United States Military Academy
USMA Digital Commons

ACI Books & Book Chapters | Army Cyber Institute

2023

Material Loss

Brain David Johnson
Arizona State University, brian.david.johnson@asu.edu

Follow this and additional works at: https://digitalcommons.usmalibrary.org/aci_books

Part of the Defense and Security Studies Commons, Politics and Social Change Commons, and the Science and Technology Studies Commons

Recommended Citation

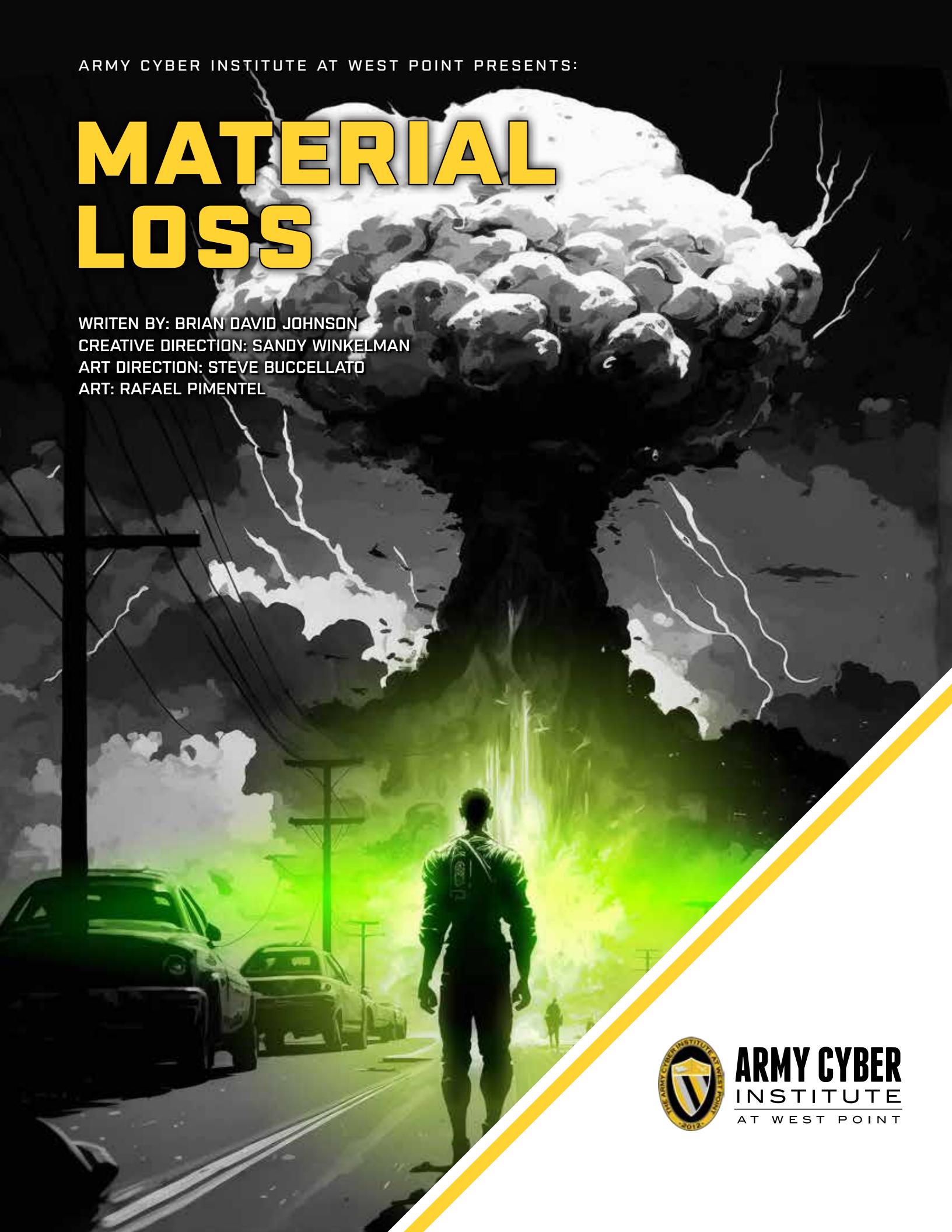
Johnson, Brain David, "Material Loss" (2023). *ACI Books & Book Chapters*. 41.
https://digitalcommons.usmalibrary.org/aci_books/41

This Book is brought to you for free and open access by the Army Cyber Institute at USMA Digital Commons. It has been accepted for inclusion in ACI Books & Book Chapters by an authorized administrator of USMA Digital Commons. For more information, please contact dcadmin@usmalibrary.org.

ARMY CYBER INSTITUTE AT WEST POINT PRESENTS:

MATERIAL LOSS

WRITEN BY: BRIAN DAVID JOHNSON
CREATIVE DIRECTION: SANDY WINKELMAN
ART DIRECTION: STEVE BUCCELLATO
ART: RAFAEL PIMENTEL



ARMY CYBER INSTITUTE AT WEST POINT

BUILDING A BETTER, STRONGER AND MORE SECURE FUTURE FOR OUR ARMED FORCES

Science Fiction Prototypes are science fiction stories based on future trends, technologies, economics, and cultural change. The story you are about to read is based on threatcasting research from the Army Cyber Institute at West Point and Arizona State University's Threatcasting Lab. Our story does not shy away from a dystopian vision of tomorrow. Exploring these dark regions inspires us to build a better, stronger, and more secure future for our Armed Forces.

Today we believe that there are nine nations with nuclear warheads out of the 195 countries across the globe. One can imagine that there are significant intelligence apparatuses dedicated to watching for indications of both potential use by the nine but also for any whispers that a 10th nation is developing the technology. But that is with today's technology.

What if we imagine a not–so–distant future where Emerging Disruptive Technologies (like AI, 6G, Quantum, Autonomous Robotics, Hypersonics, etc) intersect with Weapons of Mass Destruction (WMD). This could be a future where the barrier to entry to conduct a WMD attack no longer is just within the purview of the nine nations but also within the grasp of a rogue nation and/or actor. What if these next–generation technologies could ensure that all activities (planning, assembling, transportation, launch) could fly under the radar of all our existing sensors and safeguards meant to protect the world? What happens if we don't adapt to this changing world?

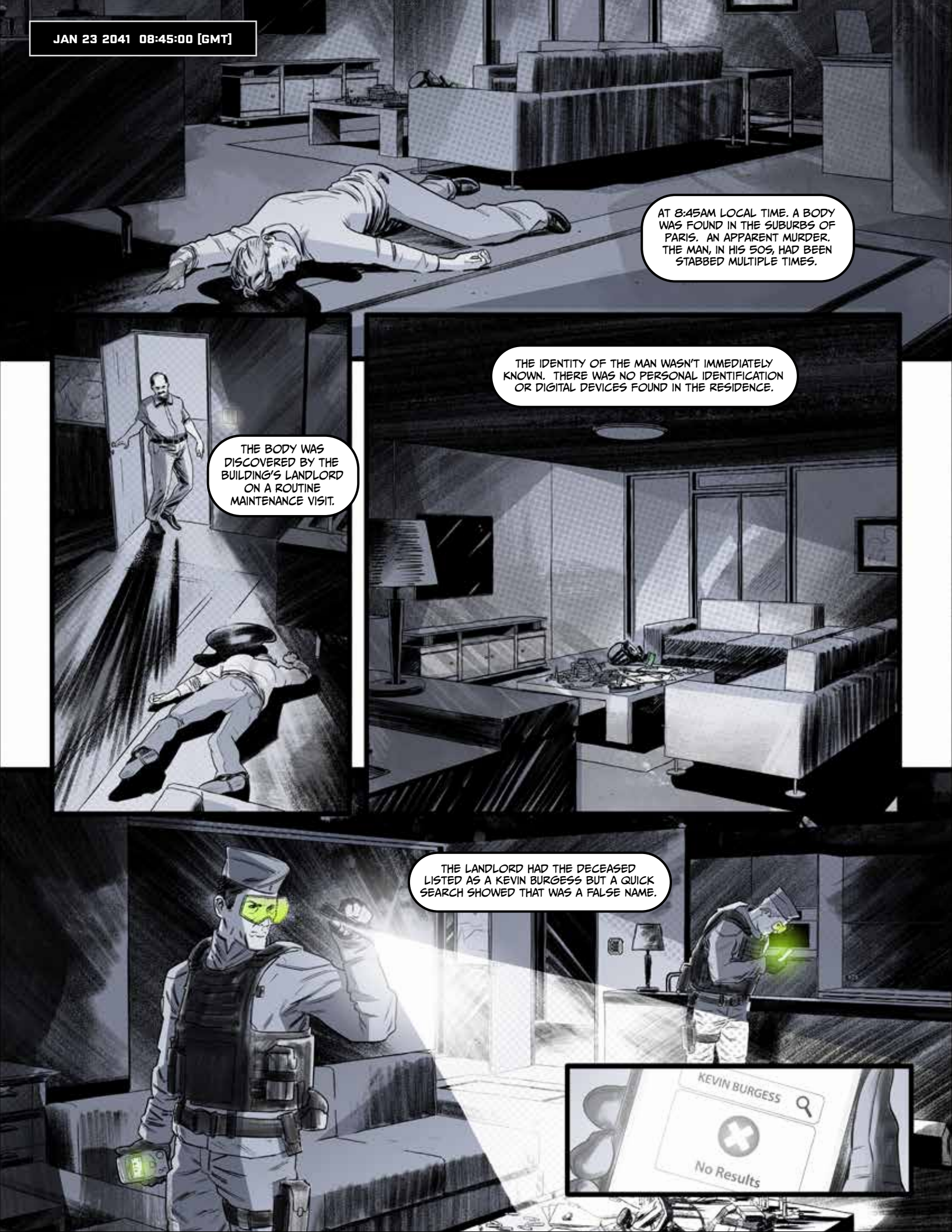
COL. NATALIE VANATTA
ACADEMY PROFESSOR
U.S. ARMY CYBER INSTITUTE

The views in this graphic novel are those of the author and do not reflect the official policy or position of the Department of the Army, DOD, or the U.S. Government.

MATERIAL LOSS

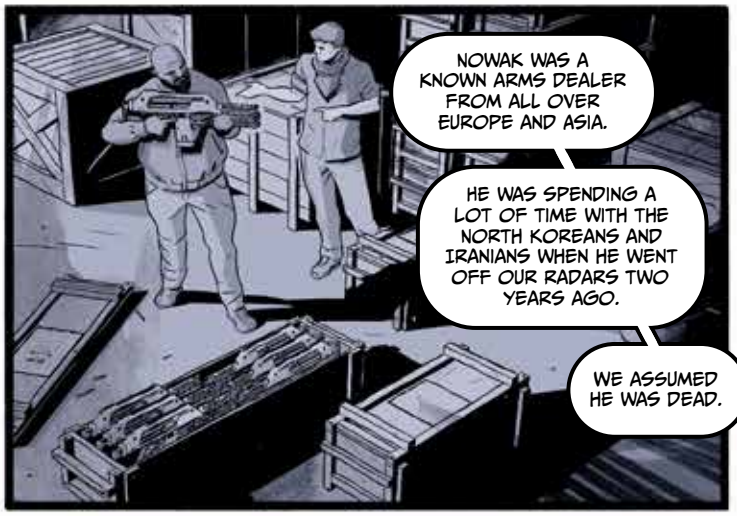
Our science fiction prototype will take us into the future… the year 2041. Nothing seems to be out of order on the world stage. Same old problems, just a different day. However, the globe has embraced a wide range of emerging disruptive technologies that today seem to be in the realm of science fiction. And, as it has always been thought–out history, any technology that can be used to better the world, can also be used to do harm to people. In our future, nefarious actors have figured out ways to use these technologies to disrupt the entire world order.

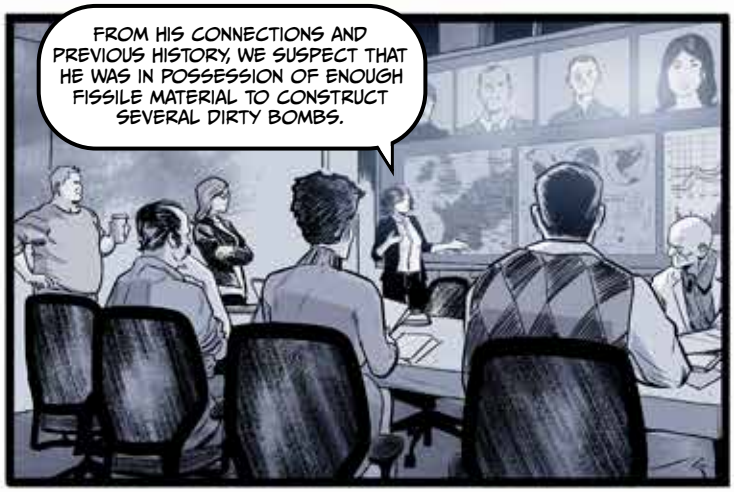
Our story begins with a minor mystery in Europe but then quickly unfolds with an unprecedented attack on American soil and ultimately leads to an international incident that could take the entire planet to the brink of disaster.

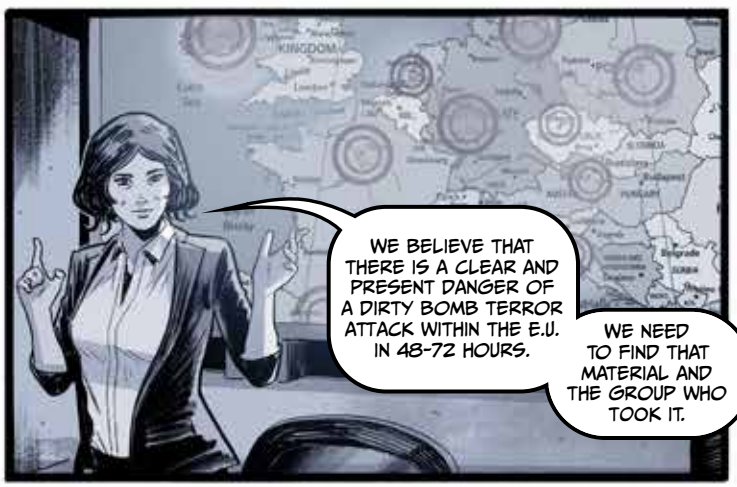

JAN 23 2041 08:45:00 [GMT]
AT 8:45AM LOCAL TIME. A BODY WAS FOUND IN THE SUBURBS OF PARIS. AN APPARENT MURDER. THE MAN, IN HIS 50S, HAD BEEN STABBED MULTIPLE TIMES.
THE BODY WAS DISCOVERED BY THE BUILDING'S LANDLORD ON A ROUTINE MAINTENANCE VISIT.
THE IDENTITY OF THE MAN WASN'T IMMEDIATELY KNOWN. THERE WAS NO PERSONAL IDENTIFICATION OR DIGITAL DEVICES FOUND IN THE RESIDENCE.
THE LANDLORD HAD THE DECEASED LISTED AS A KEVIN BURGESS BUT A QUICK SEARCH SHOWED THAT WAS A FALSE NAME.
KEVIN BURGESS
No Results

THE LAB WAS CALLED IN AND EVIDENCE OF GUNS WERE FOUND ALONG WITH LOW LEVELS OF RADIATION.
IN THE APARTMENT THERE ALSO WAS EVIDENCE THAT FIREARMS AND OTHER MATERIALS HAD AT ONE TIME BEEN PRESENT.
A HAZMAT TEAM WAS IMMEDIATELY CALLED, AND THE BUILDING EVACUATED.
FRENCH LAW ENFORCEMENT CONTACTED THE I.A.E.A. AND EUROPOL.
IT WASN'T UNTIL 8:35AM THE FOLLOWING DAY THAT WE WERE ABLE TO PIECE TOGETHER WHO THE DECEASED MIGHT BE.
BECAUSE HE DIDN'T EXIST IN ANY DATABASE, WE'RE SUSPECTING A SUITE OF TOOLS WERE USED TO ERASE HIS ENTIRE DIGITAL FOOTPRINT.

THEN AN INVESTIGATOR AT EUROPOL GOT A HIT IN A PAPER RECORD AND WE WERE ABLE TO IDENTIFY THE DECEASED AS **ALEXI NOWAK**.


NOWAK WAS A KNOWN ARMS DEALER FROM ALL OVER EUROPE AND ASIA.
HE WAS SPENDING A LOT OF TIME WITH THE NORTH KOREANS AND IRANIANS WHEN HE WENT OFF OUR RADARS TWO YEARS AGO.
WE ASSUMED HE WAS DEAD.


FROM HIS CONNECTIONS AND PREVIOUS HISTORY, WE SUSPECT THAT HE WAS IN POSSESSION OF ENOUGH FISSILE MATERIAL TO CONSTRUCT SEVERAL DIRTY BOMBS.

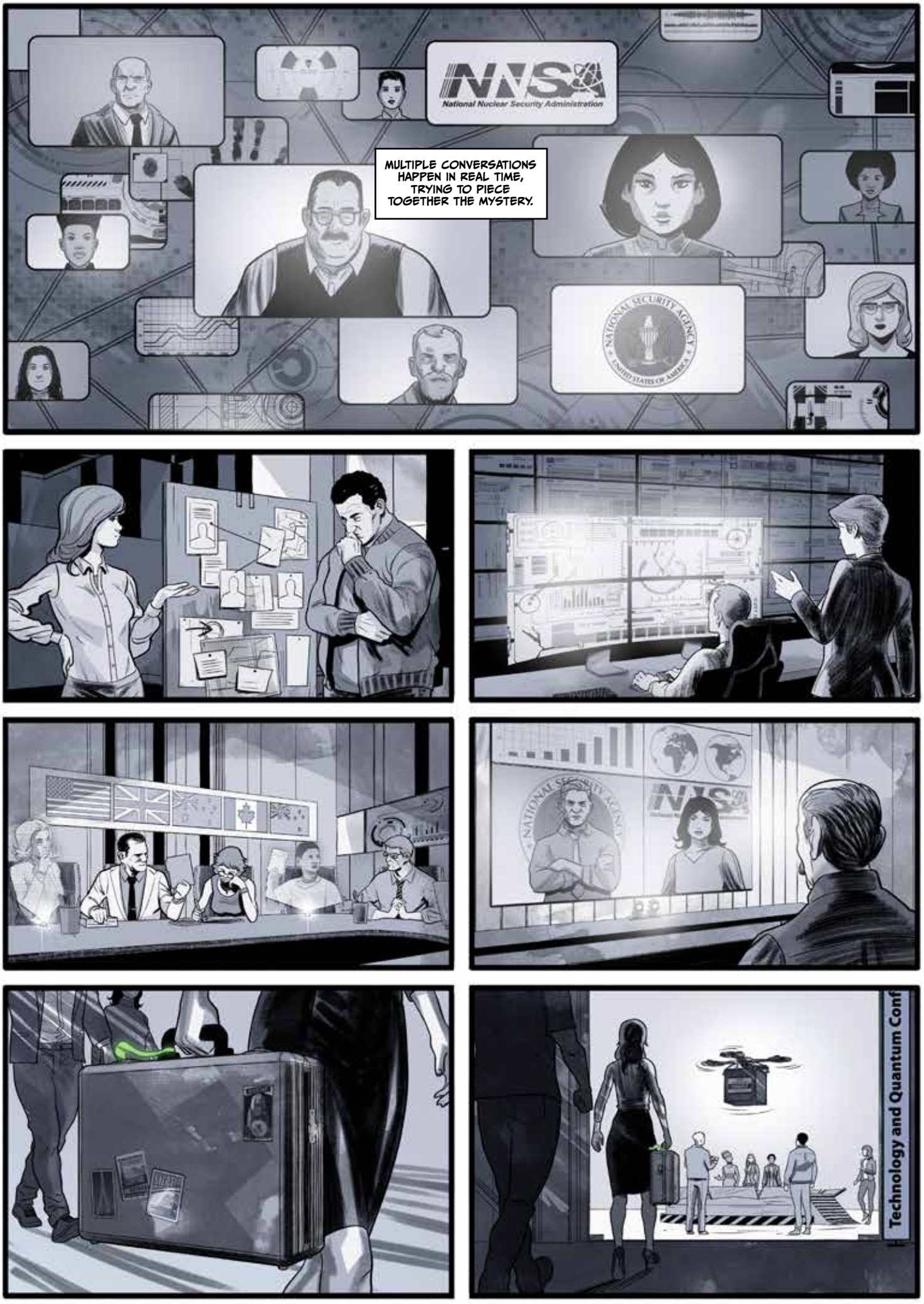

WE BELIEVE THAT THERE IS A CLEAR AND PRESENT DANGER OF A DIRTY BOMB TERROR ATTACK WITHIN THE E.U. IN 48-72 HOURS.
WE NEED TO FIND THAT MATERIAL AND THE GROUP WHO TOOK IT.

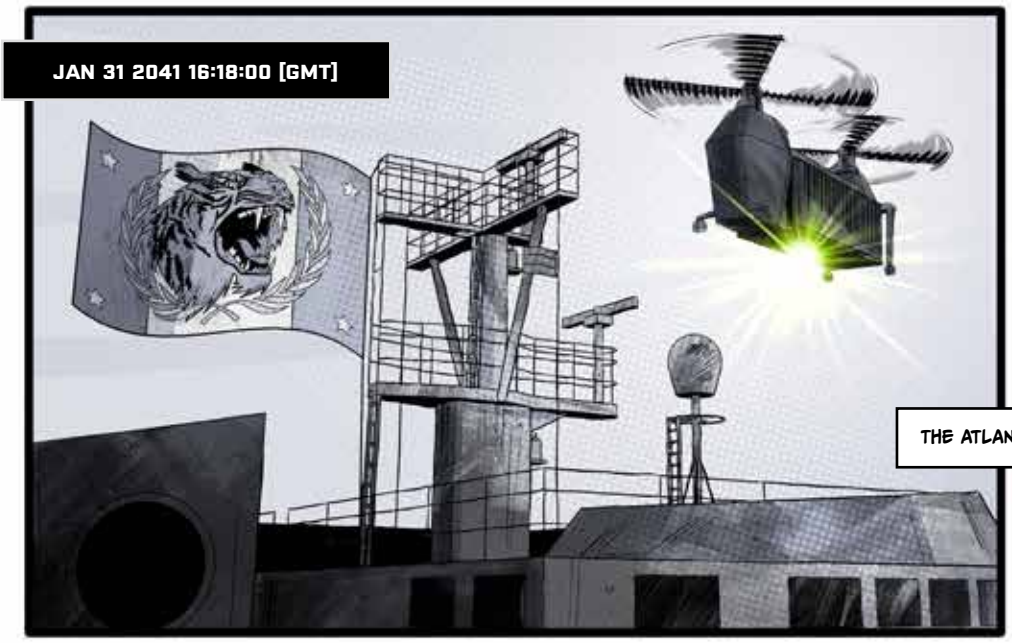
JAN 24 2041 02:30:00 [GMT]

A FRANTIC SEARCH BEGINS ACROSS EUROPE FOR THE LOST MATERIAL...
FRANCE
Bay of Biscay
Bordeaux
Lyon
Geneva
Zürich
Bern
SWITZ.
Milan
Turin
Venice
Genoa
Toulouse
Bilbao
A Coruña
Porto
Andorra la Vella
ANDORRA
Marseille
Ligurian Sea
Florence
ITALY
Rome
VATICAN CITY
Naples
Corsica
Adriatic Sea
Zaragoza
Madrid
Barcelona
PORTUGAL
Lisbon
Balearic Sea
Tyrrhenian
Ljubljana
Zagreb
CROATIA
BOSNIA AND HERZEGOVINA
Sarajevo
Belgrade
SERBIA
Pristina
Skopje
Podgorica
Sofia
BULGARIA
Istanbul
Aegean
Bratislava
Vienna
Budapest
HUNGARY
ROMANIA
Bucharest
MOLDOVA
Iași
Cluj-Napoca
Danube
UNBEKNOWST TO LAW ENFORCEMENT, A.I. AGENTS WERE INHIBITING THE SEARCH.

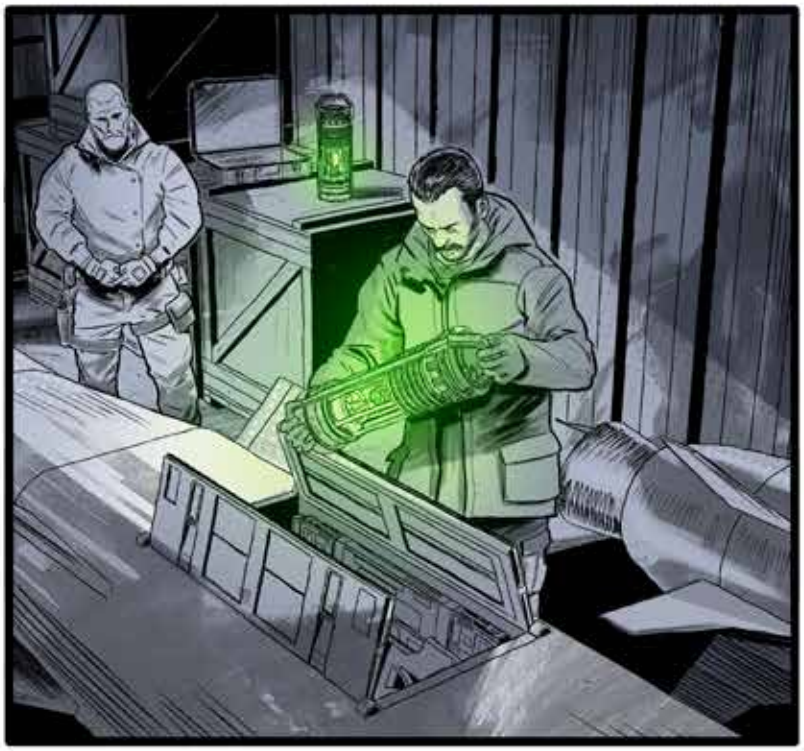
I.A.E.A. REACHES OUT TO MEMBERS. OF ALL THE WORLD'S NUCLEAR POWERS, NONE CLAIM ANY KNOWLEDGE OF ACTIVITY.

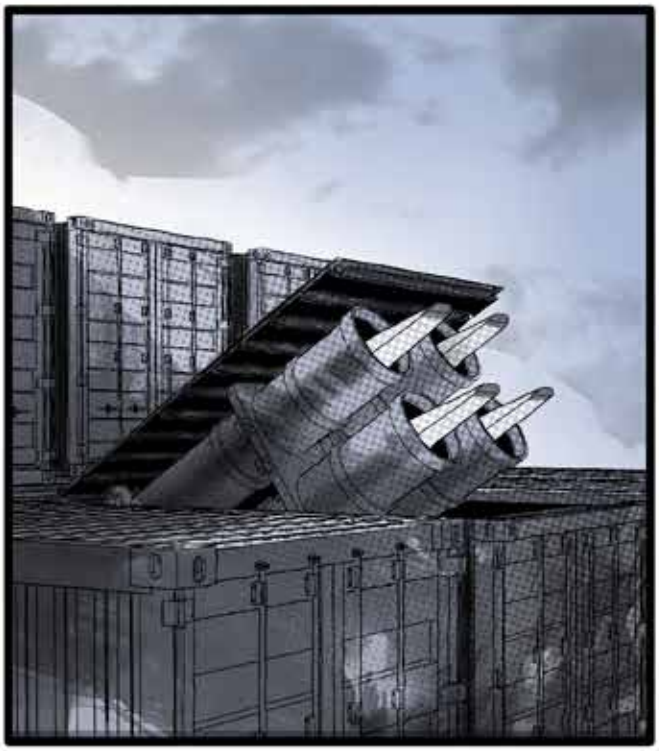
NORTH KOREA
PYONGYANG
JAPAN SEA
SEOUL
SOUTH KOREA
JAPAN
SOUTH KOREA IS CONSULTED TO SEE IF THERE WAS ANY CHATTER ABOUT NORTH KOREA SELLING THE MATERIAL.


NNSA
National Nuclear Security Administration
MULTIPLE CONVERSATIONS HAPPEN IN REAL TIME, TRYING TO PIECE TOGETHER THE MYSTERY.
NATIONAL SECURITY AGENCY
UNITED STATES OF AMERICA
Technology and Quantum Conf


JAN 31 2041 16:18:00 [GMT]

THE ATLANTIC OCEAN





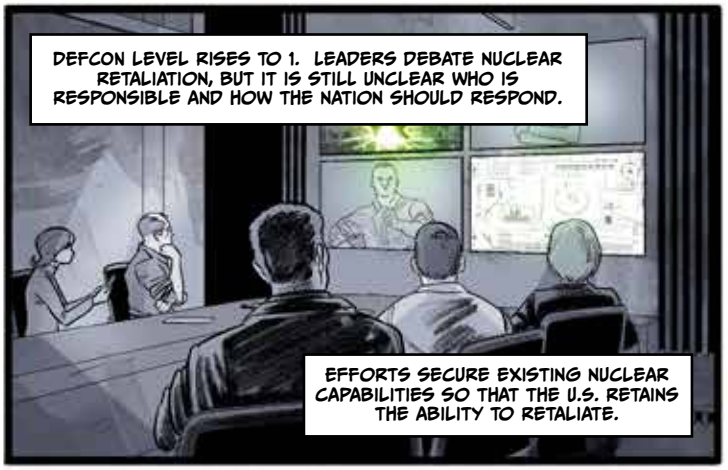
TWO HYPERSONIC NUCLEAR MISSILES EVADE AND OUT MANEUVER THE U.S.'S TRADITIONAL DETECTION AND RESPONSE CAPABILITIES. THEY STRIKE TARGETS IN THE MIDDLE OF AMERICA.
Michigan
Iowa
Nebraska
Ohio
Illinois
Indiana

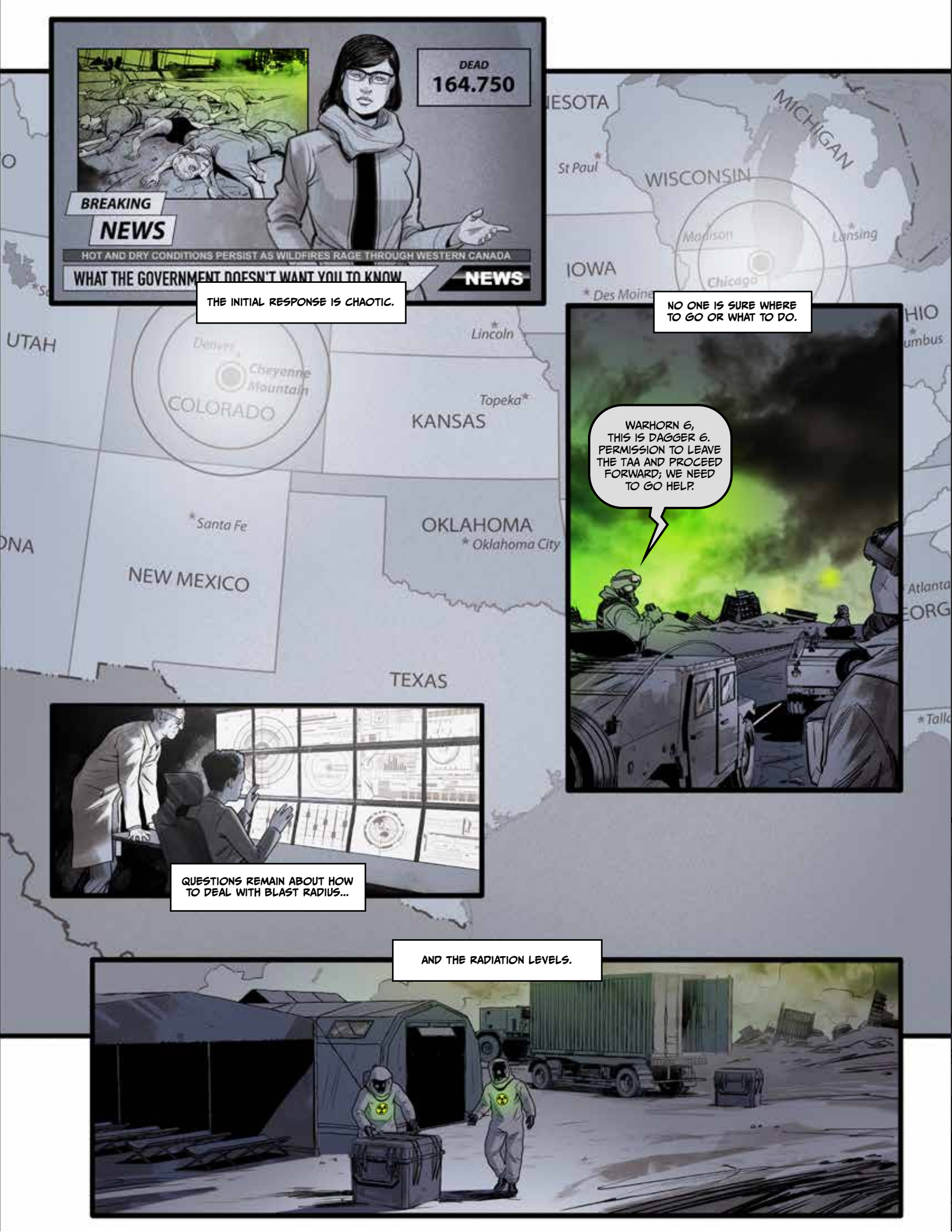
ONE DETONATES IN DOWNTOWN CHICAGO...

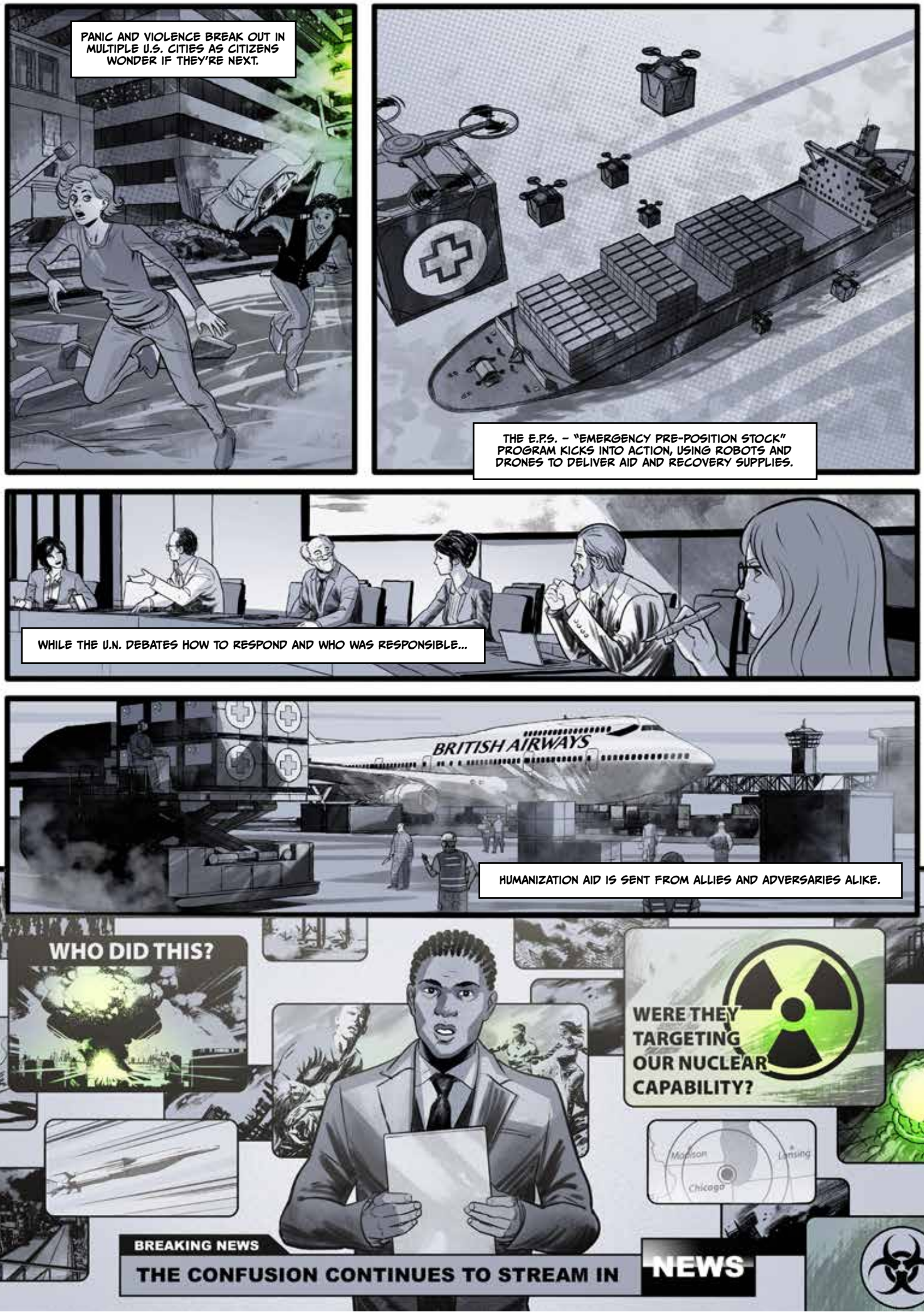
IN AN INSTANT, WIDE SWATHS OF THE CITY ARE REDUCED TO RUBBLE.

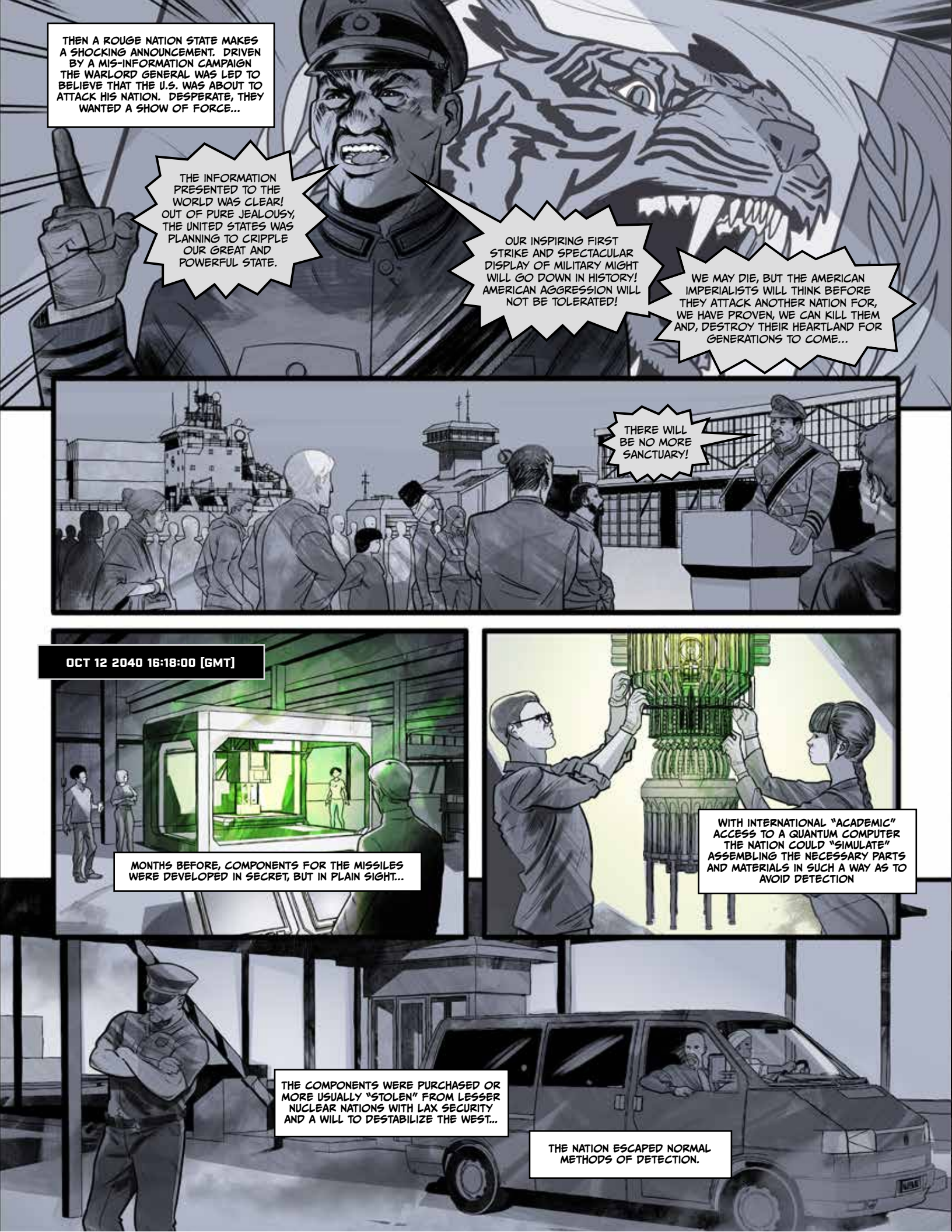
ONE LANDS OUTSIDE CHEYENNE, MOUNTAIN, CO.

THE U.S. PRESIDENT AND LEADERSHIP ARE SCATTERED TO SAFETY.


DEFCON LEVEL RISES TO 1. LEADERS DEBATE NUCLEAR RETALIATION, BUT IT IS STILL UNCLEAR WHO IS RESPONSIBLE AND HOW THE NATION SHOULD RESPOND.
EFFORTS SECURE EXISTING NUCLEAR CAPABILITIES SO THAT THE U.S. RETAINS THE ABILITY TO RETALIATE.


DEAD
164.750
BREAKING
NEWS
HOT AND DRY CONDITIONS PERSIST AS WILDFIRES RAGE THROUGH WESTERN CANADA
WHAT THE GOVERNMENT DOESN'T WANT YOU TO KNOW
NEWS
THE INITIAL RESPONSE IS CHAOTIC.
NO ONE IS SURE WHERE TO GO OR WHAT TO DO.
WARHORN 6, THIS IS DAGGER 6. PERMISSION TO LEAVE THE TAA AND PROCEED FORWARD; WE NEED TO GO HELP.
QUESTIONS REMAIN ABOUT HOW TO DEAL WITH BLAST RADIUS...
AND THE RADIATION LEVELS.
MICHIGAN
WISCONSIN
St Paul
Madison
Lansing
Chicago
IOWA
Des Moine
Lincoln
Denver
Cheyenne Mountain
COLORADO
Topeka
KANSAS
Santa Fe
NEW MEXICO
OKLAHOMA
Oklahoma City
TEXAS
Atlanta


PANIC AND VIOLENCE BREAK OUT IN MULTIPLE U.S. CITIES AS CITIZENS WONDER IF THEY'RE NEXT.
THE E.P.S. – "EMERGENCY PRE-POSITION STOCK" PROGRAM KICKS INTO ACTION, USING ROBOTS AND DRONES TO DELIVER AID AND RECOVERY SUPPLIES.
WHILE THE U.N. DEBATES HOW TO RESPOND AND WHO WAS RESPONSIBLE...
BRITISH AIRWAYS
HUMANIZATION AID IS SENT FROM ALLIES AND ADVERSARIES ALIKE.
WHO DID THIS?
WERE THEY TARGETING OUR NUCLEAR CAPABILITY?
Madison
Lansing
Chicago
BREAKING NEWS
THE CONFUSION CONTINUES TO STREAM IN
NEWS


THEN A ROUGE NATION STATE MAKES A SHOCKING ANNOUNCEMENT. DRIVEN BY A MIS-INFORMATION CAMPAIGN THE WARLORD GENERAL WAS LED TO BELIEVE THAT THE U.S. WAS ABOUT TO ATTACK HIS NATION. DESPERATE, THEY WANTED A SHOW OF FORCE...
THE INFORMATION PRESENTED TO THE WORLD WAS CLEAR! OUT OF PURE JEALOUSY, THE UNITED STATES WAS PLANNING TO CRIPPLE OUR GREAT AND POWERFUL STATE.
OUR INSPIRING FIRST STRIKE AND SPECTACULAR DISPLAY OF MILITARY MIGHT WILL GO DOWN IN HISTORY! AMERICAN AGGRESSION WILL NOT BE TOLERATED!
WE MAY DIE, BUT THE AMERICAN IMPERIALISTS WILL THINK BEFORE THEY ATTACK ANOTHER NATION FOR, WE HAVE PROVEN, WE CAN KILL THEM AND, DESTROY THEIR HEARTLAND FOR GENERATIONS TO COME...
THERE WILL BE NO MORE SANCTUARY!
OCT 12 2040 16:18:00 [GMT]
MONTHS BEFORE, COMPONENTS FOR THE MISSILES WERE DEVELOPED IN SECRET, BUT IN PLAIN SIGHT...
WITH INTERNATIONAL "ACADEMIC" ACCESS TO A QUANTUM COMPUTER THE NATION COULD "SIMULATE" ASSEMBLING THE NECESSARY PARTS AND MATERIALS IN SUCH A WAY AS TO AVOID DETECTION
THE COMPONENTS WERE PURCHASED OR MORE USUALLY "STOLEN" FROM LESSER NUCLEAR NATIONS WITH LAX SECURITY AND A WILL TO DESTABILIZE THE WEST...
THE NATION ESCAPED NORMAL METHODS OF DETECTION.

WITH THIS NEW INFORMATION THE U.S. STRUGGLED TO RESPOND. COULD THEY LAUNCH A NUCLEAR ATTACK ON A SMALL COUNTRY?
WE MUST PROTECT DEMOCRACY AND FREEDOM...HUMAN RIGHTS AND LIFE AS WE KNOW IT.
THIS SINGLE EVENT BRAKES OVER 90 YEARS OF NON-NUCLEAR USE. IT'S A DISASTER AT A MAGNITUDE THAT IS HARD TO IMAGINE...BUT IT IS REAL.
AFTER AN EMOTIONAL SPEECH TO THE NORTH ATLANTIC COUNCIL, IT WAS A UNANIMOUS AND QUICK DECISION.
STAND STRONG MY BROTHERS AND SISTERS...MY CHILDREN...
THE WORLD DIDN'T KNOW... WOULD THE WARLORD STRIKE AGAIN?
INVOKING ARTICLE 5 - WOULD NATO INVADE THE COUNTRY?
EVIDENCE BEGAN TO EMERGE...THAT MULTIPLE COUNTRIES HAD ALLOWED THE ROGUE NATION TO NOT ONLY STEAL THE FISSILE MATERIAL BUT ACQUIRE THE LAUNCH CAPABILITIES AS WELL.
THE WORLD WAS IN CHAOS AND THE UNITED STATES MORTALLY WOUNDED.
END.

“Man has lived now for more than twenty years in what we have come to call the Atomic Age. What we sometimes overlook is that every future age of man will be an atomic age, and if man is to have a future at all, it will have to be one overshadowed with the permanent possibility of thermonuclear holocaust. About that fact there is no longer any doubt. Our freedom in this question consists only in facing the matter rationally and realistically and discussing actions to minimize the danger.”

SECRETARY OF DEFENSE ROBERT MCNAMARA
SEPTEMBER 18, 1967

AFTERWORD

The threat future that you have just seen is possible and plausible and maybe even probable in the future. Just because history books have so few examples of significant attacks on the United States homeland in the last 250 years does not mean it is an impossible feat. In the 21st century there is no sanctuary from threats and global conflict.

Over the next few decades emerging disruptive technologies will continue to be developed by governments, industries, and academic institutions. Their inevitable rise and adoption across the world means that we need to start understanding their impacts today so that we can adequately prepare for tomorrow.
What were the activities that enabled this nation to successfully attack the United States in this vision of the future?

First, there was immense compute power and increased interconnectivity within global systems that allowed cyber professionals to erase Alexi's identity. It was only a dusty paper copy from the basement that allowed accurate identification. What are we doing to build resiliency and security into tomorrow's systems? What are those important things/facts that must be backed up and how do we ensure that those backups can't be compromised?

Second, the increasing capabilities of 3D printing will revolutionize traditional supply chains and affect most sectors of our economy. It has the potential to be an equality enabler across the globe. However, it can also enable malicious actors. In the future, how could we regulate or monitor certain components from being 3D printed? Should we even consider this?

Third, our Warlord General did not have a quantum computer in his country. Yet similar to today's cloud computing platform, in our future quantum computing will be an available resource for anyone. Using various academic institutions' access to quantum computing, his team was able to create the most efficient road map to evade all intelligence systems and sensors. This included war-games on how to steal/create components, appropriate methods/timing to transport them to the vessel, best delivery vehicle to use, and the actual plan of attack. In the future, should we regulate what individuals/countries can use advanced computing resources for? If we regulate, how would we monitor and enforce these bans? If not regulated, how do we protect the human race in this atomic age?

Finally, our adversary was only successful because other nations had turned a blind eye to the situation and/or helped in some small way. Therefore, what is the best response from the United States? Could we really obliterate a country and its people because of a leader's decision to make a first strike? But what happens if we don't – would that convince another nation or group to attack the homeland next? And what is an appropriate response against the other nations involved?

ARMY CYBER
INSTITUTE
AT WEST POINT