

IMIA WGP 63 (09)

RISK CONTROL AND CLAIMS HANDLING IN ADVANCE LOSS OF PROFITS INSURANCE (ALOP)



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1. INTRODUCTION

Delegates will probably be aware that the subject of ALOP: Advanced Loss of Profit or DSU: Delay in Start Up has in some form or other been the subject of previous IMIA working party presentations, namely:-

- IMIA6.53 dated 1996 (New development in Advance Loss of Profits)
- IMIA WGP11 dated 2000 (Risk control and claims handling in advance loss of profits insurance)
- IMIA WGP 25 dated 2002 (extension of the period for delay in start up cover DSU)
- IMIA WGP 48 dated 2006 (ALOP/DSU coverage for tunnelling risks)

ALOP/DSU covers emerged into the market during the 1980's and are a regular and growing source of business to insurers.

Since the last IMIA papers on ALOP the global economic climate is clearly in recession so it is no surprise that the brief put to this Working Party was, in part, aimed at highlighting some issues which insurers face in these challenging times.

Chapter 2 details statistics and analysis of worldwide ALOP results as provided by reinsurers for the period 1.1.1980 to 31.12.2008 and can be used as a comparison to previously supplied IMIA data. I.E - (Ref IMIA – WGP No 11 of 2000).

Chapter 3 provides an overview of the world socio-economic environment and deals with the effects of global trading and recession while chapter 4 examines underwriting and claims adjusting issues surrounding risks and policy wording terminology.

2. MARKET RESULTS

Analysis of the ALOP business dated 07.05.2009 for the period 01.01.1980 – 31.12.2008.

1. **General**

The following analysis on ALOP risks and claims is based on a reinsurer's portfolio, covering such business in all parts of the world. It comprises risks which were reinsured during the period of January 1980 up to December 2008 and only those which were facultatively placed with the reinsurer or which exceeded the respective treaty limits of the ceding insurer. The analysis offers insights into changes, developments and trends since similar publications in 1996 (IMIA WGP 6-53) and 2000 (IMIA WGP11).

These latest statistics comprise a total of 1,176 expired risks and 77 claims out of all industry classes across the globe. The only claims considered were those which exceeded Euro 150,000 for the reinsurer's share and which were closed. For those few claims still pending, the current loss reserve was reviewed for the purpose of this analysis and taken into account.

2. **Number of Risks**

The total demand for ALOP covers has risen significantly within the last ten years doubling from 539 risks (for the period January 1980 to June 2000) to 1,176 risks (cumulative by end of 2008).

The steepest increase in the number of risks could be noted for power plant, which has risen from 11% to 27% of the total. The next largest sectors are Building Construction Risks and Industrial Process Plants, which along with Power Plants constitute almost two thirds of all ALOP risks.

3. **Sums Insured**

The ALOP sums insured for industrial installations increased from a total of Euro 33.2 billion as of mid 2000 to an actual total of Euro 90.7 billion. Similarly the ALOP sum insured per risk increased from the previous average of about Euro 61.8 million per risk to about Euro 77.1 million per risk.

Two industry groups stood out notably from the average: Industrial Process Plants with an average ALOP sum insured per risk of about Euro 143.3 million and Power Plants with an average of Euro 96.3 million per risk. At the low end of the scale an average of Euro 26.9 million per risk could be noted for the Wood Industry and of Euro 31.7 million per risk for the Food Industry.

When looking at the distribution of the Sums Insured across all industry groups, Power Plants showed the most significant increase from 21% to 34% of the total. There were shifts in the other industry groups as well, however to a much lesser degree.

4. **Number of Claims**

Generally, the frequency of ALOP claims is high. About 6.5% of all ALOP risks suffered a loss. Industrial Process Plants, Power Plants and Civil Engineering contributed strongly and in disproportionate volume to their risk count, while Building Construction showed significantly lower frequency.

5. **Claim Amounts**

The average ALOP claim stands at Euro 6.1 million (100%, ground-up) across all industry groups and has almost doubled over the last 8 years from Euro 3.43 million was calculated.

By industry sector the highest average cost can be found in the Building Construction industry at Euro 9.4 million, followed by Industrial Process Plants with an average of Euro 8.0 million and Power Plants at Euro 6.3 million. The least expensive claims are found in the Food Industry, where an average claim was about Euro 2.6 million.

Statistics and analysis of ALOP business.

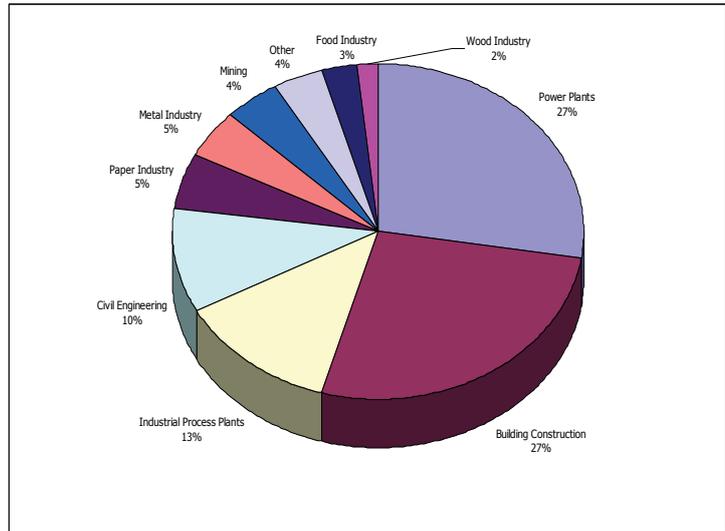
Results for the period: 01.01.1980 – 13.12.2008
All currency values: Euro
Date: 07.05.2009

1. **Summary Table**

Industry Group	Number of Risks	ALOP Sum Insured	Number of Claims	Loss Amount 100% - Ground Up
Building Construction	317	14,618,373,925	5	46,999,124
Industrial Process Plants	150	21,543,714,910	19	151,857,674
Civil Engineering	119	9,633,554,742	14	53,799,694
Food Industry	30	947,199,826	2	5,228,179
Wood Industry	21	566,712,528	5	22,376,681
Metal Industry	55	4,260,441,581	1	2,573,549
Mining	51	3,334,363,076	2	11,593,320
Other	48	2,314,149,428	2	6,010,540
Paper Industry	62	2,310,888,421	2	10,250,734
Power Plants	323	31,145,197,705	25	156,289,837
Totals:	1,176	90,674,596,143	77	466,979,330

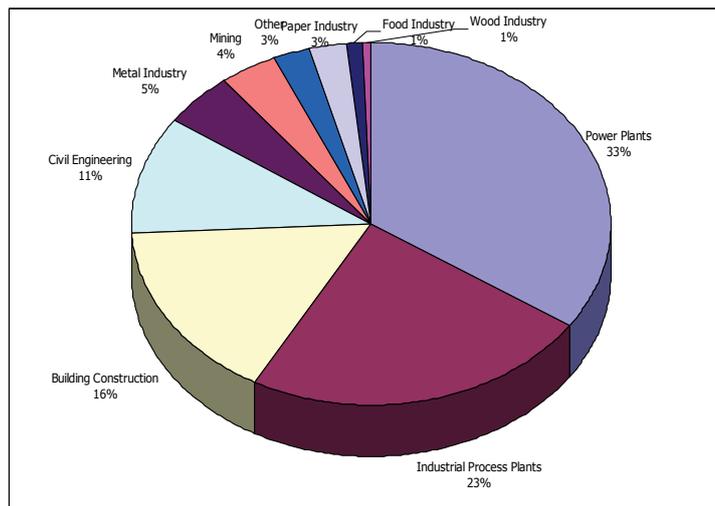
2.1

Risks per industry class	
Power Plants	27%
Building Construction	27%
Industrial Process Plants	13%
Civil Engineering	10%
Paper Industry	5%
Metal Industry	5%
Mining	4%
Other	4%
Food Industry	3%
Wood Industry	2%
Checksum:	1



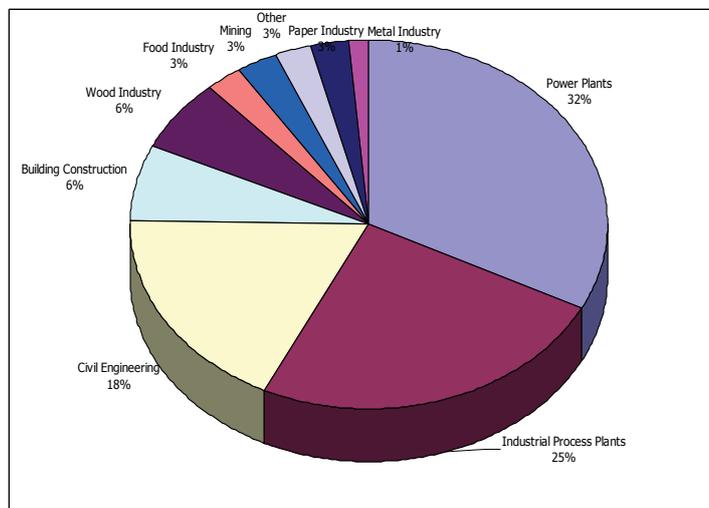
2.2

Sums insured	
Power Plants	34%
Industrial Process Plants	24%
Building Construction	16%
Civil Engineering	11%
Metal Industry	5%
Mining	4%
Other	3%
Paper Industry	3%
Food Industry	1%
Wood Industry	1%
Checksum:	1



2.3

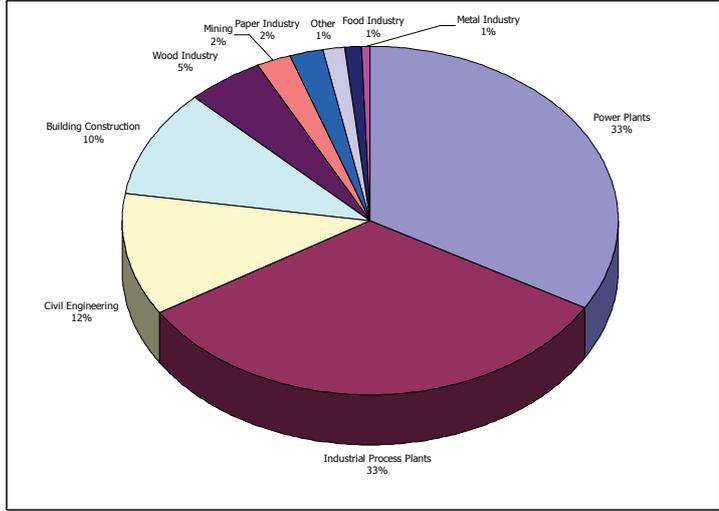
Number of claims	
Power Plants	32%
Industrial Process Plants	25%
Civil Engineering	18%
Building Construction	6%
Wood Industry	6%
Food Industry	3%
Mining	3%
Other	3%
Paper Industry	3%
Metal Industry	1%
Checksum:	1



2.4

Claim amounts

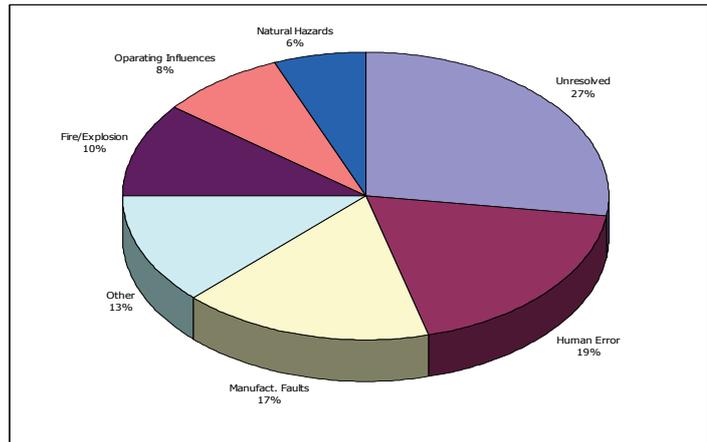
Power Plants	33%
Industrial Process Plants	33%
Civil Engineering	12%
Building Construction	10%
Wood Industry	5%
Mining	2%
Paper Industry	2%
Other	1%
Food Industry	1%
Metal Industry	1%
Checksum:	1



2.5.1

Cause of loss - EAR

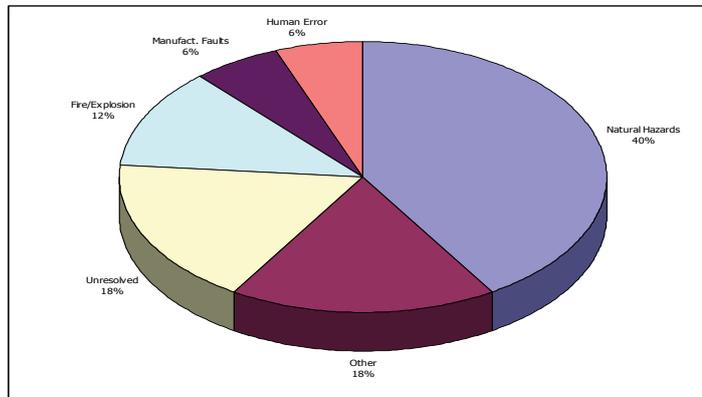
Unresolved	27%
Human Error	19%
Manufact. Faults	17%
Other	13%
Fire/Explosion	10%
Operating Influences	8%
Natural Hazards	6%
Checksum:	1



2.5.2

Cause of loss - CAR

Natural Hazards	41%
Other	18%
Unresolved	18%
Fire/Explosion	12%
Manufact. Faults	6%
Human Error	6%
Checksum:	1



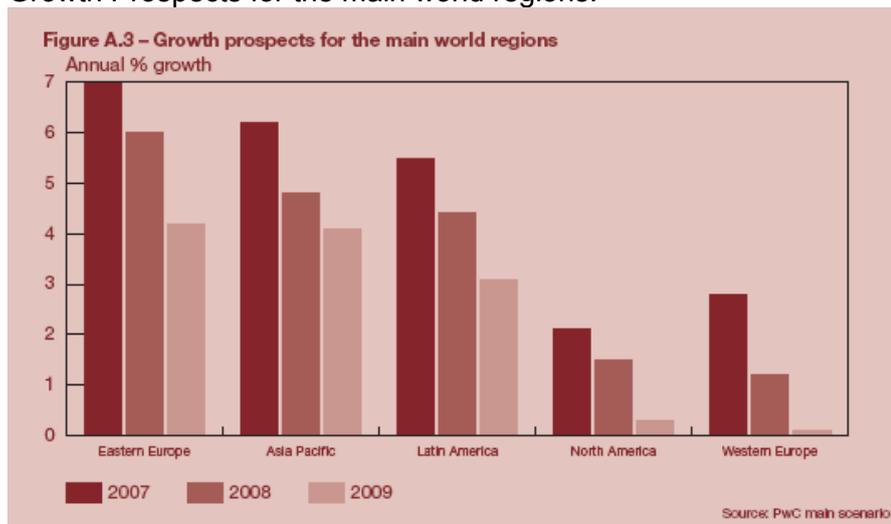
3. THE ECONOMIC ENVIRONMENT

In recent months we have seen a downturn in the economy and in this chapter we look at the socio-economic implications this may have on writing Advanced Loss of Profit business.

General overview

Global economic growth has averaged around 3.5% per annum (using market exchange rate weights) over the past five years, driven by a combination of robust growth in major developed economies and rapid growth in major emerging economies. IMF chief economist Olivier Blanchard says that “we now expect the global economy to come to a virtual halt”, with world growth projected to fall to just ½ percent in 2009, it’s lowest rate in 60 years ¹. A key driver behind the slowdown relates to tighter credit conditions for firms and households. The freezing of credit markets, collapse of stock markets, large shifts in exchange rates and commodities prices and unprecedented policy reactions have combined to create an extremely uncertain environment for market participants and forecasters alike ².

Growth Prospects for the main world regions:



The shift in economic and political power from the West towards the East is a long-term shift and will bring with it a completely different pattern of investment, consumption and trade. Emerging market countries will increasingly influence patterns of trade and investment to reflect their own natural resource requirements and the banking system will follow these flows ³.

Whilst the world is firmly gripped in recession, recent actions by authorities in all the major economies to support their banking systems have reduced significantly the risks of meltdown in the financial system ⁴.

¹ International Monetary Fund – IMF magazine in the News Feb 13 2009

² Prospects for the global economy – prices quoted are as at 20.11.08

³ ‘The day after tomorrow : PricewaterhouseCoopers perspective on the global financial crisis’ PricewaterhouseCoopers

⁴ ‘UK Economic outlook November 2008’ - PricewaterhouseCoopers

Regional variance

United States: The US economy has slowed markedly in response to the early weakening of the housing market. After a short-lived recovery in the second quarter of 2008 the severe financial crisis that has unfolded since September seems likely to push the US into an outright recession ⁵. President Obama has announced plans to 'jump-start' the US economy in order to mitigate the effects of the downturn ⁶.

Latin America and the Caribbean: Latin America and the Caribbean have enjoyed four years of robust growth with modest inflation. However in 2008, inflation jumped in response to higher oil and food prices which has led to a reduction in previous growth levels.

Europe and Central Asia: Output, while growing, has slowed in 2009. In 2009, deteriorating external positions and new risks from the global banking crisis are likely to depress prospects for vulnerable countries and the downside risks are substantial ⁷.

East Asia and Pacific: GDP increased by 8.5% in 2008, down from 10.5% in 2007 (excluding China, growth in the region fell 5.3% from 6.2% in 2007). Of importance to the slowing pace of growth, China's GDP growth in the 3rd quarter eased to 9% from 10.6% in the first quarter on a slump in investment and exports. The deterioration in the outlook for Japan and the US reduced export growth, which for East Asian Countries, outside of China fell from 10.5% in 2006 to 4% in 2008 ⁷.

South Asia: GDP eased to an estimated 6.3% in 2008, from 8.4% in 2007 and from a 25 year high of 9% during 2006. High food and fuel prices, tighter international credit conditions and weaker foreign demand have led to the slowdown.

Middle East and North Africa: have seen the effects stemming from the ramp-up in global fuel and food prices, at both extremes of the spectrum.

Sub-Saharan Africa: Outside of South Africa, growth increased to a remarkable 7% in 2007, the highest in 25 years, as outcomes for both oil-importing and exporting countries were robust. Growth among oil exporters increased to 8.2% in 2007 exceeding 5.5% gains for a 5th year running. The regions growth is expected to decline in 2009 to 4.6%, before firming to 5.8% by 2010 as a result of recovery in external demand ⁷.

The above highlights the overall worldwide economic slowdown and that although there has been some slowdown in China and India, their growth rates remain relatively robust. Other previously strong emerging economies, like Brazil, Mexico and Russia have however started to feel the impact of the recession.

⁵ 'UK Economic outlook November 2008' – PricewaterhouseCoopers

⁶ Obama presents new economic rescue plan – USA Today

⁷ Prospects for the Global Economy – Prices quoted are as at 20.11.08

Furthermore, in the past developing economies would track the American economy. This is no longer the case and means the world's developing nations are no longer nearly as dependent as they used to be on consumers in the United States and other rich nations. As a result, we expect further significant infrastructure growth in the Middle East and China, which in turn will create demand for ALOP cover.

This view is further supported by the shifting patterns in currency fluctuations.

Currency fluctuations themselves present ALOP underwriters with numerous challenges, not least of which:-

- Advanced Loss of Profit is difficult to calculate with such fluctuations. Advanced Loss of Profit insures the loss of future earnings to the business due to a delay in the construction process, but this is hard to calculate in an uncertain economy where there is no guarantee what the earnings would be or what the currency valuations would be.
- Commodity prices remain volatile and with fluctuations in commodities, if construction projects are delayed for instance due to a machinery breakdown, and commodities used to produce this item of machinery rise dramatically, the cost of replacement is likely to be more than initially projected.

Sector specific

Infrastructure Investment: In the United Kingdom and United States specifically, announcements of investment in Infrastructure to boost the failing economy will lead to an increase in jobs, spending on commodities and purchasing of equipment. Increasingly governments have sought to involve the private sector in the development of infrastructure projects such as power plants, roads, hospitals, etc. A growing number of privately funded infrastructure projects are being financed on a non recourse or limited recourse basis. In such cases the banks providing the funds are dependant on the completion of the project and its generation of revenue to service and repay the debt⁸.

In the UK the government is likely to continue investment through PFI and infrastructure projects which will provide a boost to the economy.

Construction: Increased costs of raw materials have been the main driver of inflation in the construction sector. The escalation in the price of materials is one of the main reasons for the increase in product manufacturer's costs, but there is another crucial factor, rocketing energy prices have resulted in manufacturers having to spend considerably more money on bills than they have in previous years⁹.

Energy: The wholesale cost of energy in Europe has also increased, especially in the United Kingdom, where electricity prices are 25% higher than in Europe⁹. Energy demand is projected to grow somewhat more quickly as coal, natural gas and non-fossil-fuel energy sources increase their share in total energy

⁸ Construction Insurance – The Insurance Institute of London

⁹ Construction News – how contractor's costs are rising Sept 2008

supply. The extent to which this shift occurs will depend importantly on environmental policies. A more proactive stance towards restraining carbon emissions could speed the pace at which alternative energies become economically viable and reduce the expected increase in reliance on coal-powered electrical plants ¹⁰. A return to nuclear energy is becoming more likely.

Governments are investing more in infrastructure projects to boost the economy which in turn has implications for the demand for Advanced Loss of Profit cover. According to Experian, construction industry output will fall by 3%. This will affect a lot of industry areas, for instance, private house building, which is also affected by the decline in the number of approved mortgages available.

Economic Outlook for ALOP

The worldwide recession coupled with the financial sector has led to a dramatic economic slowdown and a shift in the economic power base from West towards the East. As a result, we can anticipate continued infrastructure investments in the West as part of the drive to kick start the economy, while in the Middle East and China further infrastructure can be expected to support their growing economies. These drivers will in turn lead to increasing demand for ALOP covers.

Currency fluctuations and commodity price volatility as a result of the economic climate will present ALOP underwriters and loss adjusters with challenges in determining the true cost of loss, combined with rising inflation for construction materials and replacement items.

These features would suggest growing but increasing volatility in performance for ALOP, particularly when we consider the risk of further recessionary related claims and therefore place great emphasis on underwriting and claims adjusting discipline.

¹⁰ Global economics prospects – Commodities at cross roads 2009 – The World Bank

4. COMMON AREAS OF CONCERN

The essential objective of ALOP cover is to insure the risk of the loss of opportunity to earn revenue. The extent and nature of this opportunity varies from project to project.

Critical to successful underwriting and therefore accurate claims adjustment is an understanding of the nature of the revenue and the sums potentially exposed along with other related factors.

This section attempts to explore in some detail these claims adjustments and provides a specific focus on wordings and definitions and implications for the power industry.

4.1

4.1.1 Transparency of Project Management

Construction projects are inherently dynamic and require periodic monitoring to evaluate progress and potential changes in the risk exposure. Typically, the execution of construction projects is hampered by delays due to a variety of reasons.

In the event of an ALOP claim, the distinction between insured and non-insured delays is crucial in the claim handling process. Although the exchange of project information throughout the entire period of insurance is essential, the transparency of the project management activities becomes critical once an ALOP loss is triggered.

The claims adjustment of ALOP losses is a very complex area. Specific knowledge of the relevant industry sector is indispensable to establish a constructive rapport with the project management team, evaluate the project information and assure a realistic assessment of the insured's profit loss.

4.1.2 Analysis of Project Delay

Most contractors or principals use sophisticated planning software tools to schedule and monitor project activities. Among many features, these tools allow the determination of the critical path of a project based on a given set of time constraints. The critical path ultimately corresponds to the shortest time the project can be completed. In general, turnkey contracts contain some form of liquidated damages obligation which the contractor would incur for the late completion of the project. Therefore, the contractually agreed overall project duration contains some schedule contingencies as the contractor must weigh a competitive time schedule against the likelihood of late project completion. A clear trend towards more condensed project schedules is observed mainly due to the requirement from the principal to commence with the commercial operation of the business as soon as possible. The contractor might be rewarded by bonus payments for shorter construction times.

While the insurer can assess whether a given project time schedule

is realistic, the contingencies built into the schedule by the contractor are virtually impossible to identify and to quantify. These schedule contingencies may provide some comfort to the insurer as project delays can be absorbed and potential ALOP losses averted. Most schedule contingencies only become apparent by virtue of progress monitoring by the insurer.

Status of Project at the Time of Loss

In order to ascertain a basis for any ALOP loss adjustment the project status at the time of the loss must be carefully analyzed. The main objective is to identify project delays incurred before the loss which might already result in a late commencement of the insured business. These delays must be clearly distinguished from delays caused by a loss.

The foundation for the evaluation of any delay in a construction project is formed by the original project schedule (Gantt chart or other network diagram) as well as progress reports issued by the contractor and/or findings from site surveys which may have been performed prior to a loss incident.

Project reports of reputable and experienced contractors are very comprehensive and contain detailed schedule information. The verification of the following aspects can give clues to already occurred or imminent project delays prior to a loss event:

- Late shipments; shipping problems
- Revision of project schedule
- Modification of equipment on site due to performance and/or availability issues
- Modification of working methods; altered boundary conditions
- Changes in project management
- Potential labour dispute issues
- Accident record involving site personnel
- Funding problems

With the previously mentioned planning tools, specific “S-curve” diagrams can be produced, which are generally attached to the site progress reports. These diagrams visualize the planned versus the actual progress on an overall project basis or for specific project subtasks. If the project is properly monitored, any deviation from the original project schedule and its consequence in terms of a delay would become apparent.

Impact of Loss on Schedule

Once a baseline with respect to project delays prior to the loss has been established, an estimation of the impact of loss related delays is carried out. This investigation includes the identification of project tasks directly and indirectly affected by the loss in addition to the determination of equipment delivery times to rectify the insured material damage. Questions that need to be assessed as part of any claim would include:-

- What is the time requirement of project tasks that need to be repeated?
- By what delay are planned project tasks affected that can not be carried out according to the schedule as a result of the material damage delay?
- What equipment needs to be procured to rectify/repair the material damage and what are the respective lead times (replacement components available vs. complete fabrication/manufacturing necessary)?
- Is replacement equipment readily available or does it need to be manufactured first

Invariably the investigation leads to the question whether the scheduled commencement date of the insured business must be altered or the delays can be absorbed by the time buffer in the schedule. In order to reduce lead times the insurer may participate in discussions with equipment manufacturers and/or may suggest alternative solutions for the procurement of replacement equipment.

Obviously the cover provided for material damage must be carefully analyzed to fully understand the triggers in terms of the ALOP loss. A project delay as a result of an incident of damage may consist of both insured and uninsured delays. For instance, the level of design exclusion in the material damage section of the policy can considerably impact the extent to which project delays are indemnifiable (e.g. LEG1, 2 3 or DE1 to DE5 design exclusions and associated triggers for ALOP, see Example Claim 2). In general, it must be distinguished between repair/rectification and betterment of a part or component.

Close monitoring of reconstruction and repair is essential in order to be able to distinguish between insured and uninsured components of delays. Such monitoring requires intimate knowledge of the respective industry sector.

Covered delays can also be impacted by unfavourable conditions for replacement equipment to reach the project site. Particular seasonal restrictions due to adverse weather patterns may temporarily prevent accessing the site. Furthermore, wide spread floods, may block or destroy access ways and require alternative ways of transporting goods to the site. Last but not least, custom clearance issues for equipment in some territories might considerably increase delays.

Reducing Delays & Loss Minimisation and Techniques

Once damage has occurred it is essential to explore possibilities to mitigate delays by means of accelerating project progress. Various parties are involved and the motivation to mitigate delays might differ from party to party depending on reasons that are not always obvious to others. Clearly, an open and transparent partnership between the insured and the contractor, as well as the influence of any lending party can help to expedite swift claims settlement. Such reasons may include:

- Non-insured delay caused by the contractor could be recovered once the date of completion is postponed due to an event covered by insurer (i.e. slow progress in work).
- The contractor is trying to reduce, or may have already exhausted liquidated damage (LD) payments associated with non-insurable delays and has no real interest in accelerating progress to recover from an insured delay.
- The principal may face certain obligations with respect to an off take agreement and is interested in reducing delays.
- The reputation of the contractor might be the driving force to complete the project on time.

Effective measures to accelerate the project progress and reduce delays have to be evaluated from project to project.

- Replacement vs. Repair: It might be possible to repair a piece of equipment but the principal does not accept repairs and instead insists on the replacement of the damaged equipment. A compromise solution may entail the temporary utilization of repaired equipment until a replacement arrives on site for exchange.
- Re-adjust or optimise project schedule: This, however, might increase the risk exposure compared to the original risk assessment including the increase of the PML.
- Add additional shifts: Add Sunday and night work. This, however, could become a difficult task when no qualified additional labour is available, i.e. in an overheated construction market.
- Alternative ways of sourcing equipment: Temporary equipment, different suppliers.
- Alternative ways of producing: multiple lines.
- Alternative ways of shipping equipment (airfreight instead of sea transport).
- In some cases it might be sensible to offer the contractor an incentive (Bonus) for accelerating the project.

4.1.3 **Analysis of Loss**

During repair a close monitoring process of the works should be introduced by the loss adjuster. In most cases, insured and non insured costs do occur (e.g. design improvement on a faulty part, see also Example Claim 2). Therefore a system should be devised at the beginning of a repair to be able to identify insured and non insured costs. This could be done by separate time registration sheets. The engagement of experienced loss adjusters with intimate

knowledge of local price levels, labour costs and other site specific requirements has proven to be very helpful.

Seasonal fluctuation in revenue/profit can greatly influence the financial loss. A good underwriting practice includes the stipulation of conditions in terms of the maximum ALOP liability per time increment (i.e. maximum monthly liability which might include a margin to allow for some seasonal fluctuation).

Increased Cost of Working (ICOW) in combination with Additional Cost of Working (ACOW) might bear some potential for conflicts. ACOW are additional cost of working, often as additional costs in the property damage section of the policy, where the contractor is the beneficiary. ICOW are advanced costs of working, which forms an additional cover element in the ALOP section where the beneficiary is the principal.

There is a potential that a contractor claims for ACOW under property damage as expediting expenses which then are reimbursed by the principal. The reimbursement of these costs should take place in a coordinated fashion and the principal should not be allowed to compensate the contractor for ACOW without the agreement of the insurer/loss adjuster.

The designed output of a production facility forms the basis during the initial project assessment and the definition of the final sum insured in the ALOP section of a policy. In case of a loss, the shortfall in output due to the impact of damaged equipment might be smaller than anticipated based on the design specification. As a result, it should be verified whether under normal circumstances the planned or specified output could have been achieved.

4.1.4 **Monitoring**

Risks under construction with ALOP cover in force need close monitoring and regular follow ups on the site activities. Ideally the named lead insurer of a project policy defines the risk monitoring/loss prevention program for the entire period of the project. This program should specify the actual dates of the site visits and the specifics of the monitoring activities to be completed on site. The LEG (London Engineering Group) has developed a Report on Risk Engineering Procedures and Protocols for Construction Risks¹¹ that addresses the scope of the site monitoring, the contents and time frame of the reporting to following insurance markets. Applying a policy condition that forces the lead insurer to execute the monitoring according to the protocol helps to guarantee a certain standard of monitoring.

On large risks and risks with complex production, the surveyors/loss adjusters and insurers should be involved at an early stage of the project in order to understand the monitoring process, become

¹¹ http://www.leg-uk.org.uk/pages/papers_risk_managment.htm

familiar with the site and project and last but not least to get to know the people in charge.

Site visits are part of the monitoring program. It is essential to time site visits during or immediately before key activities such as commencement of testing, transition of risk from the construction to the maintenance phase. This needs certain flexibility of the persons involved as often the schedules are changed at short notice.

Consideration should also be given to visiting suppliers and offsite assembly workshops during the assembly phase. Offsite storage facilities are places that might have high concentrations in values and it is therefore meaningful to visit these sites at an early stage to assess storage handling procedures during the period of high value accumulation.

4.2

4.2.1 **Different Cover Types**

No two risks are ever the same. This fact alone equally applies in the selection of an adequate and measurable Sum Insured which is to apply to each individual project and to be selected as the Sum Insured /Limit of Liability on the policy.

Irrespective of the trade or business the viability of a project will be the subject of a detailed planning and feasibility study from both a physical and financial perspective.

When presented with an ALOP/DSU proposition, it is imperative that the underwriters and adjusters are in possession of, and fully understand the Insured's business plan and financial model on which the project and its financial returns are anticipated. This information is crucial in determining the type of cover to be effected and the selection of an adequate Sum Insured.

The differing status of the Employer/Principal. The different types and make up of the business and the provision of finance will determine the appropriate cover, and the "basis of loss settlement" to be used on any given project.

The ALOP/DSU cover is designed to indemnify only the Employer/Principal against the financial loss arising from a delay in start up attributable to an indemnifiable physical loss since, in contrast to the material damage cover, the principal and the contractor have conflicting interests with regards to ALOP/DSU. Therefore only one party- "the principal" can be insured. Accordingly, the cover is often referred to as the "principal ALOP/DSU."

Even though contractors often request to be included as a named insured under ALOP/DSU, this is not feasible since they have no legal claim to the financial risks under this cover.

Insured nature Impact and consequences:

To include the contractor under ALOP/DSU would entitle him to claim for actual loss as sustained, and given the lack of information and potential risk of ambiguity regarding the contractor's financial losses, the Court may, in the event of litigation, award the contractor any amount it considered justifiable, hence the limitation to 'principal only'.

With regard to financial institutions looking to fund such projects. Given that the loan agreement between the financier and the principal obliges the latter to service the debt irrespective of the DSU conditions, the financial institution therefore does not need to be named as an insured in the ALOP/DSU cover. A loss payee clause can be added to the policy which would provide the financier with the relevant protection.

In broad terms ALOP/DSU insurance is aimed at protecting the finances of a project, but only tied to an indemnifiable material damage event, occurring during the construction phase of the project.

As said, there are different forms of financial losses appropriate to different businesses and trades which are dictated by the method of financing as outlined in the financial model.

The following options, or a combination thereof, are a few examples which may form the basis of cover and basis of loss settlement.

OPTION 1) Advanced Loss of Gross Profit.

This basis of settlement is generally more appropriate to manufacturing businesses. A product is manufactured and sold for profit after taking into account all overheads and specified working expenses, such as, premises costs, wages, raw materials, fuel, packaging and transportation ,etc.

Typical Example – The Principal is a manufacturer who plans to build and run a new factory or production line to expand the business.

- a) The capital investment may come from his own internal/shareholder sources. The Principal will, therefore need to protect his own balance sheet finances.
- b) The capital for the project may be financed from a bank. There will probably be a requirement for the Principal to protect the loan and agreement with the bank.
- c) The project may be part financed by a) and b) above. There is a need to protect both the Principal's own funds and the bank's finances.

OPTION 2) Advanced loss of Gross Revenue.

This basis of loss settlement is generally more appropriate where revenue is tied to earnings or fees received for services provided by the business.

Typical Example – The Principal is a hotel operator who plans to build and operate a new hotel and leisure centre.

- a) The financial protections required will be similar to Option 1), a), b), and c) above.

OPTION 3) Advanced Loss of Gross Rent.

This basis of loss settlement is generally more appropriate to Property Owners who derive their income from lease charges and rents.

Typical Example – The Principal is a property developer/property owner who plans to build and own/manage a new retail shopping mall.

- a) The financial protections required will be similar to those outlined in Option 1) a), b), and c) above.

OPTION 4) Loss of Bank Interest.

This basis of settlement is tied to the additional interest payments incurred and/or on capital borrowed and is generally appropriate to speculative house and property developers.

Typical Example – A speculative developer raises capital to finance the building of a project for sale or lease or a combination of both.

- a) The financial protections required could be similar to those outlined in Option 1) a), b), and c) above, but generally the majority of speculative developments rely heavily on Bank loans with the speculative developer moving on to the next commercial venture. (see section 4.3.1 - Funding sources and their possible implications)

The foregoing demonstrates the importance of obtaining a copy of the Insured's financial model and budget which documents/ substantiates the anticipated performance of the model which runs parallel to the physical performance, duration and expenditure incurred during the construction programme.

Having understood the financial model which forms the basis of ALOP/DSU cover and the basis of loss settlement, it is important, in selecting an adequate Sum Insured, to consider the ALOP/DSU cover in the context of the scope of the risks insured in the underlying Contract Works Project Policy, including extensions which can impact, not only on the selected indemnity period, but also the Sum Insured.

Examples of Extensions:

Denial of Access: Multiple Lift Operations: Offsite storage: Suppliers extensions: Failures of incoming/outgoing supplies etc.

Additionally, it is important to think beyond the Project policy, as the majority of Employer Project Contract Works policies do not cover Contractors Plant or Hired in Plant. The utilisation of specialist plant could have a considerable bearing on the ALOP/DSU claim if ignored.

Example

A true example of this occurred when specialist lifts were being undertaken by the world's largest floating crane. The operations were carried out successfully and the crane demobilised.

At a later stage in the contract, indemnifiable damage was sustained to part of the contract. This required the damaged items to be removed by the original floating crane and returned to the original suppliers for repairs.

On enquiry it was discovered that the original crane was working off the Gold Coast of Nigeria and was not available for some 14 months, including demobilisation time and towing back to UK.

At this point, Insurers and Adjusters working closely together, agreed to utilise the ICOW (Increased Cost of Working) extension under the policy to meet the 'additional expenditure necessarily and reasonably incurred for the sole purpose of avoiding or reducing the losses. In this example there would have been an inevitable and serious delay to the contract resulting in a substantial claim under the ALOP/DSU Policy.

The economic ICOW resulted in commissioning the largest available UK based floating crane and paying £250 k for modifications to jib, spreader bars and counter weights to enable the contract to proceed with minimal interruption.

Having considered the financial model and the scope of cover provided by the underlying Contractors All Risks Policy. The actual risk will need to be assessed in order to select an adequate Indemnity Period which in turn is translated into an adequate Sum Insured.

In order to achieve this, the underwriter will be required to understand the works programme in detail and will rely on the following basic information.

- A copy of the Contract Conditions.
- Details of the parties to be insured.
- A schedule of the Works Programme in the form of a Gantt chart / Bar chart.
- A specification of the works to be undertaken.
- A detailed Method Statement of the works to be undertaken.

- Identification of high importance materials, prime items of plant and equipment and components including their source and country of origin.

It is not just sufficient to consider prime items or obvious stages of the works programme.

Example

A large element of the ALOP/DSU claim following the major fire at The London Underwriting Centre in August 1991 concerned the replacement of large quantities of stained and damaged marble flooring and cladding.

At the time of replacement it was discovered that the original materials, delivered and installed some eighteen months prior to the fire, had come from a particular Italian quarry and indeed from a specific seam from the quarry which had since closed. Disproportionate delays were encountered in re-opening the quarry in order to resource matching replacement materials.

4.2.2 Indemnity Period

When selecting a Sum Insured and Indemnity period it is not unusual for the Insurer to be presented with a broking submission containing details of a pre-selected Sum Insured, Indemnity period and Time exclusions. Often the pre-selected Indemnity period represents the actual contract period.

However an underwriter should exercise caution when considering the adequacy of the Indemnity period which will ultimately determine the overall risk.

The Indemnity period (subject to application of a Time exclusion) represents the period calculated from the date of anticipated completion of the works or commencement of commercial operations and at which point revenue is expected to be realised and earned, (except where the works are or could be affected by delay in completion caused by an insured indemnifiable incident).

To reach a decision on what the maximum Indemnity period should be, it is necessary to consider various risk and event scenarios and estimate how each loss would be dealt with.

In many cases the time taken to rebuild a part of the works would exceed the time originally taken for its original construction.

Full allowance needs to be made including the effects that the various extensions under the works policy can have on a loss e.g. Removal of debris, development of plans for remedial works, design or re-work to establish the method of carrying out the repair. The possible re-ordering and availability of components and materials and the possible transfer of parts back to manufacturers premises for repair.

Generally the ALOP/DSU maximum probable loss will be incurred by an incident occurring immediately before completion. At this time the contract works risk will be exposed to its maximum with only the minimum of time to catch up with any re-programming of the original building programme. This will almost inevitably lead to an ALOP claim.

The selection of an adequate indemnity period is a matter for determination and agreement between underwriters, the insured and their advisors.

Summary of some basic factors for consideration when setting an appropriate indemnity period:

- Study and interpretation of the Gantt chart (assessment of critical path).
- The response and mobilisation time to initiate inspection of the damage.
- Investigation into the cause of loss and agreement by all parties to the most appropriate course of action (including where appropriate the operation of the ICOW clause).
- Removal of Debris.
- Re-approval by any planning or regulatory authorities.
- Procurement procedures and lead time for manufacturers, suppliers and delivery of replacement equipment and materials.
- Repair and reconstruction time.
- Re-commissioning period.
- Regaining any lost markets or customers.

4.2.3 **Actual Sums Insured**

The actual Sum Insured will be an amount or a total of several specified amounts as detailed and extracted from the financial plan which forms the platform of the financial feasibility on which the project and its funding is based i.e. The Business plan.

The Business plan will normally express the figures as annual amounts for basic revenue and accounting purposes. Therefore the Sum Insured/Limit of Liability to be selected is the annual amount multiplied by the selected indemnity period to apply to the risk e.g. 18 months indemnity period = Annual Sum Insured figure multiplied by 50%.

It is important for all parties to bear in mind when selecting the Sum Insured that Insurers could apply an average clause and seek to impose a proportionate reduction in the claim settlement if the Sum Insured is less than the maximum loss for the relevant Indemnity period.

Other basic factors which may influence the selection of the Sum Insured and Indemnity period and indeed the adjustment of a loss are, for example:-

- 1) Where a risk is spread, and for example, where several production lines make up the Construction project, it may be considered safe to allow a proportionate adjustment in EML on the assumption that the whole project could not be affected in any way by a single incident. However consideration will be needed regarding any key common features of the building or process where delay in completion of one unit could delay commercial operation.
- 2) Business assumptions for performance and anticipated financial targets can be optimistic, particularly when they are used to attract new investors, business partners and customers. This can lead to instances of over inflated Sums Insured.

It is therefore important that the underwriter and adjuster is satisfied that the business assumptions that support the financial plan, that in turn support the calculation of the sum insured, are realistic, given that the business has no trading reference from previous years.

In this regard the due diligence studies made by lenders involved in financing projects are a useful reference point.

- 3) The works programme or Gantt chart is part of the means by which the underwriter will assess the critical path on a given project. These pieces of vital information are equally important to adjusters in the settlement of a claim or taking decisions to minimise the effect of a potential claim.

It has to be recognised that these are only plans and the reality of the actual situation needs to be verified and validated at intervals as the works progress.

Timing and sequence assumptions made by the designers and contractors during the planning stage may be revised many times during the actual project owing to a number of uncertainties and changing circumstances which are ever present even in the most straightforward construction project.

It is therefore important to recognise the true practical value of the works programme, not only in assessing the risk but also in the adjustment of a loss.

Flexibility in the programme of the works is inevitable and can be desirable and the need to make changes along the way is an inherent feature of the sequence of the works.

A realistic allowance should be made for the fluid nature of the programme information, against the Insured's continuous obligation /requirement to disclose material changes in risk throughout the period of insurance. Both should be viewed in the context of the overall contract.

It is therefore crucial, throughout the period of the contracts for Insurers to monitor site progress and document any alterations to the original Gantt chart, including the reasons for, and time effect that such change and deviation may have on the original programme.

Any changes or slippage to the original contract will need to be recorded and notified to an adjuster, particularly in such circumstances where the delays are not caused by insurable events e.g. bad weather; labour disputes; shortage of materials etc.

Part of the process in adjusting a claim will be to identify any delays caused by non-insurable events and to offset these delays by calculating a revised contract completion date.

This revised date will be taken as the date on which the Indemnity period commences after making due allowance for such non insurable or excluded delays and the application of the time exclusions.

4.2.4 **The Deductible /Time Exclusion.**

Deductibles can be expressed simply as a sum of money, but more often, and to be recommended, they are time-related – for example '*Sixty days or sixty days in the aggregate*'.

There are two types of time deductible:

- any loss arising in the first, say, 60 days; or
- a pro-rata deductible in which the average daily loss is calculated and 60-days' worth of loss is then deducted from the total loss suffered.

Many operations will have a 'start-up curve' where output starts at a low level and builds up as the plant is successfully balanced and the operators grow in confidence. In such a situation, the loss excluded by a deductible that is confined to the first 60 days of such operations will be significantly lower than 60 days of full output, or even the average over the whole loss period as in:-

'The period stated in the Schedule for which the company are not liable. The corresponding amount shall be calculated by multiplying the average daily value of loss sustained during the indemnity period by the number of days stated in the Schedule'

Uncertainty can prevail over when the indemnity period (and attaching deductible) begins. In many policies it is clear that the deductible and ensuing indemnity period run from the date on which (but for the insured delay) start-up would have been achieved and/or revenue earned.

The wording might take the form:

" ... the period during which the results of the business are affected in consequence of the delay ... and ending no later than the Indemnity Period detailed in the policy".

In some businesses, revenue may not have been expected to flow until some time after start-up. Until the revenue fails to materialise at the date originally predicted, it is arguable that 'the results of the business' have not been affected. Therefore the deductible and indemnity period do not start to run until maybe some months after the originally intended start-up date has passed. However, it may be considered that the delay immediately translates into less production being achieved than had been planned, and a shortfall in production is equally as much 'the results of the business', thus the deductible and subsequent indemnity period start to run as soon as the originally intended start-up date is missed.

By contrast, where the deductible is expressed as the first 60 days of any delay, there can be some situations in which no financial loss occurs during the initial period of delay and the deductible then provides no form of loss participation by the insured.

Pro-rata deductibles are common, for example, 'When a delay exceeds the deductible period, the indemnity is reduced in the same proportion as the deductible period bears to the Period of Indemnity', but have the same effect of producing a deductible based on the average daily loss.

Many consider pro-rata deductibles to be the most equitable expression of underwriters' intention that any loss should bear an appropriate element of self-insurance, and in this form, they avoid many of the disputes that can attend the other two examples given above.

Clearly, in many instances, the deductible cannot be calculated until the whole loss is known. This is one of many reasons why interim payments on DSU losses present the insurer with particular worries.

4.3

4.3.1. **Funding sources and their possible implications**

Historically the main purchasers of ALOP/DSU covers used to be the traditional manufacturing/producing companies who served to protect their anticipated growth in the form of increased revenue or gross profit etc in an expanding growth economy.

In the past, the major world economies funded infrastructure and service provisions from own government budgets from levied taxes with little or no requirement or concern for protecting national spending in the form of ALOP risks.

The mid to late 1980's saw a major shift in countries' finances, commencing with the privatisation of major, previously nationalised industries and services/utilities providers.

Previously government funded core infrastructures such as:- Power Utilities, Education, Health, Defence, Transport and Social Housing, were privatised with the main funding of such development being provided by banks and global financial institutions.

This major shift in global procurement and financing led to the birth of PFI (Private Finance Initiatives), D.B.F.O. (Design Build Finance Operate) and PPP (Private Public Partnerships) etc, as a vehicle for funding major worldwide projects.

The first major contract to be financed on this basis was the Channel Tunnel. The British and French governments, in association with the EU, identified the need for the fixed channel link, but neither government would commit to the funding from State finances. Hence the project was privately funded from world banks and shareholders who invested in the commercial venture with long term loan monies being repaid from surplus operating revenue net of operating costs and specified working expenses.

The introduction of private funding initiatives not only affected the funding, procurement, tendering and building of such projects, but also brought about significant changes to our various insurance markets and the growth in ALOP/DSU covers.

The aforementioned construction sectors were previously funded by various Governments and state controlled sector budgets. These central government projects were backed with the finances guaranteed by each funding country.

Following the introduction of private financing, the project provider is now required to complete the feasibility study, including its supporting financial model. He then obtains the finances from the financial institutions with a supporting loan agreement to guarantee loan repayments from the projected earnings (in whatever shape or

form as detailed in para 4.2.1 – Options 1 to 4, etc) from the successfully completed Construction project.

It must be said that ALOP/DSU Insurance is not a compulsory form of insurance.

However, in order for the Banks to protect their own loans there will be a loan agreement and contract in force which makes it a requirement of the loan, whereby the works and its anticipated finances are protected by Insurance.

Historically Banks used to lend money by making a sound banking business judgement based on the borrowers own credit rating and governance security. Banks traditionally always had the facility to protect their own funds by purchasing specialist market, Credit guarantee, Bond and Collateral Warranty etc covers at their own expense. However, the introduction of PFI funding has seen the financial risk being transferred to the borrowers in the form of ALOP/DSU covers with significant requirements being asked of the Construction Insurers in the form of :-

- Banks as joint Insured's.
- Banks as first call, via loss payee clauses.
- Multiple Insured's – Employer, Main Contractor, Sub-Contractors and lenders, etc in tier.
- Non-invalidation and Non-vitiation clauses, etc.

Some Insurers may view these clauses as an anathema and a conflict to their basic instincts and to the basic principles of insurance. However, in reality we estimate that underwriters will be hard pushed to recall many instances where warranties, terms and conditions, etc have been breached in any major material way to an extent where the policy is void and a loss repudiated.

An additional factor which needs to be recognised and which is peculiar but relevant to some private financed projects is as follows:-

A number of projects are set up by major consortia involving a number of “in house” subsidiary companies, primarily owned by the same parent company.

One subsidiary company could be involved in design, manufacture and supply, whilst a second subsidiary is purely involved in the construction process. A third subsidiary company is often set up as the vehicle to own, maintain and operate the enterprise on a permanent basis following completion of construction.

For underwriters and adjusters alike, there could be a degree of moral/commercial hazard to consider in this situation as, in certain circumstances, it may be more beneficial for one or more of the parties to either escalate or even slow down the project to suit the needs of the parent company. E.g. the end user operating subsidiary may seek to delay acceptance and take over of the plant

by insisting on extended testing/commissioning and performance running, thereby gaining the advantage of an extended CAR/ALOP cover whilst earning income from an operating /part operational plant.

These factors alone emphasise the importance and need for regular site surveys and project monitoring. Insurers and adjusters need to be fully aware of any alterations to the programme and the need to understand the inter-group trading relationship and the extent of contracts exchanged between the various parties to the project.

4.3.2 **The impact of economic volatility**

We are all no doubt personally and corporately aware of the current recession and the need for underwriters and adjusters to consider its effects on the business we have transacted and the losses to be adjusted.

It is true to say that during a recession some types of business will suffer, yet others will gain substantial benefit out of a recession. These two basic factors and the measure of the trading peaks and troughs of a particular business are crucial in the equitable adjustment of a loss.

Fundamentally the original feasibility study and financial model of a project may take many months to prepare, and more often than not, it could take several years before the actual contract commences.

At this stage various financial assumptions have to be made in arriving at the anticipated revenue figure selected for insurance purposes.

Accepting that a major project could be several years in planning, with a construction period of say 36 months, it is reasonable to assume that the economy will experience any combination of downturns; recession; or upturn, which could have either a positive or negative effect on a particular contract depending on its end purpose.

Given that the insurance policies and adjustment of claims are on a proved loss basis and subject to average clauses, then it is acknowledged that it can be an adjusters/accountants nightmare in reaching an equitable settlement when comparing the original financial model on which the anticipated loss was considered, versus the actual situation at the time of the loss and again comparing the finite position at the time when the Indemnity period commences and the claim is to be adjusted.

We detail a couple of (hopefully simplistic) examples to demonstrate the different effects on two types of projects being undertaken at the same time and in the same economic climate.

A) SPECULATIVE DEVELOPMENT.

A property developer plans to build a 10 storey building where the ground floor is to be rented out to several retail outlets. Four floors are to be leased as offices with the remaining five floors to be sold off as private residential units.

The contract period is 24 months.

The developer obtains funding for £30m at an interest rate of 7.5% per annum for 24 months.

On completion of the project the developer plans to repay the loan from the sale proceeds of the residential units. The money received for rent of the retail and office space is to form part of his longer term business income.

The identified bases of settlement on which the cover is arranged could be a combination of:-

- (a) advanced loss of Gross rent (to protect the rental side of the business). The loss of Gross Rent being the amount by which the Gross Rent during the Indemnity Period in consequence of an interruption falls short of the anticipated Gross Rent, less any sums saved in respect of the standing charges and expenses as may cease or be reduced or incurred in consequence of the interruption.

N.B. Adjusters will amend the figures representing the Gross Rent and Anticipated Gross Rent as may be necessary to provide for the trends in the market and business and for variations and other circumstances affecting the business either before or after the interruption which would have affected the business had there been no interruption from an indemnifiable cause.

- (b) Loss of Bank interest (to protect the interest payments due to the Bank for the period of the loan) being:-
- i. The additional interest incurred on capital borrowed to finance the build during the Indemnity period.
 - ii. The loss in respect of acquisition costs and associated expenses of raising or extending the original loan
 - iii. And/or the investment interest lost by the use of the insured's own funds which he may have contributed towards part financing the build.

Clearly in the current recession, where there has been no loss, then the developer's original business model will be adversely affected as

- He may be unable to sell the residential units in order to repay the capital and will need to refinance the loans (possibly at reduced interest rates provided he can secure a new source for the loan).
- The leases on the retail and office part of the project may in part be jeopardised if the tenants in turn have been affected by the recession and pulled out of their respective businesses.

In this situation Insurers need to be aware that the build process may be deliberately slowed down to 'ride out' the recession with distinct material change in risk and extended periods of cover.

Additionally there could be a degree of moral hazard in the form of arson or malicious damage, in so far that a desperate developer with cash flow problems is sitting on a property asset which is reduced in value and he is unable to sell or lease in order to release monies to pay the capital and extended interest charges.

Conversely, where there has been a claim, the adjusters will need to consider the basic facts submitted at inception of the risk and translate the anticipated build programme and financial plan against the current situation and economic climate pertaining during the Indemnity period.

Some main features to consider would be:

- The anticipated sale price of residential units, versus, current market prices.
- Cancellation and lease exit costs on office and retail units with proof of signed leases and deposits taken, plus evidence that cancellation of leases has been made due to the delay in the works and not due to the tenant's inability to occupy due to his own recessionary circumstances.
- Any effects and considerations due to part occupation and/or denial of access issues.

B) POWER GENERATION.

An energy provider plans to build and operate a 200 mw CHP power station with the sole purpose of generating electricity for export to the National grid networks.

- The contract period is 36 months
- The capital investment is £200m
- The financing of the project may be derived from the Company's own sources or from Bank loans or any combination.

Again the basis of loss settlement may be based on one or a combination of factors, but in simple terms the viability of the project will be based on anticipated revenue from the sale of units of electrical power.

- a) the loss of Gross Revenue being the amount by which the Gross Revenue during the Indemnity period in consequence of an interruption falls short of the anticipated Gross Revenue.

Less any sums saved during the Indemnity period in respect of the standing charges and expenses as may cease or be reduced in consequence of the interruption.

NB. Adjusters will need to amend figures comparing revenue against anticipated revenue as may be necessary to provide for the trends of the business and for market variation or other circumstances affecting the business, either before or after the interruption, which would have affected the business had there been no interruption from an indemnifiable cause.

In general terms the business model is fairly straightforward in so far that the financial viability will be derived from revenue received for electricity generated. The overall gross revenue received will contribute to:

- The initial build cost.
- Operational costs.
- Wages.
- Cost of spares and materials.
- Costs for replacing renewable parts/overhaul and down time outages.
- Cost of base fuel (oil/gas).
- Other services.
- Profit to the business; etc.

That said. How and when the revenue is expected to be earned is more complex and Insurers will be presented with several secondary contracts to the main building contract. These secondary issues will undoubtedly have significant effects on the viability of the project and upon which Insured's will seek cover, namely:-

1) Base fuel import (take up) costs.

During the planning stage the new generating company will be required to place advanced orders for large and pre-fixed quantities of fuel to be connected and delivered to site on a set date to coincide with testing/commissioning and permanent start up of the plant.

A formal contract and agreement will be signed as a guarantee to receive fuel (take up) with a guarantee to supply fuel at a cost in the form of a variable tariff.

If due to delay, or an indemnifiable event, the power company is unable to receive fuel, then in conventional business circumstances, drawing small amounts of fuel is not a problem and this would be viewed as a specified working expense and constitute an "adjusted" claim saving on certain types of BI/ALOP covers. However, as the quantity, quality and reliability of acceptance of delivery is so crucial, then the fuel supplier will impose a cost on the power company for failure to receive fuel.

Some insurers may view this as a penalty clause which would ordinarily be excluded from a standard CAR policy, however due to the nature of the power generating industry, insurers generally take the view that this is not an arbitrary penalty, but a fixed contractual cost to the business. The actual charge levied is normally a percentage of the wholesale price of fuel taken from the oil/gas production spot market tariff. To some extent the adjuster can make allowances for the difference in cost between the two.

2) Power generating supply contract (Availability agreement).

Again, at planning stage, a further additional contract/agreement will be signed between the power generating company and the purchaser of the generated electricity.

Principally the contract will be an agreement to supply and an agreement to purchase against a scale of fluctuating prices. The contract will contain clauses whereby the power generator supplier guarantees to supply, or at least guarantee the "availability" of power within the parameters of the purchase "take up" schedule.

A thorough understanding of the operating regime of the overall business plan will be required by underwriters and adjusters in order to understand the anticipated performance plan to enable the adjustment of any losses at any given point.

It is true to say that adjusting a loss is complex and many factors will need to be considered. The following are some examples of the major factors to be considered:-

- i) The configuration of the plant.
- ii) The effects of the fuel purchase contract and costs incurred on failure to receive (fuel take up).
- iii) The effects of failure to supply electricity and the charges levied against lack of availability of unit power.
- iv) The power generators operating regime.

For example: The plant may consist of 3 off Gas Turbine generators which may be configured to operate on dual fuel with possible standby options and fuel choice options by enabling the purchase of fuel at different times and at differing Tariff prices.

The plant's operating schedule will detail how and when the plant will operate and in what mode.e.g. Continuous base load: Off peak generation: High Peak demand, etc.

Each of these demand modes will carry a variable scale of charges for the sale of power, as detailed in the supply contract. Equally a different range of penalties per mode of operation will apply for failure to supply the required quantities.

Generally speaking, a three unit, or larger plant, may well have a generating unit on standby or spare to produce load in the event of failure of an operating unit. There are of course times when units will be sequentially stepped down for overhaul and routine maintenance in accordance with the documented maintenance schedule.

Again the risk becomes more acute depending on when the failure occurs and at what unit demand is expected from the electricity purchaser.

It must not be overlooked that any potential loss needs to be notified immediately at any given point throughout the duration of the contract, as insurers and adjusters may decide to trigger the I.C.O.W clause on the policy, in order to minimise a greater inevitable loss even before the contract is completed and the Indemnity Period entered into.

If tying up the various effects of the contracts, in order to select an adequate Sum Insured wasn't complicated enough, then the adjustment of a claim, at a point in time, gets even more complicated, when adjusting the effects of fluctuating fuel prices and unit costs of deregulated power effected by global circumstances, such as, wars, strikes, demands, shortages, seasonal or weather related influences and global currency fluctuations.

All these issues and more can affect the business linking back to purchase and sale price adjustable tariffs.

It must be remembered that the original basis of insurance was to provide ALOP cover against the original business plan and the anticipated financial losses.

If the loss to be adjusted occurs during a period of high energy charges then it is not the intention to pay for high loss revenue which is merely a fluctuation in the operating lifetime of the plant on

which the whole viability of the generating power plant was designed.

4.3.3 Denial of Access

The policy may be extended to include the exposure from the denial of access to the project site (in line with standard business interruption policies), in which case the infrastructure leading to the site will need to be assessed – i.e. proximity to ports, airports, main roads. The quality of roads and associated structures varies from one country to another and their susceptibility to flood or landslide damage should be assessed.

4.3.4 Availability of Replacement Parts

Having identified the key items that are important to production (and therefore the revenue stream) the underwriter should then assess the lead times required to order and obtain the same items of equipment, materials or component parts for delivery to site. A pessimistic interpretation is advisable as suggested timescales are generally based on the delivery of the original items.

The source of components and individual machines needs to be assessed. Will the original equipment manufacturer (OEM) be able to supply replacement machines or parts at short notice if required following an unexpected incident? Do alternative suppliers exist?

When the works comprise prototype equipment or elements that are unique in nature, individual orders for replacements may take a considerable time to secure. 'Off the shelf' components represent a much lighter interruption risk than items made to order for the particular project. For example, gas turbines at a power station may be identical to others on a production line, whereas steam turbines are likely to be tailor-made or one-off items.

If materials or manufactured parts are only available from a restricted source, difficulties may be encountered if replacements are required at short notice. Individual risk characteristics such as this are important considerations for the DSU underwriter.

4.3.5 Foreign Machinery and Supplies

Machinery, materials and component parts of the contract works that are imported from foreign countries represent a different exposure from those available or supplied locally. Apart from the physical distance and time taken to transport them to the site, the means of transport needs to be taken into account. Items supplied locally will be transported by road or rail, or perhaps by river or coastal marine transit. The same is true of items that are transported within the same continent, but transcontinental shipments will involve air and sea transit operations.

Cross-border supplies may be affected by import/export controls or restrictions, which can result in delays that lengthen the repair period, and lead to a longer business interruption. Similarly, currency exchange restrictions may delay the process of securing imported items required to replace those damaged at the project site.

Extreme seasonal weather conditions may restrict the freedom to carry out work at any given time. Monsoons, sub-zero temperatures and freezing of rivers needed for transportation of materials to the project site are examples.

The quality of infrastructure and transportation systems varies from country to country and this aspect needs to be assessed by the underwriter. Is the site remote? How are heavy loads transported to the project? Are there alternative routes? Are there any load/height/width restrictions that could affect the movement of key items in and out of the site? For example, if the project suffers flood or earthquake damage, the surrounding region may also have suffered damage that interferes with the ability to mobilise repairs. Bridges and tunnels along the normal transport route to the site may have collapsed in the catastrophe event taking them out of service for several months.

Where it is possible to carry out repairs to damaged items, the ability to do this work at the site or locally will help shorten the interruption period. Therefore the proximity of manufacturers or competent repair facilities is an important factor.

Where specialist engineers are needed to carry out or supervise the repairs, their availability at short notice is another factor to be considered. This has to be coordinated with the timely supply of replacement parts or the repair facilities, which can be a greater logistical problem when working in foreign countries. Work permits and travel visas may take some while to obtain.

4.3.6 Second-hand Machinery

If the project contains second-hand machinery, problems may arise in the availability of suitable or compatible replacement parts, resulting in a prolonged interruption to the works. In line with material damage insurance, it is usual for DSU cover in respect of second-hand machinery to be restricted at the commencement of the testing and commissioning period, to exclude machinery breakdown cover, unless the machinery has been fully reconditioned, preferably by the original manufacturer, to an 'as new' condition.

4.3.7 Additional Considerations

- The underwriter must obtain a copy of the contract current at the time of issuing the policy. The contract gives information on key dates and other important information.

- Most construction projects use the programs: Prima Vera (most common) or Microsoft Project, it is important the underwriter and adjuster are conversant with these programs.
- The handover date on the program, contract and policy must concur. Contract handover dates can differ to that given in the policy sometimes due to a preliminary version of the program being used at the time of the risk placement and not amended to reflect the final contract document.
- The handover date and definition of 'hand over' must be clear and understood by all parties: insured, broker, underwriter and adjuster. This is especially important when the risk comprises more than one plant – in the event that one plant is delayed, it should be clear on how the DSU cover operates for the remaining plants that have completed testing and can enter into commercial operation.
- In the event of a covered loss triggering the DSU section of the policy, it is crucial that the adjuster monitors all aspects of repair – sometimes requiring a permanent presence on site for the repair duration. In accordance with the terms of the policy cover (DSU cover is usually at length with the MD terms and conditions) crucial to accurate loss measurement is monitoring of 'time elements' in relation to:
 - Repair of defective part (if any).
 - Improvements.
 - Non loss related activities and possible overlapping of covered and non covered delays.
- Clear understanding of the status of the construction project at the time of the claim is vital. For example a Dam loss occurred where DSU was triggered with an estimated DSU loss of US\$60m. However this delay was eclipsed by a non loss related delay of about a year due to problems with the excavation of a head race tunnel.

NB: Early settlement/negotiation of a DSU loss should take into consideration the remaining time and works on a project and the chance of delay recovery, or as in the case cited above, the potential for contractual claim delays that are not loss related, that could eclipse a *bona fide* DSU claim. Accurate measurement of a DSU loss is only possible following the *actual* handover date.

In Summary.

It will no doubt be apparent that a considerable amount of information and data is considered at inception when underwriting a risk. In the event of a claim, adjusters/auditors, accountants, etc will be required to study and understand the basis on which the risk was underwritten. An adjuster is often called in at short notice and it is not considered sufficient or reasonable to arm adjusters with only basic information and a copy policy and expect them to produce an equitable result.

It is strongly recommended that both underwriters and adjusters liaise closely so that the adjuster has the benefit of the underwriting information and an explanation understanding of the risk against which the insurance contract was originally made.

The working group took the view, when asked to comment on Sums Insured, valuation and Indemnity period etc, that it was not necessarily the policy wordings that were confusing and ambiguous, but more the understanding and quantification of the financial losses and their effects and applications at any given point in a contract which was likely to lead to an indemnifiable loss.

The main subjects for consideration in the underwriting of an ALOP/DSU risk and the adjustment of losses are as follows:-

- The basic contract for the undertaking of the construction project.
- Understanding the effects of each Insured party to the building contract.
- The business model.
- The financial model.
- The works programme, specifications and method statements.
- Agreement on the “basis of loss settlement” to interface with the effects of the business.
- Understanding the secondary/ ancillary contracts – loan agreements, purchase and sale agreements, and tariffs.
- Consideration of how the basic underlying material damage policy wording, and all its extensions, may impact on the ALOP/DSU risk.
- Regular monitoring of works progress on site.

5. EXAMPLE CLAIMS

EXAMPLE 1 : EAR+DSU/ALOP – Damage to pipe rack due to collapse of adjacent concrete water tank (not insured under the policy)

Description of the risk

One of the largest refineries in Europe, built in the early fifties.

The construction of the project within the refinery began in December 1996 and was completed about 5 years later. The plant converts heavy oil residues provided by the refinery into synthesis low calorific gas, which in turn powers gas turbines to produce electrical energy. The energy is sold to a state-owned electricity utility. The plant also supplies steam and hydrogen for the process units in the refinery.

The main plant consists of the following units:

- Feedstock gasification unit (process plant).
- Combined cycle unit.
- Air separation unit.

The risk was covered under an EAR + DSU/ALOP policy. The sum insured amounted Euro 542,5 mio for the EAR and Euro 266 mio for the DSU/ALOP.

Description of the loss

The loss concerns damage to a pipe/cable rack, owned by the refinery. The damaged section of the rack was adjacent to a concrete waste water basin located some 300m away from the plant. Although this water basin formed part of the refinery's key facilities, was not part of the insured works.

Damage occurred during the construction of the combined cycle project in 2000. At that time most of the units were in operation, with only one being in commissioning and another switched off.

At 5pm there was a noise similar to an explosion at the premises of the refinery, however the instrumentation in the control room did not indicate irregularities in any of the process units. An operator at the plant immediately started an inspection and after 10 minutes the whole plant was shut down.

The operator detected the collapsed pipe rack section and a surrounding area flooded by water. Further investigation revealed that the concrete waste water basin installed close to the rack structure – which was being filled up for the first time and due to faulty design had burst impacting the rack and releasing about 15.000m³ of water. The rack collapsed along a length of approximately 80m.

It was only good fortune that the 60 inch blow down pipe containing highly inflammable gas was only distorted and not leaking, as the procedure to vent the complete plant took two hours and was only possible by using this pipe.

Claim adjustment

The possibility to recover costs incurred for the material damage from Third Party was considered out of the question. The collapsed water basin causing the pipe rack destruction formed part of the new key facility at the refinery which was explicitly excluded from subrogation.

Notwithstanding that the material damage was relatively straightforward to quantify, the claim became problematic in as much as the pipe rack was built on an existing pipe rack that was not insured under the EAR policy. In addition to apportioning the repair costs between the EAR policy and the property insurance, the subdivision of cover for the pipe rack had more similar, though more complex, implications to the DSU cover.

An aspect of the material damage claim, which was not immediately apparent, was the exceptionally high costs related to plant shutdown, conservation and start-up. As already mentioned the power plant and the processing units were remote from the pipe rack damage location and were in fact, not directly involved in the impact of the collapsed water tank. However, it was later revealed that in the interest of safety and indeed to enable repair work to proceed, shut down and hence start-up were essential.

Priority therefore, had to be given to closing the delay period as soon and as much as possible. However, further investigations highlighted the subcontractors progress was/could be hindered by the contractors, whose interests were in direct conflict with those of the insured. The CAR policy covering the pipe rack incident had the effect of providing additional work to the contractor at increased rates through cover for ICOW (increased costs of working).

In an attempt to reduce the DSU claim an incentive payment of several hundred thousand Euro/day for each day reduced (maximum 20 days) of the programmed 124 days repair schedule was offered to the contractors. Prior to making the incentive offer it was checked that the repair programme calculated by the project managers was accurate. The incentive payment was effective reducing the programmed delay period to 99 days, which led to a considerable saving.

The gross amount of claim was in excess of Euro 6m under EAR section, after the application of a deductible.

Under DSU/ALOP section the settlement was in excess of Euro15m after the application of a 60 day deductible.

Conclusions

This is a clear example of how even simple events can cause disastrous losses. All components of the risk must be analysed and rated.

Complex losses require the assistance of an insurance loss accountant, who will detect loss reducing payments (incentive payments from government, etc) and delays not covered under the policy (due to non availability of funds, penalties for late payments etc). Progress monitoring during construction can also supply facts to identify uninsured delays.

Incentive payments can be a good tool to reduce the amount of settlement. However, note that any incentive payment represents an advanced credit only, since the DSU loss can be triggered only at the 'anticipated completion date'. Subject to everything progressing as planned, the credit becomes a portion of the loss. However, due to further losses the critical path can be changed in a way to result in no time savings for the initial loss, justifying no payments under the condition of the policy.

EXAMPLE 2 : EAR+ALOP Loss of Injection Pipes in a Biogas Fermenter

Description of the risk:

A new waste treatment and processing plant in a large city in Europe was erected. The plant performs three functions:-

- Sorting and pre-treatment of waste.
- Production of biogas and electricity.
- Composting of organic material and wastewater treatment.

The projected waste processing capacity of the plant was a few hundred thousand tons per year. The output was expected to be more than 50.000 tons of compost and more than 10.000 tons of biogas.

The waste fermented in four tanks, each with a volume of a few thousand cubic meters. Without an oxygen supply, certain kinds of bacteria digest the biomass of waste and catalytically produce a mixture of biogases, including methane. In this case, stainless steel pipes (around 5cm in diameter, 20m in length) injected biogas into the slurry in the fermenter tanks in order to improve the efficiency of the biogas production and the viscosity of the slurry was maintained by circulation pumps.

Description of the loss

During the testing period of the risk, the methane production did not reach the expected level. Subsequent investigations revealed that the waste slurry solidification reached a height of 5m in the tank instead of the allowed height of 1m and that the viscosity of the remaining slurry was too high. Consequently all the biogas pipes were damaged (deformed) in the process and required replacement.

The Insured claimed a loss of more than EUR 5 mil for the material damage and the delay in start-up.

Claim adjustment:

The loss adjusters arrived at the conclusion that the loss had been caused by faulty design, as the dimensions and protection of the biogas injection pipes had been insufficient. In addition, the pre-selection of the waste mass was inadequate and the pumping capacity to maintain adequate circulation of the slurry fell short.

The biogas plant was conceived as a new concept in waste disposal however despite the requirement of policy conditions the contractor did not inform the insurer of the prototypical nature of the risk.

Physical damage was limited to the biogas injection pipes. The EAR cover did included a DE-5 clause, covering repair and replacement of damaged and faulty designed property including the faulty part itself. Excluded, however, are costs for design improvement.

In this case, policy cover was given for the biogas injection pipes, which were both defective in design and had sustained damage. The pumping system was inadequate (therefore considered defective) but not damaged and the increase in pumping capacity (improvement) was not covered.

As the costs for the modification and improvement of the biogas injection pipes were not covered, only the repair works for the replacement of the original injection pipes fell for consideration under the Policy. These costs were found to be below the Policy deductible.

With respect to the ALOP cover, the insured claimed a delay in start-up of nearly a year. However, included in this period was the time necessary for improvement and modification of the defective design of the biogas injection pipes. In accordance with the DE-5 design clause, the covered delay is limited to the time necessary to replace/repair the biogas pipes to their original condition only.

It was very difficult to identify the period to be excluded as the design modifications and the repair works were done concurrently. In the end the loss adjusters negotiated a period of two months for the design improvements and the remainder for the repair works.

The claim was settled at a much lower number than claimed. In respect of the material damage there had be no insured loss after application of the deductible.

Conclusions

A full Design DE-5 cover under a CAR/EAR policy does provide cover for faulty design of property, including the defective part, if it has been damaged. As a consequence, a covered material damage loss also triggers an ALOP/DSU loss. A DE-3 cover that excludes the faulty part itself under these circumstances, would have excluded the material damage and would not have triggered the ALOP cover.

The insurers must ask for information on prototype features of a risk. A DE-5 Cover in combination with prototype risks might lead to undesired and unexpected claims.

Even with a DE-5 cover, time corresponding to modifications and improvement of the design is not covered. A detailed and thorough analysis is necessary to identify which period is attributable to improvements and which period is necessary for the repair works.