audit because it may not be possible to make a meaningful assessment until the total costs for a particular aspect are known, and because information available at the time of the audit, although only a sample of the total cost, is usually much more detailed and accompanied by full supporting vouchers and accounting source documents.

Audit findings vary significantly from contractor to contractor, and even sometimes from project

to project within a particular contractor. This will depend on the quality of the company accounting system and the rigor with which it is applied and also, to some extent, on the particular accountants and project personnel involved.

Typical irregularities identified during audits are the following:

- Charging direct to contract items that are included in the overheads.
- Charging capital items to contract.
- Charging the cost of fixed-price activities to a cost-reimbursement area.
- Wrong bookings, in terms of charging to the wrong work package or contract.
- Charging proposal costs direct to the contract.
- Charging other un-allowable expenditure as per the General Clauses and Conditions.
- Charging other un-allowable expenditure as per the contract.
- Lack of agreement on special arrangements, e.g. for staff working away from the home base.
- Unsubstantiated travel costs.
- Travel costs exceeding limits in the company regulations or in the contract.
- Unsubstantiated purchases.
- Partly allowable costs being charged in full to contract.
- Expenditure incurred outside the period of authorization.
- Incorrect application of overheads.

In order to ensure, as far as possible, that cost claims are valid, and to help improve the efficiency of the audit process, the Agency requires that before establishing the final claim contractors carry out an internal audit and that the Financial Director or his authorised representative makes the following certified declaration:

*“I ..... , do hereby certify that the costs presented on the above statement are, to the best of my knowledge and belief, a true statement of the costs incurred, an internal review of the costs having been conducted to verify that the company’s accounting system and rules and the Agency’s requirements in Annex 1 to the General Clauses and Conditions, ESA/C/290, rev. 5, have been observed.”*

#### **Co-funded contracts**

A variation of a cost-reimbursement contract is the co-funded contract. In standard ESA procurements the Agency pays for 100% of actual allowable cost within the financial limit of liability on a cost-reimbursement contract, and also 100% of the agreed estimated cost on a fixed price contract. In a co-funded contract, the Agency pays for only part of the total cost,



this typically being 50% but with higher percentages sometimes for Small and Medium-sized Enterprises (SMEs) and for academic institutions. These percentages are specified in the programme Implementing Rules. Above a certain financial threshold, most of the co-funded contracts are awarded on the basis of a ceiling price to be converted to a firm fixed-price basis on completion of the work and acceptance by the Agency of the final costs. The Agency is entitled to have full visibility of costs incurred and to conduct audits, as in the case of the traditional cost-reimbursement contract.

An audit of a co-funded contract has the same objective to verify that costs have been incurred as claimed and that they are allowable. In addition, the contractor is required to make a certification with respect to the contractors’ own contribution to confirm that it has not been provided by another public body, in which case it would be considered to be a ‘State Aid’, and also that it will not be recharged to the Agency through being included in the overheads.

#### **Contractor financial viability**

The question of ascertaining contractors’ financial viability is a difficult one. With well over one thousand contractors with whom it regularly places contracts, it is not possible for ESA to do this systematically. This is partly because the Agency does not have the resources to do so, but it would anyway not be cost-effective as it is a relatively small minority of companies who get into financial difficulties, and any assessment can only represent a snap-shot of the situation at that time whereas circumstances can change rapidly. It is true that there may be indications of financial instability of a more permanent nature such as under-capitalisation, but more often the problems are a consequence of specific events.

The main means for identifying financial problems are from:

- the visibility provided by performing verification of rates and overheads or audits of cost-

- reimbursement contracts and consideration of certain financial ratios
- credit-rating agencies
- notification of problems by the companies themselves or by third parties
- reports in the financial press.

The fact is that it is inevitable that, from time to time, problems of this nature of which there has been no prior warning will occur. In such cases, Cost Analysis Division investigates the situation and works in close collaboration with the contracts services to assess what the implications are and to see what action has to be taken. It is important in this process to maintain strict confidentiality and to only involve those who would be impacted by a financial failure. Unsubstantiated rumours in this respect can be very damaging and a loss of confidence concerning the financial viability of a company can lead to actions which become self-fulfilling prophecies.

#### **The concept of ‘fair and reasonable prices’**

Apart from specific audits undertaken on an ad-hoc basis, most of the remaining tasks undertaken relate in some way to pricing and are of a more commercial nature, as opposed to classical auditing activities. However, an important aspect of the way in which industrial cost auditors perform their duties is that they are seeking to establish fair and reasonable prices, which does not necessarily mean the cheapest price.

The ESA pricing approach is based on the concept of full recovery of ‘reasonable costs’, defined in the General Clauses and Conditions as being ‘those costs which would be accepted by a prudent person in the conduct of competitive business’. This means that cost claims have to be compatible with certain minimum requirements such as acceptable levels of productivity and of facility utilisation. Thus costs that have been incurred and which are normally regarded as being allowable may nevertheless be regarded as resulting from inefficiency, which is not acceptable and which has to be corrected. Such aspects, together with estimated or budgeted cost elements, are negotiable and can represent a significant cost in the context of the company’s business with the Agency. Even with companies familiar with the Agency’s policies and approach, this process can result in significant reductions in the amounts proposed, but with contractors new to this sort of scrutiny the reductions can even be spectacular. In a few cases, contractors, particularly small companies, sometimes unwittingly submit rate proposals that would significantly under-recover costs and which are therefore unsustainably low. In such cases,

there can be agreement of unexpected rate increases which are, perhaps not surprisingly, criticised by the uninformed.

However, apart from any industrial-policy considerations with respect to ESA’s obligation under its Convention to support the development of industry, the policy of agreement of fair and reasonable prices would certainly have been endorsed by the English writer John Ruskin (1819-1900), who wrote:

*“It’s unwise to pay too much, but it’s worse to pay too little. When you pay too much, you lose a little money, that is all. When you pay too little, you sometimes lose everything, because the thing you bought was incapable of doing the thing it was bought to do. The common law of business balance prohibits paying a little and getting a lot - it can’t be done. If you deal with the lowest bidder, it is well to add something for the risk you run, and if you do that you will have enough to pay for something better.”*

#### **Agreement of rates and overheads**

The verification of rates and overheads and other unit charges is, in financial terms, the most important task of the auditors, but the nature, importance and complexity of the task is often not fully understood or appreciated. The rates and overheads are the basic building blocks of the price. For major companies there are enormous numbers of hours involved, and relatively small variations in the rates or apparently minor changes in the allocation of costs to specific cost centres can have a significant impact on the overall costs. The complexity of the rate structures can vary considerably, with some major companies having well in excess of 60 cost centres. In some cases, final rates are agreed taking account actual costs in the past and a budget prediction for the future. Alternatively, they may be agreed on a provisional basis, based on



budget predictions and then on a final basis retroactively once actual costs and utilization are known. There are also cases where rates for a particular year are determined by extrapolating previously approved rates, but this approach will usually only be valid for a short time and provided there are no changes in the company's accounting structure.

The process of establishing rates and overheads is an active control function rather than simply being an arithmetic or 'bean-counting' exercise. There are judgments to be made and key points to be negotiated, particularly with respect to allowability of costs, utilisation/productivity levels, inter-company charges and extraordinary charges and allocation of shared costs. At this juncture it should be pointed out that many people are not aware of the fact that as far as 'rules' are concerned, cost accounting permits great flexibility of approach. Whilst there are international accounting standards and



generally accepted accounting principles that must be adhered to, there are many options which may be adopted with respect to different accounting issues. Even in France where the 'Guide Comptable', imposed a large measure of standardisation with respect to the accounting structures for French aerospace companies, this approach has now been abandoned in recognition of growing internationalism and the need for greater flexibility with cross-border mergers. The ESA General Clauses and Conditions, which have to be applied to companies in the fifteen Member States, whilst being very specific about certain aspects such as the exclusion from the overheads of imputed interest and limitations with respect to R&D expenditure, only contain three pages defining allowable cost, partly allowable cost and non-allowable cost. Within certain boundaries, there is therefore considerable scope for interpretation of specific provisions and their application.

In the negotiation of rates and overheads, contractors are often represented at a senior level, typically by Financial and Commercial Directors, reflecting their awareness of the importance of these aspects to pricing. Furthermore, it has been observed that with the increasing pressures of having to demonstrate increased 'shareholder value', the process of reaching agreement is becoming more intense and difficult. As a consequence mainly of resource limitations, the Industrial Cost Auditor is usually the sole ESA representative in the discussions being faced with challenging situations and often considerable pressure. It is unusual that individuals are placed in a position where they are regularly expected to address such important matters with industry at senior management level on their own rather than as part of a team. With the emergence of the large international companies and the increased complexity, it will be the policy to send two auditors for major rate verifications. However, this will inevitably mean that the general coverage will be reduced and more companies will remain uncontrolled in terms of active control, in the absence of other measures being taken.

#### **Agreement of firm fixed prices and price-variation provisions**

It is the Agency's policy to agree firm fixed prices where appropriate. However, sometimes it is necessary to place contracts on a cost reimbursement basis and where fixed prices are agreed for activities for more than say a three year period, such prices are often with 'variation of price' provisions. This means expressing the fixed price at specific economic conditions and defining a mechanism, usually a formula, to subsequently adjust the price according to prevailing economic trends. The formula contains a fixed element, typically 10-15%, not subject to change, a labour element, typically 65-70%, and a non-labour element of say 20%. The non-labour element varies according to an appropriate materials index, and the labour element traditionally to a labour earnings index. The formula is usually applied to a milestone payments plan taking the arithmetic mean of the index value at the nominal (contractual) milestone date and that of the previous milestone. No matter how delayed achievement of the milestone may be, the index value considered is always that at the nominal, or in other words, contractual date.

As many major programmes are of long duration, fixed prices with variation have often been agreed. However, the traditional approach, and in particular the indices applied in the formulae, is now being questioned and a review is being undertaken to assess whether this approach still leads to fair results.

### General financial advisory service

Industrial cost auditors are frequently consulted by contracts officers and project personnel to give an opinion on a variety of matters with financial implications. Such advice is given on the basis of experience, general knowledge of financial matters, and knowledge of companies and circumstances in particular countries. In support of this type of advisory activity, in addition to making reference to its own databases and analysis, the Division is also taking steps to increase its access to external databases providing both economic and company information.

### The auditing of SMEs

Economic considerations necessitate the Agency giving priority to auditing the larger companies with whom a high value of contracts is placed, and it is simply not possible to audit many of the hundreds of SMEs who also receive contracts. Sometimes coverage of such companies is achieved by auditing them less frequently, at intervals of say two or three years. Most people consider audits in terms of the financial results, but there is another aspect to the auditor's role with respect to SMEs. In the ESA situation, auditors have an almost unique insight into the way in which a large number of companies are organised and conduct their business. In this respect they have a good appreciation of 'best practice' with regard to matters with cost and financial implications and knowledge of accounting systems and software packages.

In addition to their official duties, they are also sometimes able to suggest to companies approaches that would reduce costs and increase efficiency, as well as being able to comment constructively on accounting aspects and accounting systems. Such advice can be of particular benefit to SMEs, many of which have meagre resources for support functions, which can lead to problems or inefficiencies. Sometimes SMEs actively seek advice, particularly when reaching stages in the company's evolution where significant administrative and organisational changes have to be considered. Furthermore, many start-up companies or other companies wishing to enter the space market seek advice from industrial cost auditors on a wide range of financial aspects.

### Confidentiality

The question of the confidentiality of information provided by companies is of paramount importance. In the case of verifications of rates and overheads and cost-reimbursement audits, it is possible to do some preparatory work at ESTEC based on inputs received from

the contractor. For the most part, however, it is necessary to verify the facts in-situ at the contractor's premises, with direct access to the accounting system and to highly sensitive financial information that has important commercial implications as far as the company is concerned. Understandably, contractors require auditors to maintain strict confidentiality with respect to such information and it is vital that their trust is fully respected.

### Trends or issues with implications for auditing activities

There are a number of changes taking place which represent challenges to the industrial cost auditor. There are some new companies entering the space domain, but also some leaving. There has also been the closure of one major site as a consequence of a rationalisation process. Such closures raise particular accounting issues, and these situations can be expected to occur more frequently in future. The consolidation of European space industry and the emergence of large, multi-national groups is giving rise to additional complexity and change.



Companies are also changing their cost-accounting and cost-allocation structures more frequently due to modernisation initiatives and the wish to have a more precise cost allocation than hitherto. Mergers and the resulting need to have a unified approach to accounting structures and of accounting software is also playing a role. The need for companies to achieve increased 'shareholder value' also results in greater difficulty in reaching agreement on rates and overheads. There is an increase too in the number of companies showing very low profitability or even making losses, which also has an influence on attitudes. Co-funding arrangements, which are gaining in popularity, involve significant additional work.

However, there are other developments that are, at least in principle, making life simpler. They include an increase in the number of fixed-price contracts placed and a corres-

ponding reduction in the number of classical cost-reimbursement contracts. There is also a general reduction in currency-exchange risks as a result of introduction of the Euro (but due to the weakness of the Euro, increased risk with some other currencies outside of the Euro zone). The generally lower levels of inflation have encouraged more firm fixed-price agreements, although some countries within the Euro zone still have relatively high rates of inflation. The improvements in data transmission are leading to more companies submitting accounting data electronically in spreadsheet form. In the case of smaller companies in particular, this is facilitating the process of agreeing rates remotely, without conducting a physical audit. This trend is likely to continue and will permit an extension of audit coverage.

### Training and cost awareness

Part of the remit of Cost Analysis Division is to promote cost awareness and expertise in cost-related aspects of the procurement process. For many years, the Division has organised an internal training course entitled 'Cost and Financial Aspects of ESA Contracts'. It focuses on the ESA environment and is given by members of the Division and experienced colleagues from other Directorates. It was found necessary to develop this course because of the lack of a suitable alternative, most courses available externally being either too general or too specific. The course has attracted a lot of interest and sessions held at ESTEC have typically involved around forty-five participants. An abbreviated version of the course has also been given several times at ESRIN.



In addition, the Division has organised, from time to time, courses on accounting topics, delivered in ESTEC under the banner of the Chartered Institute of Management Accountants (CIMA) in the UK. These have primarily been for the benefit of the Division, but with the invited participation of colleagues from finance and project control.

### Conclusion

Industrial cost auditing is not, in any way, regarded as being a glamorous activity, but it is a challenging and vital function for a professional procurement agency such as ESA. The irony is that the greater recognition and respect for the function is in industry, which fully appreciates the financial significance of agreements made in this respect. The scope of activities is also quite wide, ranging from classical audit exercises to activities of a more commercial nature. There are important principles to be observed, in particular the concepts of fairness and confidentiality, which underpin all activities. It is underlined that whilst there are significant cost savings resulting from audit activities, this is not the goal, the real objective being to agree 'fair and reasonable' prices.

The general perception is that in the space sector, ethical standards are high. This is something we should be grateful for, but human nature being what it is, we should remain aware of the temptations to depart from high standards for the purpose of short-term gain, and the deterrent factor in the role of the industrial cost auditor (as well as of other staff members) should not be underestimated.

As in other domains, the audit function is very much affected both by changes in the industrial environment, giving rise to new challenges, and by advances in the software support tools now available, which offer new possibilities for improving the efficiency of operations. These improvements, together with a small but significant increase in audit resources that has recently been approved in the Agency, can be expected to increase the effectiveness of ESA's audit activities and consequently the cost effectiveness of its programmes, thereby increasing the value for money for the Member States.