

## PLASTICS COMPANY FIRE

Carteret, New Jersey

August 19, 1989



# FIRE INVESTIGATIONS

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**Summary Investigation Report**

**PLASTICS COMPANY FIRE  
CARTERET, NEW JERSEY  
AUGUST 19, 1989**

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**INTRODUCTION**

On August 19, 1989 at approximately 5:20 a.m., the Carteret Police dispatcher received a phone call reporting a fire in the vicinity of the S & A Plastics Company which is located in the northeast corner of the town of Carteret. The building housing S & A was constructed in 1915 and is part of a larger complex of building segments which are all connected to form a U-shaped plan. Within this non-sprinklered structure, the building spaces were leased to a variety of industrial and commercial occupancies which included a plastics recycling company, a machine shop, a steel fabrication shop and a towing company among others. No employees of any of these companies were reported to be at the premises at the time of the fire.

Preliminary investigation by the Carteret Fire Officials, working in conjunction with local and county agencies, has concluded that the likely source of ignition was in a pile of improperly placed debris near the south east corner of the S & A lease property. The debris was placed in an alley against the S & A space. Indications are that the fire origin is of a suspicious nature and at least one suspect has been questioned in connection with this fire.

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The fire was able to spread rather rapidly from the exterior of the building, through some window openings and directly to stored plastic commodity in the S & A facility. Fire then progressed along the entire length of the S & A portion to a machine shop and a steel fabrication facility, which made up the sides of the "U" shaped complex. The fire also directly exposed a flammable and combustible liquids storage facility across an alley. Fast action by the Carteret Fire Chief and an employee of this storage facility perhaps averted a much larger loss by utilizing a partially completed sprinkler system to protect the highly flammable contents.

The potential for airborne fallout of hazardous pollutants from the burning plastic and the release of some minor quantities of ammonium hydroxide resulted in voluntary evacuation of some 1,000 city residents. Exposure levels did not reach critical limits in the residential areas, however, 35 fire fighters were evaluated at a local hospital after testing positive to a litmus paper skin test at the fire scene.

The National Fire Protection Association conducted a summary investigation of the multi-tenant fire in cooperation with the Carteret Fire Department and the New Jersey Department of Community Affairs, Bureau of Fire Safety.

The assistance and cooperation of Richard Greenberg, Superintendent of Fire, Borough of Carteret; Bradley Pabody, Supervisor of NFIRS, Bureau of Fire Safety, New Jersey Department of Community Affairs; and John Parzych, Plant Operations Manager, Unocal are greatly appreciated.

## **BACKGROUND**

Carteret, New Jersey is located in the northeastern part of the state near Newark. Various industrial sites are located within the city limits many of which are related to the petrochemical and manufacturing industries. This general area of the state had been the site of several large loss fires involving petroleum storage facilities. Recent adoption of the *Uniform Fire Code*, State of New Jersey Subchapter 4 by the state was mandating the installation of automatic sprinkler systems in many existing facilities, mostly due to size/area limitations and hazard of occupancy.

In October of 1988, a recommendation was made to Unocal to install an Aqueous Film Forming Foam (AFFF) closed head automatic sprinkler system to protect the palletized drum and rack drum storage facility which was adjacent to the S & A facility. Design work was contracted based upon the recommendation and the installation work was approximately 70 percent complete. A similar recommendation to upgrade fire protection in the building which housed the S & A operation was pending. Due to the hazard in the Unocal facility, the required system was being installed in a timely fashion.

A citation had been issued to the S & A tenants in 1987 for improper storage of debris in the alley area. The debris had been removed, and there was no evidence of a recurring problem.

### **The Industrial Complex**

The complex facilities directly affected by the fire involved a "U" shaped structure which had an area of approximately 50,000 square feet. The individual building segments were all single-story with varying roof heights of 40 to 60 feet. The building was constructed in 1915, and it was occupied by one manufacturing facility in the past.

Construction type included various forms of noncombustible construction. Most of the structure walls were masonry block, brick, or in some areas, transite, fiberglass and sheet metal siding on steel. Access to the complex was somewhat limited due to the security gates which restricted the three entrances to the complex. There were no manual or automatic fire alarm systems or sprinkler systems installed in the complex.

Construction features of the Unocal building included a solid masonry wall with a five foot opening near the roof line which was covered with a transite sheeting. A sheet metal roof covered this structure. As previously mentioned, a partially installed AFFF closed sprinkler system was present in this building. An existing manual fire alarm system was operational at this site, but there is no indication that it was actuated during the fire. The fire protection system installation was approximately 70 percent complete and included two system risers, a 1500 gpm fire pump and all the necessary trim and equipment for AFFF proportioning.

### **FIRE INCIDENT**

At 5:20 a.m. on Saturday, August 19, 1989, an anonymous phone call was placed to the Carteret police dispatcher reporting a fire in the vicinity of the S & A Plastics Company located at 337 Roosevelt Avenue. No other information was given, and the police dispatcher immediately notified the Carteret Fire Department which is a combination paid/volunteer organization. Two career fire fighters were on duty the morning of the fire. Upon leaving the station, they observed flames and smoke issuing from the complex which was located approximately three-quarters of a mile from the fire station.

Upon hearing the description of the fire, the responding volunteer fire chief immediately requested mutual aid. After arriving at the scene, the engine company reported that the fire was located near the south west corner of S & A Plastics. The engine company crew, which was now supplemented by the volunteer members, began hand-laying 800 feet of 4 inch large diameter hose. This line had to be laid across a railroad siding, through a chain link fence and across a vacant lot to a fire hydrant. The delay associated with placement of this supply line resulted in depletion of the water supply tank

on the engine. The second arriving pumper was directed to boost pressure from the hydrant to the pumper at the fire scene.

During this time period, the fire had penetrated window openings, in the plastic company portion of the building, and was able to rapidly grow due to the quantity and nature of the fuel - stored plastic commodity in granular form. The product was kept in cardboard boxes, placed on pallets and stacked. The company utilized plastic commodity in various forms throughout its operation, which provided a continuous source of fuel for the rapidly advancing fire.

About twenty minutes after the alarm, the Carteret Superintendent of Fire considered the potential threat to the Unocal storage facility. The radiation from the S & A fire was intense enough to have melted some plastic drums containing ammonium hydroxide which were located in the rear of the facility. It was also observed that the transite siding located near the roofline was being melted by the radiant exposure.

The Superintendent had reviewed plans for the Unocal facility and had first hand knowledge of the AFFF sprinkler system installation. A mutual aid pumper from Woodbridge fire department was available in a staging area, and the Superintendent directed the pumper to proceed to the south end of the Unocal building begin supplying the sprinkler system hose lines between the pumper and the fire department connection were stretched and charged.

Since work on the system was underway, the Superintendent had concluded that the system valves were closed. With the assistance of an Unocal employee, the two entered the facility and opened all system valves. Water was then observed discharging from approximately five sprinklers, since enough heat had been released by the fire to have already operated these sprinklers. The system was only discharging water at this time since the AFFF proportioning equipment was not connected. After the fire was extinguished, it was determined that a total of 14 sprinklers had operated.

The sprinkler system acted to keep the liquid filled drums, which contained ketones, glycols and phthalates, below their flash point, and prevented the wood pallets from reaching their ignition temperature; this averted a much larger loss. It is theorized that a fire within this storage facility may have exposed several outdoor storage tanks and a truck loading rack. The volatility and flammability of these products was of such a nature that if ignited, severe explosions could have resulted.

The residents in the area were notified of a voluntary evacuation at about 6:00 a.m. This evacuation was precautionary due to the nature of products involved in the fire and the potential for other products to become involved. Estimates indicate that between 600 and 1,000 residents relocated to other areas, and there were no reports of injury or illness to the civilian population.

Fire fighting operations remained at fairly intense levels until the fire was declared under control at approximately 9:30 a.m. The fire ground operations centered on efforts to stop the fire in the building which housed the Butler Steel Company. Effective use of heavy appliance devices and coordination of the numerous mutual aid companies on the scene permitted a stop to be made in this large structure.

During overhaul and salvage operations, officials from the New Jersey Department of Health were conducting tests of fire fighters for exposure to ammonia using a litmus paper skin test. Thirty-five fire fighters tested positive and were transported to a local hospital for simple decontamination. No lingering effects were reported by the fire fighters who were treated.

The most likely source of the ammonia residue was the failed plastic containers in the rear, outdoor area of the Unocal building. A light misting rain was falling during the incident which helped deposit the ammonia product on the fire fighter's clothing and skin. Even fire fighters, who were not in the proximity of the containers, may have been affected.

Fire suppression personnel remained on the scene for approximately 29 hours to control rekindles, which occurred during overhaul operations. This was mostly due to the uncovering of the layered plastic commodity during the salvage operation.

Coordination of the various mutual aid fire departments involved in this fire was quite effective. A total of 23 engine companies, 7 truck companies, 10 auxilliary vehicles and 200 fire fighters worked closely under the supervision of the Carteret Superintendent of Fire to combat this fire.

## **SUMMARY**

This major fire resulted in the destruction of two manufacturing companies in the complex. The involvement of the flammable liquids at Unocal and further loss was avoided by quick action of the incident commander in utilizing the partially completed sprinkler system. This incident illustrates the importance of fire department involvement in plans review and on-site inspections. In this case, the in-depth knowledge of the fixed fire protection system was utilized in this "save". The system installation was the result of state-wide retroactive sprinkler installation requirements in certain facilities.

This case also points out the importance of good housekeeping practices since the fire began in a pile of combustible debris outside the industrial complex. Also, the coordination and cooperation of the mutual aid departments, other governmental agencies and a helpful employee of Unocal resulted in a favorable outcome of this fire.