Nautica

Building a safer solution.

September 1, 1999

Bill Ralph FYI Pat

Pat Gower
BP Amoco
2401 Fifth Ave South
Texas City, TX 77590

Dear Pat:

We offer a modular blast resistant building (with a 5.0 to 8.0-psi capacity) to replace your wood frame trailers (only a 1.0-psi capacity). The use of our buildings allows you to ***immediately***:

- Protect the lives of your workers,
- Move buildings closer to your process areas which saves you labor $$,
- Comply with API RP 752,
- Limit your legal and regulatory liability (see attached Air Liquide article), and
- Enhance worker morale by providing a safe workplace.

Consistent with industry practice, you can lease our buildings. Moreover, we have set our building lease rates ***equal to or less than*** the daily rate of wood frame trailers so that it will make economic sense for you to replace every wood frame trailer in your plant. Up until now, the best that you can do is to move wood frame trailers to remote locations where blast risks are not as high. Those areas are always far away from the process and add to your labor costs. Although you move trailers to low blast overpressure areas, the trailers will still suffer significant damage in a blast because at 1.0-psi, "isolated buildings overturn...[and] roofs and walls collapse." *See Table 4, API Recommended Practice 752.* Our units have a peak free-field, not reflective, capacity of 5.0 to 8.0-psi. Therefore, you can locate our units deep within process areas and still avoid placing your personnel at risk.

Other applications for our buildings include:

- Operator shelters (layout enclosed),
- Office complexes (layout enclosed),
- Control rooms,
- Tool rooms, and
- Analyzer and process control equipment shelters (layout enclosed).

This makes sense to us. We would like to know what you think. I will call you in a few days to get your thoughts on our product. In the meantime, call me if you have any questions.

Very truly yours,

Samuel B. LaVergne

Nautica Buildings
Price Sheet

5.0-psi Rated Modular Blast Building

Three (3) standard office floor plans tailored to petrochemical applications. Each MBB includes top quality construction that has a blast rating of up to 5.0-psi; Class I, Division II HVAC components and exterior lighting; Category V wiring with data and telephone ports at each workstation, interior and exterior access interfaces, and fiber optic ready.

Purchase

Price per MBB
$ 89,500

Short and Medium Term Leasing Options

Lease Term	Rate Per Unit
	Per diem
Month to Month	$72.00
1 to 4 years	$66.00

Long Term Leasing Options

Lease Term	Rate Per Unit	Residual Purchase Price*
	Per diem	**Per Building**
5 Year	$ 50.50	$43,417
6 year	$ 44.76	$40,487
7 Year	$ 40.70	$37,511
8 Year	$ 37.68	$34,489
9 Year	$ 35.36	$31,421
10 Year	$ 33.35	$28,309

*Lease purchase options are available with a two month prepayment fee and are able to be exercised at the end of years 5-10 with the listed residual price.

$33/day

Other Options

- 8.0-psi Overpressure Capacity
- Positive pressure system
- Gas detection
- Custom desks, cabinetry and workstations
- Class I, Division II 30 kVa 480/120 transformer
- Communications package including--
  - DT 110 punch-style termination blocks
  - system surge protection
  - fiber optic junction boxes
  - system interface for easy connection/disconnection to advanced Local Area Networks and telecommunications

Prices exclude installation and are FOB Rayne, Louisiana
Prices and unit availability are subject to change
08/31/99

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Iberville jury awards $158 million in Air Liquide blast

By CHRIS FRINK
Westside bureau

PLAQUEMINE -- An Iberville Parish jury awarded $158 million Thursday in a suit over in a 1994 explosion in an oxygen production system at an Air Liquide plant in Plaquemine that killed the plant manager and injured two workers.

According to court documents, the jury award included $120 million to "punish and make an example of Air Liquide S.A." An agreement in the settlement of a related suit will limit the total award to $100 million, plus interest.

Attorneys for the men and their families claimed Air Liquide ignored its own safety rules and did not install a filter that might have prevented the explosion, nor did the company build a blast wall that would have protected workers from the explosion.

Eighteenth Judicial District Judge Jack Marionneaux said the award is the largest he has seen in a trial that was not a class-action case.

Marionneaux sealed the verdict and judgment after the jury made it's decision late Thursday after a two-week trial. Marionneaux said he had never before sealed the results of a jury trial.

Marionneaux opened the results Monday.

"I don't remember who asked for it. Somebody suggested it," Marionneaux said. "The trial is not really over. We have some insurance coverage questions that will be decided by me. This is a very complex case. There are levels and levels of insurers. Somebody tells me there is another set of insurers."

A three-day hearing beginning May 17 will sort out some of those complexities, he said.

One of the three men hurt, plant manager Ray Hracek, died after six days in the hospital. Hracek, a widower, left three children in their 20s, said attorney Keith Richards, attorney for Hracek's children. The other two men suffered serious burns and have "tremendous residual injuries," he said.

Joseph "Jeb" Bujol III, 37, of Plaquemine, suffered burns over 94 percent of his body. The explosion and fire left Don Perkins, 41, of Baton Rouge, burned over 88 percent of his body, Richards said. Skin grafts saved the men's lives but, because they have no sweat glands, sentenced them to lead their lives indoors, he said.

An attorney for Air Liquide S.A. said Monday he would find a corporation spokesman to make a statement on the case but no statement was issued by Monday evening.

Victor Marcello, Perkins' attorney, said he expects the insurance companies representing Air Liquide S.A. to appeal the verdict.

Air Liquide S.A. is the French parent company of Air Liquide America, the corporation that operates the Plaquemine plant it bought from Big 3 Industries in the late 1980s.

The plaintiffs reached a sealed out-of-court settlement with the American subsidiary, Richards said.

The jury found Air Liquide S.A. 80 percent liable for the explosion. An engineering company owned by Air Liquide was found 15 percent liable, and Entergy, 5 percent liable, Richards said. Entergy is appealing a 1997 verdict for $22 million, he said.

The 1994 explosion in a pressure reduction valve occurred after a "power sag" in the Entergy system shut operations at many plants along the Mississippi River, Richards said.

As Air Liquide's oxygen-production operation began restarting, a vital valve in a system that reduces pressure before the oxygen goes into a pipeline did not operate properly. The three men were on the way to inspect the valve when it blew up, Richards said.

Air Liquide investigators believe impurities, small pieces of solid material, in the high-pressure oxygen line sparked the explosion inside the valve, he said.

The corporation knew of this type of accident but did nothing to prevent it, Richards said.

An Air Liquide's safety official testified that he was surprised the company had not done a safety audit at the plant, he said.

The Air Liquide America settlement limited the judgment in this case to $100 million, the maximum amount of the company's insurance coverage, and released the French parent company from liability, Richards said. That does not include interest on the judgment, which could be about $40 million, he said.

The jury awarded a total of $38.2 million in compensatory damages to the men and their families: Bujol, $15.6 million; Perkins, $14.6 million; and Hracek, $8 million. Under an agreement between the plaintiffs, they will share the punitive damage award in the same ratio, Richards said.

Table 4—Overpressure Effects on Various Building Types

Building Type	Peak Side-on Overpressure (psi)	Consequences
Wood-frame trailer or shack	1.0	Isolated buildings overturn. Roofs and walls collapse
	2.0	Complete collapse
	5.0	Total destruction
Steel-frame/metal siding pre-engineered building	1.5	Sheeting ripped off and internal walls damaged. Danger from falling objects
	2.5	Building frame stands, but cladding and internal walls are destroyed as frame distorts
	5.0	Total destruction
Unreinforced masonry bearing wall building	1.0	Partial collapse of walls that have no breakable windows
	1.25	Walls and roof partially collapse
	1.5	Complete collapse
	3.0	Total destruction
Steel or concrete frame w/unreinforced masonry infill or cladding	1.5	Walls blow in
	2.0	Roof slab collapses
	2.5	Complete frame collapse
	5.0	Total destruction
Reinforced concrete or masonry shear wall building	4.0	Roof and wall deflect under loading. Internal walls damaged
	6.0	Building has major damage and collapses
	12.0	Total destruction

Source: *The Effects of Nuclear Weapons* by Glasstone (1964).

b. Determine the explosion loading (overpressure and duration) for each event for each target building using the TNT-equivalency, Multi-Energy, Baker-Strehlow, or other method.

c. Determine the frequency of explosions, based on historical or industry data for the type of process unit at the facility. Information may be limited, and the user should carefully evaluate the applicability of any such information before using the analysis. See Appendix C for more information on typical data for explosion frequency.

d. Determine the vulnerability of occupants (probability of fatality) in the target building versus overpressure (overpressure as a function of the type of building construction). See Appendix C for more information on vulnerability of occupants.

e. Calculate the risk to an individual from a single event by multiplying the explosion frequency, the percentage of time that the individual occupies the building, and the vulnerability estimated for building occupants. To obtain the total individual risk to an occupant, add the risks from all potential explosion events. The total risk for the most exposed individual is the maximum individual risk. Other means of expressing individual risk exist, and the user may wish to refer to the CCPS's *Guidelines for Chemical Process Quantitative Risk Analysis*.

f. Calculate the aggregate risk to all building occupants. One simple way of expressing aggregate risk would be to determine the weighted average occupancy of the building by summing, for all individuals, the fraction of time that each individual occupies the building. Next multiply the weighted average occupancy by the explosion frequency and the vulnerability estimated for building occupants. To obtain the total aggregate risk to all occupants, sum the risks from all potential events. There are a variety of means for expressing aggregate risk, and the user may wish to refer to the CCPS's *Guidelines for Chemical Process Quantitative Risk Analsyis.*

g. Compare the calculated risk with the company's risk acceptance criteria to determine whether additional study is required.

The screening risk-analysis method provides an additional level of evaluation because the frequency of the incident has been included in the evaluation. By identifying risk rather than just the consequences, additional buildings not posing significant risk to the occupants may be identified. Screening risk analysis may require more time and effort to complete than those methods previously discussed. Additionally, the use of industry versus site-specific data may not account for factors such as maintenance history, process safety management

Table 5—Typical Overpressure Effects on Unprotected People

Response	Threshold Overpressure (psi)
Eardrum rupture	5
Fatal head injury	8[a]
Serious lung damage	10[a]
Fatal bodily injury	11[a]

Source: *The Effects of Nuclear Weapons* by Glasstone (1964).
[a]Values are for a 165-lb individual and a 0.05-sec positive phase explosion duration.