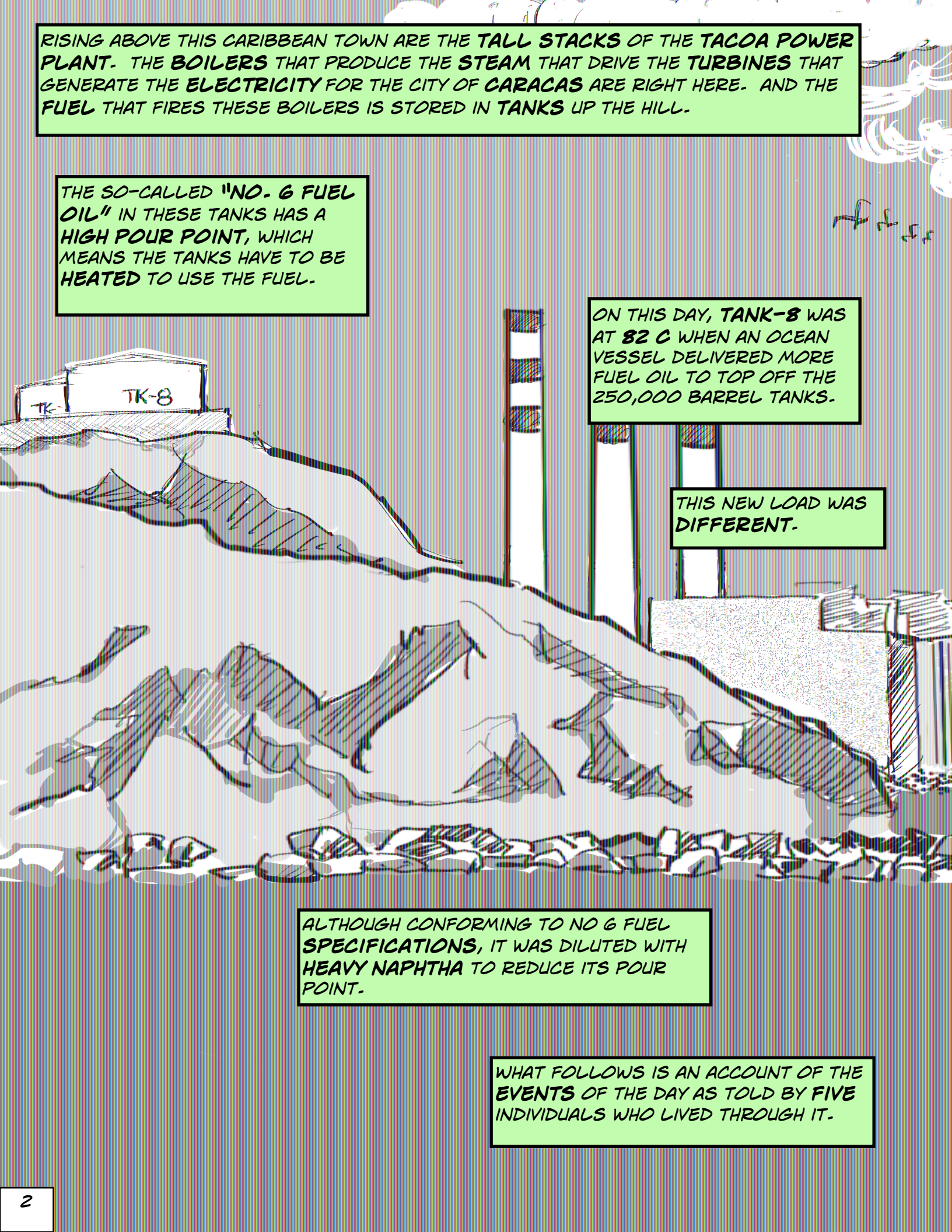




IT IS THE LAST WEEKEND BEFORE  
CHRISTMAS OF 1982. LIKE OTHER YEARS,  
THE SEASIDE TOWN OF ARRECIFE IS ABOUT  
TO DESCEND WITH HOLIDAY TRAVELERS.

# **BOILOVER**

**RAMIN ABHARI**



RISING ABOVE THIS CARIBBEAN TOWN ARE THE TALL STACKS OF THE TACOA POWER PLANT. THE BOILERS THAT PRODUCE THE STEAM THAT DRIVE THE TURBINES THAT GENERATE THE ELECTRICITY FOR THE CITY OF CARACAS ARE RIGHT HERE. AND THE FUEL THAT FIRES THESE BOILERS IS STORED IN TANKS UP THE HILL.

THE SO-CALLED "NO. 6 FUEL OIL" IN THESE TANKS HAS A HIGH POUR POINT, WHICH MEANS THE TANKS HAVE TO BE HEATED TO USE THE FUEL.

ON THIS DAY, TANK-8 WAS AT 82 C WHEN AN OCEAN VESSEL DELIVERED MORE FUEL OIL TO TOP OFF THE 250,000 BARREL TANKS.

THIS NEW LOAD WAS DIFFERENT.

ALTHOUGH CONFORMING TO NO 6 FUEL SPECIFICATIONS, IT WAS DILUTED WITH HEAVY NAPHTHA TO REDUCE ITS POUR POINT.

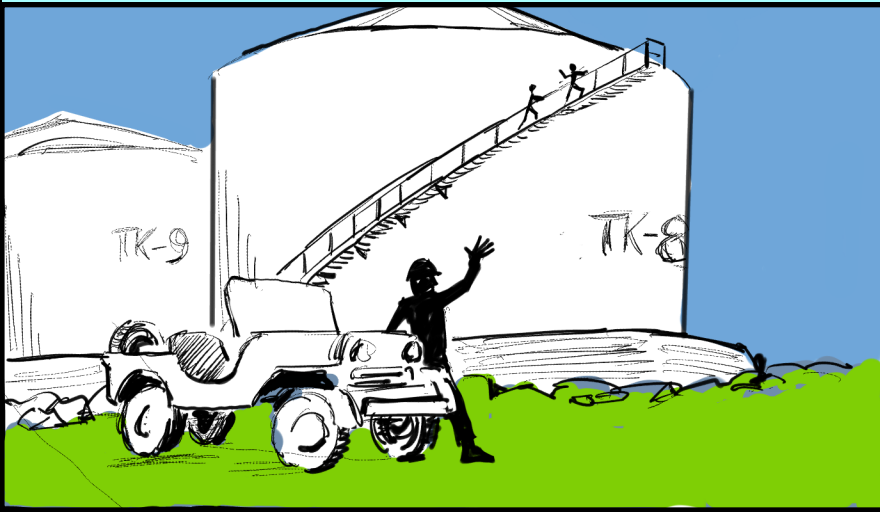
WHAT FOLLOWS IS AN ACCOUNT OF THE EVENTS OF THE DAY AS TOLD BY FIVE INDIVIDUALS WHO LIVED THROUGH IT.

# 1. ALEXIS

ALEXIS ALZALL,  
WORKER AT THE  
TACOA POWER PLANT

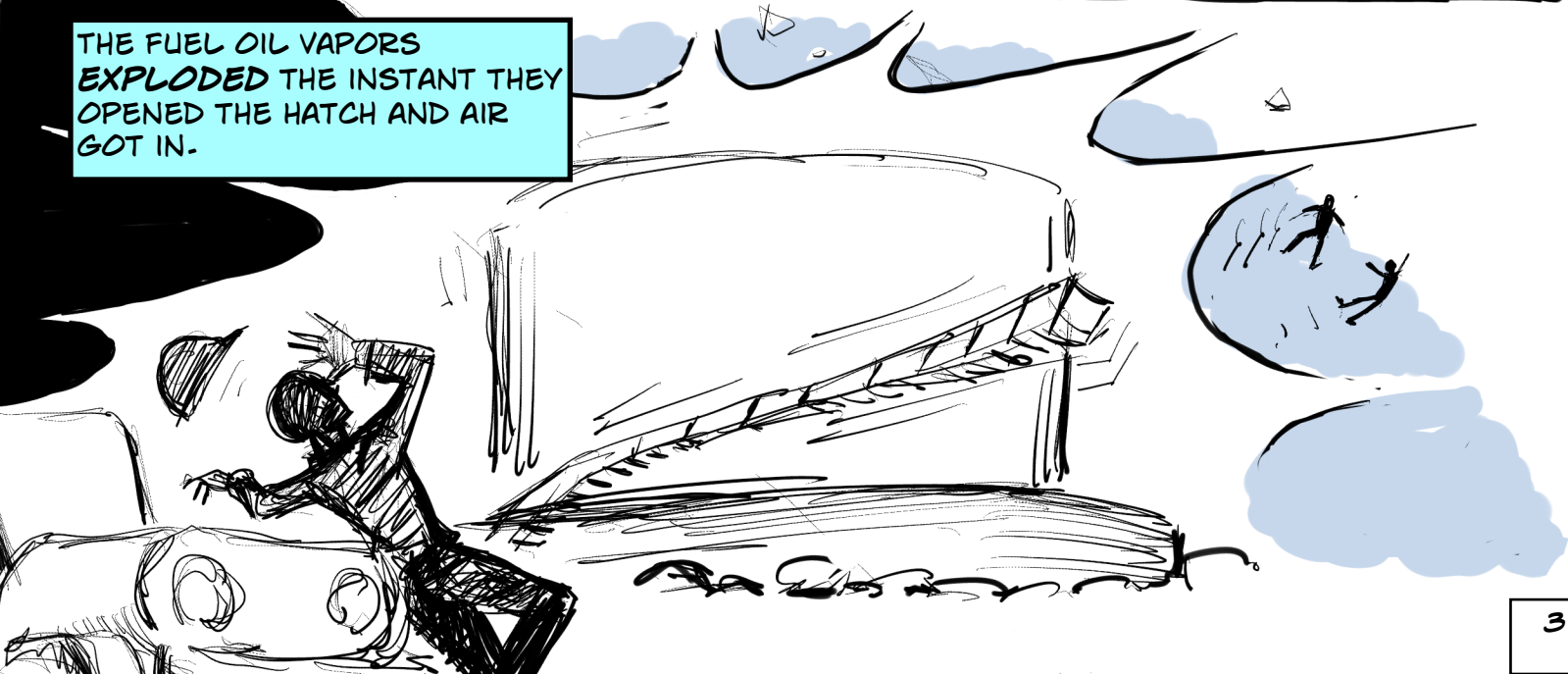
AFTER  
TANK-8 WAS FILLED,  
THE TANKER VESSEL  
SAILED AWAY AND WE WENT  
TO TAKE THE LEVEL  
READINGS... ALL NORMAL  
STUFF WE'D DONE 100  
TIMES BEFORE.


WE TOOK THE JEEP UP THE HILL TO THE TANK FARM  
AT 5:45 AM. JOSE AND LOUIS WENT UP THE TANK  
WHILE I STAYED DOWN.



Y'KNOW, WE  
THOUGHT NO. 6  
FUEL OIL IS ALL THE  
SAME. NOW WE KNOW  
THAT **FLAMMABLE  
VAPORS** WERE PRESENT  
IN THE TANK 'CAUSE A NO.  
6 FUEL HAVING A FLASH  
POINT OF 65 C WAS  
ADDED TO A TANK HEATED  
TO 82 C FOR A HIGH  
POUR POINT NO. 6  
FUEL OIL...

THE FUEL OIL VAPORS  
EXPLODED THE INSTANT THEY  
OPENED THE HATCH AND AIR  
GOT IN.





AT THAT MOMENT, I WAS FOCUSED ON JUST ONE THING... TO RUN TO THE CONTROL ROOM, ACTIVATE THE FIRE ALARM, AND GET AN AMBULANCE FOR JOSE AND LOUIS.

THEY DIDN'T MAKE IT.

LATER I WAS INTERROGATED ABOUT THE THE IGNITION SOURCE... DID SOMEBODY LIGHT A MATCH?! WAS IT STATIC DISCHARGE? SOMETHING ELSE? I STILL DON'T KNOW. WHAT I DO KNOW IS THAT THERE SHOULDN'T HAVE BEEN A FLAMMABLE ATMOSPHERE IN THAT FUEL OIL TANK.

**Z. RIXIO**

RIXIO MEDINA,  
HSSE EXECUTIVE

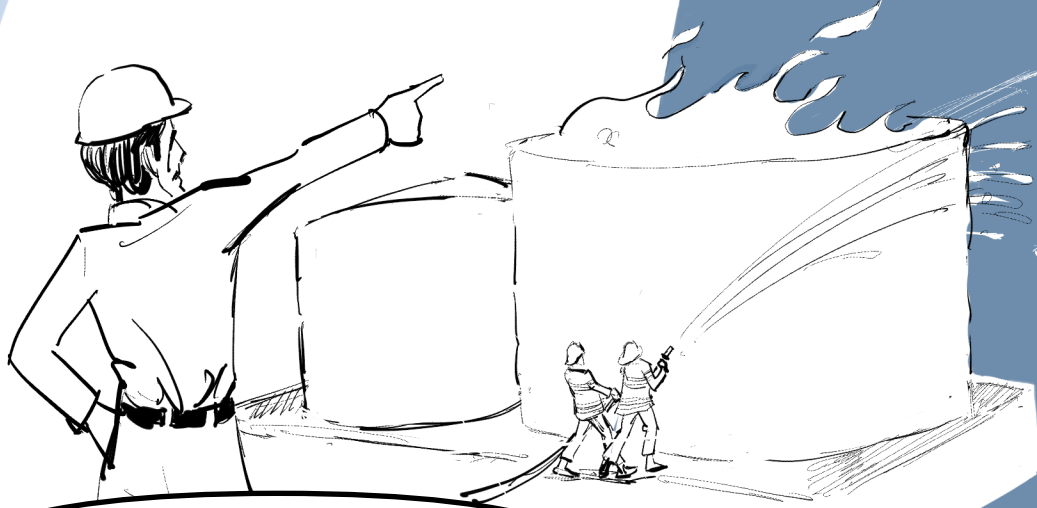
I WAS WITH THE FIRE ENGINEERING TEAM AT THE NATIONAL PETROLEUM COMPANY, PDVSA. OUR TEAM WAS CALLED TO HELP WITH THE FIRE RESPONSE AT TAOA.



MY MANAGER AND MENTOR, **IBRAHIM ALFONSO FERRER** CALLED ME THAT MORNING AND DESCRIBED SOME OF THE **CHALLENGES** AT TACOA. THE EXPLOSION HAD **KNOCKED DOWN** THE WATER 'N FOAM RING ON THE TANK. ALSO, THE LOCAL FIRE FIGHTERS COULDN'T GET FIRE FIGHTING APPARATUS UP THE HILL.

IBRAHIM WAS IN CARACAS AND GOT THERE **FAST**. SINCE I HAD TO FLY IN, I WAS SCHEDULED TO ARRIVE A BIT **LATER**.

BECAUSE OF THE ISSUES WITH **FOAM SUPPLY**, THE DECISION WAS MADE TO FOCUS ON PREVENTING FIRE FROM **SPREADING** TO THE ADJACENT TANK, AND LET TANK-8 **BURN ITSELF OUT**



BY 11:30, THE FIRE SEEMED TO HAVE COME UNDER CONTROL. **REPORTERS** FROM CARACAS TV HAD ARRIVED ON THE SCENE BROADCASTING RIGHT BY THE TANKS.





...THE AUTHORITIES ARE TELLING US THAT THEY ARE GOING TO LET THE OIL SLOWLY BURN OUT WHILE PREVENTING ITS SPREAD...

HI MOM!  
I'M ON TV!

YOU CAN SEE THE FIRE FIGHTERS STANDING BEHIND ME ON THE BURNING TANK'S SO-CALLED CONTAINMENT DIKE!

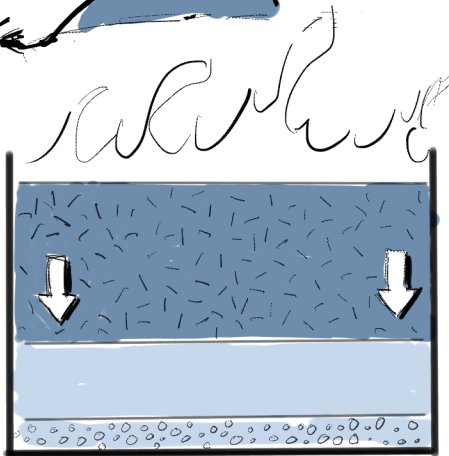
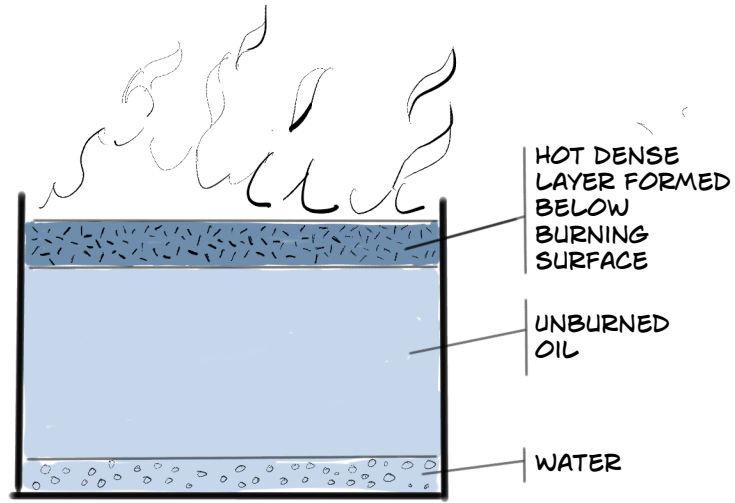
THE PRESENCE OF REPORTERS ATTRACTED EVEN MORE **ONLOOKERS**. THE HOLIDAY TRAVELERS AND LOCALS FOUND THE COMMOTION EXCITING. THIS GAVE THE FIRE MORE OF A FIESTA ATMOSPHERE THAN THAT OF AN EMERGENCY!



BEFORE DESCRIBING WHAT HAPPENED NEXT, I NEED TO EXPLAIN SOMETHING CALLED, "**BOILOVER**"....

... A PHENOMENON KNOWN TO OCCUR DURING **CRUDE OIL** TANK FIRES, BUT **NEVER** REPORTED FOR **NO. 6 FUEL OIL** BEFORE.

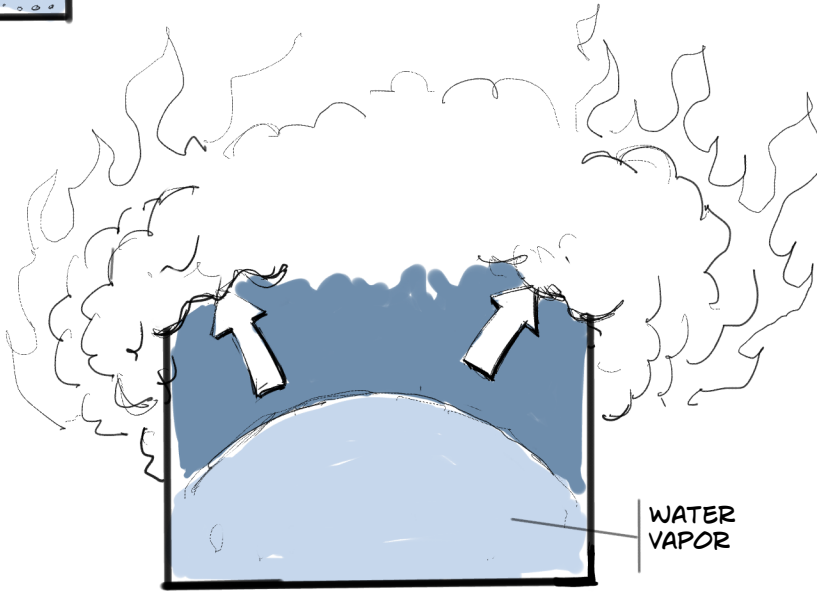
WHEN A VOLUME OF OIL BURNS IN A TANK, IT CAN FORM HEAVY COMBUSTION RESIDUES THAT CREATE A **HOT DENSE LAYER** WITHIN THE TANK.



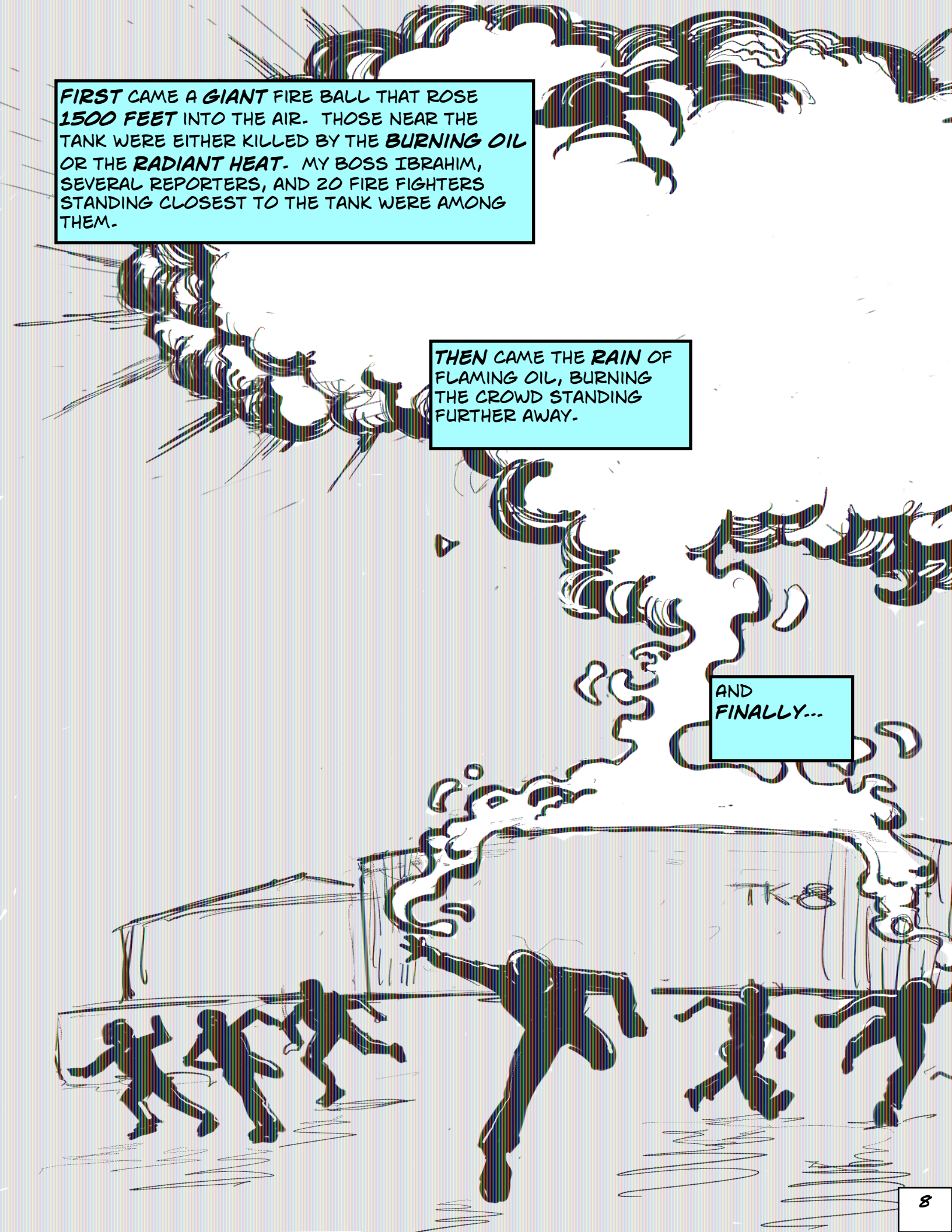
AS THE OIL CONTINUES TO BURN, THIS HOT DENSE LAYER CONCENTRATES AND SINKS DOWN TOWARDS THE **BOTTOM** OF THE TANK, WHERE A WATER OR WATER EMULSION LAYER IS PRESENT.

WHEN THE HOT DENSE LAYER REACHES THE BOTTOM, IT RAISES THE WATER LAYER'S TEMPERATURE WELL ABOVE 100 C WITH THE HYDROSTATIC PRESSURE KEEPING THE WATER **SUPERHEATED**.

THEN SUDDENLY THE SUPERHEATED WATER VAPORIZES, EXPANDING 1700 TIMES IN VOLUME AND CAUSING A **VIOLENT ERUPTION** OF THE TANK CONTENTS... A VOLCANO OF BURNING OIL. THIS IS CALLED A **BOIL-OVER!**



**THAT'S** WHAT HAPPENED AT TACOA AN HOUR AFTER THEY DECLARED THE FIRE UNDER CONTROL.



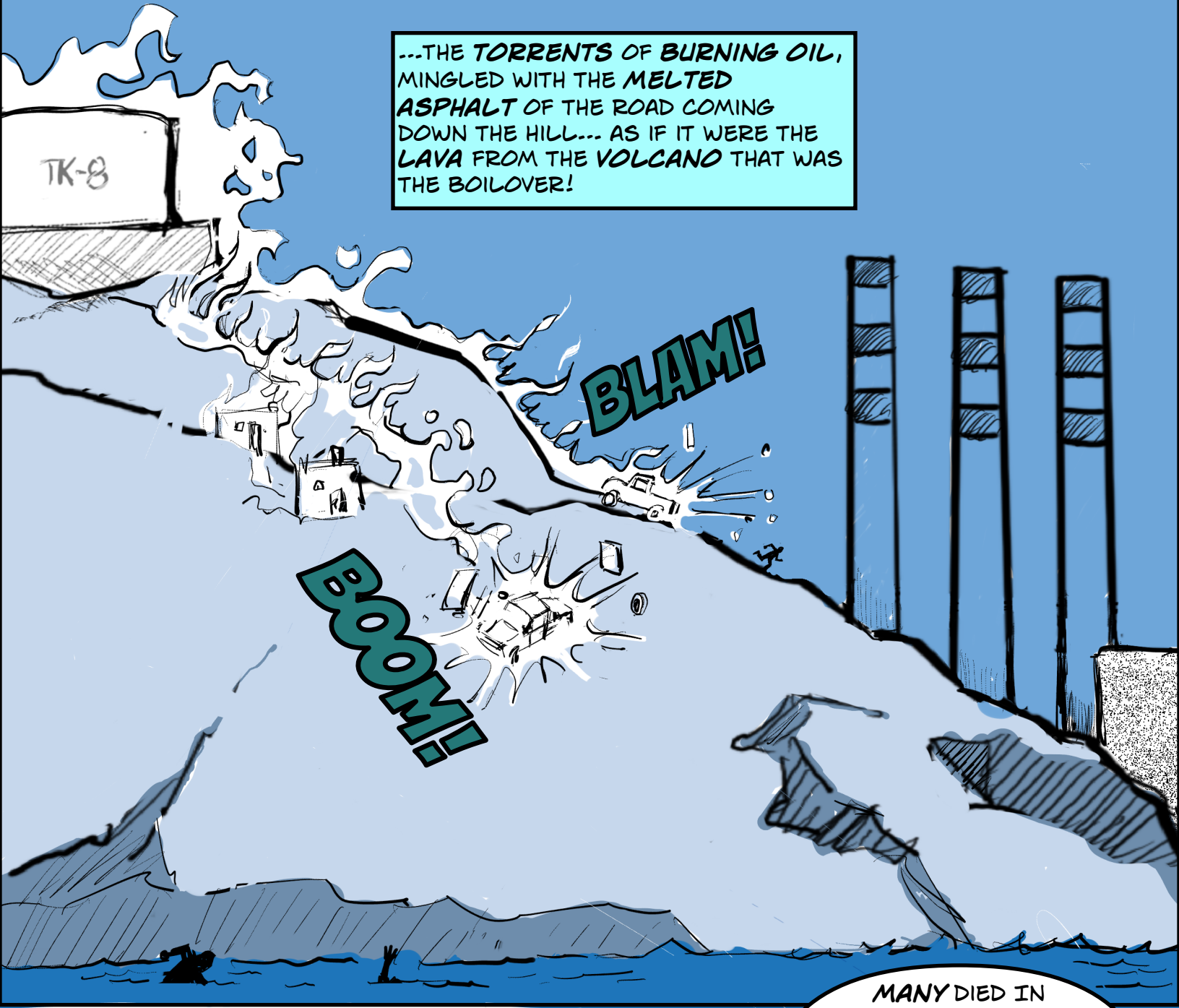
FIRST CAME A GIANT FIRE BALL THAT ROSE 1500 FEET INTO THE AIR. THOSE NEAR THE TANK WERE EITHER KILLED BY THE BURNING OIL OR THE RADIANT HEAT. MY BOSS IBRAHIM, SEVERAL REPORTERS, AND 20 FIRE FIGHTERS STANDING CLOSEST TO THE TANK WERE AMONG THEM.

THEN CAME THE RAIN OF FLAMING OIL, BURNING THE CROWD STANDING FURTHER AWAY.

AND FINALLY...



...THE TORRENTS OF BURNING OIL,  
MINGLED WITH THE MELTED  
ASPHALT OF THE ROAD COMING  
DOWN THE HILL... AS IF IT WERE THE  
LAVA FROM THE VOLCANO THAT WAS  
THE BOILOVER!



MANY DIED IN  
THE HORROR SCENES  
THAT FOLLOWED. THE ONLY  
REASON I WASN'T THERE  
RIGHT THEN IS BECAUSE MY  
FLIGHT WAS DELAYED. MY  
GOAL THEN BECAME TO  
DEDICATE MY CAREER TO  
KEEPING THE MEMORY OF  
IBRAHIM AND THE REST  
ALIVE.

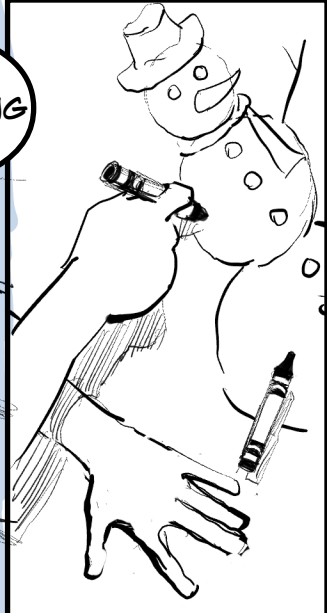


### 3. BENJAMIN

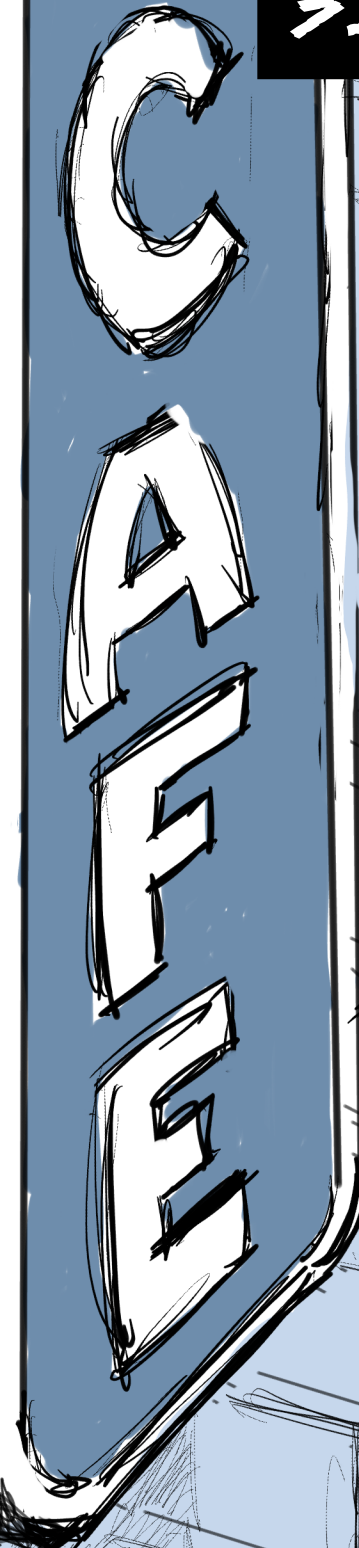


BENJAMIN FRONTADO, A CAFE OWNER IN ARRECIFE

MY NEIGHBOR'S 10-YEAR OLD DAUGHTER USED TO HANG OUT AT MY CAFE ALL THE TIME.



SHE WAS FULL OF JOY AND HELPED GET THE PLACE FESTIVE FOR THE HOLIDAYS!



WHEN THE TV REPORTERS SHOWED UP AND THE CROWDS GATHERED, SHE RAN TO BE PART OF THE EXCITEMENT.


AFTER THE **BOILOVER**, AS **EVERYONE** WAS **RUNNING AWAY** OR **DIVING** IN THE **SEA** TO **ESCAPE** THE **HOLOCAUST**, SHE BECAME **PARALYZED** WITH **FEAR**...

...JUST **STANDING** THERE AS THE **FIRES** WERE **CLOSING** IN ON HER.

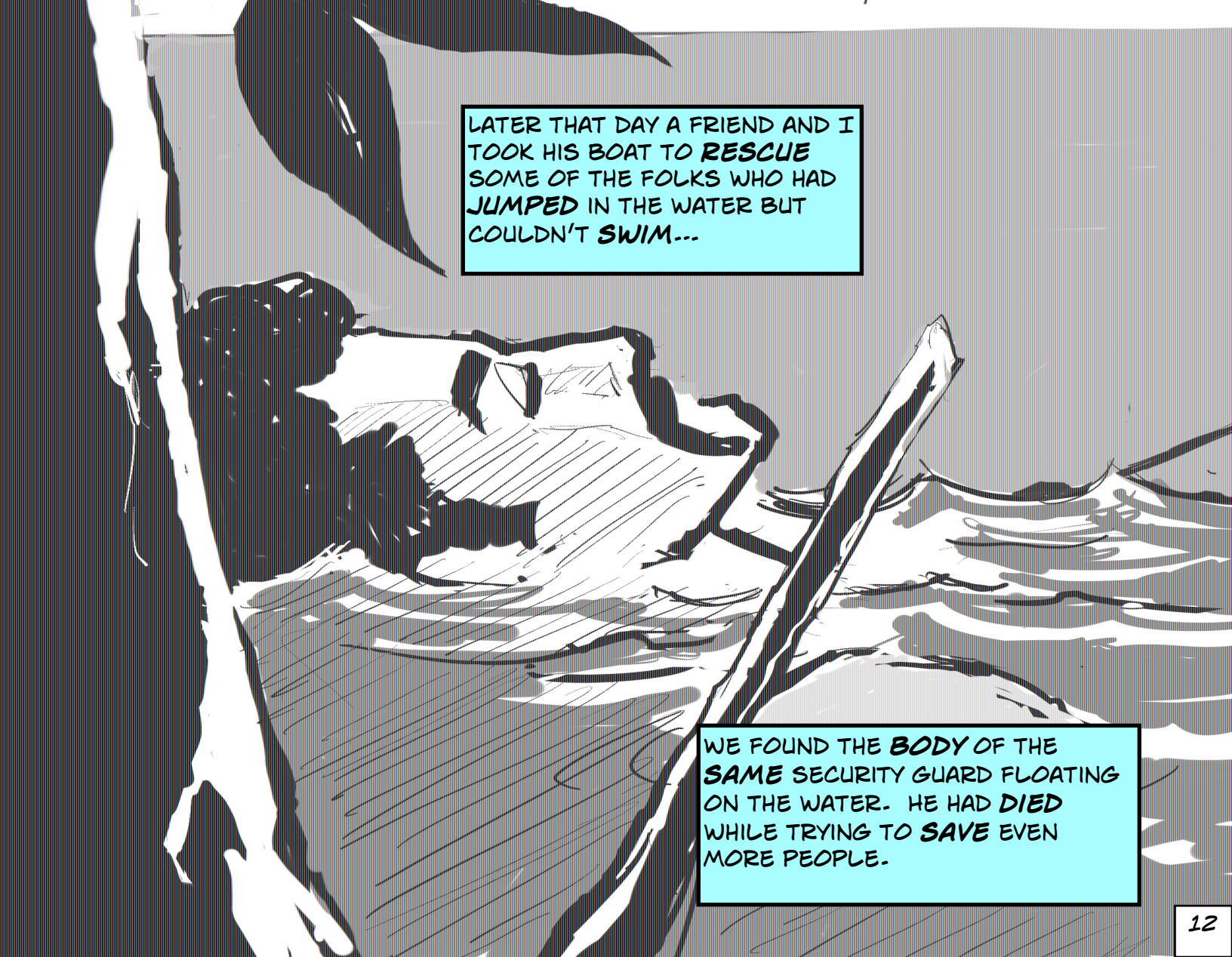


**GRACIAS A DIOS**, A **SECURITY** **GUARD** **RAN** INTO THE **FIRE** AND **LIFTED** HER TO **SAFETY**.





BEFORE I COULD  
THANK THE GUARD,  
HE WENT **BACK** TO  
HELP **OTHERS**.



LATER THAT DAY A FRIEND AND I  
TOOK HIS BOAT TO **RESCUE**  
SOME OF THE FOLKS WHO HAD  
**JUMPED** IN THE WATER BUT  
COULDN'T **SWIM**...

WE FOUND THE **BODY** OF THE  
**SAME** SECURITY GUARD FLOATING  
ON THE WATER. HE HAD **DIED**  
WHILE TRYING TO **SAVE** EVEN  
MORE PEOPLE.

## 4. FREDDY

AFTER THE BOILOVER,  
WHEN ALL  
HELL BROKE  
LOOSE...

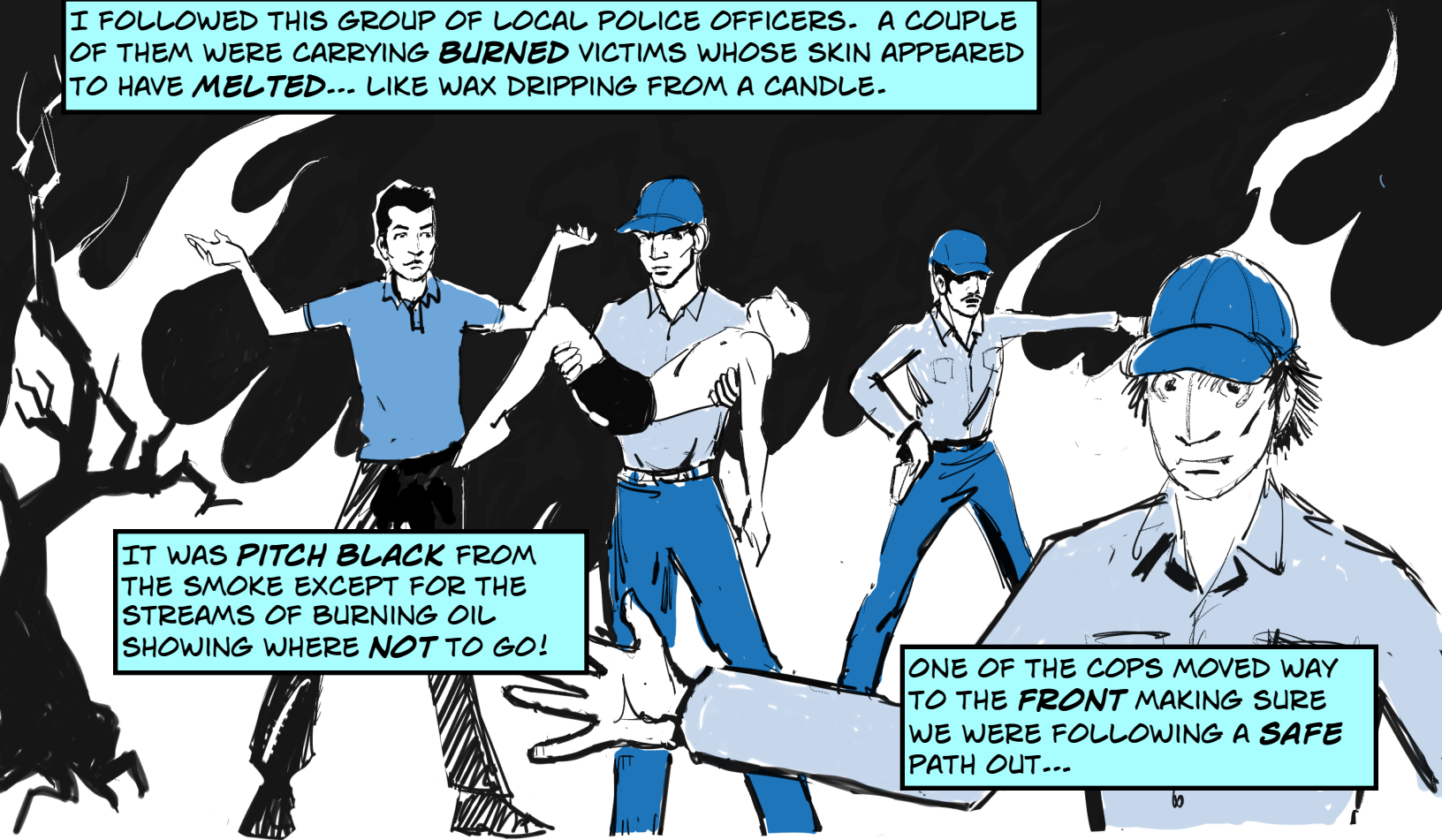
FREDDY  
GARCIA,  
REPORTER FOR  
RADIO CARACAS  
TELEVISION

...AND I MEAN "HELL"  
LITERALLY...

...I RAN UNDER AN ABANDONED FIRE  
TRUCK TO PROTECT MYSELF FROM THE  
RAIN OF BURNING OIL AND THE  
RADIATING HEAT.

THE POLICE WHO WERE THERE TO RESCUE  
OTHERS SAW ME AND TOLD ME THE FIRETRUCK I  
WAS USING FOR COVER HAD CAUGHT FIRE AND  
I'D BETTER GET OUT OF THERE FAST!

I FOLLOWED THIS GROUP OF LOCAL POLICE OFFICERS. A COUPLE OF THEM WERE CARRYING **BURNED** VICTIMS WHOSE SKIN APPEARED TO HAVE **MELTED**... LIKE WAX DRIPPING FROM A CANDLE.



IT WAS **PITCH BLACK** FROM THE SMOKE EXCEPT FOR THE STREAMS OF **BURNING OIL** SHOWING WHERE **NOT** TO GO!

ONE OF THE COPS MOVED WAY TO THE **FRONT** MAKING SURE WE WERE FOLLOWING A **SAFE** PATH OUT...

...WHEN HE SUDDENLY GOT **TRAPPED** IN THE **FLAMES**!

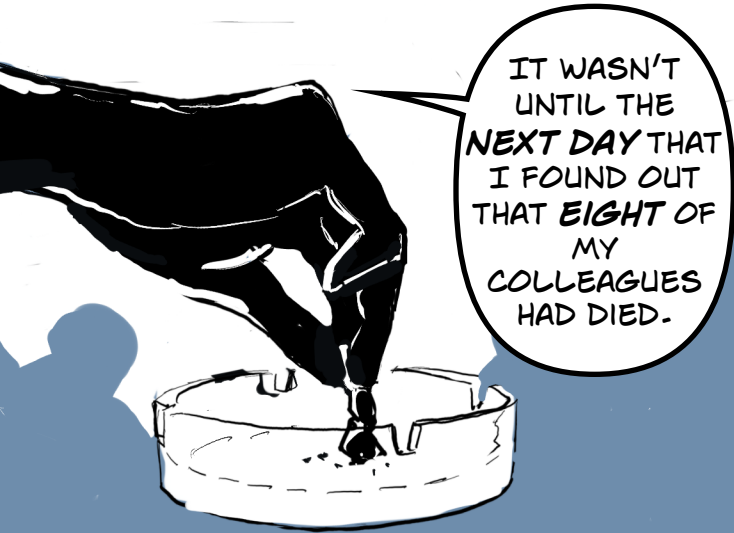
HAVING JUST SEEN HOW **EXCRUCIATINGLY PAINFUL** DEATH BY SEVERE **BURNS** CAN BE...



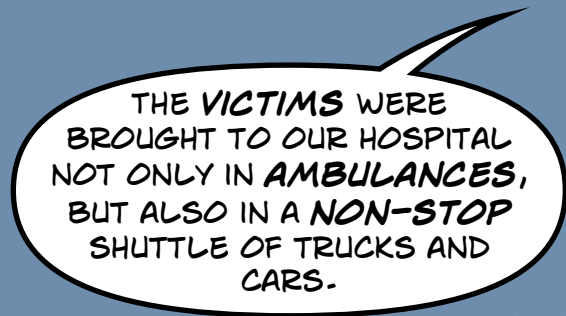
...HE DECIDED ON A **FASTER, LESS PAINFUL** OPTION.



JUST THEN A  
RANDOM **EXPLOSION**  
OCCURRED AND **CLEARED**  
A PATH TO THE SEA. WE  
WERE SAFE.



IT WASN'T  
UNTIL THE  
**NEXT DAY** THAT  
I FOUND OUT  
THAT **EIGHT** OF  
MY  
COLLEAGUES  
HAD DIED.



THE **VICTIMS** WERE  
BROUGHT TO OUR HOSPITAL  
NOT ONLY IN **AMBULANCES**,  
BUT ALSO IN A **NON-STOP**  
SHUTTLE OF TRUCKS AND  
CARS.

**S. IRIS**

IRIS SALAZAR,  
NURSE AT JOSE  
MARIA VARGAS  
HOSPITAL IN LA GUITA

SOME WERE IN **SHOCK**,  
OTHERS MOANING IN **PAIN**...



THE HOSPITAL STAFF  
WORKED **DOUBLE**  
**SHIFTS** TO RECEIVE THEM

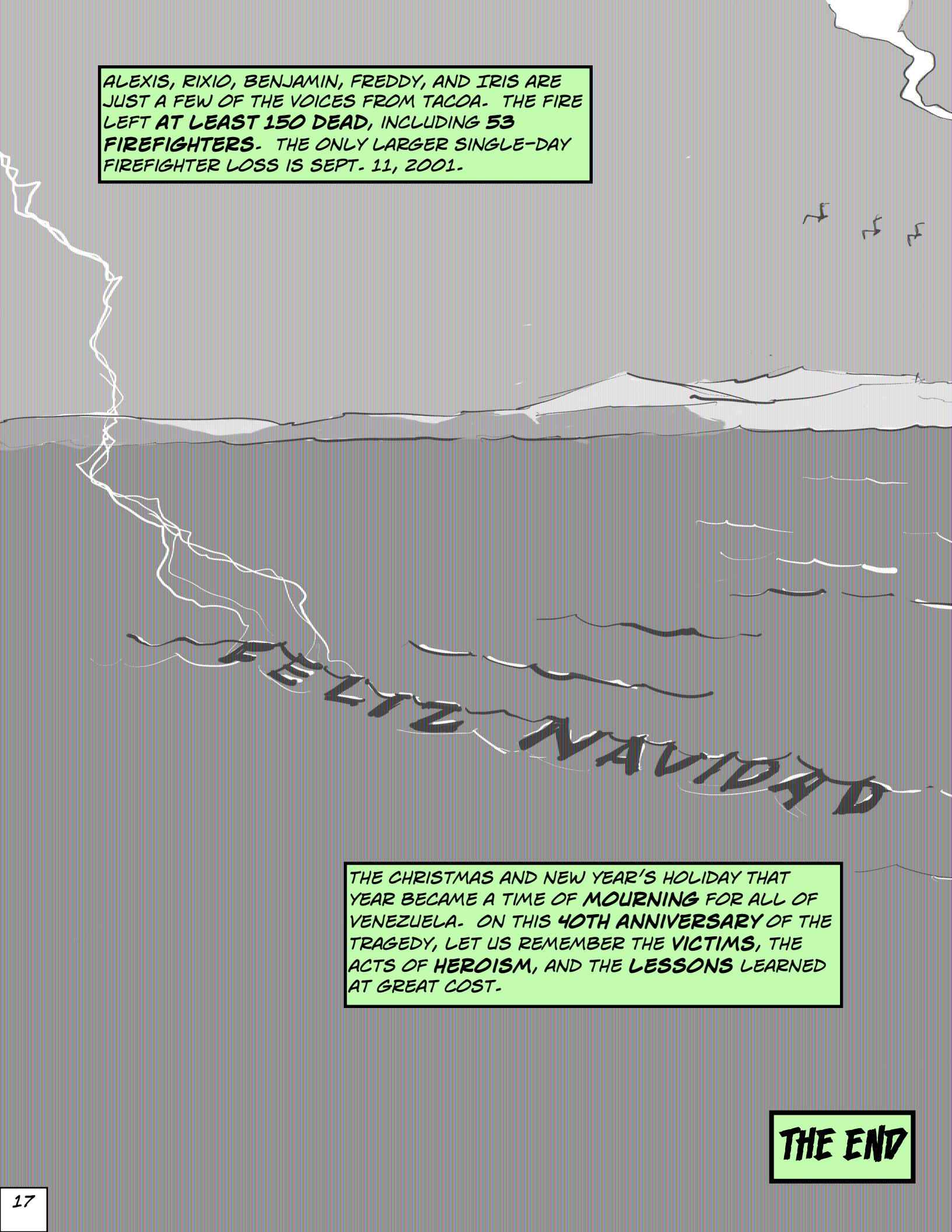


I SAW **BURNS** LIKE  
I HAD **NEVER** SEEN  
BEFORE



IT WAS THE **WORST**  
DAY I **EVER** EXPECT TO  
LIVE THROUGH.





ALEXIS, RIXIO, BENJAMIN, FREDDY, AND IRIS ARE JUST A FEW OF THE VOICES FROM TACO. THE FIRE LEFT AT LEAST 150 DEAD, INCLUDING 53 FIREFIGHTERS. THE ONLY LARGER SINGLE-DAY FIREFIGHTER LOSS IS SEPT. 11, 2001.

FELIZ NAVIDAD

THE CHRISTMAS AND NEW YEAR'S HOLIDAY THAT YEAR BECAME A TIME OF MOURNING FOR ALL OF VENEZUELA. ON THIS 40TH ANNIVERSARY OF THE TRAGEDY, LET US REMEMBER THE VICTIMS, THE ACTS OF HEROISM, AND THE LESSONS LEARNED AT GREAT COST.

THE END