11th September 2001

Münchener Rück
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Contents

Cover:
It is not only the skyline of New York that has changed since 11th September 2001.

1 Introduction

The tragedy in the USA and the immeasurable suffering of so many people has left us deeply shocked. Besides the two towers of the World Trade Center, a number of buildings in the vicinity were also damaged or destroyed. As many people and companies now endeavour to resume their everyday activities, the vast extent of the losses caused by the terrorist attack is gradually coming to light. The brunt of these losses will be borne by the insurance classes of aviation, property insurance for buildings, contents, and business interruption, life, and workers' compensation.

The attack wrought hitherto inconceivable damage, highlighting the necessity of a fundamental reassessment of the risk situation with respect to the peril of terrorism. This does not only apply to the US market but is of global importance. It necessitates considering how the underwriting of political risks, particularly terrorism, is to be handled in the insurance and reinsurance sectors in the future. For insurers and reinsurers this will involve a fundamental rethink of their covers and underwriting policies in this respect.

This publication is a supplement to the "High-Rise Buildings" brochure published by Munich Re in 1999 and has been issued in response to the recent events. Due to the limited information available at present, it is not possible to include all aspects and insurance classes in this analysis of the incident and its repercussions on the insurance sector. We therefore focus on the known facts and the immediately recognizable lessons to be learned in property and business interruption insurance. In particular, we do not consider the event itself or its effects on underwriting from a legal point of view. We are fully aware that this publication only deals with a portion – albeit assumedly the largest portion – of the losses resulting from the events in New York on 11th September 2001.

The first plans for constructing the World Trade Center in Lower Manhattan date back to 1960. By 1987 a total of seven buildings had been erected in the area between West Street, Liberty Street, and Vesey Street, and on Church Street near the financial district around Wall Street, including the twin towers designed by the American architect Minoru Yamasaki.

2 WTC – Facts

The erection of the twin towers and between them the Vista International Hotel (the later Marriott World Trade Center Hotel) commenced in 1966. A pit almost 22 m deep, 240 m long, and 120 m wide was excavated within a protective wall that was 1 m thick. The excavation material from the six underground storeys, which included a subway and railway station, was subsequently used to recover land in the Hudson River on which to erect the World Financial Center.

The construction work proceeded on schedule, and in 1972 the North Tower was opened, with the South Tower following one year later.

2.1 Description of the buildings

The two towers were 417 m (North Tower) and 415 m (South Tower) tall and had 110 storeys, thus surpassing the Empire State Building as the tallest building in New York. The two towers measured more than 63 m along each side of their square footprint; together they accommodated more than 920,000 m^2 of office space. The first two of the six underground levels were used as shopping centres. Below them were two underground parking levels with space for 2,000 vehicles, while the two lowest levels were used as a station for two subways and a railway line.

The façade mirrored the strict verticality of the loadbearing structure with 60 external steel columns on each side of the building. For static reasons, these were closely spaced with a centre distance of just over one metre, with the result that from a distance the façade appeared to be without windows.

On the first three storeys the steel columns were combined in groups of three to form one stronger column, producing larger openings. The facing was curved to yield a more elegant portal form.

2.2 Construction method and design features

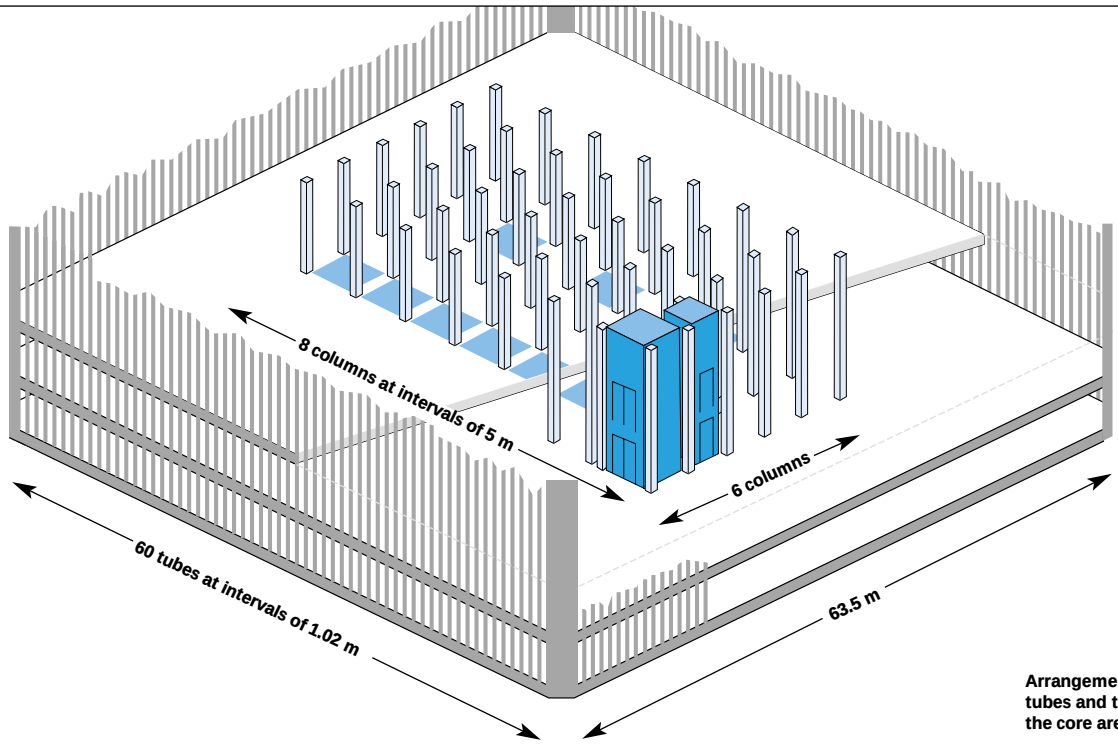
The erection of such slim towers was made possible by the method customarily employed in the United States of erecting a loadbearing structure of steel columns and trusses, with lightweight floors covered by a thin layer of concrete. A similar structure of reinforced concrete, with the same height of more than 400 m and a footprint of 63.5 x 63.5 m, would have significantly increased the dead weight of the building and would probably have resulted in architecturally and economically unacceptable dimensions, particularly at the lower levels.

There is consequently no point in speculating on the possibly higher fire resistance of reinforced concrete. The fact of the matter is that the towers were able to react much more flexibly to the extraordinary impact of the aircraft because the steel columns absorbed some of the impact energy, while the fire protection on the loadbearing parts enabled the South Tower to hold out for roughly 55 minutes and the North Tower for almost two hours before collapsing.

The loadbearing structure reflected the American standard of the 1960s and was based on the "tubular" system:
– The four outer walls of the towers took the form of closely spaced, vertical steel columns – 60 on each side – to create an oversize "square tube". With a centre distance of 1.02 m and a square column cross-section of roughly 0.47 m, a gap of about half a metre remained between the

Façade of the WTC.

On several storeys the outer steel columns were caught in the fire caused by the aircraft impact and severely damaged.



Arrangement of the outer tubes and the columns in the core area.

columns. Although these columns also served to discharge the dead weight and floor loads in a vertical direction, their primary function was to act as a wind bracing, absorbing the bending moments, the pressure and suction of winds and storm, and distributing these forces over the entire outer surfaces. In this way, the towers were meant to withstand a hundred-year hurricane with a design speed of 320 km/h. Together with the horizontal floor trusses, this yielded a close-meshed, stable, yet also flexible network of steel.

– Inside the towers, there was a core comprising 48 vertical steel columns and reinforced concrete walls for the elevators, of which there were over 100 in each tower. However, this core was merely intended to bear the dead weight of the buildings.
– The outer façades and core were interconnected by horizontal steel trusses approx. 20 m long, which were covered with a layer of concrete roughly 10 cm thick to form the floor of each storey. This made it possible to create large office areas without additional supports.

All the steel trusses were coated with the usual mixture of fireproof material used at that time.

2.3 Aircraft impact

On 11th September 2001, an American Airlines Boeing 767 flew right across the Manhattan peninsula at low altitude, heading southwards. The aircraft had a wingspan of almost 48 m, weighed approx. 180 tonnes, and had 92 passengers and crew on board. The aircraft had taken off in Boston shortly before and was hijacked en route to Los Angeles. At 8:45 it slammed into the North Tower of the WTC, between the 96th and 103rd floors. The impact was immediately followed by a major explosion, and the entire building was shrouded in black smoke. The steel columns of the façade were severed over a width of roughly 50 m. The heavy aircraft probably also severed a number of steel columns in the inner core. The aircraft had an almost full complement of fuel so that over 90,000 litres of kerosene poured into the interior of the building, ran down through the vertical elevator shafts to the storeys below and ignited.

A second Boeing 767 – operated by United Airlines – with 65 people on board was also hijacked en route from Boston to Los Angeles. This aircraft approached the WTC in a long drawn-out curve from the seaward side and struck the South Tower at an angle roughly between the 73rd and 77th floors at 9:03, little more than a quarter of an hour after the first impact. Whether by coincidence or through perfidious planning, the kerosene in the wing tanks was distributed over several storeys by the oblique impact of the 48-m-wide aircraft, thus accelerating the fire with fatal consequences. A huge fireball on the outer façade and dense black smoke from the building's interior heralded its imminent demise.

2.4 Collapse

Both towers were now ablaze. Before long, the fire reached temperatures of over 800°C and as much as 1,400°C according to some experts. The fireproof coating of the steel

trusses in the core area was designed to withstand at best a local fire, such as burning archives. At temperatures of only 600°C steel loses around 75% of its strength. Despite their coating, the columns consequently gave way or melted completely.

In the case of the South Tower, the aircraft had struck the building lower down and also severed the columns of the outer façade near one of the edges. Due to the higher load of the 35 or so floors above – reputedly around 100,000 Mp – the upper half of the tower initially buckled. Then, at 10:02, almost exactly an hour after the collision, the tower completely collapsed in a huge cloud of dust.

Although the North Tower had been struck first, the aircraft hit the building higher up and the fire raged longer there before the weakened steel columns in the floors finally caved in abruptly. Due to the dynamic force of this sudden failure of the loadbearing structure, the upper storeys hit the undamaged floors below with their full weight. The lower floors were not designed to withstand such loads and likewise collapsed. As a result, the North Tower caved in like a telescope at 10:28 , almost an hour and three-quarters after the collision.

The third building to succumb was the 47-storey 7 WTC on Vesey Street. Severely damaged by flying debris from the twin towers it collapsed floor by floor, almost in slow motion, at 17:40. Subsequently the other four buildings of the WTC collapsed one after the other too.

2.5 Effects

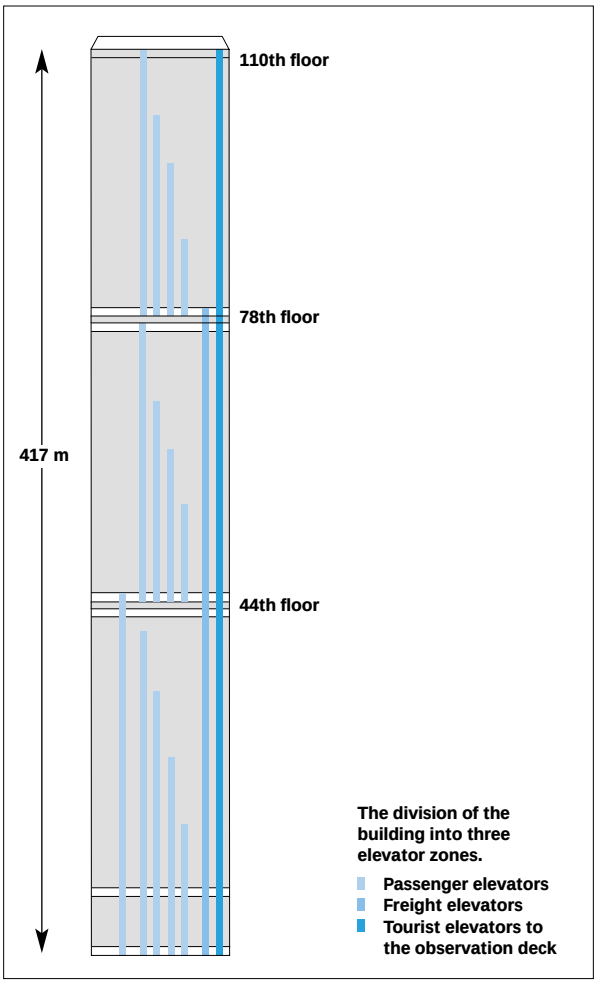
Both of the towers were prime addresses in New York thanks to their height, form, and proximity to the financial district in the south of Manhattan. Not only were they a desirable location for a great number of reputable companies that rented office space there but they also attracted flocks of tourists wishing to enjoy the incomparable view from the towers.

It is no wonder that up to 50,000 people worked in the two towers every day and that the number of visitors could exceed 100,000 on peak days.

The number of parties affected by the attack is therefore high. Those directly affected include, in addition to the owners and lessees of the towers, above all the firms domiciled there: telecommunications companies, banks, insurance companies, brokers, hotels, and public authorities. The interruption or even discontinuation of their business activities has led to considerable losses of rental value as well as loss of business income and extra expense.

However, as an indirect consequence, the collapse of the two towers following the outbreak of fire resulted in another 50 buildings being severely damaged or even collapsing in Manhattan, with its dense concentration of high-rise buildings. This is not surprising, considering the dynamic force and energy released during the collapse of the two towers, the resultant pressure waves, and the masses of falling structural components and flying debris that were spread over the district.

The entire area of Lower Manhattan was closed off as a result of the catastrophe. Over 150,000 people lost their jobs temporarily or permanently because thousands of smaller businesses and offices were forced to close due to limited access. This in turn led to a breakdown of the entire infrastructure. Bridge and tunnel operators are suffering from the loss of toll fees, whilst subways, ferries, and other public transport companies have had to suspend operations, and there are no passengers for the taxis.



Damaged buildings in the immediate vicinity of the collapsed towers.

For reasons of confidentiality and on account of the uncertainty regarding all the policies that may be affected, it is impossible at this stage to make any comment on the actual legal situation with regard to the policies for the WTC and its tenants.

3 Underwriting issues

The following covers are usual on the US market and will very probably be affected in view of the losses described in the second section:

Property insurance covers for:
- Buildings and contents taken out by the owners and tenants of the buildings directly affected and of other destroyed or damaged buildings
- Debris removal and clean-up costs on directly affected buildings and other destroyed or damaged buildings
- Extra cost of reinstatement due to restrictions or requirements placed on reconstruction by the authorities
- Possible increases in prices for construction services subsequent to the inception of the loss
- Consequential fire losses, e.g. costs of cleaning undamaged buildings

Covers for the financial consequences:
- Owners' loss of rental value as well as loss of business income and/or extra expense of tenants of the buildings directly affected and of other destroyed and damaged buildings
- Dependency risks of policyholders not affected by the property damage
- Loss of business income due to prevention of access caused by actual damage or by action of civil or military authorities

3.1 Property insurance aspects

The overall economic burden arising from the property losses and costs affecting the WTC and the insureds in the neighbouring buildings is estimated at some US$ 10bn to 12bn.

3.1.1 Property loss

Property insurance covers the destruction, damage, and loss of insured objects. The insurance cover generally extends to the cost of reinstatement or the new replacement value, i.e. the cost of replacing the building, the operating equipment, and all the supplies that are in the insured's possession or that are in the insured's safekeeping and for which the insured assumes the risk. This forms the basis of the sum insured, which defines and limits the amount of the insurer's liability insofar as limits of indemnity have not been agreed upon. In the case of non-proportional insurance, a form of coverage quite customary in the USA, the insurer's total liability is divided into several layers, for which sums are defined. When specifying the overall limit for high-rise buildings on a scale such as that of the WTC, the buildings' total destruction was not considered a possibility in the past. In the case of the loss on 11th September 2001, the insurers' and reinsurers' liability under each policy is therefore likely to be limited. There are already speculations in the press that the sums to be paid out by the insurers may not suffice to cover the costs of the restoration.

3.1.2 Additional costs

In the case of losses on a scale such as that of the WTC, it is easy to see that substantial expenses will be incurred in addition to the restoration costs:

– Clean-up costs for the removal of the huge amount of debris
– Extra costs of reinstatement or replacement due to alterations in the design and plans in order to comply with government regulations and new technical requirements. These additional costs are covered within the scope of the limit of indemnity, so that they will not increase the total liability assumed. This means that if the property loss reaches the limit of indemnity, these additional costs will be borne by the policyholder.

3.1.3 Insured perils and exclusions

When defining the scope of cover in property insurance, regardless of whether named-perils or all-risks policies are concerned, no consideration is given to the cause that brings about the realization of the insured peril and the occurrence of the damage. For this reason, political risks, especially terrorism, are excluded only if a corresponding exclusion of such causes has been agreed upon in the contract or if there are corresponding statutory provisions regarding the exclusion of such causes. Both all-risks and named-perils policies not only cover the risks of fire and explosion but also generally include so-called cold damage caused by the impact of manned or unmanned aircraft. In view of current underwriting practices in the USA, terrorism is unlikely to be excluded in many of the primary insurance policies covering the WTC and the aggrieved parties in the surrounding area.

3.2 Business interruption aspects

The various exposures of the business interruption risk relating to the salient example of the World Trade Center were outlined in our "High-Rise Buildings" brochure and were illuminated with the main data from the BI loss which resulted from the terrorist attack on 26th February 1993 (cf. 4.9 Loss of profit).

Experts believe that the BI losses generated by the event on 11th September 2001 will ultimately far exceed the sum of all the property losses. Local investment bankers, for instance, are not alone in fearing the highest accumulated BI loss in history. What are the facts and assumptions behind these fears?

When assessing the BI risk, American risk managers and insurers primarily consider the probable duration of the interruption and essentially evaluate the necessary cover on the basis of the period required for the restoration of the premises or for the economic rehabilitation of the business. In the case of the WTC, it is impossible at present to forecast the duration of the interruption. On the basis of this time element, i.e. from the date of damage and destruction to the time of restoration, lessors of the facilities affected could assume a maximum loss in respect of their lost income from rents, a sum which, in the sense of a full-value BI insurance in European practice, should be equivalent to the sum insured under standard BI insurance.

What forms of coverage and extensions of BI insurance may come into question in the broader connection of the catastrophe of 11th September 2001?

a) In the interest of the numerous owners of the buildings and all the infrastructure facilitites directly or indirectly affected such as toll roads, bridges, tunnels, and subway stations, there are tailor-made policies on a non-proportional basis, as described in Section 3.1.1 above. This means that following the occurrence of an insured event, the cover under the overall insurance concept includes up to the limit of indemnity not only the various property losses and costs but also all conceivable exposures from the BI sphere with individual sub-limits and deductibles.

b) Given the roughly 1,200 businesses which had rented space in the entire WTC complex – encompassing seven buildings over an area of approx. 7 hectares – an inestimable number of claims under standard BI covers must be expected, which will generally be tied to the proviso of material damage insured under a combined commercial property policy. Indemnification will cover the actual loss of business income sustained due to the necessary suspension of operations during the period of restoration, which begins 72 hours after the time of the direct physical loss or damage. This coverage is frequently combined with extra expense insurance, which attaches immediately upon the occurrence of the loss or damage.

   Bearing in mind the standing of the tenants involved, such as banks, investment companies, stockbrokers, and insurance brokers, the total claims for compensation under these policies are expected to be very high. Claims settlement is likely to be very difficult in this case due to the extensive destruction of and damage to operating areas, the loss of experienced employees, and the destruction of the business data which is crucial to the settlement of BI claims. Nevertheless, in the wake of the

1993 terrorist attack it is to be anticipated that these businesses have tried and tested disaster recovery plans at their disposal. It is also said that a number of major companies have already relocated to alternative offices in Manhattan and the surrounding area and have restored normal business processes. In other words, loss-minimizing expenditure and further extra expense must be expected in such cases. It will be particularly difficult to make a distinction between the insured loss of business income due to business interruption caused by damage to buildings and contents and the uninsured financial losses attributable to the closure of the New York Stock Exchange (NYSE) on Wall Street, the loss of key staff, and the adverse impact on the financial market following the terrorist attack and the already tense situation on the financial market prior it.

c) In the interest of all businesses in the vicinity of the WTC: extensions to include contingent time-element coverages with regard to business income from dependent properties

In addition to covering the effects on the insured's operations as a result of property damage caused by insured perils at the premises of direct and indirect suppliers, customers, and public utilities (electricity, gas, water, telecommunications), insurance protection also extends to, among other things, loss of business income and extra expense incurred through business interruption as a consequence of access to business premises being restricted due to the direct impact of an insured peril – in particular when such restrictions are imposed by the authorities. Such extensions of cover may also encompass the consequences of damage to or destruction of "attractive" facilities in the trading area of the insured business caused by an insured peril, thereby leading directly to a reduction in the insured's business volume.

In tailor-made BI covers offered by major insurance brokers, the scope of cover under the above-mentioned clauses is, as experience shows, more extensive than that provided by a corresponding product within the framework of standard policies, which, in terms of the coverage extensions mentioned above, generally refer only to the consequences of property damage caused directly by an insured event on the premises of the supplier, customer, or utilities, loss of customer attraction, etc.

We have no information on the individual BI covers for the majority of the tenants in the World Trade Center. However, it is important to bear in mind the possibility that there will be many further liabilities for the insurers arising from the inclusion of the above-mentioned extensions in BI covers as part of the standard package policies for retailers and commercial, trading, and service enterprises in the vicinity of the WTC, which was entirely or at least partially closed to public traffic for a substantial period of time over an area of approximately five square miles.

3.3 Underwriting approach to date

As far as the coverage elements of "commotion of any kind" and "terrorism and acts of sabotage" are concerned, it has hitherto been impossible to clearly determine their limits of insurability. They are crucially influenced by the particular political and social situation in a country and especially by the question of whether the police and forces of public order are able to terminate a state of violent political unrest in adequate time, to prevent or limit new unrest, and to hinder politically motivated acts of terrorism. The longer-term "political climate" of a country was therefore the decisive factor in determining whether the private insurance industry, i.e. local insurers and international reinsurers, were willing to provide the required capacity for political risks in their covers for completed risks. Prior to 11th September 2001 these considerations were in part responsible for the fact that the issue of terrorism did not receive adequate attention, which becomes especially clear from the following remarks on PML calculations.

3.3.1 Calculation of the individual PML

We understand the Probable Maximum Loss (PML) of a risk to mean the estimated probable maximum loss which is to be anticipated – from a cautious standpoint – for a single event in the light of the risk circumstances. The PML is

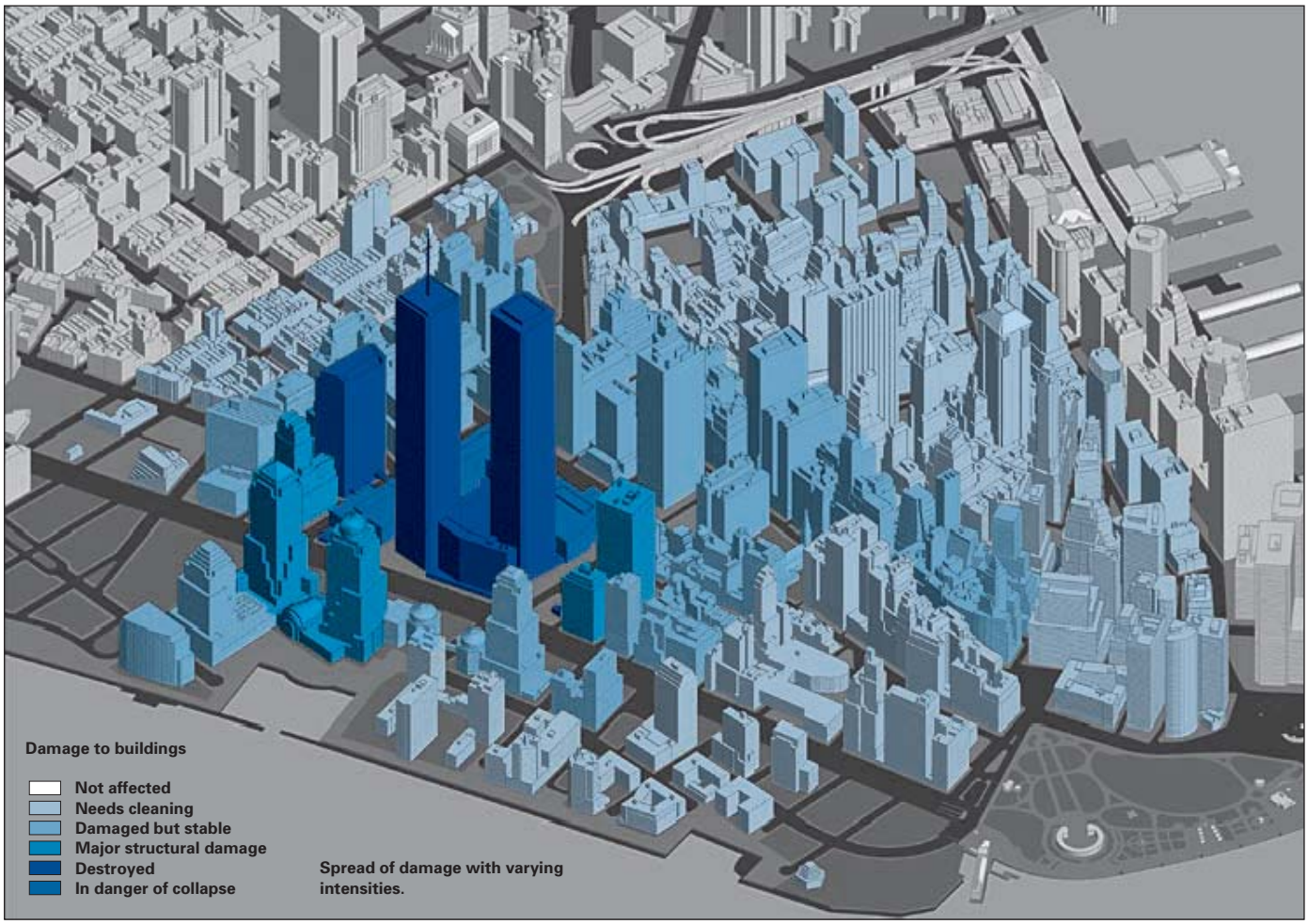
based on "probable" events, usually oriented towards infrequent, but already existing loss experiences. The probable maximum loss was discussed in our "High-Rise Buildings" brochure – especially with respect to the operating phase – and tips were provided for calculating the relevant fire PML in this regard (see 5.3 Problem of maximum loss). The fact is that – provided the insurer considers adequate structural separations exist – the probable maximum loss is generally taken to be a portion of the total sum insured plus cost items. When calculating the fire PML, some insurers only consider the possibility of a plane crash or arson at several locations in special cases (e.g. when buildings are located on the approach path or in the vicinity of an airport).

These were considered "possible", but certainly not "probable" events. In our "High-Rise Buildings" brochure we asked whether it might not be advisable to specify a terrorism PML for skyscrapers. As things stood at that time, this was not held to be necessary since – on the basis of our PML definition – we did not consider the event to be probable. With the catastrophic terrorist attack on the World Trade Center on 11th September 2001, the event which we previously considered inconceivable has now unfortunately occurred. Never before have civil aircraft been used for terrorist attacks on skyscrapers, causing such unimaginable damage and resulting in such a loss accumulation. In future it will doubtless be necessary to take such scenarios into account when calculating the PML for covers under which terrorism is not excluded.

3.3.2 Calculation of the accumulation PML

The problem of accumulation losses had arisen primarily in connection with natural hazards, such as windstorm, earthquake, and flood. However, the terrorist attack on the (single) risk of the World Trade Center has demonstrated in a very dramatic way just how necessary it is to perform a worst-case accumulation analysis encompassing all the property and BI types of loss specified in 3.1 and 3.2 respectively as a consequence of terrorist acts.

Given the numerous types of loss and damage indicated in the above-mentioned sections, it is clearly a difficult task to calculate a realistic accumulation of property and BI losses. Even if the building and contents damage incurred by the



Spread of damage with varying intensities.

owner of the building directly affected and the owners of the neighbouring buildings is conservatively assumed to be 100%, there are a number of other items for which such a calculation poses considerable difficulties. For example, the potential losses in terms of contents and loss of business income and extra expense incurred by the tenants in the affected building and in the neighbouring buildings were scarcely assessed, since these were generally not known or could not be examined and accumulated due to the very heavy administrative workload this would entail. The situation is similar with regard to internal and external dependencies covered under policies taken out by tenants and third parties and with regard to the business interruption resulting from access restrictions and closures imposed by the authorities. Such extensions to the cover, which have become increasingly frequent of late, have been a major factor in the considerable lack of transparency surrounding the assessment of accumulation risks.

3.4 Summary

Insurers and reinsurers have in the past already taken the incalculability and unpredictability of terrorism losses into account in their risk assessment considerations. However, such a widespread conflagration affecting so many buildings as a consequence of two skyscrapers collapsing after an organized and pinpointed attack by a whole group of terrorists using wide-bodied passenger jets with a full load of fuel had previously been considered highly unlikely – if indeed it had been contemplated at all. For this reason, the work involved in calculating an accumulation of property and BI losses on the scale described above for the purposes of risk assessment in the context of such terrorism loss scenarios was – from the economic point of view – totally out of proportion to the loss expectancy value.

However, the reality and possible repeatability of these and similar acts have rendered obsolete the previous assessment of such a scenario as “highly improbable”.

Demanding and perilous salvage operations.

It is clear from the dramatic events of 11th September 2001 that the private insurance industry must completely and unconditionally rethink its policy on covering political risks and follow through with the requisite decisions.

4 Consequences for insurers and reinsurers

4.1 Coverage options

Owing to what happened on 11th September 2001, events previously considered highly improbable have become probable. The extent of damage incurred in the property sector – and to an even greater degree the accumulation of losses from a diverse range of insurance classes even extending to impacts on the assets side of insurers' balance sheets – necessitate a fundamental reorientation with regard to how the insurance industry handles such risks (terrorism coverage and concentration of values) in its underwriting.

Every concept for covering political risks in property insurance requires that they can be clearly and unambiguously distinguished from other perils. The WTC loss event shows that insurers' and reinsurers' overall commitment can only be clarified if their liabilities for losses due to terrorism are transparent.

The question is whether it is the task of individual insurers or indeed the private insurance industry as a whole to provide covers for circumstances whose lack of transparency rules out any possibility of calculating the risk and whose causes are political or state-related. Various pool systems have been established in countries where the political situation makes it impossible for the private insurance industry to grant capacity for commotion elements or terrorism. Such countries include Great Britain and Northern Ireland, Spain, and South Africa.

If, following intensive analysis, the risk of terrorism is nevertheless covered by individual insurers, it is included on a restricted basis with limits of indemnity, a deductible, an additional premium, and a short period of notice. Insurers are then well-advised to take into consideration not only the exposure from the individual risk, but also the possible accumulation with other risks. The design of the terms and conditions and the structuring of the liability are then subject to the following concrete requirements:

1 The definition of uninsurable and uninsured political risks must be sufficiently clear and adjusted to the current circumstances, and these risks must be excluded from the insurance protection.
2 The insured perils must be adequately distinguished from the uninsured elements.
3 The definition of one event must be formulated unambiguously.
4 The BI cover is to be limited precisely to the direct economic consequences of the property damage caused by an insured peril; under no circumstances may it include all possible consequences arising purely out of the operation of the insured peril.
5 The onus of proof is to be reversed in favour of the insurer.
6 The sum of all possible liabilities from one event is to be rendered transparent using appropriate information tools.
7 Provisions are to be made for cancellation with short periods of notice.
8 Annual limits of indemnity and appropriate deductibles must be agreed upon.

9 Correct claims settlement must be ensured.
10 Compensation by the state that precedes indemnification by insurers must be offset against the indemnification.
11 A commensurate additional premium is to be charged for the extended coverage.

The points to be considered by the reinsurer are similar to those facing the insurer (see above); in addition to controlling liabilities, the reinsurer must consider offering non-proportional reinsurance covers on a per-event basis and proportional treaties with occurrence limits.

4.2 Calculation of the overall commitment

At present there is no satisfactory solution for calculating a possible accumulation PML. Only when further progress has been made in settling the claims from the terrorist attack on the World Trade Center might it be possible to draw conclusions about the items which – as described above – are currently difficult to assess. In the future, however, it will be essential to develop methods that can create transparency as to all possible affected property and BI covers in metropolitan areas such as Lower Manhattan with their high concentrations of property values. It is therefore advisable to include the above-mentioned individual items as far as possible in accumulation considerations – not only for the terrorism risk but also for the coverage of other political risks and for natural hazards events.

5 Closing remarks

The comments in the preceding sections focus on property and BI insurances; they do not consider further accumulations with other classes of business or the assets side of insurers' balance sheets. There are many questions that cannot be answered definitively just a few weeks after the tragedy, but the details that have already emerged show that the insurance industry must adapt itself to coping with this new risk potential.

In view of the considerable number of dead and injured left in the wake of this terrorist attack, the largest loss incurred to date by the insurance industry pales in significance next to the grief and human suffering that has been caused. We extend our condolences and express our deepest sympathy for the victims and their families.

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