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The PSA crash occurred seven years before this report was prepared, yet the scars still remain. Many of those we interviewed came close to tears as they recalled the horrors of September 25, 1978. Yet everyone helped us, because they sympathized with our goals -- to develop a training aid to help others. To all who gave us so much time and help, we are most grateful.

1. The Incident

It's 9 a.m. Monday, September 25, 1978, and in San Diego it's already a stifling 30 degrees Celsius.

By early afternoon the temperature will reach a record-breaking 40 degrees, hot enough to send children home early from school.

At the San Diego Police Department, the Acting Chief is holding a meeting, in the Chief's office, with the force's senior officers. They're discussing which sergeants should be promoted to lieutenant. The Chief is on his way to Santa Ana with the Mayor for another meeting.

Most uniformed police units are out on regular patrol. One police ambulance is just leaving a home in North Park, an established residential area built during World War II. They had been called in to help an elderly lady. But there's not much they can do. The lady has died peacefully. As the ambulance leaves, one of the Coroner's deputies arrives.

At the Fire Department, the Chief is in his office, chatting with a few senior officers. Many firemen are taking advantage of the relative quiet to get in their regular exercises. number of them are jogging at Balboa Park, a large recreational area situated in the heart of the city, between the airport and North Park.

At the police training academy, an instructor is watching recruits as they complete their morning exercises. At another training centre, paramedics are winding up the training that will see them take over city ambulance duties from the Police Department.

In North Park, many residents are away at work, others are sleeping in late.

One lady is on the phone with her sister, trying to decide whether to go and visit her to escape the day's heat.

Another woman is waiting from some children to arrive at her home. She takes care of them while their mothers are at work. One of these mothers is just driving up with her young son before going to work at a downtown bank. A block or so away, another mother is approaching the same corner, with her youngster in the front seat of the car, beside her.

In another home, around the corner on Nile, a young woman is studying for a college biology exam.

At a nearby service station, a television camera crew and a photographer are working on a story about a new gasoline vapor recovery system.

Across the street, a young man is sleeping in, while just a block away a storekeeper is chatting with some customers. Near them, a city electrical repairman, up high in a bucket, is working on some power lines.

Above him, a Cessna 172 is climbing away from San Diego Lindbergh Field Airport. One pilot, his head in a plastic hood, is practising instrument flight navigation. The other pilot in his more experienced instructor.

A Pacific Southwest Airline 727 Jet has just started its final approach to the same airport. On board are 135 passengers and a crew of seven.

Both pilots are warned of the other aircraft's location. The 727 indicates it has the Cessna sighted. But the computer warning goes off at Mirmar, the regional control center. The two planes are on a collision course. Controllers try to contact the Cessna, to warn it once again of the jet's proximity. But there is no time to reply. The two planes collide.

The 727's starboard wing slices the Cessna in half. The small aircraft begins a slow rolling spin.

The jet's wing catches fire. The pilots regain control for a brief second, but then its electrical system give out and it, too plunges toward the ground. The pilot tells San Diego Airport he's going down. The control tower replies help will be sent to the airstrip. But it's already too late. Someone in the cockpit utters his last words. "I love you, ma".

On the Ground

The accident does not go unnoticed.

Two four-member fire crews, working out at different locations in the park, hear the planes collide. They look up and see it falling like a rock.

A police officer on patrol around Tierrasanta, in northern San Diego, sees the same thing.

One of the police instructors spots it through a window. So does a doctor in one of the hospitals.

The power worker is mesmerized. Taking time out to watch the jet complete a turn, he sees the collision and watches as the 727 cuts the smaller plane in half. The jet straightens out for maybe a second, then falls nose first.

The young woman studying biology hears a sound, looks up, and sees the jet heading straight toward her. It clips a bush off the house two doors away and demolishes the front part of a neighbour's home. Its wings hit surrounding houses, which collapse as the jet follows itself into the ground, like a telescope.

The lady dropping off her child probably hears it too. In a desperate effort to avoid getting hit, she starts to run away -- the wrong way -- she and the child are killed!

The lady on the telephone with her sister hears a bang, asks what it is, then screams. There's a sudden whoosh, then only silence.

The mother in the car doesn't hear it coming, but she, too, knows something has happened. As the plane scatters debris, bodies, and pieces of bodies for blocks, one body hits her car door and another, a stewardess, smashes into her windshield. She and her child, hit by flying glass, are left hysterical. Their car rolls slowly along toward the intersection where the place impacted.

3. First Reaction

Reaction on the ground is immediate.

The storekeeper, told by a customer that two planes just collided, runs toward the impact area. She gets there just in time to see the plane's tail roll on the ground.

The young woman studying biology grabs some trousers and runs out the door. Seeing a huge fire just around the corner, she goes to her neighbour's house, hoping to arouse it's elderly occupants. But she can't get close enough. The debris and a huge hedge block her way. In desperation, she runs across the street to get another neighbour's son.

Her father, a few blocks away, also sees what has happened. He throws some things back into his pickup truck and jumps in. He's frightened his daughter may have been hit.

Another woman goes out the back door of her house and runs around to the front, only to discover there no longer is a front. Her husband is inside. She wrenches the door open, and goes in to try and rescue him. Sleeping in the now shattered bedroom, he had gotten up to go to the bathroom just before impact. He's all right.

Another woman, hardly aware of her actions, turns on her garden hose and tries to douse what is now a massive fire engulfing her home.

Two women just one house away crawl out a back window and escape the fire's destruction. Another couple flees as well.

But seven persons die on the ground -- the woman and her child, the babysitter, the woman on the phone with her sister, and three others.

Dead with them are both pilots from the Cessna and all 142 persons on board the PSA jet, bringing the death toll to 151 persons.

The impact leaves 22 hours damaged by fire and debris. Seven are totally destroyed.

Some pieces of the plane have travelled for blocks. A watch, probably belonging to the pilot, has gone through a window two blocks from the crash, leaving a tiny hole, and landing on the living room rug.

A passenger, still strapped to his seat, has flown through the air. Although his shirt and tie remain neatly in place, his head, arms and legs were missing.

The firefighters abruptly end their jogging, jump onto their rigs and head to the scene.

The power worker quickly gets his bucket down and heads to the scene as well. He and his partner speed along a nearby thoroughfare, following two fire trucks and a Fire Chief into the area. A police car follows them. The convoy roars along at 88 kilometers an hour and arrives on site two and one-half minutes after impact. But they're not fast enough to beat the TV crew and photographer, who have already begun to record the horror of the crash.

The two police officers, one a reservist, try to persuade the woman with the hose to move away. The fire, fed

by the spilled jet fuel and leaking natural gas, is getting worse.

Another officer tries to drive in closer to the wreckage. Suddenly, flames burst out. Accelerating, he barely misses becoming engulfed.

Safely away from the flames, he notices the car with a smashed windshield coasting slowly toward him. As it approaches, he can see a woman behind the wheel, and an infant next to her. Both are screaming and hysterical. Getting the woman and child out of the car, the officer radios for an ambulance.

The two attendants who had been called in to help the elderly lady notice a column of smoke, and are just short of the area when the request for an ambulance is made. Arriving on site,they examine the woman and her child. One attendant sees a person still in the car, and asks the woman about another passenger. Unable to get a coherent reply, he rushes over to the car, only to find the barely recognizable remains of the stewardess.

Enroute to a nearby hospital, one of the attendants calls up the county radio dispatcher at station X. He tells the operator there has been a plane crash, gives the location, and notifies the operator and the hospital that he is transporting two of its victims.

4. The Word Spreads

News of the incident travels quickly.

The police officer in Tierraksanta radios in as he sees the two planes collide. His first location estimate is a bit off, but when the jet crashes and smoke begins to rise, he estimates the point of impact to be south of El Cajon Boulevard and West of 40th Street. It's a pretty good estimate.

There's a bit of confusion a minute later when the dispatcher thinks she hears one of the first responding officers say "Falcon" Street instead of "Felton", and starts dispatching to Falcon.

By this time radio airspace is filled with transmissions by responding officers, and the mistake isn't corrected for almost four minutes. But it makes little difference. The huge pall of smoke rising from North Park just beside Interstate 805 marks the site like a beacon.

The Fire Department also has some initial problems. A North Park resident telephones in to report her car on fire.

When the first firefighter radios in from the Park to report the crash, the dispatcher thinks he's reporting the vehicle fire. She doesn't realize its source is jet fuel from the crash. The firefighter has to repeat his message several times before the dispatcher grasps the enormity of the incident.

This confusion also makes little difference. Just as the police use the smoke as a location marker, so do the fire fighters. The initial location estimate of Interstate 805 at University Avenue is very close.

The two crews which had been working out at the park arrive on site at high speed. Another pumper and ladder truck arrive just behind them. A woman had banged at their station door, alerting them to the incident. A more senior officer, a battalion chief, also arrives.

The first response is well under way before the fire dispatcher finally orders it.

5. **First Activity**

When the first to respond arrive on site, it's immediately obvious that everyone in the downed plane has died, and that there are, at most, a handful of injuries on the ground. There's not much they can do.

The firefighters, however, can do something. Although the first pumper initially has some problems with a dry hydrant, three separate pumpers are soon working to stop the fire from spreading.

Once the hoses are laid, the ladder company makes a quick check of the damaged homes to make sure no one is trapped inside.

The Fire Department escalates its response, calling for a second and third alarm. A fourth alarm is sounded later to bring in relief for those who had arrived earlier.

It takes about two hours to bring the fire under control.

control, not an easy task given the heat of the day and the intense, radiating heat from the jet fuel-based fire.

Although the fire response is relatively controlled--only three engine companies from the immediate area and one off-duty fireman living nearby respond on their own -- the police response is overwhelming. Some of it is controlled, but most is spontaneous.

Many officers park their cars across intersections to block traffic, lock them, then rush out to see if they can help. Once at the point of impact, they stand and watch, sometimes overwhelmed or in shock.

Many fire vehicles can't get by the parked and abandoned police cars. They have no way of reaching the appropriate officers, and are forced to either find a way to move the vehicle, or wait up to half an hour for a tow truck to get through.

Although the incident is entirely within the limits of the City of San Diego, police officers respond from throughout the County.

There are officers from the Sheriff's Department, the highway patrol and the border patrol. Others respond from Fish and Game, Forestry and from neighboring municipalities.

The area is soon flooded with police officers from the City, and from every other jurisdiction within reach.

The difference between fire and police response can perhaps be partly explained by the differences in their work habits. Policemen operate a beat and actively patrol certain areas. They're used to driving around and checking things out.

Firemen, on the other hand, usually don't respond until they're given a location by their dispatcher.

At the crash site, most of the police officers simply stood around, unable to believe the horror and their inability to do something for the victims.

A few began to man a perimeter in an effort to keep the growing crowd back. One lieutenant organized a small group of police, marines and a few others into a search party which combed through surrounding houses. They found one body in an alley, but no survivors or trapped residents. This search was one of several. Firemen did a quick initial search, then completed a more systematic check as soon as the fire was under control.

Neither agency tried to find out what the other had done or found.

Still later, paramedics conducted an independent search of the same area, not knowing fire and police had already done the same.

6. Convergence

The phenomenon of massive response to the scene of an incident is known as convergence,and what happened in San Diego is a prime example.

The fire response, though controlled, was enormous. Several battalion chiefs and the City's Deputy Chief supervised operations on site.

A San Bernadino crew, which happened to be driving through the City after a battle with brush fires, was hastily pressed into service as a backup unit.

A crew from San Clemente also arrived.

The police response was overwhelming. At one point only nine officers were left to police the rest of the City, in vehicles without sirens and emergency lights.

The Acting Chief was constantly on site. The Chief also turned up,. arriving with the Mayor. Neither men tried to assume direction, and spent most of the day dealing with other VIPs and the media. They did, however, walk over and around the area of impact, as did a City Councilman with his eight year old son.

The response wasn't confined to fire and police. Ambulances, both police and private, converged on site. Although the police medical supervisor attempted to establish a staging area just north of where the jet hit, the response was so great the ambulances eventually parked in long lines on both sides of the site. As there were no survivors, their presence became unnecessary except to treat or transport injured or exhausted officials and onlookers.

Local hospitals responded by sending medical teams and triage units. Off-duty doctors and nurses also responded.

The Red Cross arrived. Volunteers set up a rest area and supplied food and drink. Red Cross investigators, who in the United States have a legal mandate to assess damage, began

work to determine the extent of injury, death and damage on the ground.

The Salvation Army arrived, competing with the Red Cross for persons to help.

Crews from the city's gas, power, water and telephone companies also arrived.

National Transportation Safety Board and Pacific Southwest Airline's representatives drove in, as did the Coroner and his staff.

An aide to the Mayor and the Deputy City Manager arrived. The aide started issuing orders from the police command post on his own, not the Mayor's initiative. He was nearly thrown out.

Many North Park residents, at work or elsewhere, rushed to the area as soon as they became aware of the incident. So did their friends and relatives. One resident slipped past police officers by crawling under a hedge.

Although schools kept area children back, they, too, tried to get relatives to pick them up.

Emergency response vehicles and tow trucks found it extremely difficult, and often impossible to get past the enormous crowd. Motorcycle travel was the only way anyone could get through.

Public response wasn't limited to the crash site. Within 30 minutes of impact, 2,000 people descended on the San Diego bloodbank, creating a second crowd control problem.

7. Medical Response

Convergence wasn't the only problem plaguing authorities at the PSA crash site. Equally pressing were problems in getting the overwhelming response to stop once it became clear there was no need for it.

The medical response illustrates this problem.

San Diego County had -- and still has -- a detailed emergency plan which calls for a high-speed emergency response to any incident once the county radio system, station X, is notified.

Triage teams would be sent to the scene and casualty clearing points established. Hospitals would be notified to clear space, cut back on all but emergency surgery and gear up their emergency receiving areas for disaster victims.

The triage teams would see that the walking wounded were sent by bus to casualty clearing points and that those in serious condition were sent by ambulance to hospital.

The system depends on constant communication between those on site and the hospitals. It also depends on effective control of access to and from the site for buses and ambulances. And finally, it depends on initial response personnel to know the plan.

As soon as the crash occurred, station X was notified by a doctor who had heard about the two planes colliding, but who could not estimate an accurate crash location.

The police ambulance radioed a few minutes later, giving the location and notifying the operator and hospital that it was transporting two victims.

Having finally received a location, the operator alerted six hospitals to stand by for casualties. During the next four minutes, he tried to call up someone at the scene for information on the extent of injuries. But county officials, such as the Coroner and Sheriff's Department officers, had not arrived yet and City police officers, including ambulance personnel, had abandoned their vehicles to try and help crash victims.

The first ambulance on site, the one which transported the woman and her child, had not remained at the scene to become the medical command post and communications center as called for in the County's disaster plan.

The operator finally telephoned the City's private ambulance dispatcher, who spoke with his own personnel on site and advised the operator to alert an additional seven hospitals.

After following through with the advice, the operator tried once again to establish contact with medical personnel on site, and again, to no avail. And by this time he couldn't get through to the private ambulance service either as the

telephone line was constantly busy.

On site, seven triage teams and 58 ambulances had arrived, all within half an hour of impact. But they were simply not needed.

To those who first responded, it was immediately evident there were no survivors. within five minutes of his arrival on site, one of the first responding police officers told police dispatch that everyone had been killed, and that the ambulances were not necessary. But by this time the air traffic was so thick with calls from responding police officers that he had a difficult time getting on the air, and never received acknowledgment of his information.

The County Emergency Medical Officer, by this time also on site, tried to get policemen to radio in the same message, but they said they had other matters to deal with.

A police lieutenant decided he should pass the word that ambulances weren't needed, but he couldn't get on the air at all.

Although various hospitals called repeatedly all morning, asking what was happening, station X could only advise them to stand by. It was not possible to make any contact with an incident commander on site and it was not possible to tell whether any sort of medical support was required because ambulance personnel could not be contacted.

The reason for this complete breakdown can be explained in part by the peculiar structure of the San Diego ambulance system at that time, a system which no longer exists.

San Diego City ambulances, the ones which triggered the first response, were driven by police officers who at the time had all been trained as emergency medical technicians.

Officers were assigned to ambulances at their daily roll call. When not on medical runs, they were dispatched to regular police calls, such as civilian complaints and traffic accidents. These officers also carried out regular police duties, such as issuing tickets and patrolling a beat.

Some of the police ambulance drivers were very proud of their arrest record. Drivers would assume it was safe to drive carelessly in front of an ambulance. When stopped, they would protest, saying ambulance drivers could not issue tickets or make arrests.

The system seemed to work well, but when it came to emergency communications it had one major flaw.

The police ambulances were equipped with two radios, one for police traffic and one designed to facilitate communication with hospitals via station X.

The station X radio was used only when an ambulance was enroute with victims. The operator would patch the ambulance through to the requested hospital, or as in the case of the PSA crash, would alert any number of hospitals for a disaster response.

Since station X had no control over the ambulances -- they were police vehicles -- the police ambulance drivers would turn their station X receivers down once their transmission was over, and turn their entire attention to police radio traffic.

There was another problem. Although the police had a medical supervisor, he was a police sergeant who patrolled his area in a police cruiser. This meant he had no radio to link him with station X as only ambulances carried this system. He could hear neither station X nor his own ambulance when they were talking to station X or to a hospital.

And because he was responsible for the overall ambulance service rather than any particular areas, he had no real command of the ambulance system. Individual ambulance drivers were under the direct supervision of their own police sergeants, officers who also had no access to station X radio.

What happened the day of the crash could have been predicted. The police ambulances radioed station X to alert it of the disaster. Station X alerted the hospitals. The police then went back about their business, and turned their station X radios down. They never called station X again to tell them there were no further casualties.

This resulted in the entire medical emergency system staying on full alert until 11:55 that morning, nearly three hours after impact and more than two and a half hours after it became evident a medical response was not necessary.

The station X operator was finally briefed of the situation by the on site police commander through the City's private ambulance service.

Only 16 people had needed medical help, most for shock or heat exhaustion. They included two policemen, two

firefighters, one civil defence employee, one FAA official, and 10 civilians.

There was one further problem. The police officers who responded to the scene were not familiar with the county emergency medical plan. They had not been briefed about the location of designated casualty clearing stations -- schools stocked with medical supplies.

Police set up the casualty clearing point at the high school, because they were familiar with it. The Department's contingency plan designed for the Republican convention had pinpointed it as an emergency centre.

They didn't know the County plan, so ignored the two schools in the area which did have medical supplies on hand.

8. Command and Control

Although there was reasonable cooperation among the various agencies at the PSA crash site, no integrated command structure ever developed, and no overall command post was ever created.

Both police and fire officers involved in the response were astonished at later meetings when each announced his agency had been in charge.

In retrospect, it seems clear that no shared command was created because leadership flowed fairly smoothly from one agency to another, with other agencies providing support.

In the early stages, while the fire was still burning fiercely, the Fire Department directed operations at the site and police backed them up by keeping people back.

Once the fire was under control, firemen conducted a final search of the affected homes, then moved aside and began picking up equipment. Relief fire crews moved in to stand by in case of further fire outbreaks, and to assist the Coroner and transport inspectors by digging through the rubble.

At this point, operations shifted naturally from the Fire Department to the Coroner, who with the help of police and fire personnel, began the process of identification, tagging, and bagging.

By about 6 p.m., most of the human remains had been removed and the two federal aviation agencies, the Federal

Aviation Agency and the National Transportation Safety Board, assumed direction of operations on site. They continued to collect and assemble parts of the wrecked plane in an effort to deter ine the cause of the crash.

Throughout the day, the Police Department assumed two roles. First, it acted as a support group for other agencies.

Policemen assisted the Fire Department by acting as a liaison between it and other agencies, such as power, water and gas.

They tried to keep people back so fire operations could be carried out.

Later, police assisted the Coroner by locating additional body bags. They also helped by tagging and transporting body parts to the temporary morgue. Some officers, however, simply picked up body pieces and other evidence, such as watches and jewellery, without first consulting the Coroner and without noting the location. This later hampered attempts to identify the passenger.

The Police Department's second role was one which involved actions and overall command decisions made independent of other agencies.

It set up two command posts, one on site which assumed overall police command, and one off site at downtown headquarters to provide support and resources for the on site police commander. However, it did not establish communications with the other on site command posts, such as those set up by the Fire Department, the Coroner's office, and the aviation investigation agencies.

It attempted to get up a perimeter, but did not consult with other agencies. As a result, it did not take into account the necessity of, and best location for, fire and medical access and egress routes.

It requested the Coast Guard and later the Sheriff's Department put up a helicopter to survey the site and keep other helicopters, particularly those operated by the media, at a reasonable distance. They were worried that a convergence of aircraft above the scene might lead to another collision.

It arranged for Lindbergh Field to issue a NOTAM (Notice to Airmen) to restrict air traffic above the collision site.

It brought in public relations personnel to deal with the large number of media on site.

And it dealt with local politicans, who wanted to know what was happening.

Other agencies also arrived on site. However, cooperation between them and others was less forthcoming.

Because there were no casualties, the medical command structure could be and was ignored. And because there were so few ground survivors -- just a handful of homeless residents -- the Red Cross could be and was similarly ignored.

Although no conflict arose among the various responding agencies cooperation was limited, and consultation was almost non-existent.

9. The Command Posts

San Diego did not establish n overall off-site command post or Emergency Operations Center (EOC). Although the City has EOC facilities, ready for instant use at the City's Administration Building, the Mayor decided such a move was unnecessary. The incident, horrible as it was, involved only a small section of the City and did not pose any further threat to the community.

The only off-site command post was operated by San Diego's Police Department. Located at the Department's Headquarters in the heart of the City, it too was ready and available for instant use.

Equipped with the Police Department's radio frequencies, telephones and intercom system tied to the City's fire dispatch room, the Emergency Communications Center (ECC) acted as a resource base for the on site police mobile command post, functioning as a liaison between it, the Department, and other agencies.

The ECC arranged for the Coast Guard and Sheriff's Department helicopters to secure airspace above the impact area.

It contacted Lindbergh Field to issue a NOTAM (a Notice to Airmen which restricts airspace above a site).

It made contact with the County Emergency Preparedness office, which in turn contacted a local produce company to

supply the six refrigerated trucks needed to store the victims' remains.

It secured additional body bags for the Coroner.

It handled arrangements with outside food companies to provide ice, iced drinks and food for staff on site.

It sent officers to local sporting goods shops and paint stores to find hats for on site policemen. At the time, officers were not required to wear uniform hats, so soon found the unrelenting sun unbearable.

Finally, it set up a rumor board and monitored the media to track down, check and correct any rumors.

Almost every agency which responded to the P A crash set up its own on site command post.

The Police Department set up its mobile command at the high school.

The Fire Department set up its mobile command in a drugstore parking lot.

Other command areas were set up closer to the area of impact by the Red Cross, the FAA, the NTSB, medical personnel and PSA.

The only interaction between these numerous command posts occurred about an hour after impact when fire and police exchanged liaison officers carrying portable radios.

10. Communications

Communications is almost always a problem in disaster and the San Diego air crash was no exception.

Within minutes of the planes goingdown, the emergency radio channels were filled with traffic, much of it from vehicles responding to the scene.

The police radio was so overloaded that the on site e commander could not find out who was on site or where they wer located. He eventually turned his radio off, finding it impossible to get information and impossible to concentrate.

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Telephone communications suffered from the same proble- Many of the key agencies -- police, the airline, the Coroner -