

EMPLOYERS' LIABILITY INSURANCE

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Section 1: Introduction

1.1 Terms of Reference

Our terms of reference were to provide 'A Background to the Subject of Employers' Liability Insurance'. The paper presented at last year's GISG by Nicholas Michaelides' Working Party on Liability Insurance gave an excellent introduction to the general principles of Liability Insurance - and this report attempts to cover the area of Employers' Liability (EL) insurance in some depth.

1.2 Purpose

It is hoped that the paper will be of educational benefit both to actuaries working in General Insurance and to students of the Institute's examinations. It collects the important aspects of EL insurance into a single document and should prove to be a valuable source of reference. The paper also highlights areas in which the actuary's skills may be applied and it is hoped that this paper will promote a wider use of actuarial techniques in EL business.

1.3 Structure of the Paper

Section 2 explains the basis of EL insurance. Section 3 deals with Exposure and highlights its importance for both rating and reserving. Section 4 considers the Claims aspects - it details the different types of claims, how these can be valued, some useful claims statistics and the reserving issues. Section 5 moves on to the Pricing arena, both at individual risk level and at the overall account level. The critical area of Management Information is outlined in Section 6. Section 7 looks at Reinsurance and the next section outlines the fundamental differences between the UK and some other countries. The paper concludes with a summary of some of the areas in which actuaries may be able to add value in the area of EL.

Section 2: Cover and Legal Aspects

2.1 Cover

The purpose of EL insurance is to protect employers against claims for damages brought by employees. An employer may incur legal liability to an employee who sustains bodily injury or illness which arises out of and in the course of his or her employment.

The Employers' Liability (Compulsory Insurance) Act 1969 makes it compulsory for most employers carrying on business in Great Britain to have EL insurance. Such insurance has to be provided under an approved policy (ie one not subject to any conditions or exceptions prohibited by the Act) with an authorised insurer. The minimum amount for which an employer is required by the Act to insure is £2 million. In practice, insurers provide indemnity unlimited in amount.

The injury or disease has to be caused during the period of insurance. There are no policy exceptions but trade endorsements, in line with normal underwriting principles, can be applied. For example, a policy issued to a building contractor might exclude demolition work.

Automatic extensions to the policy cover are normally provided in the following instances:

- Compensation for court attendance

This provides a payment for each day that a director or employee may be required to attend court as a witness in connection with a claim under the policy.

- Unsatisfied Court Judgements

This provides an indemnity where an employee of the Insured is injured by a third party who does not satisfy a judgement for damages.

Premiums are usually based on wages and these are generally estimated. At the end of the year of insurance, the exact wages are known and an adjustment of premium is then made. For smaller businesses, EL cover is sold as part of a package policy encompassing all the insurance needs of the business. For many large businesses, EL cover is sold together with Public and Products Liability and it is common to issue a single policy of three sections. Since EL cover is compulsory and is often purchased with other covers, there is

often cross-subsidy in the pricing of the various covers.

A sample EL policy is shown in Appendix I.

2.2 Basis of Liability

An employer may incur liability for injury to employees in the following ways:

- If he fails to meet his duties at common law:
 - to provide a safe system and place of work
 - to provide and maintain safe and suitable plant and equipment
 - to engage suitable and competent employees
- By his or her personal negligence
- Breach of statutory regulations. These include the Health and Safety at Work, etc Act 1974 (this Act laid down general standards and principles of safety management in workplaces of all kinds and also dealt with safety of the public in general), the Factories Act 1961, the Offices, Shops and Railway Premises Act 1963.
- Negligence of fellow employees.

Two examples of incidents which might lead to a claim are:

- a filing cabinet falling over and causing injury
- a fork lift truck hitting a factory worker in the chest.

2.3 Legal Remedy

If an employee wishes to seek compensation for injury sustained at work, he would normally consult his union, or solicitors, who would write to his employer for satisfaction. The employer would necessarily report all such claims to his insurer. If the employee is not satisfied with the response he would need to commence a civil action and issue a writ for damages in the Courts.

It is worth noting that even if many employees are likewise affected by a particular injury, it is not legally possible to take out a joint civil action, a 'class action' in US terminology. Each individual would need to seek his own legal remedy.

Under the current Statutes of Limitation (in force since 1963), the employee must issue a writ for damages within 3 years of knowledge.

The legal system is currently undergoing profound scrutiny and certain changes affecting the availability and affordability of legal advice are taking place:

- solicitors are free to advertise for business, and in practice pursue this opportunity quite actively.
- contingency fees, whereby the solicitor's fees are reduced and/or eliminated in return for a share in the award, are being seriously considered. This could eventually give rise to the American situation of 'ambulance chasers', namely solicitors who actively pursue victims of serious accidents and/or their relatives for the chance of a contingency fee of perhaps 20 to 30% on a multi-million dollar award.
- ALAS (Accident Legal Advice Service) was set up by the Law Society to provide initial interviews with a solicitor free of charge. This initiative may be expected to increase claim frequency, although currently a very small fraction (<1%) of total EL claims will actually be settled through the courts.

2.4 Market Data

The following table, based on 1988 DTI returns, gives a list of the major writers of EL business in the UK. It shows that the top three account for just under half of the market.

<u>1988 GWP for EL</u>	
	<u>£m</u>
Eagle Star	84.1
Iron Trades	58.4
Guardian Royal Exchange	50.1
Sun Alliance	29.6
General Accident	24.1
Zurich	20.9
Commercial Union	20.8
Municipal Mutual(E)	16.0
Norwich Union	14.6
Royal	13.9
Prudential	12.9
National Employers	12.0

	357.4
Rest(E)	50.0

Total	407.4

E (Estimated)

1988 premiums represented a 15% increase over 1987 and figures available elsewhere show a smaller increase in 1989.

This table does not include EL business written at Lloyd's. The largest volume of EL business by a Lloyd's syndicate that is separately identified is £11m for the 1986 Year of Account.

There is little readily available information on profitability. Published figures are generally only shown for the whole Liability class and Public and Products Liability business is usually significant for the above writers. Even when available, assessing underlying performance from the published underwriting results is very difficult since the results are heavily influenced by reserve strengthening. It is felt that 1989 rating levels for EL may turn out to be insufficient to produce an insurance profit (ie after the inclusion of investment return on technical funds).

Section 3: Exposure Measures

3.1 Introduction

This section introduces some exposure measures which may be used in the rating and reserving of EL insurance. The applications of these measures are considered further in the next two sections.

A number of the exposure measures can be usefully employed to analyse the emerging claims experience. Various ratios can be calculated and used to monitor the experience of different risk groups over time. In particular, trends in claim frequency and nil claims can provide early indications of changes in the underlying experience and mix of claims. In addition, exposure measures enable exposure based claims reserving techniques to be applied.

Data on wages, and in some instances the number of employees, are also used for premium rating and should be included in the analysis undertaken for any rate review.

It should be noted that, when actual wages become available at the year-end, the premiums can be adjusted and this can complicate the analyses.

- 3.2 Four of the measures which may be used are described briefly below:

Number of Policies

The number of policies is usually readily available. However, different size employers can distort ratios calculated using this measure. Care is required to ensure that ratios derived relate to groups of similar composition. This measure should normally only be used where wages, or the number of employees, are not available.

Number of Employees

The number of employees is not distorted in the same way by differences in size of employer. However, this measure is not often held in an easily manipulated form, if it is held at all. Also, since it is not used directly in day to day administration, audit checks

tend to be limited and therefore, the data can be unreliable. Much care in interpretation is required.

Wages

Wages will usually be stored by insurers for premium rating purposes, although they may not always be available for experience rated policies. Most insurers would regularly audit the wage data, given its importance to premium calculation, although the allocation by risk group may not always be subject to rigorous audit. It can be difficult to use wages for claim frequency comparisons over time and between risk groups, unless suitable salary scales are available. This exposure measure is best applied to average cost type calculations, particularly in regard to review of premium rates in use.

Written/Earned Premium

Premiums enable exposure based reserving methods to be used when considered together with a review of rating levels. These methods can be useful for the more recent accident periods. This is discussed further in Section 4.9.

Section 4: Claims

4.1 Constituent Elements

A litigant does not make a claim for a given amount (as, for example, in the USA) but seeks compensation for injuries sustained. The components of a claim can be broadly set out under the following headings (so called 'heads of damage'):

Economic (or pecuniary):

- loss of future earnings, and earning capacity
- loss of past earnings
- medical and other expenses, past and future.

Non-economic (or non-pecuniary):

- Pain and suffering

This includes the suffering attributable to the injury itself and to any consequential medical treatment and worry about the effects of the injury upon the plaintiff's way of life. It will include a nominal amount for 'expected loss of life' on the grounds that this causes added distress. If the plaintiff suffered no pain, e.g. because he remained unconscious, or was incapable of experiencing pain, then no damages will be awarded under this head. It may include an element for 'aggravated damages' if, in the opinion of the judge, the defendant has acted with bad motive or wilful conduct that increases the distress of the plaintiff. The intention behind aggravated damages is solely for the purpose of compensation.

- Loss of amenity

This is to compensate for any loss of enjoyment, for example if a footballer loses a leg. This applies even if the plaintiff remains unconscious.

- Exemplary (or punitive) damages

These are rarely given in the UK for personal injury actions. They are commonly sought in the USA for relatively large amounts compared to the UK. They are awarded to punish the defendant and deter him from similar behaviour in the future. They raise the problem that the award is trying to serve two conflicting requirements: compensation and punishment. They can have the effect of making the amount of the award less predictable.

Interest at 2% from the date of service of writ to the date of award is applied to the non-economic loss. This figure represents the real 'use value of money' (remember that awards are already given in current money, so this item is merely to reflect the deprivation of the use of that money). Future earnings are implicitly discounted at 4.5%, justified as the difference between interest rates and inflation. This rate seems rather high, particularly as no account is taken of tax. Special damage awards are increased by half the 'appropriate rate' (currently this is 15% pa) from the date of the accident to the date of the trial.

The actual awards are made under the three categories:

- general damages: assessed by the judge
- special damages: these amounts must be specifically claimed for in compensation for precisely known outgoings
- future losses: eg loss of earnings and other benefits of employment, future nursing costs, cost of special equipment, etc.

Special damages can only relate to economic loss, whereas general damages can relate to both economic and non-economic. Judges must now show how a total award breaks down into separate heads. In cases of large awards, the non-economic head may typically account for 50% of the overall award. The judgement will give the total level of the damages ('quantum') assuming 100% liability, together with any deduction to be made for contributory negligence.

4.2 Valuing (Multipliers)

The conversion of future lost earnings to a present value lump sum is normally done by multiplying together:

- multiplicand
The plaintiff's net annual loss (gross earnings less tax, national insurance and any other expenditure necessary to gain the income eg pension contributions).
- multiplier
This should make allowance for, inter alia, future mortality of the injured plaintiff, future rates of investment return, inflation and taxation and future rates of increase in the plaintiff's salary. In practice, allowance for such factors and others is

implicitly incorporated in the multiplier which gives a maximum value of 18, falling to about 15 or 16 at around ages 25 to 30. This is equivalent to an implicit discount rate of 4.5%

A recent press article on the controversy surrounding the valuation of these losses is given in Appendix III and further reference may be made to the paper 'The Actuary in Damage Cases - Expert Witness or Court Astrologer?' by R Owen and P S Shier, published in Vol 26 of JIASS (1986).

4.3 Injury Claim Example Showing Constituent Elements and Impact of Inflation on Delay in Settlement

This example gives an illustration of how calculations are done in practice and the method used does not follow actuarial theory wholly. A scaffolder, aged 28 at the date of accident, suffers a lower back injury. He is unable to resume scaffolding and is unqualified for sedentary employment.

Accident 12/85, writ served 12/86, medical prognosis final 12/87, Settlement 12/90.

Multiplier	15			
Wage Inflation (past and future)	9.0% pa			
Increase on General Damages	5.0% pa say			
Interest on General Damages	2.0% pa			
Interest on Special Damages	7.5% pa			
1985 Take Home Pay	8000			
		87	88	89
Notional Take Home Pay	9505	10360	11293	12309

<u>Claim</u>	Values as at December			
	87	88	89	90
General Damages	15000	15750	16538	17364
Interest on General Damages	300	630	992	1389
Special Damages	16720	26225	36586	47879
Interest on Special Damages	1854	3821	6565	10156
Financial Loss	142575	155407	169393	184639
Costs	5000	8000	12500	18000
	-----	-----	-----	-----
Total	181449	209833	242574	279427
% inc over prev yr		15.6	15.6	15.2
Cuml % inc		15.6	33.7	54.0

The effect of the delay in settlement is to increase the cost of the claims by 16% per annum and this is the level which needs to be allowed in setting estimates. Note that a similar claim occurring a year later will show an increase in line with the level of wage inflation.

4.4 Fatalities

These are covered under the 'Fatal Accidents Act 1976'. Basically this allows dependants to sue for the loss of the breadwinner. An action can be brought against the defendant only if the deceased could (but did not) sue by the time of his death. Thus no action is possible against a bus company if the deceased threw himself suicidally in the path of its bus. The dependants must show a financial loss in consequence of the death of the deceased. No deduction is made for any benefit that may accrue from the estate, nor is any deduction to be made for the possibility of a widow's remarrying. The award will be reduced by any contributory negligence of the deceased. Awards made under this Act may not be as great as if the deceased had lived and brought a successful action against the defendant, as the award for non-economic loss (for 'sentimental loss' - bereavement and pain and suffering) is likely to be relatively small, currently £3,500.

4.5 Provisional Damages & Structured Settlements

In cases where the condition of the injured party may deteriorate in the future, but where the prognosis is uncertain, a 'provisional damages' award may be sought. This allows the plaintiff the right to return to court to seek further damages against the defendant if certain specific deterioration, as stated in the provisional judgement, occurs.

In settlement of personal injury claims, the conventional approach is to pay a once-for-all lump sum as agreed damages, following the traditional pattern set by the courts. One of the attractions of a lump sum settlement in an action for personal injury damages is that the compensation is tax free, though any income derived from its investment is taxable in the usual way. In 1987, the ABI concluded an agreement with the Inland Revenue that payments made to a plaintiff for whom defendant insurers had purchased an annuity would be regarded for fiscal purposes as sums received by way of capital, not as income.

The annuity is purchased by the defendant's insurers and they remain its legal owners, holding the benefits in trust for the plaintiff. The details can be tailored to fit the individual circumstances of the plaintiff. This arrangement is called a 'structured settlement'.

The 1987 concession means that, in order to obtain the same net income that would have been forthcoming had the plaintiff purchased the annuity himself, a smaller capital outlay is involved. His lawyers are obviously unlikely to agree terms that pass the whole of the fiscal advantage to the insurers, but are more disposed to share it with them.

A case was reported in the press recently (albeit for a motor claim) of a 25-year old woman with life expectancy put at 20 years. The parties had agreed that the proper sum for settlement on a conventional once-for-all basis would be £427,000. That sum reduced to £410,000 if disposal were achieved on the structured basis negotiated between the parties. £300,000 of the total amount was to be used by the insurers to purchase an annuity, while the remaining £110,000 was to be paid over as a straightforward lump sum payment. The annuity

was for £25,562 pa, index-linked and guaranteed for the first ten years. Evidence was produced in court to suggest that, if the money were put into gilts, or into mixed gilts and equities, provision of an annual amount of £25,562, index-linked to 5% inflation, would in fact lead to exhaustion of the fund in 12 to 13 years. As well as the guarantee of income should the plaintiff live beyond her life expectancy, there were also advantages to the plaintiff of significant savings in the administration of the fund. The Pearson Commission of 1978 suggested that only 5% of plaintiffs invested their award, as opposed to spending it.

It is suggested that a structured settlement is unlikely to be a profitable enterprise for awards less than £50,000.

The common law denies a judge power to order payment of damages by instalments. Thus a structured settlement can come about only as the result of negotiation between the parties, ie it is essentially an out-of-court operation.

4.6 Short Versus Long Tail Claims

EL is a class of insurance which presents a shifting amalgam of long and short tail claims. Events or legislative changes which bring about a change in the balance of short and long tail claims will disturb the observed reporting and settlement patterns.

As a general observation, short tail claims tend to correlate closely with those arising from injury. Nevertheless there are plenty of examples of injury claims with long delays in settlement. Equally there are examples of disease claims which might be expected to be notified and settled relatively quickly following exposure, such as:

Asthma - eg following exposure to foam insulation.
Dermatitis
Eczema
Legionnaires Disease

A long settlement tail can arise either as a result of delays in notification, or from delays between reporting and settlement, or possibly both. Delays in notification are most commonly associated with claims

for industrial diseases. This reporting delay may be due to a combination of factors including:

- Clinical latency where there is a long interval between exposure to the hazard and the emergence of the symptoms giving rise to the claim. Asbestosis is one such example where the manifestation of the disease can be a considerable period after the last exposure to asbestos.
- Cumulative effects of exposure to the hazard which cause continuous and progressive development of symptoms. The delay in the reporting of the claim occurs as the result of the fact that a claim is reported only when symptoms surpass a certain - often ill-defined - threshold.
- The invidious effects of ageing. The 'spare capacity' which many enjoy in their years up to middle age may disguise or compensate for deterioration in health, hearing etc. It is often only when the increasing toll of industrial disease is combined with the natural effects of ageing that the employee becomes sufficiently aware of his condition to lodge a claim.
- Increasing awareness of the causes of industrial disease. Typically newly recognised links between disease and industrial causes give rise to a rapid increase in the incidence of claim. The 'avalanche effect' produces claims which may have arisen from quite distant periods of exposure. One would normally expect that awareness would lead not only to preventative measures reducing the number of claims, but also to a shortening of the mean delay in notification.

Whatever the underlying cause, long delays in reporting give rise to difficulties in verifying the years of exposure, in the allocation of the claim between underwriting years and in making projections. This is of particular importance if the cover had been underwritten by different insurers during the period of exposure.

Typical causes of claims with a long reporting tail include the following:

Deafness - since the production of the pamphlet 'Noise and the Worker' in 1963 it has been accepted that exposure to noise in the workplace does induce hearing loss. Clinical trials have shown that the greatest loss of hearing will occur in the first five to ten years of exposure with much slower deterioration in hearing over longer periods. Nevertheless it is common insurance practice to assume that the liability for hearing loss is spread equally over all periods of exposure. Many employers have union agreements which set out a level of compensation which will be determined by the age of the claimant and the degree of hearing loss. Claims frequency is closely correlated with the degree of union involvement.

Raynaud's Disease - perhaps better known as 'vibration white finger'. This is a circulatory problem of the fingers which may cause them to become blanched and numb. In long standing cases there can be small superficial areas of gangrene. In an industrial setting the disease arises as a result of the use of vibrating hand tools. Claims often go hand in hand with deafness claims since both may be due to the same root cause. The date of guilty knowledge on the part of employers is generally considered to be in the mid 1970s and it became a prescribed disease in 1985.

Asbestosis - Fibrosis of the lung caused by exposure to asbestos dust. In the USA many claims have been lodged against the manufacturers of asbestos although there have also been claims against individual employers under workmens' compensation cover. Paradoxically it now appears that the removal of asbestos from existing buildings may give rise to greater problems than would have arisen had it been left undisturbed.

Other lung diseases - for example Pneumoconiosis. The most common source of claims for pneumoconiosis in the UK has been the mining industry and of the lung diseases which have afflicted miners, silicosis is the most common and the most severe. Another example which is of interest in an historical context is byssinosis. This is a chronic respiratory disease found amongst cotton, flax and soft hemp workers. Whilst this is no longer a significant problem in this country, it is a condition which afflicts workers in the emerging nations.

Repetitive Strain Injury (RSI) - The best known form is Tenosynovitis, in which the tendons of the victim's wrists become inflamed, arising from repetitive movements of the hand or wrist. An example is the recent award of £45,000 against Midland Bank to a typist who had restricted use of her hands as a result of suffering from this condition. Studies have shown that jobs associated with RSI include cleaners, hairdressers, VDU/keyboard operators, butchers, music teachers and machine operators. Claims are usually presented in batches and claims are now emerging in what were historically regarded as low risk industries - both the NUJ and BIFU are preparing for legal battles.

The potential for long-tail claims from the above sources, and indeed from many others, is well documented and understood. Some of these problems are likely to continue with us for some while. Others, like byssinosis, will pass into history as the nature of our industries change or as preventative measures are developed. History has also taught us that new industries, new jobs and new processes can give rise to yet other problems which will not have been foreseen. Underwriters therefore face the ongoing dilemma of how to cope with the next generation of latent claims from the point of view of both rating and reserving.

Changes in reporting pattern can arise as a result of factors totally unrelated to the underlying cause of claim. For example:

- Historically reporting patterns have been influenced by changes in the Statutes of Limitation which effectively govern the period in which a claim can be lodged. Changes in the Statutes - invariably in favour of the plaintiff - now expose insurers to much longer claim reporting tails.
- The reporting pattern can be disturbed by a change in the relationship between employer and employee. Even in this day and age it is not unknown for employees to be reluctant to take action against an employer whom they perceive to be paternalistic and sympathetic. However, a change in that relationship, maybe as a result of a change of ownership, redundancy, or increased union involvement, can precipitate an increase in the incidence of claims

and the reporting of claims relating to earlier years of exposure.

- Greater social awareness heightened by media pressure
- Advancements in medical knowledge
- Introduction of new regulations governing the control and safety of certain work hazards.

It is inevitable that there will be some delay between notification and settlement of claims. This delay can become extended if there is a doubt about the extent of liability or the quantum of compensation. The latter is generally the more significant cause of delay and can be attributed to the time which may be required to gauge the extent and the practical effects of the injury. The award of provisional damages mentioned in the previous section, which allows the plaintiff to reopen his claim, will have an effect upon settlement patterns.

4.6 Claim Frequency & Amount Distribution: Some Interesting Numbers

Average Cost per Claim on a year of origin basis: These are from DTI returns and the averages include nil claims, because nil claims are not readily split out by year of origin in Form 33.

Average Cost of EL Claims by Year of Origin

<u>Year of</u> <u>Origin</u>	<u>Company</u>					
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>
1973	826	968	521	482	374	591
1978	1432	1615	1234	1029	587	1229
1983	2221	2697	1951	2127	1825	2496
1988	3246	2214	1901	3036	3364	2776

The average cost per claim at present (June 90) for an injury claim is around £5,000 , for a deafness claim £1,000 and for an asbestos related claim £15,000. For latent claims, the average represents the share of a single office and the average awarded to a claimant will be higher than this because the award is shared between insurers in proportion to the period of exposure.

At present, an insurer is entitled to deduct half of the state sickness benefit from claim payments. On accidents occurring after 1.1.89 on which payment commences after September 1990, the insurer must return the part deducted to the state. This may effectively add 15% to the cost of these claims.

An 'avalanche effect' of new claims may arise following the successful litigation of a new form of industrial disease (ID) claim.

In the USA there were 12,000 stress claims in 1983 which cost insurers over \$30 million. Currently, there is no experience in the UK, but there is again the threat of an avalanche effect - particularly amongst office workers. Stress claims have also been successful in Australia, but we have no data on this.

The experience of High Court claims settled over the year 1986-1987 showed that 1,300 personal injury claims came to court and were settled in court, of which:

- 80% by number settled below £25,000
- 10% settled in range £25,000 - £50,000
- 10% settled in range £50,000 +

Note that this implies a very small fraction of total EL claims will actually be settled through the courts (< 1%).

Disease claims typically can have 20% nil claims, whereas accident claims can often show 40% to 50% nil claims, although this is heavily dependant on recording practices.

Peak individual claim values

A study of a selection of the largest claims in the UK up to the middle of 1990 shows the following approximate peak claim values:

<u>£000s</u>	<u>Settled prior to mid 1990</u>	<u>Reported prior to mid 1990 and still outstanding</u>
750+	0	0
500-750	2	2
400-500	0	9
300-400	5	8
250-300	3	3

[These claim amounts are per person - an explosion, or some other large scale event, could potentially give rise to a larger claim per event]

This compares with peak individual motor claims of £1.5m, £1.2m, and £950,000, with more than 15 claims exceeding £500,000.

4.7 Payment Patterns

Source : Claims Run-Off WP Report Oct 1989
A weighted average of 19 companies experience

The claims paid development pattern using the Inflation Adjusted Chain-Ladder is:

	Development year									
	1	2	3	4	5	6	7	8	9	10+
%	3.3	18.1	21.3	18.1	13.5	8.7	5.5	3.5	2.3	5.7
%	3.3	21.4	42.7	60.8	74.3	83.0	88.5	92.0	94.3	100

This pattern gives an average period to payment of approximately 3.9 years.

Note that this pattern is of delay from accident date, not from report date.

Caution needs to be exercised with any EL run-off pattern in respect of the following points:

- treatment of disease claims

It is quite difficult to define a reporting delay pattern, because disease claims might get allocated to year of notification or allocated to year(s) of exposure, which might be known or might have to be assumed, or allocated arbitrarily.

- effect of inflation

The choice can be made between using a profile expressed in real values and using one expressed in cash values.

- reporting delays are fairly short on accident claims, and so the overall pattern will change with variations in the relative proportions of accident and disease claims.

4.8 Case Reserves

In EL business there is often a long period between notification of the claim and final settlement. This means that any work on reserving/rating etc. will need

to make use of case reserves, because these give a more up-to-date picture of the cost of claims than actual settlements. An actuary or statistician undertaking any studies involving EL claims experience needs to bear in mind the following:

- The need to segment the account by trade (source of business) and type of claim.
- Consistency
He needs to be satisfied that there is a fair degree of consistency between claims estimates
 - as between different claims at one point in time:
 - particularly between different personnel in the claims department
 - are large schemes treated differently from small schemes in respect of loss estimation?
 - at different points in time:
 - practices can change and affect measured trends.
- Frequency of Update
 - stale claims: how are old claims treated where little information has been forthcoming for some time?
 - evaluation must allow for timing and completeness of update.
- Formula versus individual summation
 - Company philosophy
The company may approach case estimation on the basis of either worst case or conservative or reasonable average. A conservative approach to claims estimation might not be in the company's best interests when using this information for other purposes.
 - different treatment of average/big/small claims: the company might treat claims below a certain size on a formula basis, in particular sometimes for the early duration of a claim.
- Fragmentation
Too much subdivision of each claim into separate components of the cost can lead to double counting of overlaps. The claims manager will sometimes not wish to be drawn too far on the exact division of his estimate into the different heads of damage, as there is considerable scope in an award for cross-subsidy.

- Contributory negligence
In assessing the ultimate cost to the company, allowance needs to be made for contributory negligence, although in EL claims this is in general quite low.
- How does the case estimate treat inflation?
Ideally, the estimate should set out separately:
 - likely settlement amount in today's values
 - expected delay to settlement
 This gives the opportunity for statistical treatment of the effect of inflation, ie statistical analysis of the performance of case estimates against actual experience, and the possibility of sensitivity analysis.
- Large claims uplift
Experience shows that, even when the case estimators do a good job on each individual claim, a few claims may eventually drift out to be very large claims. This means that the case reserves cannot give an adequate reserve in the aggregate and allowance for this needs to be made on a statistical basis.

4.9 Reserving Issues

A good background to this can be obtained by reading the relevant sections of the Liability WP report. The purpose of the reserve estimation should be considered. This may include statutory reporting, taxation, rating and business planning amongst others. Of particular importance is whether a best estimate is required or whether extensive analysis of uncertainty is appropriate. To a large extent, in this line of business particularly, some estimation of uncertainty cannot be avoided.

EL business is particularly difficult to reserve. In recent years, changes in trends in nil claims, frequency and average claim size have all been seen in various segments of the account. Particular problems have arisen from industrial deafness claims. Other latent developing injury and disease claims are expected to be an increasingly important feature in the future.

Some have drawn an analogy with what occurred in workers compensation insurance in the US some 10 to 20

years ago. At that stage major companies were unable, through their existing databases, to understand and reliably predict future developments. This necessarily indicates a more investigative approach towards reserving than might be the case in some more stable lines of business. We should expect any one of the traditional actuarial methods to fail on its own.

Claims Data - in order to apply statistical methods an adequate data base must be available. For any class of business, claims data are required segmented both by type of business and by type of claim and with corresponding exposure measures available. Any data collected for reserving purposes should also be considered in the context of rating analysis and general management information. The data for rating analysis are generally more detailed.

At a minimum the latent developing injury and disease claims and industrial deafness claims should be considered separately from the main accident claims in the account. Also segmentation by source and type of business should be considered. For example, a mainstream EL account may well be expected to show different characteristics from those of the EL element of small business and package policies. The incidence of industrial disease and industrial deafness claims will be very different for different trade groups although the lack of homogeneity within individual trade groups should be recognised in analysis.

With varying degrees of sophistication and with some omissions the above probably describes the approach of most of the major insurers.

Typical claims data collected for the data base might be the number of claims, the number of nil claims, paid claims, number of settled claims, amount of settled claims, outstanding claim numbers and estimates for each segmentation of the account and of the type of claim. Data would be available both by exposure period (either accident year or underwriting year) and by report year with development at each subsequent period. For investigative work quarterly exposure and development periods are sought on the larger accounts.

Each individual company or insurer and its portfolio would have its own characteristics. Its administration

systems for claims settlement and also its systems for claims estimation are areas for investigation. For industrial deafness claims and other latent developing injury claims the dates or periods of exposure are often not available and the only item available for an individual claim may be the date of notification, which may be many years after the actual exposure periods. A detailed and separate analysis is required for these types of claims which should include an estimation of the total exposure for the individual involved, the exposure of the company in estimating its share of any claim, and the delay to notification from the exposure period. We look to the GISG working party on Latent Developing claims for more detail.

Claims Inflation in Reserving - a feature of EL claims is the long average delay to settlement, typically several years. Also there is a tendency for those claims which are much delayed in settlement to be the larger claims, being associated with the more serious and late developing injuries. There is an analogy here with bodily injury claims on motor insurance and other lines of business. Claims inflation and the assessment of the average delay to settlement become especially important when considering methods relying heavily on case estimates and the actuary may well become involved in supplementary analyses on the accuracy of the case estimates in the aggregate as opposed to the more traditional development analysis of incurred claims based on accident year data. Claims inflation indices are traditionally very hard to come by and to project into the future. Wage inflation indices are important for EL business but as with most liability lines the trends in court award have tended to be upward. Currently average inflation of EL claims will be in excess of 10%.

Market agreements also become important for particular types of claim - for instance, the Iron Trades agreement for industrial deafness claims which, whilst not binding on companies, has tended to form a market norm.

Tail Factors - EL claims are subject to substantial delays between the claim incident or exposure and notification of the claim and between the notification and settlement date or dates if several payments are made. Delays of ten years or more are not uncommon and

so predicting development beyond the experience of the insurer is always a problem. Even for companies with long experience in the market, because the claims settlement environment changes, interpreting their own experience is also difficult.

The GISG Run Off working party gave some development statistics for EL business by company but since their research was based on published information the business was not segmented for instance, by type of claim. The development experience for any company therefore needs to be supplemented by discussion with claims personnel and other experts. Clearly the actuary attempting to estimate reserves for a relatively new entrant into EL, or for one where significant changes in the mix of business have occurred, is faced with larger uncertainty.

Exposure Measures - the measurements of exposure will be dependent upon individual companies recording systems. Often large schemes will be dealt with in a different manner from the smaller ones. Where rating is dependent upon the underwriting result directly on a formula basis, premiums may not be a good guide for exposure. In using premiums as an exposure measure it becomes important to consider rate increases and the general level of rate change. In recent years, the market has become more competitive and this may well have driven rates down.

We have discussed elsewhere measurement of exposure by premium, wage roll and number of employees. In estimating reserves for recent underwriting periods the availability of exposure measures for recent underwriting periods provides the actuary with a range of additional reserving methods, which may be more appropriate than projections based solely on the very limited claims data for these periods.

Problems with Reserving Methods - to help illustrate some of the difficulties actuaries face we briefly consider a number of different methods and why individually they may fail.

- Paid development method

No allowance is made for changes in the delays to notification of claims. The method therefore would be particularly inaccurate for latent developing disease

claims but also for the accident claims, where trends also have a distorting influence. Claims inflation has changed over time and therefore adjustment for claims inflation is indicated. Any estimates arrived at from paid claim development above would be expected to be poor.

- Incurred development method

By including case estimates we would hope to obtain some advance warning of trends emerging. However, often these will arise as calendar year effects making projection into the future particularly difficult. This is especially the case where trends arise because of market changes re-establishing new levels of average claim size. Where a surge of claims emerges, as in recognition of a new latent disease, then methods not based upon a frequency/severity analysis are inadequate. An assessment of the accuracy of case estimated reserves and the levels of claims inflation implicit within them would be needed before the incurred claim development, either for accident claims or for latent developing disease claims, could be relied upon.

- Number and average claim methods

From the above, methods based more on a projection of number, average claim size, and with due allowance for delay to notification and explicit claims inflation may be thought to be more appropriate. However, development of number of claims can be distorted, especially where the proportion of nil claims is changing in an unpredictable manner, perhaps because of changes in recording by the company itself, but also because of market notifications. A change in the mix of industries written can be important also.

Projections of average claim amount based either on paid amounts to date, on settled claims and their relationship to delay to settlement, or on case estimates are each clearly subject to difficulties being based on potentially unreliable estimates. Explicit allowance for claims inflation in methods is also indicated.

It is clear that any individual method may be expected to fail on its own. Often a particular method when applied will be known to generate either under or over

estimated reserves on a consistent basis. The application of a number of methods and supplemented with significant additional investigations is indicated. Methods based upon an exposure analysis, such as the Bornhuetter-Ferguson methods giving a credibility weighting between an expected loss ratio method and a claim development method, will become most appropriate for the more recent years. With the emergence of industrial disease and industrial deafness claims the projection of older years of account is problematic also. Special techniques of projection are indicated.

Wider Issues - in most companies the role of the actuary and of actuarial reserving reports is still developing. Given the level of uncertainty which necessarily will be present in any EL reserves, there is an emphasis towards two areas, collation of data and management of the statutory reserving process, to keep it within control. Individual companies will have constraints on capital and on the declared result. Presentation of results as wholly accurate by the actuary is therefore inappropriate. This indicates a need to communicate the levels of uncertainty to underwriters so that proper rating decisions can be made, and also to accountants, auditors and senior management to allow proper management of the statutory result, the general finances of the company, future business planning and soundly based discussion with the Inland Revenue.

Section 5: Rating

5.1 A Brief History

EL pricing up until the mid 1960s was strongly influenced by the tariff rates produced by the Accident Offices Association (AOA).

The tariff rates comprised a set of basic rates on a trade or industry basis. The basic rates were expressed as a percentage of the wageroll of each trade. Various adjustments could be made to these basic rates depending on the particular features of the risk.

The AOA tariff system was abolished in 1969 following pressures due to increased competition, the lack of flexibility of the tariff system and the changing make-up of the economy.

Whilst many companies will now be making their pricing decision using claims statistics derived from their own more flexible databases, it is likely that many underwriters will still be heavily influenced by the old tariff rating structure.

5.2 The Pricing Decision

Traditionally the pricing decision lay firmly with the underwriter. Decisions would tend to be taken at the individual risk level, and a risk would be accepted if it was felt that it was of acceptable quality and on profitable terms. Very often investment income would be ignored and an underwriting break-even might be the ultimate goal. The control of the account at overall level would often be of secondary consideration.

More recently the control of the account at the overall level has become of equal importance to the underwriting decision at the individual risk level. It is likely that this trend is evident across all classes of business where the profitability of each class and the contribution to the company's bottom line result has become of prime importance. The role of the underwriter has therefore changed to some extent as he must now take more direct responsibility to ensure that the results of his class of business fit into the corporate objectives of the company. The actuary can play a significant role in this area, working closely

with both the underwriter and senior management to ensure all objectives are achieved.

To support the various needs of the underwriter, actuary and senior management it is fundamental that adequate information is recorded on the statistical database and that suitable management reports are extracted. These management reports must be correctly designed if they are to prove useful. This does not imply a two foot high file of computer output each month, but a carefully designed system which will satisfy the needs of all interested parties and at all levels of management. The topic of management reporting is discussed in more detail in Section 6. This is clearly an area where the actuary can make a useful contribution.

5.3 The Pricing Decision at the Individual Risk Level

Premiums are generally calculated as a percentage of the estimated wageroll. These are then adjusted at the expiry of the period of insurance following the declaration of the actual wages in accordance with a 'premium adjustment clause' normally contained in the policy. Cover is normally for all employees who have a contract of employment. This would also include directors of a limited company. The total wageroll is generally total remuneration including overtime, value of board/lodging, accommodation, bonuses and benefits in kind.

When a proposal comes in, the underwriter will study the proposal form and look for any undesirable features. There will be certain features where, if exhibited, special terms may be applied or further information required or the policy would be declined. Examples might be undesirable locations (Northern Ireland), undesirable trades, declined by another insurer or name of company or previous insurer withheld.

The underwriter will pay particular attention to the nature of the trade or business. His rating guide will specify the standard premium rates for a very wide range of different trades and specific tasks within trades. There will also be a large list of further underwriting considerations which must be taken into account before the proposal is accepted. For larger

risks (perhaps over £1000 of premium income) an accident surveyor's report will be requested. A survey may also be necessary for specific trades or where previous claims experience has been poor.

For even larger risks (over £50,000 premium income) special consideration may be given. This might be in terms of discounts on the standard rates or in some form of experience rating. However it is believed that experience rating is not widely used in EL. Care should be exercised if there is extensive use of experience rating, since it is often a one-way option whereby risks are rewarded for good experience but are not penalised for poor experience. This policy would have a significantly detrimental effect on the overall account.

Many companies have a standard proposal form covering many different trades. An example is given in Appendix III. In some cases therefore, policies will be endorsed. The endorsement usually depends on trade and will specify particular causes where the proposer will not be covered. For example electricians may not be covered for claims arising from erection of aerials.

5.4 The Accident Surveyor

It is useful to consider the factors which an accident surveyor will be interested in when he visits a premises. It is difficult to specify all features since some will be specific to any one premises. However the list gives a guidance to the main risk factors which the surveyor will be interested in.

- (i) Address
- (ii) Full description of trade
- (iii) Type of buildings

Construction

Are they purpose built?

When erected ?

Are they well maintained?

Are they congested?

Is lighting adequate?

Are floors and gangways in good order?

Are fire exits adequate?

Are building regulations maintained?
Is there any new building work?

(iv) Ventilation and Heating

What system is in use?
Does the atmosphere contain dust/fumes

(v) Housekeeping

Are gangways and passages clear?
Is there any accumulation of dust?
When is dust removed?

(vi) Personnel

What is the average age?
What is the standard of labour?
Are there training schemes?
What is the standard of supervision?

(vii) Welfare

Are there first aid facilities?
Who is the safety officer?
Are fire fighting appliances adequate?
Are there fire drills?
Is there a canteen?
Is work done at night?
Are there washing facilities?
What are the methods of cleaning?
Are barrier creams used?
Are there rest rooms?

(viii) Materials

What raw materials are utilised ?
What secondary materials are employed ?
Are there any known physical hazards from
paints, glass, resins etc?
Are inflammable liquids used?
What is the construction and location of the
store?
What quantities are kept in store?

(ix) Machinery

Description of classes in use

What is the state of repair?
What is the standard of guarding and fencing?
What are the instructions for cleaning?

(x) Stacking and Storage

Is stacking safe?
Are there accident prevention measures?
Has there ever been a prosecution under the
Factory Act?

(xi) The accident book

 This should record details of accidents
 experienced

The accident surveyor's report will be extremely useful
to the underwriter and will be used as the basis for
acceptance or declination of the proposal.

5.5 Some Example Premium Rates

The premium rates charged for different trade groups
and by different companies are extremely variable.

We give below example standard rates for five different
companies for ten different trades classified as high
risk, medium risk and low risk.

These rates are guide rates. Discounts may be given for
size, favourable past claims experience and superior
underwriting features. Loadings would be applied for
poor claims experience or adverse underwriting
features.

The pure 'underwriting rate' would then be adjusted for
market forces like competition.

Different criteria for what is standard make it likely
that the variation between companies in the final
'underwriting rate' for a given risk will be lower than
that in the guide rates shown.

Rate per £100 Wageroll

Company

High Risk

	A	B	C	D	E
Building Demolition with explosives	Decline	Decline	Decline	34.65	Decline
Window Cleaners	3.50	7.00	10.00	10.00	7.50
Saw Mills including tree felling	5.00	3.80	5.00	6.93	5.00

Medium Risk

Woodworking	2.00	1.90	2.00	1.74	2.00
Electrical Eng (Excluding Erecting aerials)	0.75	1.27	2.00	2.31	1.00
Artificial stone makers	0.90	1.14	1.00	1.85	1.00

Low Risk

Caterers	0.50	0.63	0.20	0.41	0.15
Clothing Manuf	0.10	0.20	0.35	0.25	0.15
Hairdressers	0.15	0.07	0.20	0.25	0.10
Clerical and Managerial	0.03	0.02	0.03	0.03	0.03

5.6 Costing vs Pricing

As mentioned in section 5.3 the underwriter is now equally concerned with the bottom line performance of his account and this will be closely monitored. To achieve suitable pricing objectives it is essential that both investment income and expenses are correctly allocated to each line of business.

Using the company's experience and appropriate statistical models, one can arrive at theoretical estimates of premium rates to charge. When it comes to the premiums actually charged in practice, conversations with underwriters have revealed the following features:

- Market forces versus technical calculations.
 - any allowance for industrial disease (ID) is at best just an approximate overall uplift factor. The view is taken to make an allowance of a certain percentage of total future claims cost from ID claims, and then the attempt is made, on a fairly subjective basis, to try to allocate this loading to give different weights by industry and trade sub-groupings. There is large uncertainty regarding the ultimate cost of known types of claim (eg industrial deafness) and the potential future costs of unknown types of claim (e.g. VDUs)
 - it is felt that new entrants can always undercharge existing players because past pricing is perceived to be inadequate. Large players have remained in the market to pay for past claims. Furthermore they feel they must remain in the market to provide a comprehensive service, as EL is a compulsory class. Hence the class is often sold in a package, possibly cross-subsidised by profitable business written alongside.
 - competition in areas perceived as "light" risks (eg clerical with rates as low as 0.02%) has held down rate levels.
- Large risks, eg BT which actively practises risk control, can have better experience than smaller companies. The Health & Safety Executive Reports on the period 1981 to 1985 revealed that major incident injury rates are 50% higher in small manufacturing concerns employing fewer than 100 people than in large undertakings.

5.7 Influence of Investment Income and Expenses on Rating

This section gives a simple illustration of the level of contribution that investment income can make to the total return on a book of EL business.

We assume a profile of claims payments as derived by the Claims Run-Off Working Party at GISG 1989, using the inflation-adjusted chain-ladder pattern which is as follows:

	Development Year									
	D0	D1	D2	D3	D4	D5	D6	D7	D8	D9+
	--	--	--	--	--	--	--	--	--	--
Movements:										
%	3.3	18.1	21.3	18.1	13.5	8.7	5.5	3.5	2.3	5.7
Cumulative:										
%	3.3	21.4	42.7	60.8	74.3	83.0	88.5	92.0	94.3	100

Naive cashflow basis.

Using the above settlement pattern, the present value of the claims at 1 January of the accident year is 74% of the face value, using an investment return of 10% pa. On this basis, we can calculate that a loss ratio of 135% just covers the cost of claims.

The above loss-ratio was calculated before the effects of reserving, taxation, expenses escalation and risk return on capital were considered. These are illustrated in the next paragraph.

Simple model of a revenue account.

Suppose we build a simple model of a portfolio that is static in real terms. We assume an inflation rate of 8% pa, ie premiums grow at 8% pa, expenses escalate at 8% pa, and the payment pattern from the Claims Run-Off WP uses the inflation-adjusted chain-ladder at 8% pa.

For a reserving pattern, we assume that the underwriting loss is reserved in full at the end of the accident year on an undiscounted basis. The investment income allocated to the revenue account has been calculated on the basis of the underlying cashflows, not by a reserve based method. Expenses have been taken as 15% of net earned premium. Tax has been assumed to be paid immediately at the end of the accident year. This model then produces a revenue account as follows:

Simple Steady-State Revenue Account

	<u>£'000</u>	
Written premium		11,652
Commission	(1,165)	
UPR b/f		4,855
UPR c/f		(5,244)
Earned Premium	10,099	
Claims Reserve b/f		30,361
Paid Claims		(8,680)
Claims Reserve c/f		(32,790)
Incurred Claims	(11,109)	
Expenses	(1,515)	

Underwriting result	(2,525)	
Investment income	3,541	
Tax at 40%	(406)	

Post-tax profits		610

Thus business written at a loss-ratio of 110% of net earned premium can produce a post-tax profit of 6.0% of premium. If it is assumed that a solvency margin of approximately 50% of premium is being used to support this portfolio, and this capital also earns a return of 10% gross, then the total post-tax return is 18% of capital.

The 'real world'

In the 'real world', it is necessary to take account of (at least) the following features:

- accounts are growing or declining in volume in real terms
- sharp growth/heavy initial reserving can lead to financing strain
- expenses can escalate at rates which differ from those of the underlying premiums
- effect of any discounting of reserves
- the cost of yesterday's industrial deafness claims needs to be met, and is probably being paid out of today's premiums
- fluctuating asset values

The example revenue account is intended purely as an illustration, and in any particular practical example many more features need to be taken into account. However, the basic process is one where an actuary can make a contribution in a company, ie convert the

company's required targets for return on capital into volume and loss-ratio targets, which an underwriter will in general find easier to comprehend.

5.8 Measurement of Inflation of Claim Costs

Problems to be considered are as follows:

- measuring the trend in the average cost per claim might not be sufficient indicator of future developments, as it is a composite measure. It is necessary to distinguish between the cost per individual claim on a like-for-like basis and the emergence of new frequency of claims at certain levels.
- What shape of model to use:
accident year inflation versus settlement year inflation, eg changes in court award levels in one calendar year affect claims from different accident years.
- micro view versus macro view. The micro view is to look at the components of the claim as described in section 4.1 and to take a view on inflation for each component. In particular, very large claims (say over 100,000) have in recent years shown rates of increase well above those applicable to the general body of claims.

5.9 Operation of Captives

UK legislation demands that EL business be written only by UK authorised insurers. This requirement generally precludes the direct writing of this class by captive insurance companies since the vast majority, if not all, are not so authorised. Thus, the captive which has ambitions to participate in EL risks can do so only by arranging for the risk to be "fronted" by an authorised insurer and then accepting a part of the risk by way of reinsurance.

As a general rule the direct insurer will reinsure 100% of the risk with a captive but subject to limits on the captive's liability for each and every claim, and subject to a limit in the aggregate for the year. This, in effect, puts the direct insurer in a position of a reinsurer of the risks in excess of the per event and aggregate limits. However, the direct insurer undertakes most of the administrative work, an important part of which will be the handling of claims

and the assessment of the level of reserves to be established. Capability in the handling of claims will be a factor which will be of paramount importance in the choice of fronting insurer.

A further implication of the procedure is that the direct insurer has to price elements of cover which are outside the sphere of its normal direct activity and possibly a little removed from its area of expertise.

The attractions of using a captive are due to a large extent to the ability to roll up funds without deduction of tax. To gain the maximum benefit from captive placement this implies that the direct insurer is left with a modest premium to cover the higher layers of risk. Earlier reference was made to the fact that rating levels really cater only for accidents and make no allowance for industrial disease. This has undoubtedly been the case in the operation of fronting arrangements and it is probably fair to say that many such arrangements were established without proper thought for the effect of disease claims. The added risks to the direct insurer are that the aggregate limit is not indexed (or inadequately indexed) or, worse still, that the captive is not around to settle long tail claims.

Section 6: Management Information

6.1 Introduction

The collection of proper statistical information and the production of informative management reports are vital to the control of the account at the overall account level where all factors and influences on the profitability of the account can be brought together.

It is not possible to outline a generalised management reporting system since the needs of every company will be slightly different. However the style of management report must suit the needs of the recipients; certainly senior management do not want to see pages of monthly output. In general any management report should be:

1. Useful
2. Accurate
3. Regular
4. To the point
5. Flexible

It is difficult to achieve all the above points simultaneously and this is generally one of the main difficulties. Very often the recipients themselves must be educated in order for them to understand and interpret new reports which may be in a different style from those reports which they may have been used to in the past.

The ability to generate informative management reports is dependent on the collection and maintenance of appropriate statistics which must be held on the computer database. This is another important area where actuaries should become involved.

We attempt to outline below some of the more useful management reports where an actuary may be involved. This is certainly an area where more work is required and those described below are not intended to be an exhaustive list.

6.2 Higher Level Management Reports

Quarterly Development Triangles - although very simple, a quarterly development of loss ratios on both an incurred and paid basis is a very powerful report. These reports would also show the estimated ultimate loss ratio for each accident year/underwriting year. Triangles both net and gross of reinsurance can be compared.

For an EL account it will be difficult to interpret trends in their early stages of development, owing to the length of tail. However the monitoring of claim development against those of prior years is essential.

Particular consideration should be given to the effects of large claim development and the effect of latent claims.

Quarterly Revenue Accounts - these reports might be produced by the accounts departments in conjunction with input from the underwriter or actuary.

The reports could be on both a published account and on a realistic basis. Ideally investment income should be allocated correctly to the line of business. Expenses must be broken down into commission, acquisition and other expenses.

For comparative purposes the prior years accounts at the equivalent time period should also be shown.

These accounts might make special provision for the reserves for latent claims.

These reports would be intended to focus senior management's minds on bottom line results. Ideally a short report could be attached focusing on the salient features of the results.

6.3 Lower Level Reports

We describe below some of the lower level reports that might be used more directly by the underwriter, or actuary/statistician. We do not consider those reports which might be used by the claims or marketing departments.

Quarterly Development Triangles - these will be similar to those described in 6.2. However in addition a triangle by year of claim notification will also be useful. These reports might be used more directly for reserving purposes.

In addition to triangles of claims paid and claims incurred it will also be useful to track claims amount settled, and claim numbers reported, settled and nil. It will also be important to track the impact and development of large claims. Ideally individual large claims would also be monitored from the period of notification to settlement. Large claim triangles could be built up and used to monitor the effect of large claims in total.

Certain key ratios can also be monitored. These include the proportions of nil and settled claim numbers, average costs both on a reported and settled basis, and loss ratios.

Latent Claims - all latent claims should be separately monitored. It is usually difficult to allocate the latent claims to the correct year of origin. For monitoring purposes it is sometimes more informative to track by year of notification. The paid claim and incurred claim development can then be monitored on a year of notification basis.

It is also very important to track the numbers of claims reported. This should be monitored on a monthly basis.

Experience by Main Area of Work - for pricing purposes, the underwriter will be required to monitor the experience of broadly homogeneous trade groups, for example, Textile and Clothes, Food Production, Construction etc.

The following information will be useful:

Year of incident
Number of employees
Total wage roll (earned)
Number of claims. These could be split into injury and disease
Number of zero claims
Number of settled claims
Earned premium

Amount paid
Amount settled
Amount outstanding
Amount incurred
Proportion settled
Proportion nil
Frequency
Average cost per settled claim
Average cost per claim
Loss ratio

The reports for each of the major trade groups could be broken down further to ancillary trade. For example, within construction there are builders, flooding and roofing constructors, civil engineers etc.

Even more detailed breakdown for specific activity should also be produced. For example, within Civil Engineering there are road surfacing, pipe laying, land drainage etc.

The underwriter will be concerned that the rate per trade is broadly correct, ie is the ranking correct? The experience could be aggregated over a number of years if these are available and a broad assessment of the experience of each trade could be made. However, this is an extremely difficult task even for the companies with large portfolios owing to the length of tail, high variability in claim amount and small exposures.

It is sometimes convenient to code trades into broad bands depending on the risk level. The experience of each band can then be monitored and if necessary trades within bands. It would be hoped that the loss ratio for each band would be similar if the trades have been correctly allocated to each band.

It is also important to monitor the source of the latent claims. These can often be specific to certain trades. For example, industrial deafness and the building and construction industry.

6.4 Summary

The amount of statistical information which could usefully be extracted from the statistical database becomes immense. We have only outlined some of the

reports and analyses which may be useful. However, it is essential not to get lost in the forest of information which can be produced, but to extract the information which helps determine the important issues. Certainly senior management do not have the time to waste wading through reams of output. The actuary can play an important role in this area.

Apart from using their own database, most companies would have access to some market information. Good descriptions, together with the limitations of schemes operated by the ABI - EL Risk Statistics Scheme, GB Interstat Returns and 1988 Industrial Disease Report - are given in Chapter 9 of the Liability WP report.

Section 7: Reinsurance

7.1 Reinsured's Viewpoint

What is the reinsured's need for cover?

- Individual accident EL awards are now being given in excess of £0.25m. Therefore per risk cover is required accordingly.
- Per event: e.g. an explosion such as Piper Alpha. Catastrophe cover is required for accumulations, and will be needed by any insurer.
- Ideally, insurance companies would like cover against the aggregation of many small losses, eg industrial deafness. Reinsurers have acted (post-1983) to restrict their exposure in respect of ID claims. EL reinsurance is normally only written on an excess of loss basis, and for ID claims cover is in respect of individual employees only. Thus the burden of the deafness settlements, which are nearly all individually small (£1,000 - £5,000), will fall entirely on the insurer. Peak values are less than £10,000.

How is reinsurance bought in practice?

In practice, reinsureds tend to buy reinsurance in the following guises:

- stand-alone
- EL/PL/Motor, ie all the personal injury types of cover combined together, typically for small/medium companies
- under GL: combined with GL and products type covers, where the original insurance is sold as a package to small/medium businesses
- worldwide covers and programmes, typically for large composites who only require cover above a high deductible
- clash covers
- For the smaller companies, the retention may be as low as £100,000 and could rise to £1m for the largest ones.

7.2 Reinsurer's Viewpoint

Cover available

Almost the only cover available is Excess of Loss.

Basis of cover

In practice, only losses occurring or risks attaching is used, in order to fit in line with the insurer's basis (the insurer cannot provide a claims made EL cover in the UK).

Clauses encountered

- ACOD - for Occupational Diseases. This clause is designed to limit the reinsurer's involvement to sudden and identifiable events only, and to prevent the aggregation of many small and slowly emerging ID claims counting as one claim for reinsurance.
- Index Clause, where the deductible is revalued in order to share the effect of inflation between the reinsured and reinsurer. Typically, a published earnings index is used, which probably does not give sufficient allowance for social inflation. The alert reinsurer must add an element for this in his pricing calculations.
- Currency Fluctuation Clause.
- Change of Law Clause.

Territory

The extent of the above is subject to the exigencies of the territory covered (especially regarding legislation).

Exclusions

Typical exclusions can be:

- prohibited occupations, eg off-shore rigs/platforms, underground mines, nuclear risks.
- other common restrictions:
 - no cover for reinsurance accepted by cedant
 - limit on maximum primary excess
 - exclude employees based permanently in USA/Canada

Information required by the reinsurer

- specimen policies, proposal forms, rates
- types of business covered & underwriting limits
- territorial scope/premium breakdown, using location of risk
- Workers' Compensation Act legislation in territories concerned

- claims information:
 - detailed experience of claims over 5/10 years
 - number/amount of losses > 50% of proposed retention
 - development of paid & outstanding separately
 - protected premium over same period
 - original rate increases imposed over same period

Section 8: Comparison with Other Countries

We do not attempt to present a detailed comparison of compensation programmes by country in this section. Our aim is to identify the fundamental differences between the form of compensation provided in the UK and the forms provided in other countries, and to discuss possible consequences for both employees and employers.

Many countries outside the UK have developed, to varying degrees, integrated workers' compensation programmes. We refer, in particular, to those schemes developed by West Germany, USA, Canada and Australia.

These programmes are characterised by:

- the principle of no fault; it is only required to show that employment was the cause of the injury/illness and not to show negligence on the part of the employer.
- standardised benefits; compensation is based on the degree of incapacity and the needs of the claimant rather than the possibility of proving negligence.
- there are limited rights to sue at common law.
- in addition to covering loss of earnings, the compensation provided would usually include:
 - medical expenses
 - the cost of rehabilitation programmes and in certain cases
 - pain and suffering benefits (usually payable as a lump sum).

Workers compensation in the UK has not been integrated to the same extent. The comparable benefits are provided from different sources:

- EL Insurance; the onus is on the employee to show that his or her employer was negligent.
- National Health Insurance (providing medical expenses).
- Social Security Benefits; these have been integrated with EL in as much as the amount payable is reduced by amounts received from EL Insurance. The level of benefit payable is a subsistence type benefit and not related to pre-injury earnings.

- PHI (where provided); we note that this may also be provided in other countries to some employees.

The fundamental differences in the design of the UK scheme have consequences for the interests and behaviour of workers and claimants alike.

The other countries mentioned have moved towards a system in which compensation is based on the needs of the injured party rather than the possibility of proving negligence - benefits are largely standardised. This is in contrast to the UK where quite different remedies can result from similar incapacities and needs. The moral issue of fairness appears to have been approached quite differently in the UK.

The UK system is more litigious. Litigation can be destructive, and introduces hostility in to the employer/employee relationship. Moreover, the outcomes of court cases can be extremely uncertain and the uncertainty creates anxiety for both parties. Drawn out adversarial encounters can delay the payment of compensation, with further anxiety for the claimants.

In the UK, the direct costs to the employer are low. EL premiums can be as low as 10-20% of workers' compensation costs in other countries. While National Insurance contributions and other taxes will be payable in addition to the EL premium, these costs are fixed and not related to the experience of the employer. This may have a number of influences on employer behaviour. There would appear to be a significantly reduced financial incentive in the UK to undertake occupational health and safety programmes, and thereby reduce the incidence of workplace injuries and illnesses. Similar considerations apply to rehabilitation programmes, which can be costly to establish in the first place.

Section 9: Conclusion

In our report we have attempted to provide a broad view of the subject of EL insurance and have described areas where the actuary might make a useful contribution. The delays associated with this class introduce uncertainty and make it necessary to project past incomplete experience. The actuary has to understand the implications of the changing social and legal environment and make suitable allowance for them in his work. It is our belief that there is considerable scope for the extension of actuarial involvement in EL, as there is in other commercial classes.

There are two subjects which could be considered for future work:

- the allocation of capital to different classes of business.
- the influence of economic cycles. They are believed to affect both the level and number of claims emerging on EL. In a downturn of the economic cycle, where firms are failing, EL claims may become pseudo-redundancy payments as the motivations of employees cease to be linked to those of their employer, which may no longer exist.

These are applicable to the whole of General Insurance and were briefly touched upon in our deliberations but time did not permit us to explore them.

EMPLOYERS' LIABILITY POLICY

The proposal and declaration made by the Insured are the basis of and form part of this Policy

In consideration of the payment of the premium the Society will indemnify in the terms of this Policy

Indemnity to
the Insured

1. the Insured against his liability at law for compensation and claimant's costs and expenses in respect of Injury to any Employee caused during the Period of Insurance and arising out of and in the course of his employment by the Insured in connection with the Business within the Territorial Limits

Legal
Representatives

2. the legal representatives of any person claiming indemnity under this Policy in the event of his death and in respect of liability incurred by such person

Indemnity to
Principal

3. where any contract or agreement entered into by the Insured for the performance of work so requires

(a) the Insured against liability assumed by the Insured by virtue of such contract or agreement

(b) the Principal in like manner to the Insured in respect of the Principal's liability arising from the performance of such contract or agreement

but only so far as concerns liability as defined in this Policy to an Employee

Provided that

(a) the Insured shall have arranged with the Principal for the conduct and control of all claims to be vested in the Society

(b) the Society shall not be liable in respect of any legal liability of whatsoever nature directly or indirectly caused by or contributed to by or arising from

(i) ionising radiations or contamination by radioactivity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel

(ii) the radioactive toxic explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof

Indemnity to
Other Persons

The Society will also indemnify in the terms of this Policy if so requested by the Insured

(a) any director partner or Employee of the Insured in respect of liability for which the Insured would have been entitled to indemnity under this Policy if the claim for which indemnity is being sought had been made against the Insured

(b) any officer or member of the Insured's social sports and welfare organisations and fire first aid security and ambulance services while acting in their respective capacities as such

Costs and
Expenses

The Society will also pay all other costs and expenses incurred with its written consent

SCHEDULE

Office	Renewal Date	Policy Number
<div> <div>Period of Insurance</div> <div> <div>From</div> <div>To</div> <div>and any subsequent period for which the Society shall accept the premium</div> </div> <div> <div>} both dates</div> <div>} inclusive</div> </div> </div>	<div>Annual Premium</div> <div>£</div>	<div>First Premium</div> <div>£</div> <div>Less return under Policy No.</div> <div>hereby cancelled £</div> <div>£</div>
The Insured		
The Business		<div>Premiums are not adjustable/ adjustable (see Condition 8)</div> <div>Minimum Premium £</div>

DEFINITIONS

1. "Injury" means bodily injury and includes death illness and disease

2. "Employee" means
 - (a) any person who has entered into or works under a contract of service or apprenticeship with the Insured
 - (b) any labour-master and/or person supplied by him
 - (c) any person employed by a labour-only sub-contractor
 - (d) any self-employed person
 - (e) any person who is hired to or borrowed by the Insured while working with the Insured in connection with the Business

3. "Territorial Limits" mean
 - (a) Great Britain Northern Ireland the Isle of Man and the Channel Islands
 - (b) elsewhere in the world where Employees of the Insured who are normally resident in the above territories are on a temporary visit on the Business of the Insured but only in respect of an action for compensation which is brought against the Insured in a court of competent jurisdiction in Europe (other than in Albania Bulgaria Czechoslovakia East Germany Hungary Poland Romania Turkey the USSR or Yugoslavia)

4. "The Business" includes
 - (a) the provision of canteen social sports and welfare organisations for the benefit of Employees
 - (b) fire first aid security and ambulance services
 - (c) private work undertaken with the consent of the Insured by an Employee for a director partner or senior official of the Insured

CONDITIONS

Interpretation	1. The Policy and Schedule shall be read together as one contract and any word or expression to which a specific meaning has been attached in any part of this Policy or of the Schedule shall bear such meaning wherever it may appear
Observance of Terms	2. The liability of the Society will be conditional upon any person claiming indemnity under this Policy complying with its terms. The truth of the statements and answers in the proposal and all information given to the Society about the risk shall be conditions precedent to any liability of the Society to make any payment under this Policy
Reasonable Precautions	3. The Insured shall exercise reasonable care in the selection and supervision of Employees and take all reasonable steps to prevent any occurrence which may give rise to a claim under this Policy and to comply with all statutory and other obligations and regulations imposed by any authority
Increase in Risk	4. This Policy shall be void and all premiums paid thereon forfeited to the Society if the risk be materially increased without the assent of the Society being signified by endorsement hereon
Claims	5. In the event of a claim or possible claim under this Policy (a) the Insured shall (i) notify the Society as soon as possible giving full particulars of the occurrence (ii) notify the Society in writing immediately he shall have knowledge of any impending prosecution inquest or fatal inquiry in connection with any occurrence for which there may be liability under this Policy (iii) forward to the Society immediately on receipt every letter claim writ summons or process (iv) give all such information and assistance as the Society may require (b) the Society shall be entitled (i) to have the sole conduct and control of any claim and legal proceedings relating thereto and the Insured shall not negotiate admit liability or make any promise or payment without the Society's written consent (ii) to prosecute in the name of the Insured but for the Society's benefit any claims for compensation or indemnity
Contribution	6. If at the time any claim arises under this Policy there shall be any other insurance covering the same liability or any part thereof the Society shall not be liable to pay or contribute more than its rateable proportion thereof

Cancellation

7. The Society may cancel this Policy by sending thirty days notice by recorded delivery letter to the Insured at his last known address. The Society shall make a return of the proportionate part of the premium in respect of the unexpired Period of Insurance or if the premium has been based wholly or partly on any estimates the premium shall be adjusted in accordance with Condition 8

Premium
Adjustment

8. If the premium for this Policy has been based wholly or partly on any estimates given by the Insured the Insured shall keep an accurate record of all the relative particulars and such record shall at all times be available for inspection by the Society. Within one month of the expiry of each Period of Insurance the Insured shall supply to the Society such particulars as the Society may require and the premium for such period shall be adjusted and the difference paid by or allowed to the Insured subject to the retention by the Society of any Minimum Premium under this Policy

Instalment
Premiums

9. Where reference is made in the Policy to the payment of premium it is understood that such reference includes the Insured having agreed to pay under the terms of a separate instalment agreement
If the Society has agreed to accept payment of the first premium or any subsequent premium by instalment
 - (a) the Policy remains an annual contract
 - (b) if any instalment of premium is not received by the Society on or before its due date all unpaid instalments of premium and service fee shall immediately become payable. Should the full premium and service fee not be paid within seven days of the Society giving written notice of non-payment of an instalment the Policy shall be cancelled immediately on expiry of such notice
 - (c) following cancellation the Society shall return to the Insured the balance of any instalment already paid after deduction of an appropriate charge for the insurance cover to the date of cancellation except that if a claim has arisen in the current Period of Insurance no refund of premium shall be made

Compulsory
Insurance

10. The insurance granted by this Policy is deemed to be in accordance with the provisions of the law relating to compulsory insurance of liability to employees in Great Britain Northern Ireland the Isle of Man or the Channel Islands
If however there shall have been non-observance of any Policy Conditions by the Insured and the Society shall have paid any sum which the Society would not have paid but for the provisions of such law then the Insured shall forthwith repay such sum to the Society

Article from the Times 21/8/90

THE accusation in a report by the Institute of Economic Affairs that judges are selling accident victims short has reopened a debate over low compensation levels that has been simmering for at least 20 years.

The controversy centres on the method used to assess an injured person's future financial losses, the bulk of which normally consist of his or her loss of earnings and the cost of medical care.

The guiding principle in compensating for injury is simple: it should, as far as money can, place the victim in the same position as he or she would have been if the wrong had not been sustained.

Yet the report's author, Dr Cento Veljanovski, says that the "unsophisticated and intu-

itive" method used by the courts has consistently failed to achieve this aim: that the judges have blatantly refused to employ standard financial techniques when calculating personal injury damages, with the result that accident victims have been severely under-compensated.

He cites an example in which a claimant would have received two and a half times the amount awarded if a principled arithmetical approach had been adopted.

Criticism of the way in which compensation is as-

sessed is not new. In 1979, the Pearson royal commission report on civil liability and compensation for personal injury stated that "lump sums calculated on the present basis are unlikely to provide full year by year replacement of the plaintiff's loss of income".

Further, David Kemp, QC, author of the lawyers' bible on damages, *Kemp and Kemp*, has campaigned for years for a change in the judges' approach. He believes that the principle of full compensation has been prejudiced by inflexible and unscientific evi-

dential rules of thumb which effectively exclude the use of expert actuarial and economic advice.

For claimants, faced with the prospect of their compensation being eroded by inflation, the situation is far from satisfactory. The introduction of index-linked periodic payments is undoubtedly the best solution. However, structured settlements are likely to take several years to gain widespread acceptance, and even then, claimants may still opt for part or all of the award or settlement to be in the

Henry Whitcomb lifts the lid of the long-simmering compensation cauldron

Selling accident victims short

traditional lump sum form. It seems inevitable that if justice is to be done and the injured fully compensated for their losses, the judges must use the best information and advice available to them. In the most complex case, this may mean more general acceptance of actuaries as expert witnesses.

In the majority of claims, however, actuarial tables produced specifically for personal injury litigation could be used as the primary basis of assessment.

This is hardly a radical

move, considering that the tables were drawn up more than five years ago by the government actuary's department, acting on the unanimous recommendations of a working party, chaired by Sir Michael Ogden, QC, and which included representatives of the Faculty and the Institute of Actuaries, the Faculty of Advocates, the Bar and both Law Societies.

Given the tables' pedigree, it is incomprehensible that the judges have not felt able to use them instead of the existing arbitrary method of calculating damages.

Simply, under-compensation is too high a price for further judicial caution.

● The author is a member of the Citizen Action Compensation Campaign.

Liability Insurance Proposal

Appendix III

Please answer questions in BLOCK CAPITALS

Full Name		
If an individual, please state (i) Title (Mr/Mrs, Miss, Ms)		(ii) Date of birth
Postal address		
Postcode		Telephone No.
Full description of your business		
Date of commencement in business		

Address(es) and nature of use of all premises to which this insurance is to apply

Address	Use

Address(es) and value of all premises hired or rented to you

Address	Value

Details of your Business

1. Describe: – a) Work undertaken. b) Goods supplied, installed, erected, repaired, altered or treated by you.		
2. Have you entered into any agreements assuming liability for injury, illness, loss or damage for which you would not have been liable in the absence of such agreements?	YES/NO	If YES, please supply copies of the agreements
3. How do you ensure that any sub-contractors employed by you maintain adequate liability insurance?		
4. Do you undertake operations outside the United Kingdom? If YES, give full particulars, including countries concerned, nature of activity, wages and expenditure.	YES/NO	
* 5. a) Do you export directly or, to your knowledge, indirectly to U.S.A. or Canada?	YES/NO	a)
b) Have you previously exported goods to the U.S.A. or Canada? If YES, give full details, including gross turnover and nature of goods exported.	YES/NO	b)
c) Do you export goods to any other countries?	YES/NO	c)
d) Do you import any goods? If YES, give particulars including countries concerned.	YES/NO	d)
* 6. Do you supply or have you previously supplied goods for use in the nuclear, aircraft or marine industries? If YES, give full particulars including turnover. (N.B. Separate insurance may be necessary.)	YES/NO	
* 7. Do your goods bear a permanent marking to identify the date of manufacture or distribution.	YES/NO	
* 8. Give details of any facilities at your premises for loading or unloading vessels or craft.		
9. If any of the following are or have been used, handled or stored in the course of your business please give details: – a) asbestos, silica, explosives, or other substance involving a hazard to health or property. b) radioactive substances or other sources of ionising radiations. c) power driven machinery. d) flame cutting or welding plant or other heat producing plant or processes used away from your own premises, by you or your sub-contractors.		a) b) c) d)

* These questions are not relevant to EL Insurance.

10. Are you aware of any situation where noise may be impairing hearing ability?
If YES, give full details.

YES/NO

* 11. Do you hire in or hire out plant?
If YES, please state:

a) type or plant

b) estimated hire charges

c) conditions of hire used

YES/NO

Hired in

Hired out

a)

b) £

c)

a)

b)

* 12. Give particulars of any of the following to which this insurance is to apply:

a) mechanically propelled vehicles (unlicensed or for which compulsory insurance is not required).

b) mechanically propelled plant, licensed for road use. (N.B. Insurance cover required under any Road Traffic legislation is not provided by this liability policy.)

If there is any specific liability insurance in force for any of these items, please give details:

Claims and Insurance History

- What is the name of your present liability insurer?
- Please give details if any insurer has ever declined to insure you, required special terms to insure you, or cancelled or refused to renew your insurance.
- Have you ever been prosecuted, or received notice of intended prosecution, under the Health and Safety at Work etc. Act 1974 or any Consumer Protection Act?
- Claims experience.
Please give information for each of the last five years.

Year	* Total payment to employees and other persons.	* Gross Turnover	Employers' Liability Claims				Public Liability Claims				Products Liability Claims			
			No.	Paid £	No.	Out-standing £	No.	Paid £	No.	Out-standing £	No.	Paid £	No.	Out-standing £
19														
19														
19														
19														
19														

* Total Payments must include overtime and board and lodging without deductions such as National Insurance, Income Tax etc.
* Gross Turnover means all your receipts from trading activities without deduction for Value Added Tax.

Estimated Payments and Turnover for next 12 months

Description	Est. No.	Estimated annual payment to all employees and other persons	
		work at your premises	Work away from your premises
Clerical commercial travellers and managerial employees who do not engage in manual labour.			
All other employees.			
Labour gangers, labour only sub-contractors and self-employed hired or borrowed persons.			
All other sub-contractors.			
Proposer's own annual remuneration if working manually in the business.			
Estimated gross turnover		Home £	Overseas £

* These questions are not relevant to EL Insurance.