# MONITORING OF LARGE CAR/EAR PROJECTS

## IMIA – WGP 35(04)

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**Index**

## Introduction

The availability of novel and complex systems of financing has recently made possible the development of large and complicated projects both in the field of civil engineering and in the industrial sector.
The successful completion of these projects requires not only more sophisticated project management tools but also more comprehensive insurance schemes in order to cover the consequences of unexpected events that might otherwise compromise the completion of the project.
Contractor's All Risk (CAR) and Erection All Risks (EAR) policies are the instruments used to cover these events in case of material damages to the works being carried out.
Sometimes however Principals and Lenders also require protection for the possible loss of future revenues due to delays in completion.
In this case Advance Loss of Profit (ALOP – sometimes referred to as DSU "Delay in Start Up") cover is required.
Due to its inherent characteristics ALOP cover, if not dealt with properly, can significantly increase risk exposure to Insurers. Monitoring is an essential instrument to keep this risk in view and hence under control.

In this paper, after having introduced very briefly ALOP scope of cover, we would like to give some information of the actual market situation for this cover and, thereafter, to present the methodology of ALOP monitoring through information obtained from one company which is specialised in this activity for both Insurance companies and Banks.

The monitoring process will be reviewed in detail with explanations of the various stages including the process of assessment of activities and the current tools used for progress monitoring.

## Basic Concepts Of ALOP

ALOP cover is a relatively recent extension of cover linked to CAR and EAR Policies, which have been available on the market since at least 1970.
The idea associated with this product is to insure the loss of the future earnings of a business, due to a delay occurring under construction, as a consequence of a material damage covered under a CAR or EAR policy.

Depending on the extent of cover agreed the limit of indemnity is calculated on the basis of the Gross Profit or can be limited to Fixed Costs or Debt Services.

The fundamental elements of this type of insurance are:

- Delay causing the loss : this must be a consequence of a material loss or damage covered by the CAR or EAR Policy insuring the project.
- Indemnity Period (most frequently 12 months): According to a frequently applied wording this is "the period during which the results of the business are affected in consequence of the delay, beginning on the scheduled date of commencement of the insured business and not exceeding the maximum indemnity period stated in the Policy Schedule".
- Limit of Indemnity: as agreed with Insurers, based on the documented possible loss of Gross Profit or cost for Debt Service. The amount most frequently insured refers to an Indemnity Period of 12 months.
- Time Excess : defined as "the period stated in the Policy Schedule for which the Insurers are not liable".
- Time Schedule: the risk assessment is based on the time schedule of working activities agreed between the Principal and the Contractor in which the key element is the scheduled date of commencement of the insured business.

Loss or damages covered under the CAR or EAR Policies are most commonly those due to natural events, fire, faulty design or workmanship or testing and commissioning activities.
Cover provided by the ALOP section of the Policy can be restricted to delays due to only some of the events covered by the "All Risks" Section of the Policy.

Sometimes the delay can be substantial even if the loss or damage is below the CAR/EAR Policy deductible. For example a special item damaged during erection may require replacement and may have a long lead time before being supplied, even if it is of relatively low value.

As mentioned above it is a condition precedent to any liability under the Policy that the delay must be a consequence of a loss or damage insured under the CAR/EAR Section.

It is important to understand that major projects consist of many different activities most of which are interconnected. These can be influenced by different factors generating delays not necessarily dependent upon material loss or damage.

Most common cases are:

- Climatic conditions influencing the execution of works (e.g. an excessive rainfall can make it very difficult to maintain adequate progress in earth movement works)
- Unexpected geological conditions (the finding of unexpected geological conditions can substantially slow down tunnelling works)
- Bad management at the site (if projects involving many subcontractors and suppliers are not properly managed there might be delays due to the absence of a proper control over the various interconnected activities)
- Difficulties in financing (delay in the payment of the progress of works causes a delay in the rate of production)

Delays are inherent in all projects. For Insurers it is extremely important to distinguish between these delays which were effectively due to a material loss or damage covered by the CAR/EAR Policy and these which were not.

The only way to keep these delays under control is through the implementation of an appropriate programme of monitoring.

Before entering into details in the monitoring we would like to summarise the present market situation for ALOP.

## Current Status Of The ALOP Market

With the aim to obtain a very rough picture of the present situation of the market, we distributed a questionnaire to some of the major companies within the following countries: Austria, Finland, Italy, Japan, Spain, Sweden, Switzerland, UK and to two major reinsurers (Munich Re and Swiss Re).

Using the data provided for 2003 it has been possible to estimate that the total ALOP premium collected through CAR and EAR Policies amounts to about EUR 160 ml, representing roughly 10% of the CAR/EAR premium underwritten by the same market.

It is therefore possible to estimate a worldwide ALOP premium, excluding USA, of between EUR 200 ml and EUR 220 ml.

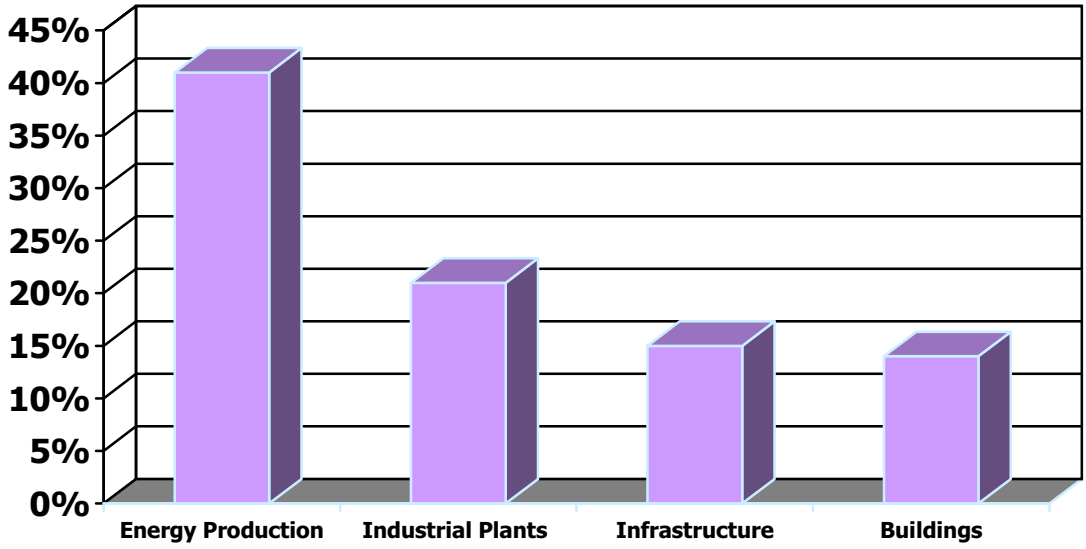
The survey responses also identified that during 2003 the largest limit of indemnity underwritten was of EUR 250 ml for 12 months indemnity period. This data is very pertinent as, compared to the previous one, it is possible to ascertain how this limit exceeds the total premium available on the market during the same year.
This data demonstrates that the overall ALOP risk portfolio is extremely unbalanced; in this situation underwriting results cannot be left to the philosophy of large numbers; instead a deep understanding and management of the risk is essential and for ALOP this can only be achieved through properly implemented Risk Assessment and project monitoring.

From the replies to the questionnaire, it was also interesting to note that there is no common approach to Project Monitoring.

In most cases this task falls to in-house experts and only in a few cases to specialised consultants. The average number of surveys at site is two per year and some of these may be combined with the more traditional Risk Control surveys.

The most common period of indemnity is 12 months, but there are different opinions about what can be the maximum insurable period of indemnity. Last year, according to the survey, the maximum accepted by the market was 36 months with a limit of indemnity of about EUR 120 ml.

Based on the sources approached, ALOP cover, as shown in table 1, is mainly requested for Energy Production (approximately 41 % of the total ALOP premium) and thereafter for Production of Products (21%), Infrastructures (15%) and Buildings (14%). Unfortunately, it has not been possible to obtain any meaningful statistics on policy results.




**TAB.1 (Data 2003)**

The most frequent cause of losses identified falls in the category "Fire, Explosion and Testing Activities" whereas the second one is due to "Natural Events".

The time excess most commonly applied is the one "In the Aggregate".

Having outlined the importance of monitoring as a necessary tool for keeping risk exposure under control, the next section describes the monitoring process in further detail.

# PROJECT PROGRESS MONITORING

## Monitoring aim

The main aim of Project Progress Monitoring in relation to **ALOP/DSU** policies, is to provide Insurance Companies with an updated picture about the real progress of the Project, underlining present or future potential delays and criticalities that could impact on the general Planning itself.

Therefore, Monitoring main aims can be summed up in 2 basic aspects:

- To follow the "history" of the Project in order to define a detailed progress of works according to which Companies will be able to determine future delays of works that do not come from events covered by CAR/EAR Policies.

- To verify whether there are events that can determine a situation of potential worsening of the risk.

## Structure of Technical Control Service

The service is structured in three different and sequential phases, hereby detailed:

a) Preliminary Assessment

b) Site Survey

c) Issue of Reports

*a) Preliminary Assessment (Fact finding)*

This activity which precedes the Site Survey generally consists of a preliminary familiarisation with the Project that allows the Monitor to appreciate the scope and structure of the Project itself. This preliminary activity also aims at focusing on the general planning of the Project and the relevant definition of the technical monitoring programme, through identification of the critical phases of the Project.

In particular, this phase includes the acquisition and the analysis of the following documents:

- Detailed Project Specifications (most relevant aspects);
- Master Plan;
- Engineering Plan;
- Purchasing Plan (e.g., orders, contracts, other services);
- Detailed Construction Programmes (most relevant phases) with specific attention on the definition of the Critical Path (CP);
- Site Organisation Chart.

In particular, the following aspects are checked in this phase:

- Techniques and methods used by the Contractor for Project Planning and Control and in particular their adequacy both in relation to the construction monitoring and to insurance monitoring scopes. Any inadequacy is duly communicated to the Insurance Company so that the Insured can be requested to adopt adequate tools for the planning and control. These instruments constitute, in fact, a vital prerequisite for the technical monitoring and also to allow the application of insured risk mitigation methodologies;

- Potential criticality of the Project relating to timing, particularly:

    - **Starting Project impediments:**

        - Financing agreements;

        - Organisational and logistical difficulties;

        - Local problems (e.g., expropriations, disturbances);

        - Availability of permits, authorisations, licenses;

        - Environmental problems (following the Environmental Impact Analysis - EIA).

    - ***Engineering activities*:**

        - Organisation of activities and resources;

        - Quality of entrusted engineering companies (if external to the structure);

        - Co-ordination and management procedure (Quality Assurance (QA) and Quality Control (QC) Plans).

    - ***Purchasing activities*:**

        - Supply and Subcontract Plan;

        - Organisation of purchasing structure;

        - Identification of the critical path components and checking up of the relevant supply planning adequacy;

        - Expediting and inspection structure.

- ***Construction Activities*:**
  - Site Organisation analysis through the control of staff, subcontractors, adequacy (quantity and quality) of construction resources;
  - Existence and relationship with work supervision structures (the Engineer);
  - Quality Control structure.
- ***Commissioning, Testing and Starting Activities*:**
  - Procedures for commissioning and performance;
  - Availability of raw materials and ancillary services;
  - Commissioning staff and, if applicable, external inspectors.

Clearly, the impact of the factors that must be monitored can be different according to the type of Project (Civil works / Infrastructure and Industrial).

The main factors to be assessed in accordance with the different Project types are summarised as follows:

**Civil Infrastructure:**

- Site organisation;
- Quality of resources;
- Site setting plan;
- Interference with existing services;
- Expropriation procedures (if any).

**Industrial Plants:**

- Purchasing Plan (supplies and subcontracts);
- Testing procedures;
- Supply of raw materials;

- Availability of ancillary services (waste treatment, connection to external networks, fire - fighting facilities);
- Operating permits.

At the end of the activity a preliminary Report (Fact Finding Report) is generally issued. This document details the results of the analysis and verifications carried out; the document also establishes a specific risk register for the Project and, accordingly, the main elements to be monitored together with the relevant time schedule.

*b) Inspection Activity at site*

The Site Survey is organised according to the following operational pattern:

- Initial Briefing with the Insured in order to obtain information about progress of works and to underline particular events occurred like delays, claims, accidents, natural events, etc..);
- Collecting of most important and updated documents about planning and control:
  - Monthly Progress Report (Progress curve, Engineering Procurement Construction and resources planning, including, where possible, *Recovery Plans*);
  - Updating of Permit Plan;
  - Claims and change orders of Commercial Contracts;
  - Safety Plan;
  - List of Subcontractors;
  - Purchasing Plan;
  - List of Site Equipment,
  - Communications between Contractors and the Engineer;
  - Site registers;
  - Progress of works certified by the Engineer, where applicable;
- Analysis of all the criticalities pointed out in the *Fact Finding* document;

- Site Survey and relevant Photograph Report;
- Final Debriefing with Representatives of the Insured.

The previous mentioned activities may take up to 3 days dependent on the number and complexity of the risk factors to be checked, on the anticipated collection of documents by the Insured and on the difficulty in carrying out the requested analysis.

Also the Monitoring scheduling is tied to the complexity of the project to be monitored, to the length of works, to the typology of the specific risk to be tested each time. On average, a basic monitoring schedule could range from 3 up to 6 months.

## Usual Techniques in Planning Control

Before entering in the techniques utilised for carrying out the technical progress monitoring it is perhaps worthwhile summarising some of the basic planning methodologies and the software tools commonly adopted for the planning itself, control and management.

The more usual type of Planning Techniques in use can be defined as follows:

- "Gantt Planning": this kind of planning produces bar charts which represent in time-scale the beginning, the development and the end of the activities, or group of activities, through bars which are proportional to the period of activities;
- Planning based on reticular techniques according to graphs' theory and, particularly, the one which is named PERT/CPM (*Program Evaluation and Review Technique/ Critical Path Method*). Such a method allows planners to determine the shortest way to complete the project and to find out the critical paths of the project, that is, those activities which, if delayed, could result in a general delay in completion of the project.

This technique is based on the following assumptions:

- Break down of the whole project in basic activities (WBS - Work Break Structure) characterised by an established duration related to available resources or to contractual obligations subscribed by the contractors and/or subcontractors;
- Definition of predecessors and successors activities among the above defined activities and setting out of logical and temporal links strictly connecting all the different activities in order to create multi-modal grids;

- Definition of minimum and maximum completion deadlines, of the critical paths, and of project-float (which can be total, free, or even, independent).

The monitoring company who we approached normally evaluates the total float which determines the total margin existing between the contractual terms and the completion date, scheduled as earliest. This parameter represents the most outstanding element to evaluate the project criticality, from the planning point of view as this factor (total float) has to be updated periodically in consequence of the actual progress achieved.

**Software tools available for the analysis**

To realise all or part of the above sequences the most common Project Management software tools are:

- Primavera Project Planner by Primavera Systems Inc.
- Microsoft Project by Microsoft (Part of Microsoft Office).

Quite obviously, both of these software packages do substantially the same things but at a different level of size and complexity.

Primavera Project Planner is designed to handle large and complex Projects. It can handle Projects with up to 100.000 activities each, with a practically unlimited number of resources. The system allows multiple users to concurrently update, analyse and report their respective sections of a project or, simply, access and view without the possibility to modify the Project data. It allows also multiple Projects, both as sub-projects of a main large Project or at Company level.

The level of possible detail is such that the project resources can be directly connected to timesheets and names; the scheduling is normally done on a daily basis, but can be done also on an hourly basis as a complex Project is not necessarily of long duration.

To be fully exploited Primavera requires dedicated resources and specialised training (about one week), but can also be managed with a minimum of training. Normally the results of the analysis of the work progress are diffused through Reports and Graphic both on a periodical basis or an “ad hoc” basis. The software allows reports at various crescent levels of synthesis, graduated according to the needs of the recipients, using the various codes available.

The plan can be graphically shown in two ways: as a time scaled bar charts (Gantt) with or without logic (relationships) or as a PERT chart with logics.

Primavera can import and export data from and to Microsoft Project, within the limitations of the latter.

Relatively speaking, Microsoft Project is more limited in scope than Primavera Project Planner but has the big advantage to be a part of Microsoft Office and to be simpler to use.

Some of the key differences in the capacity of the two software tools, Primavera Project Planner against Microsoft Project are identified below:

- Activities per project: 100.000 against 9.999
- Calendars: 31 against 1
- Price per unit: 6 against 1
- Activity codes: 24 against 8

Several "add-in" application software packages exist for Microsoft Project developed for specific applications.

Primavera has less "add-in" tools but some are very interesting like "Monte Carlo" to quantify, analyse and mitigate risk; "Claim Digger" to allow complete comparison between different plans to get data for a claim.

Further auxiliary tools to verify the progress of works are:

- *Overall Master Schedule* + programmes of detail which are normally carried out by the contractors;
- S Curve for each activity
- Resources' Histograms

**Applied method**

The method applied for the technical control of a project is basically constituted by the following steps:

Before the Monitoring

- Check that the basic structure of Project Plan is realistic and acceptable in relation to the organisation and to the quality and quantity of resources available;

- Check of the correctness of the duration of every activity and of the relevant logic-temporal links among them.

During the Monitoring

- According to the assumed Criticalities the Monitor will carry out the site survey basically aimed to:
  - Verify the actual progress versus the planned one;
  - Analyse the status of the Criticalities: both the ones hypothesized in the preliminary analysis (fact finding) and those arising during the project realisation;
  - Evaluate in discussion with the Contractor the effectiveness and the adequacy of the corrective / mitigation actions put in place previously planned and actually adopted;
  - Identify the elements (e.g., claims, extraordinary events, occurred accidents) that can impact heavily in the work planning.

To sum up, after each Site Survey, the Monitor is able to give to Insurers a complete picture of the Project and in particular of the following aspects:

- Actual work progress and prospective changes, identifying the possible causes of them;
- Evaluation of any kind of criticality in being or potential that could impact in the completion of work;
- Forecast of final completion of the Project;
- Potential or existing events that can somehow determine an increase of the risk insured.

Two meaningful documents achievable after this exercise are:

- a bar chart of works highlighting actual delays on major activities (fig. 1);
- curves showing the actual progress of works versus the one originally planned. Curves shown in fig.2 report as well several reviews undertaken to a very large project following delays affecting works.

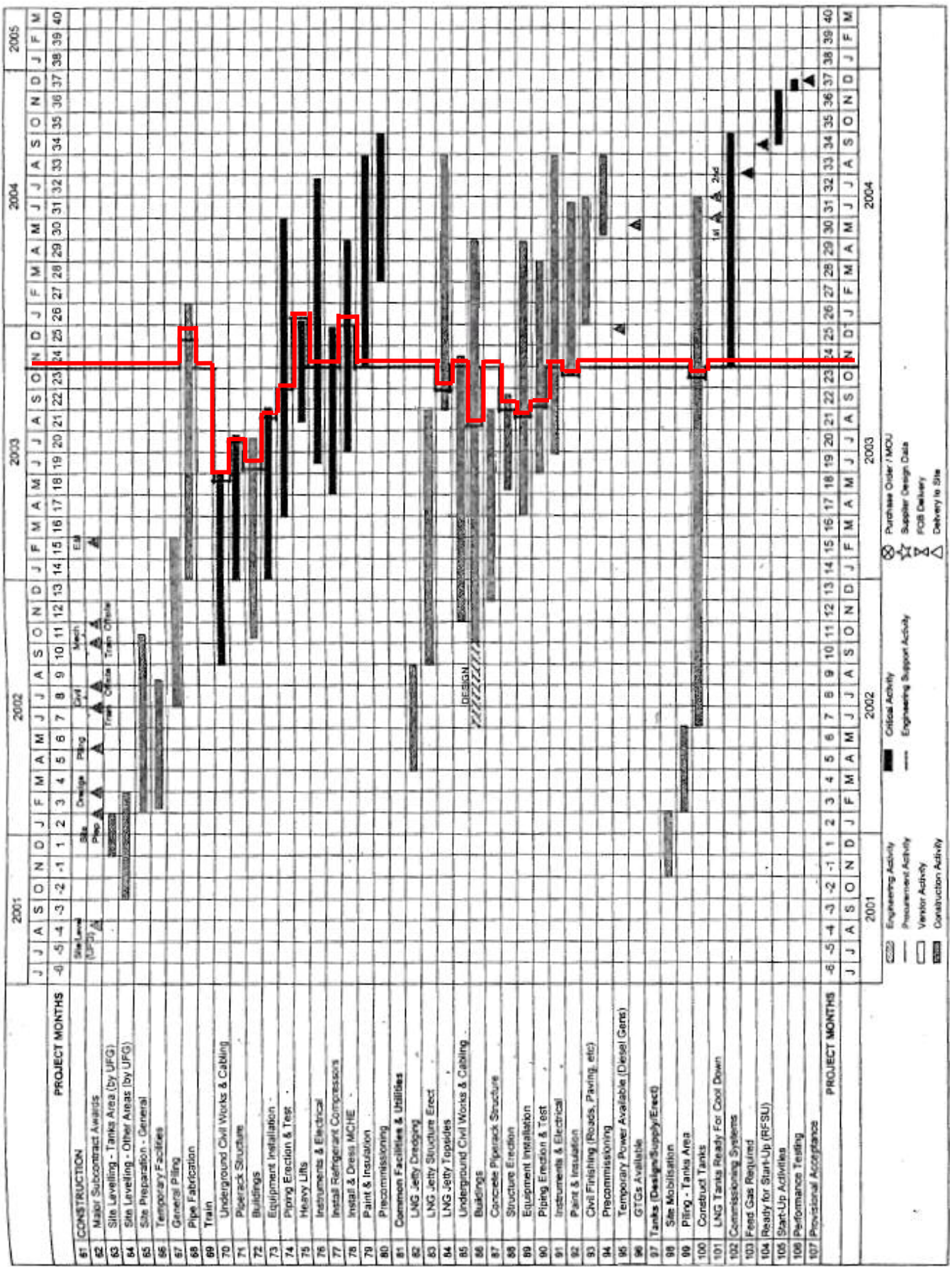

PROJECT MONTHS
CONSTRUCTION
Major Subcontract Awards
Site Levelling - Tanks Area (by UFG)
Site Levelling - Other Areas (by UFG)
Site Preparation - General
Temporary Facilities
General Piling
Pipe Fabrication
Train
Underground Civil Works & Cabling
Piperack Structure
Buildings
Equipment Installation
Piping Erection & Test
Heavy Lifts
Instruments & Electrical
Install Refrigerant Compressors
Install & Dress MCHE
Paint & Insulation
Precommissioning
Common Facilities & Utilities
LNG Jetty Dredging
LNG Jetty Structure Erect
LNG Jetty Topsides
Underground Civil Works & Cabling
Buildings
Concrete Piperack Structure
Structure Erection
Equipment Installation
Piping Erection & Test
Instruments & Electrical
Paint & Insulation
Civil Finishing (Roads, Paving, etc)
Precommissioning
Temporary Power Available (Diesel Gens)
GTGs Available
Tanks (Design/Supply/Erect)
Site Mobilisation
Piling - Tanks Area
Construct Tanks
LNG Tanks Ready For Cool Down
Commissioning Systems
Feed Gas Required
Ready for Start-Up (RFSU)
Start-Up Activities
Performance Testing
Provisional Acceptance
DESIGN
Engineering Activity
Procurement Activity
Vendor Activity
Construction Activity
Critical Activity
Engineering Support Activity
Purchase Order / MOU
Supplier Design Data
FOB Delivery
Delivery to Site

fig.1

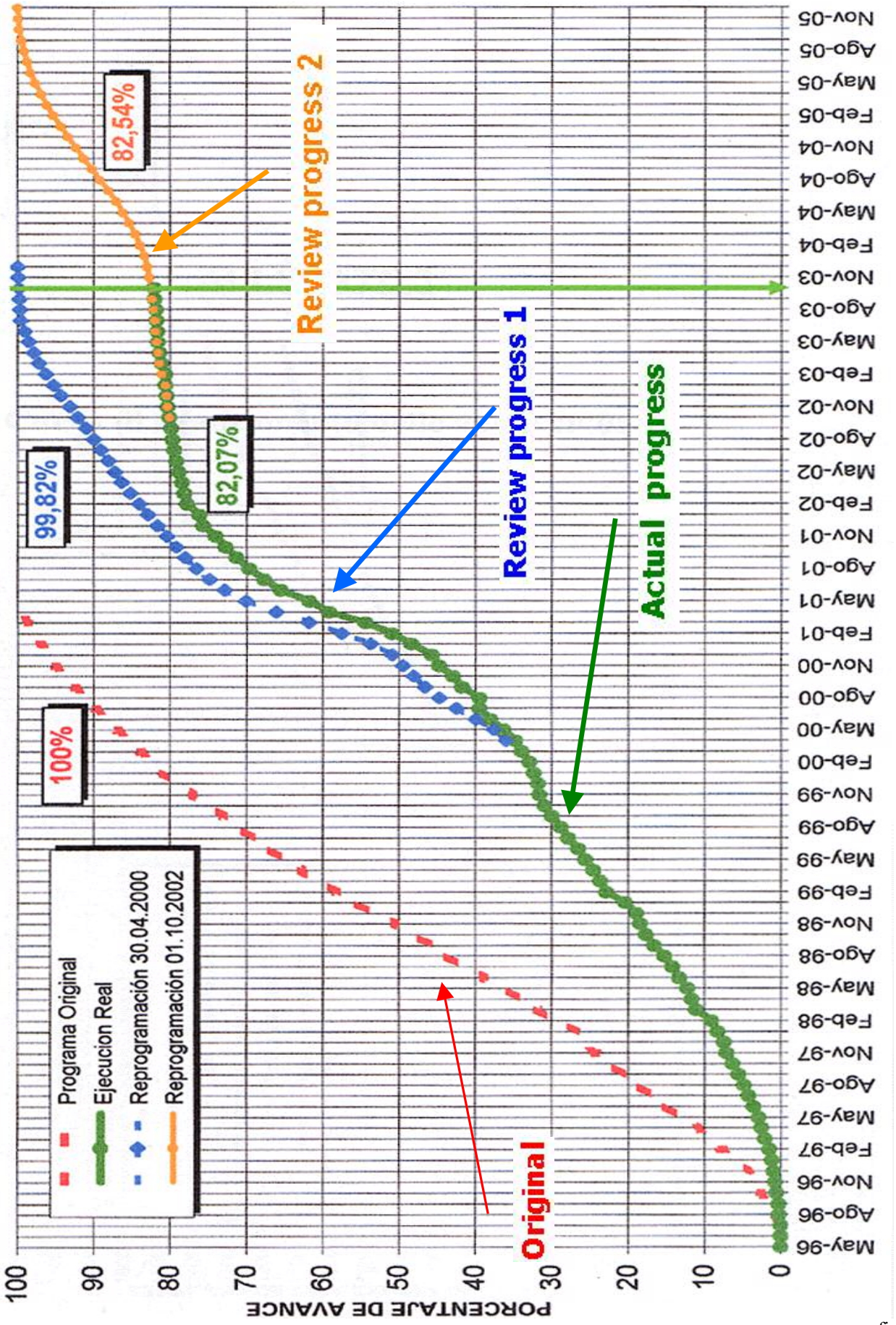

Programa Original
Ejecucion Real
Reprogramación 30.04.2000
Reprogramación 01.10.2002
100%
99,82%
82,54%
82,07%
Review progress 2
Review progress 1
Actual progress
Original
PORCENTAJE DE AVANCE
0
10
20
30
40
50
60
70
80
90
100
May-96
Ago-96
Nov-96
Feb-97
May-97
Ago-97
Nov-97
Feb-98
May-98
Ago-98
Nov-98
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fig.2

A common phenomenon during the realisation of the Project is the progressive time-contraction. This aspect usually determines either a reduction or the loss of the *floating* period that originally exists among the different activities or the reduction of the expected timing itself for some activities (mainly for those on CP).

All of these phenomena will normally result in an increase of the risk insured and, as a consequence, they have to be carefully monitored.

Summing up, through the Monitoring Activities, it is possible to acquire a precise and realistic status of the progress of works, of the delays already registered and of the possible further causes of potential delays. This picture represents a clear and unambiguous reference point to judge the real consequences due to any accident, covered by ALOP/DSU insurance policies, that could occur from that time on.

With the aim to increase the effectiveness of the monitoring service, at present the monitoring company who we interviewed is working on the definition of a methodology that should allow its own elaboration of the project planning based on the data coming from Contractors so as to be able to carry out independent and more realistic forecast in relation to the project planning modifications and evolutions.

## Reports Issue

After each Site Survey, a Monitoring Report is issued. This Report deals with the following points:

| | |
|---|---|
| **Executive Summary**<br>▪ Progress to date<br>▪ Planned activities<br>▪ Analysis of critical issues<br>▪ Recommendations<br>▪ Look ahead | In this paragraph, the main accomplishments of the Monitoring are presented and compared with the whole works progress (illustrating the reasons for the delays occurred), underlining the potential critical issues in being and their impact on the project. Suggestions of possible corrective actions to be asked to the Policy Holder to minimize risks are given. |
| **1. Engineering Status**<br><br>**2. Procurement Status**<br>▪ Purchasing and contract formation<br>▪ Bid evaluation and awards<br>▪ Expediting<br>▪ Supplier quality<br>▪ Traffic and logistics<br>▪ Shipping plan<br><br>**3. Construction Status**<br>▪ Activities completed<br>▪ Activities in progress | In this section of the document, detailed information about the progress of E/P/C are given. This information deals particularly with the impact of the E/P/C progress on the project general framework. |
| **4. Safety**<br>▪ Goals | In this section of the document, the most important data about industrial injuries and any related statistics and comments about site organisation are |

| | |
|---|---|
| ▪ Accidents<br>▪ Statistics | given. Particularly, the previously mentioned comments deal with the precautionary safety measures at site and with construction procedures applied. |
| **5. Permits Schedule**<br>▪ Progress of Permits release<br>▪ Potential impact on the Works progress | In this section a list of permits and authorisations obtained, and those still to be obtained, are given. Authorisations and permits' impact on the progress of the project are underlined. |
| **6. Project Changes**<br>▪ Contract Variations Logs and status<br>▪ Impact on general planning | In this section Contract Variations Logs and status are described and analysed. This section also presents their impact on general planning. |
| **7. Start up**<br>▪ Activities completed<br>▪ Activities in progress<br>▪ Activities planned | In this section commissioning, start-up and acceptance test, with the relative analysis of criticalities and the consequent impact on general planning are analysed. |
| **8. Schedule Analysis**<br>▪ Project Milestone<br>▪ Milestone summary schedule<br>▪ Mitigation or Recovery plans in being, if any<br>▪ Best forecast for the completion of the works | This section of the document resumes and defines the Project Milestones in relation to the fulfilment of the contractual engagements and/or delays occurred, if any. If any it also analyse the Recovery Plans submitted by the Contractor and give comments about their adequacy and their reliability. The section ends with a prospective evaluation made by the Monitor about the completion of the works based on all the elements collected during the survey. |

| |
|---|
| **9. Attachments**<br><br>Papers, documents, plans and whatever needed to give evidence of the results reported in the Survey Report |
| **10. Photographic Appendix** |

## Technical Monitoring for Banks

The main differences between the techniques used for progress monitoring carried out for Banks / Financial Institutes in "Project Financing" assignments versus the same carried out for Insurance Companies may be of interest.

The definition of the Risk Matrix is the main instrument that Banks use to evaluate the possibility to finance a Project.

Utilising the Risk Matrix, through which each risk is identified, evaluated and estimated, Banks define the mitigation and the "covenants" required to the Promoter. These constitute in general terms the Security Package, that is the complex of agreements, contracts, engagements and guarantees that mitigate the projects risks as peculiar to each Project Financing Operation.

The phases more subject to risks are:

- Construction period (characterised by investments whose times and costs can change)
- Testing
- Coming in to operation and economic exploitation of the investment (that determines the starting of pay back to the Banks)

It is interesting to notice that Banks, having to evaluate the risks connected to the investment, are involved in the Project from the very beginning while Insurance Companies are mostly in the position to express their availability to release Insurance Policies requested, without the possibility to acquire the elements of analysis and evaluation owned by the Banks themselves.

Economic margins and the high Contractual Power of Banks allow them to put in place a systematic and steady Technical Monitoring, through an Independent Company. On this basis the Banks themselves are able to analyse the actual progress of works in real time through the same Independent Company so that they are able to request corrective actions in due time, as usually enabled by normal procedures foreseen in Financing Contracts. As a consequence of this, the frequency of Site Surveys made for Banks is basically monthly while, for Insurance Companies, it is generally quarterly or six-monthly.

The following table reports the main aspects analysed in the two different kinds of Monitoring (for Banks and for Insurance Companies):

| BANKS | INSURANCES |
|---|---|
| Certification of Works Progress | ----- |
| Site Organization | Site Organization |
| Sub contractors resources and structure | Sub contractors resources and structure |
| Permitting plan | Permitting plan |
| Purchasing Plan (Orders, Contracts, services, etc.) | Purchasing Plan (Orders, Contracts, services, etc.) |
| Logistic problems | Logistic problems |
| Check of costs declared against the actual progress | ----- |
| Quality of works | Quality of works |
| Compliance with the Contracts | Compliance with the Contracts |
| Consistency of works executed with the detailed engineering | ----- |
| Work Progress and analysis of delays or changes | Work Progress and analysis of delays or changes |
| Recovery Plan, if any | Recovery Plan, if any |
| Commissioning and Testing Procedures | Commissioning and Testing Procedures |
| Performances obtained, after the Mechanical Completion | ----- |
| O&M performances during the operational period | ----- |
| Capability to guarantee the Pay Back | ----- |

In case of "Project Financing" contracts, it would be advisable to reset the process of precautionary risk analysis for Insurance Policies and of the Technical Control of the Risk underwritten, taking advantage of some synergies that actually exist between Insurance Companies and Banks.

Documents that would help Insurance Companies in the phase of risk assessment are:

- the “Term Sheet” in which banks highlight financial conditions and requested guarantees. From the analysis of these data Insurance Companies could obtain some useful elements about the risk evaluation that Banks have already carried out on the whole Project (for example a rate applied higher than the average, together with the request of a structure of stronger guarantees and with a higher equity demand can be assumed as a clear signal of an exposed project)

- the “Information Memorandum” prepared by Banks outline the most important aspects of a project. The results of the analysis made by the Technical Advisor in the “Due Diligence” are also reported in this document.

Insurance Companies could also ask for the intervention of the Independent Monitoring Company in this phase, requiring a “Due Diligence” which aims only at some aspects of particular interest. Thus, Insurance Companies could have at their disposal their own Risk Matrix and, therefore, the possible elements of mitigation.

## Risk Management

On the basis of the Reports issued by the Technical Monitoring Company, Insurance Companies can decide, whenever necessary, to:

- Solicit the Insured to put in action measures to minimise the risk which has been put in evidence;

- Apply, if present, policy terms provided for the increase in risk exposure;

- Grant, or not, an extension of the period of Policy Cover.

Following their experience in Technical Monitoring for several important Insurance Companies, the monitoring company who we interviewed provided us with the following two tips:

To put the Monitor in action since the phase which precedes the Policy underwriting, by asking the Monitor itself for a preliminary risk analysis. Policy Conditions, evaluation of prices and further Monitoring activities to be based on this analysis of the risk;

To prepare a technical attachment which precisely defines Contractual Obligation of the Policy Holder in order to make Monitoring Activities easy and effective.

## Bibliography


- Insurance of Revenue for Projects Under Construction – The Insurance Institute of London – September 2003


## Acknowledgement


We would like to thank Protos S.p.A., an Italian company specialised in Monitoring services and assessments for banks and insurance company, who provided us with detailed information on the present status of the art for monitoring.