Initial Investigation On Potential Chemical Weapons Found In Syria

By: Richard M. Lloyd
Warhead Technology
Tesla Laboratory Inc.
(509) 979-3995
rlloyd@tesla.net

TESLA

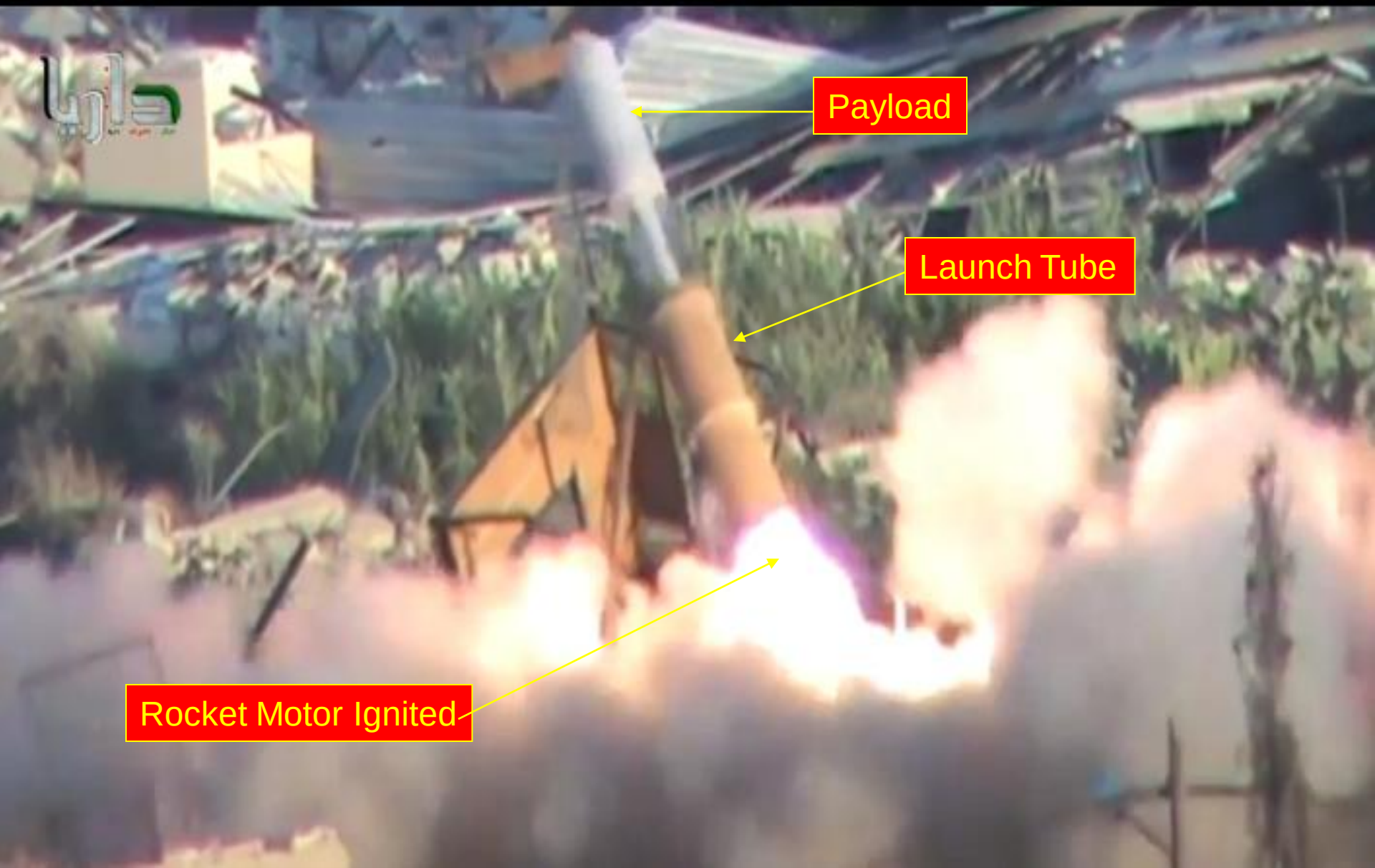
Summary: Chemical Weapons Found In Syria Based On Photos Found On Internet

- Rocket payloads contain chemical filling ports which is found on chemical weapons and not high explosive weapons.
- Dead animals found up to 50 yards away from rocket.
- The damage to the ground and the rocket is minimal and does not support a weapon that detonated hundreds of pounds of explosive.
- Small craters on the ground do not support large explosive payloads.
- Rust was found on one of the warheads which means its steel while pure chemical weapons are usually made of aluminum.
- Chemical/High Explosive Submunitions or bomblets could be deployed from this type of weapon but filling ports would not be required.

Potential Assads Forces Firing Chemical Weapon?

Large Rocket In Launch Position

Large Rocket Launched



Found Rocket On The Ground After Launch

Holes appear to be filling ports for chemical weapons

High Explosive Weapons Do Not Require these Holes in the bulk head

If this was a high explosive detonation then there would be NOTHING left of the front end of the weapon

Appears a small explosive charge was ignited which is characteristic of chemical weapons

Submunitions or bomblets could have been deployed but filling ports do not support design

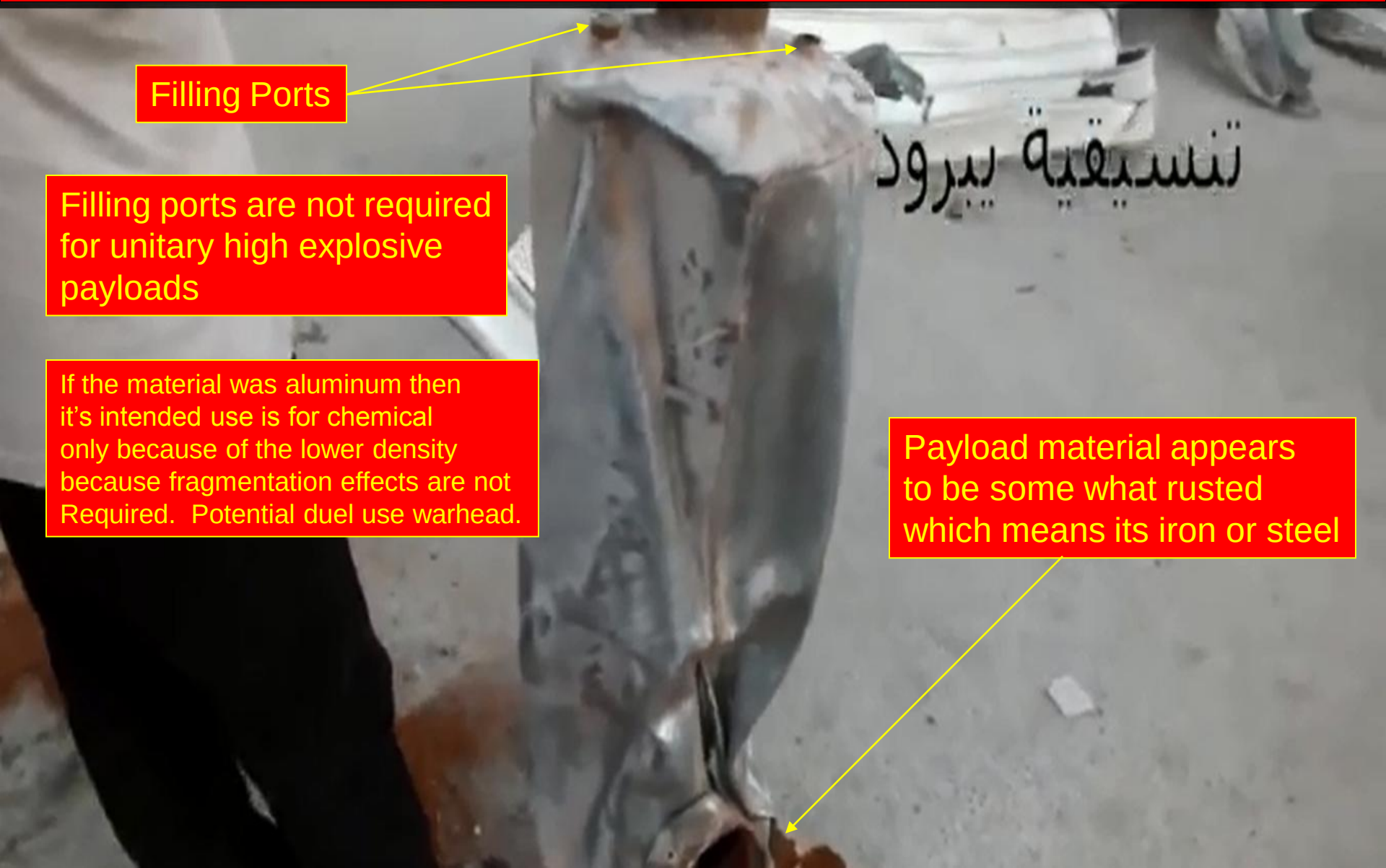
Minimal Damage to ground from large explosive weapon

Recovered Payload Showing Large Chemical Filling Port On Payload Bulk Head

Recovered Payload Showing Filling Ports

Recovered Rocket

Warhead Container Showing Filling Ports



Filling Ports

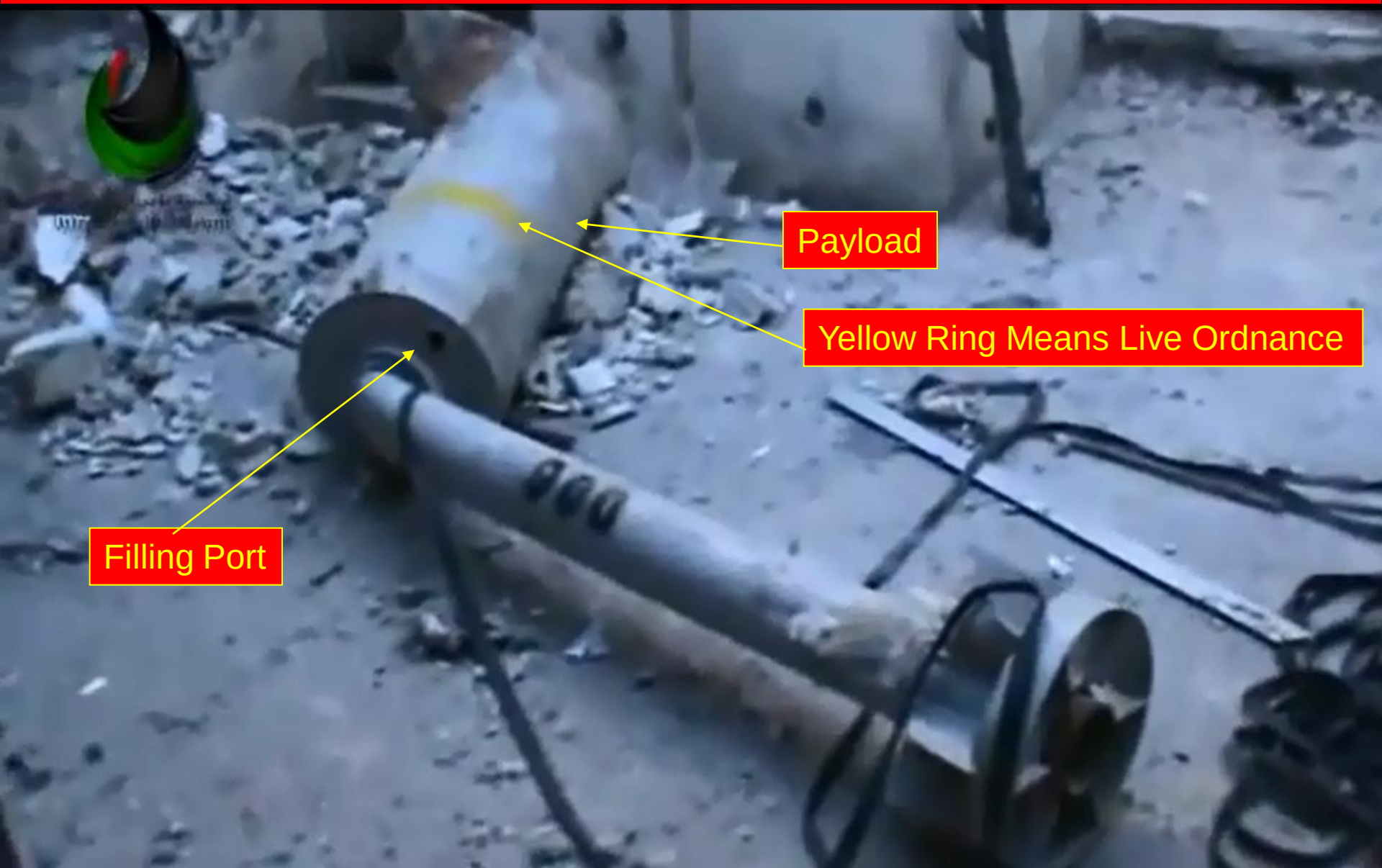
Filling ports are not required for unitary high explosive payloads

If the material was aluminum then it's intended use is for chemical only because of the lower density because fragmentation effects are not Required. Potential duel use warhead.

Payload material appears to be some what rusted which means its iron or steel

Recovered Rocket With Minimal Damage On The Ground Which IS Typical For Chemical Munitions Or Cluster Weapons

Found Rocket Post Launch



Minimal Damage To Ground From Recovered Weapon

Payload skin deployed from small explosive charge given chemical weapon

Dead birds and animals found around 50 yards from device

If this was a ground impact, minimal crater formed.
Appears device did not detonate
Large explosive payload

Rocket Payload Investigation Of Syrian Warheads

By: Richard M. Lloyd
Warhead Technology
Tesla Laboratory Inc.
(509) 979-3995
rlloyd@tesla.net

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Summary: Chemical Weapons Found In Syria Based On Photos Found On Internet And Experience as A UN Weapon Inspector

- Chemical/Bio Materials can be non-persistent which allows for short contamination times.
- White Phosphorus (WP) or Chlorine could have been used in these weapons.
- The Syrian rockets are unique to them and not widely known to the world.
- The high explosive and chemical payloads appears to be interchangeable with minor modifications.
- Rocket payloads contain chemical filling ports which is found on chemical weapons and not high explosive weapons.
- Dead animals found up to 50-100 yards away from rocket.
- The damage to the ground and the rocket is minimal and does not support a weapon that detonated hundreds of pounds of explosive.
- Small craters on the ground do not support large explosive payloads.
- Chemical warheads only require small amounts of explosive to deploy the chemical agent.
- It appears these warheads were detonated on the ground with minimal explosive as seen by the warhead skins next to the munitions.

Known Chemical Warhead Found In IRAQ Showing Key Features

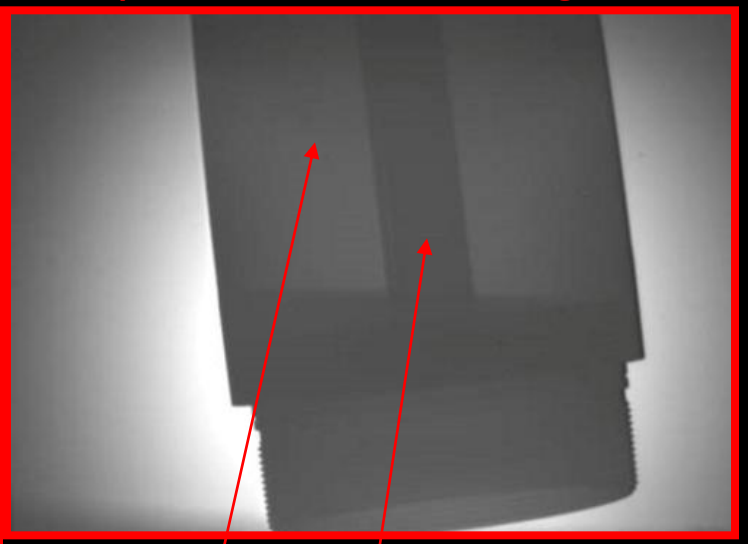
122mm Al Buraq Chemical Warhead Rocket

Most chemical warhead are made of aluminum but governments with limited resources can use HE warhead for chemical weapons by adding required features

122mm Al Buraq Chemical Warhead

Chemical filling Port

X-ray Showing Liquid and Explosive Burster Charge



Burster Charge

Chemical Agent

Inside View Of Chemical Warhead

Explosive Burster Tube

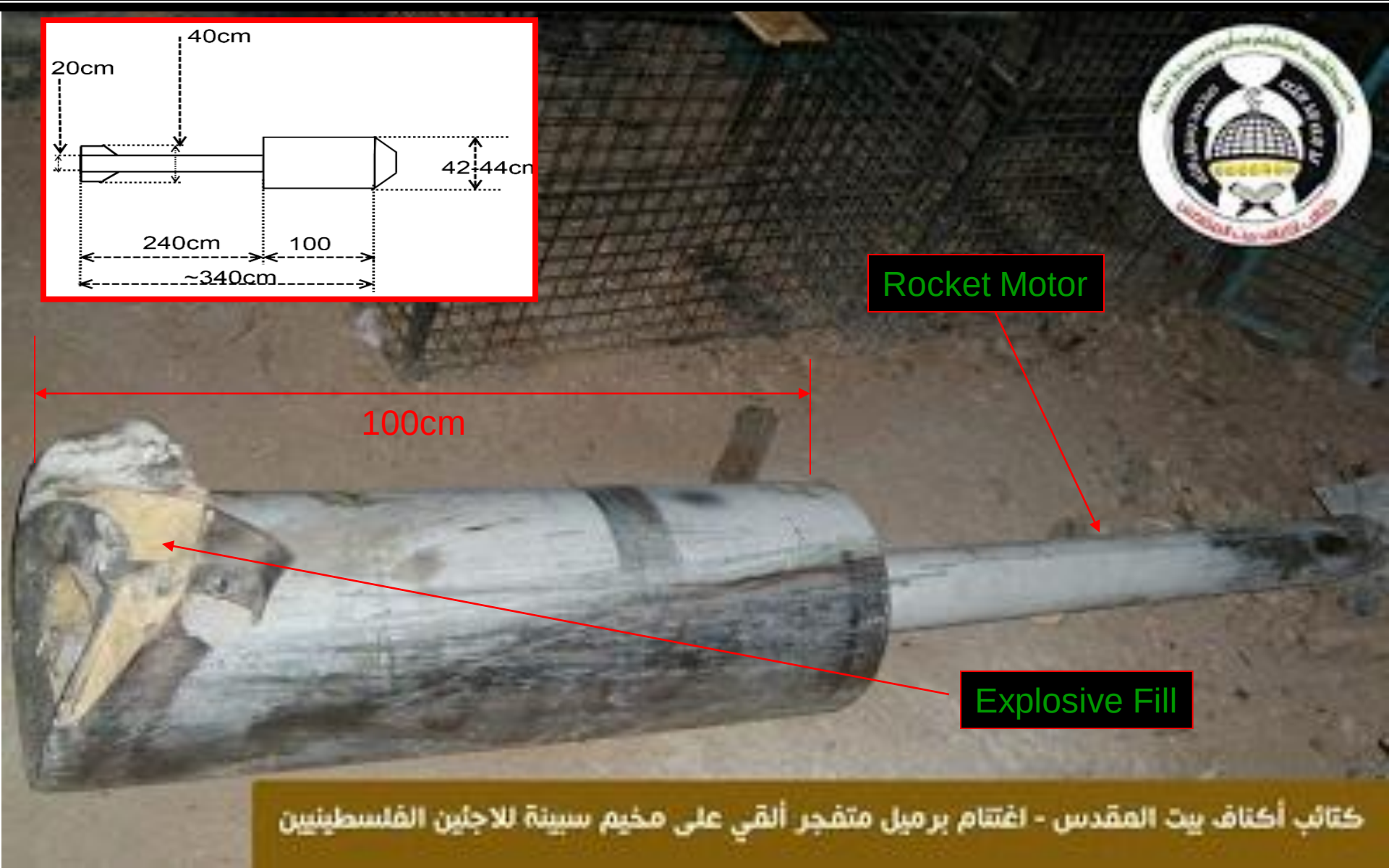
Unitary High Explosive Payloads Are Designed Different Then Chemical Weapons

Unitary High Explosive Bomb Found In Syria

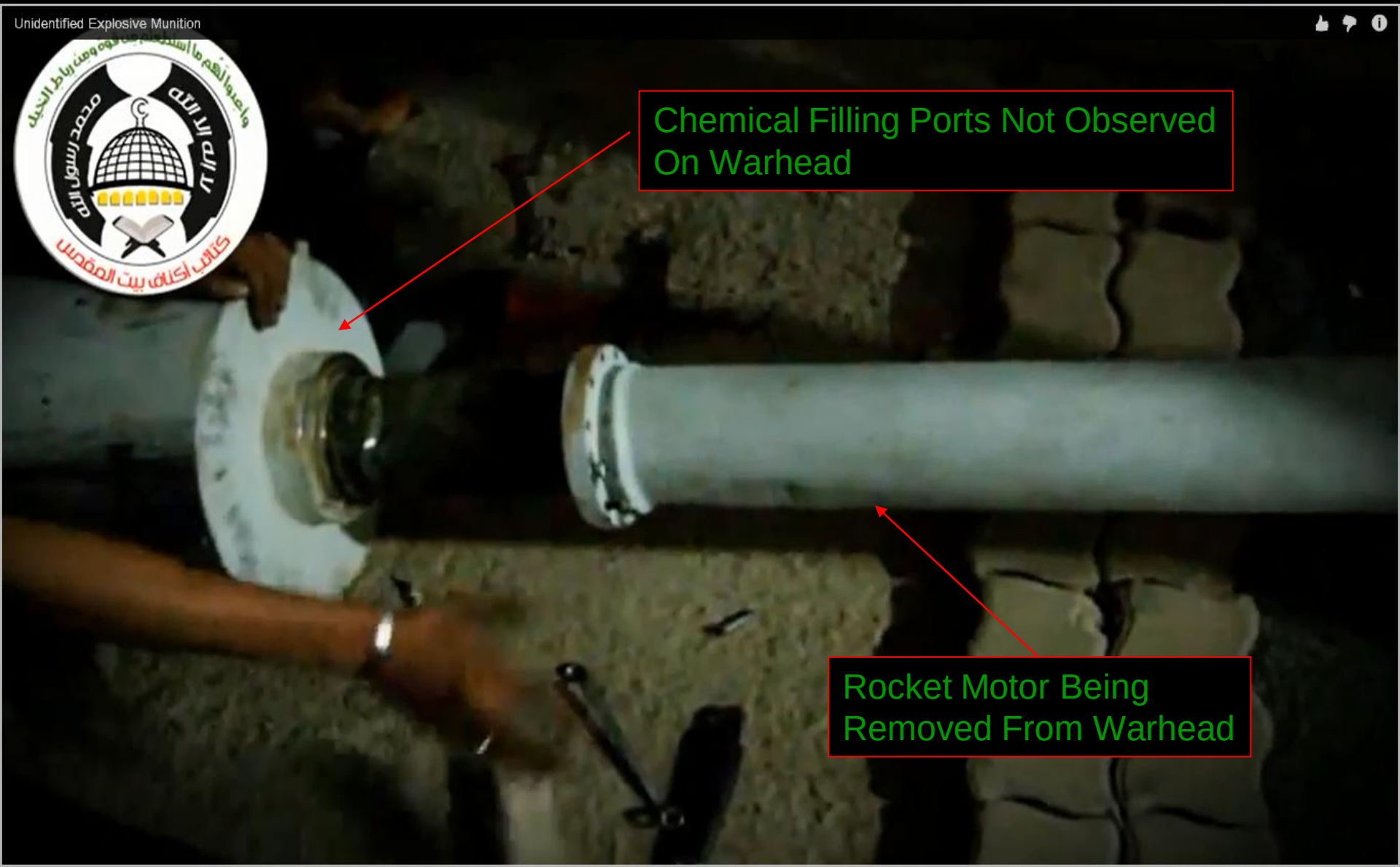
1. Does not require burster tube
2. No chemical Filling Ports
   Impact Fuse
3. High explosive bomb of this size will generate large crater

Comparison Of “KNOWN” High Explosive Warhead And Unidentified Warhead Found In Syria

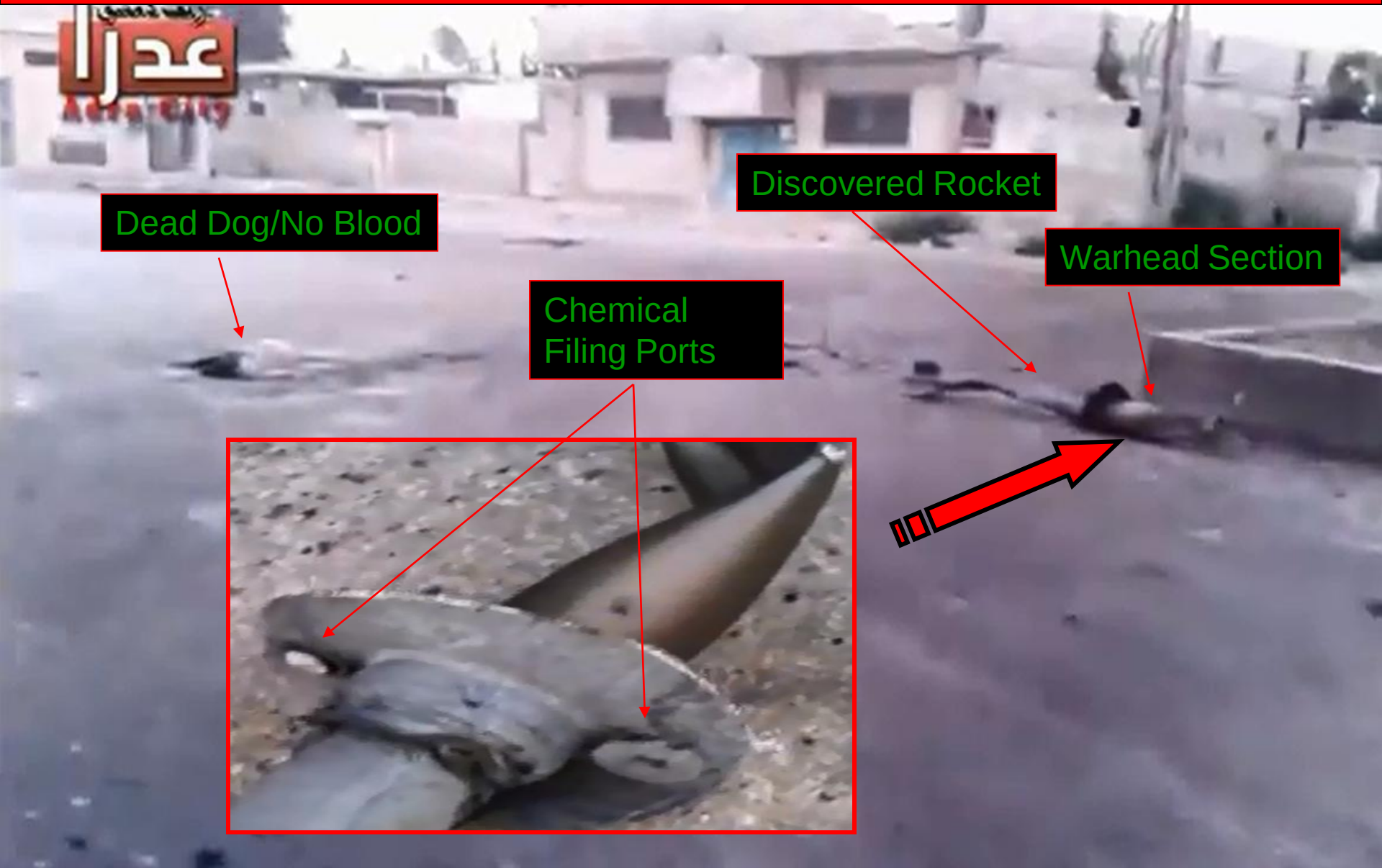
Found High Explosive Payload In Syria



Chemical Filling Ports Are Not Observed On Found Explosive Rocket



Same Warhead Found That Contains Chemical Filling Ports



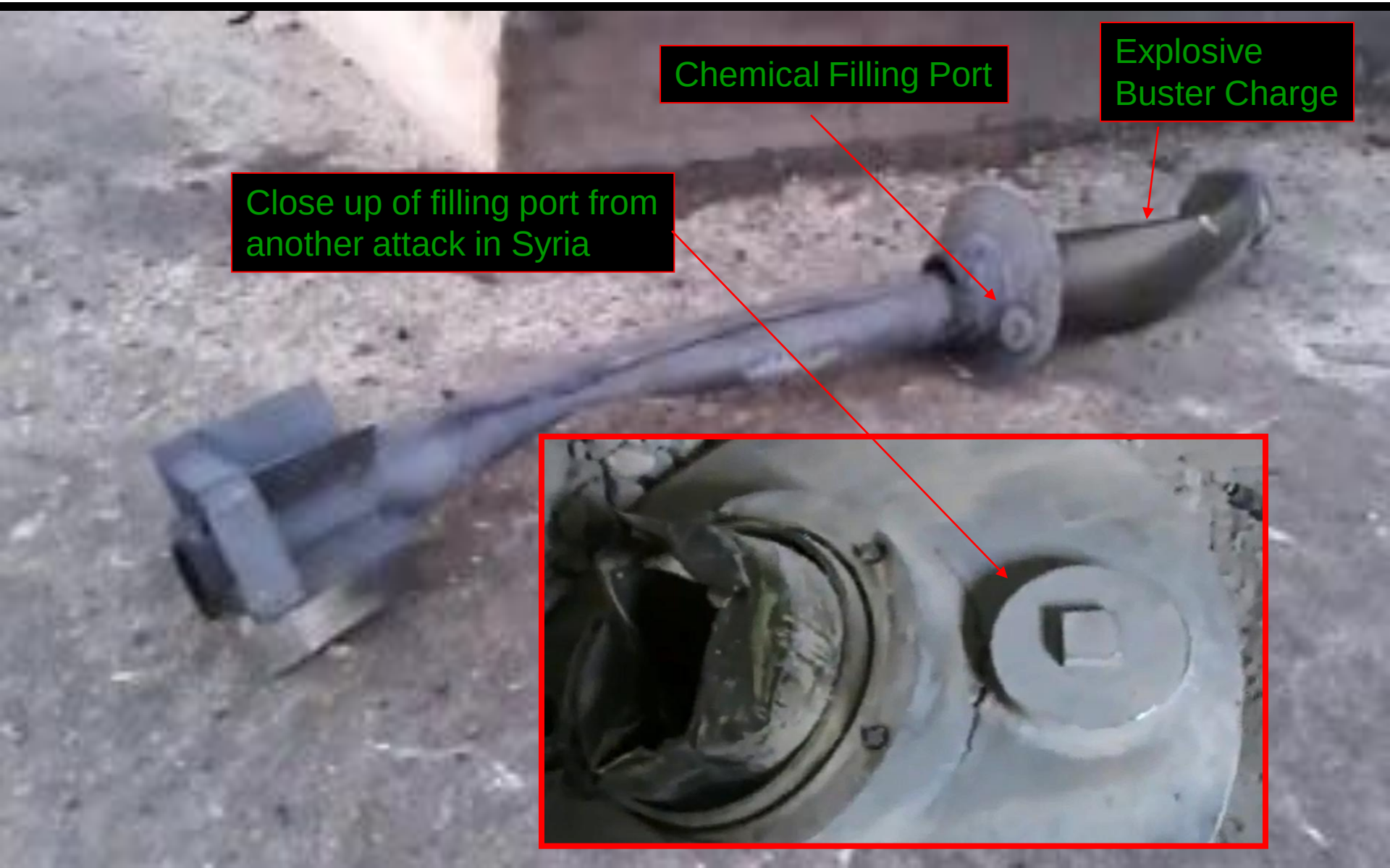
Several Other Dead Animals Observed On Video That Did Not Show Blood

Dog 1 is Approximately 75 yards From The Discovered Weapon

Dog 2 and weapon located approximately 25 yards to the left of cat

DOG 1

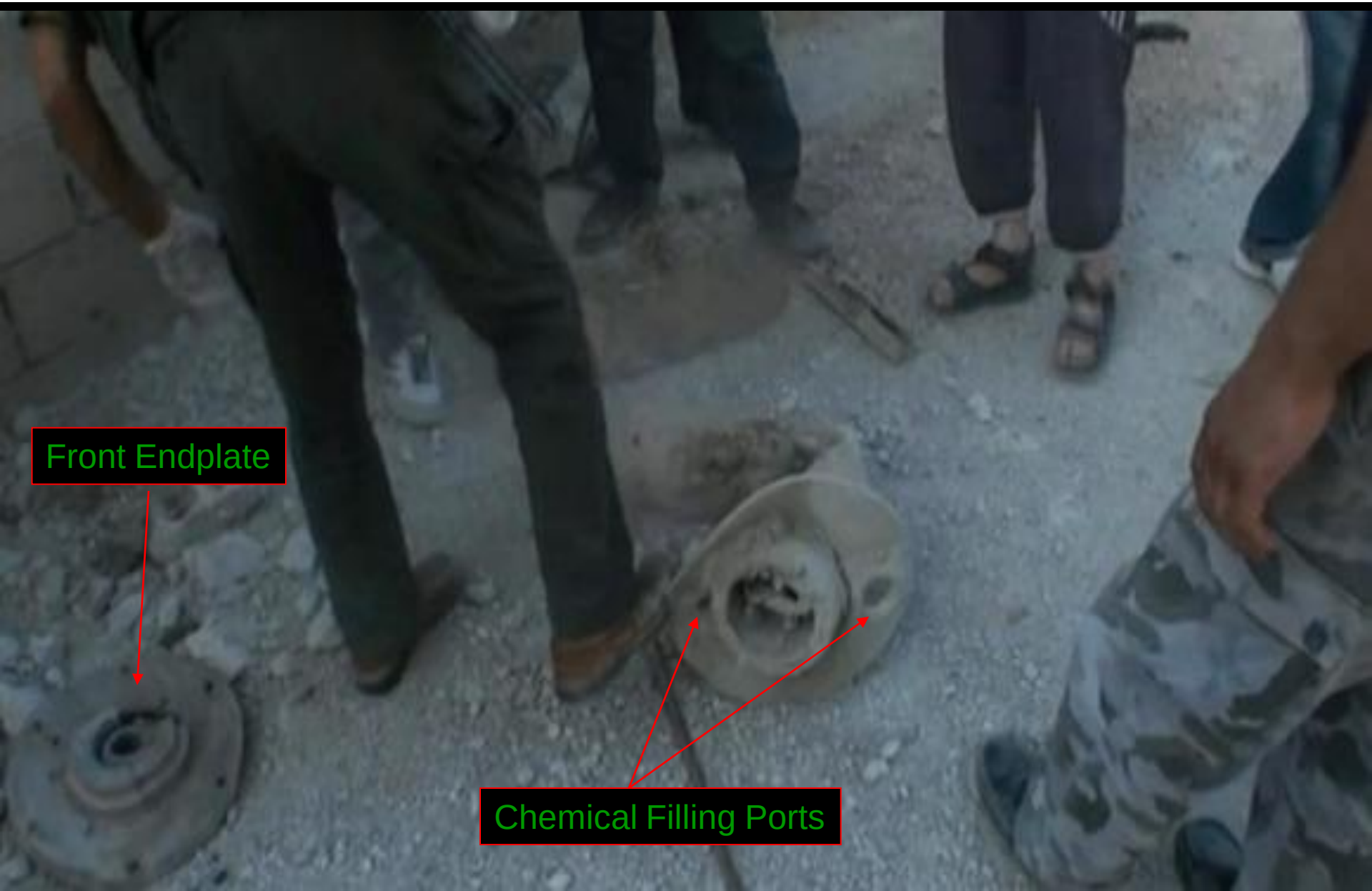
Close Up Of Weapon Detonated In Syria



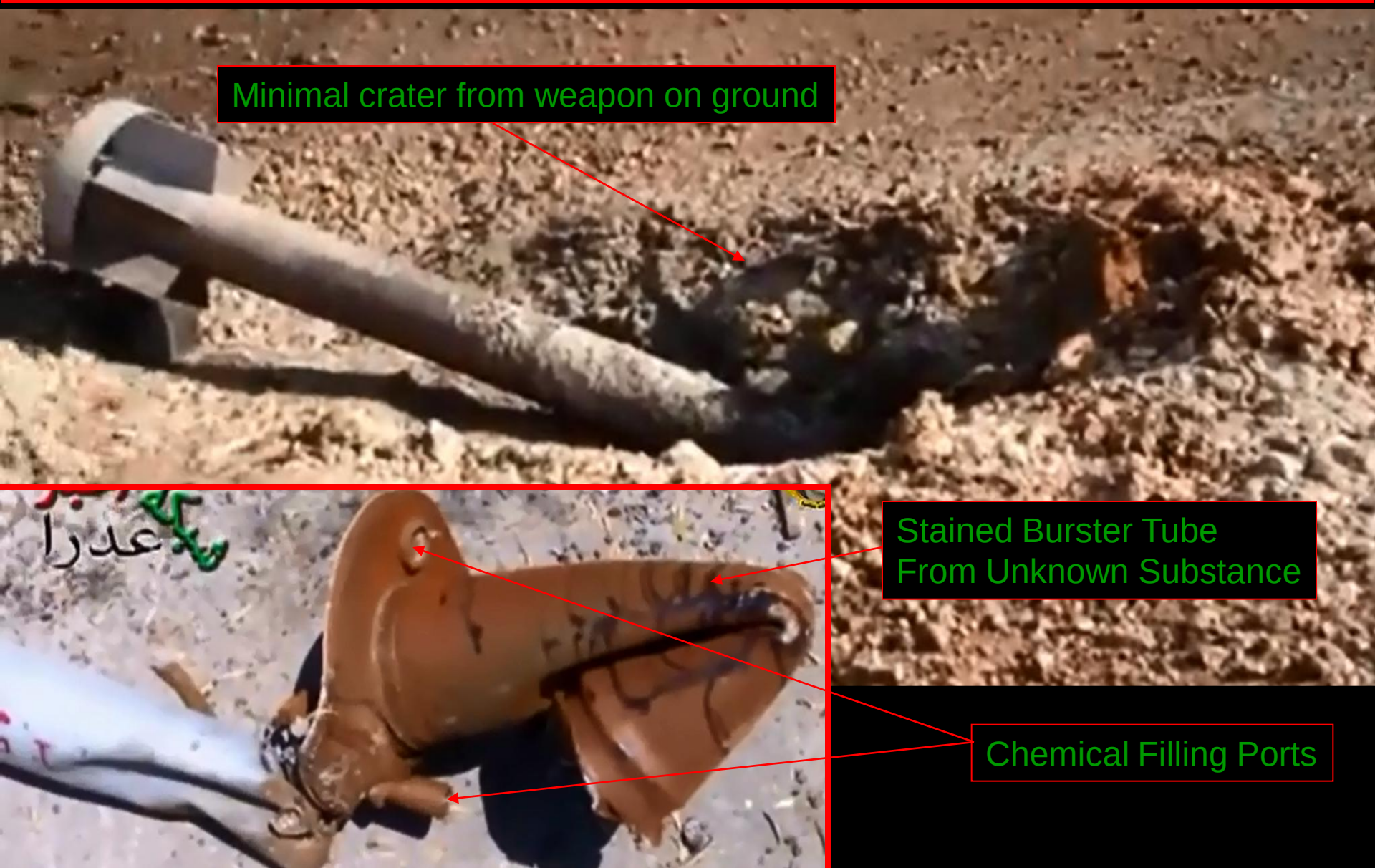
UN Weapon Inspector Analyzing Sold For Chemical Effects

No Crater Observed From Weapon Impact Suggesting The Device Did Bit Contain Much High Explosive

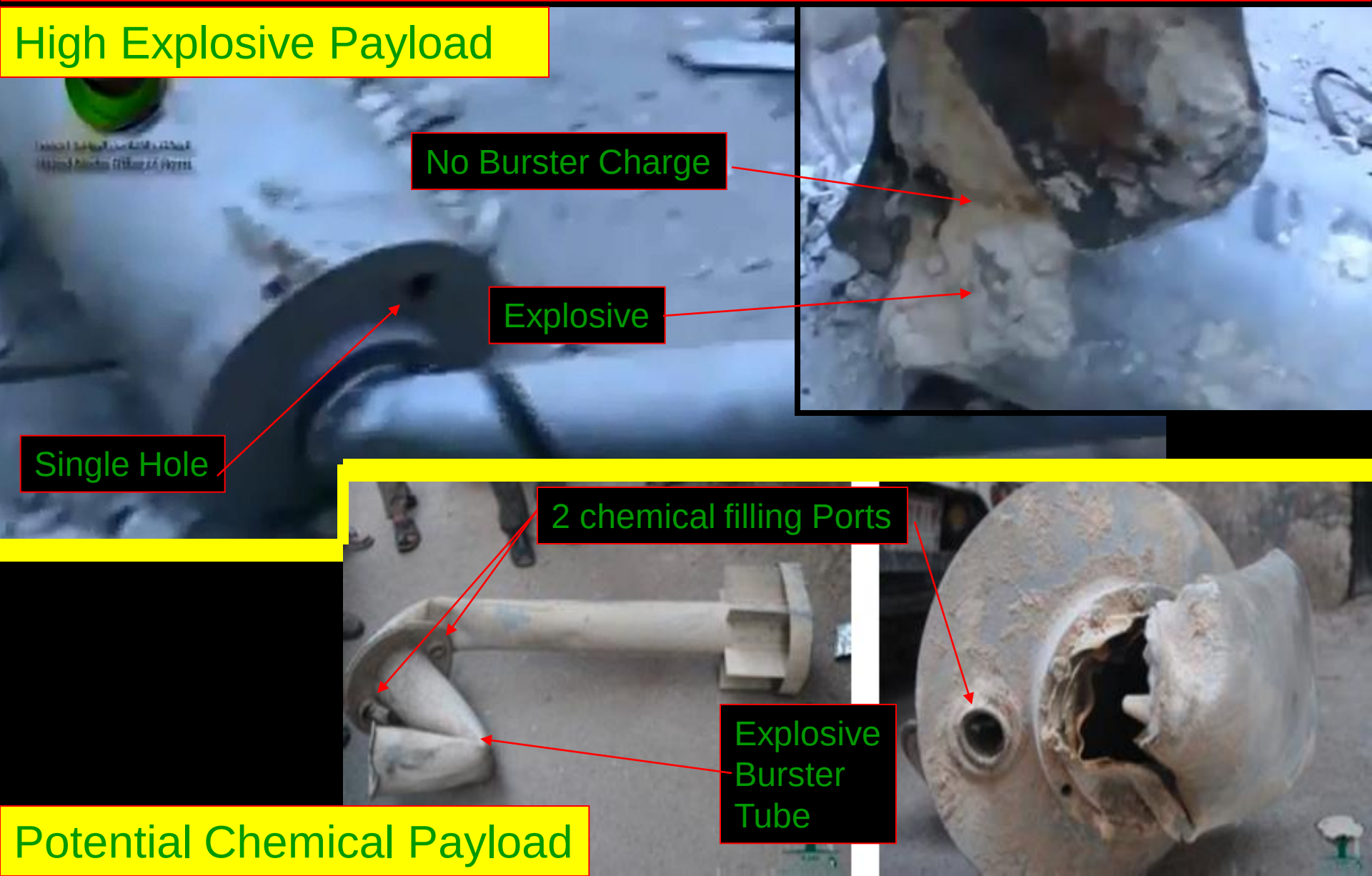
2 Filling Ports Seen On Warhead Bulkhead



Minimal Crater Seen with Clear View Of Filling Ports On Bulkhead



Difference In Syrian Payload Configurations When High Explosive And Potential Chemical Weapons Analyzed



Syria Appears To Posses Iranian Falagh 2 Rocket Launcher (330mm)

Weapon In Launch Position With Iranian Rocket Launcher

www.diomil.ir

FALAGH 2 ROCKET

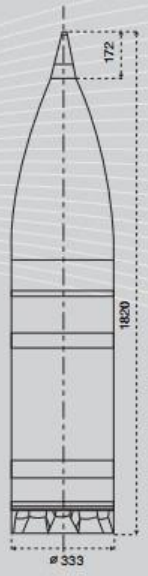
333 mm SPIN STABILIZED

General Specifications:

Having a wide spreading explosion rocket, 333 mm Falagh 2 has been designed to be deployed in attacking and defending positions. Reinforcement of artillery fires and destroying enemy's Forces and equipment are the other purposes of its design. This rocket can be installed on vessels.

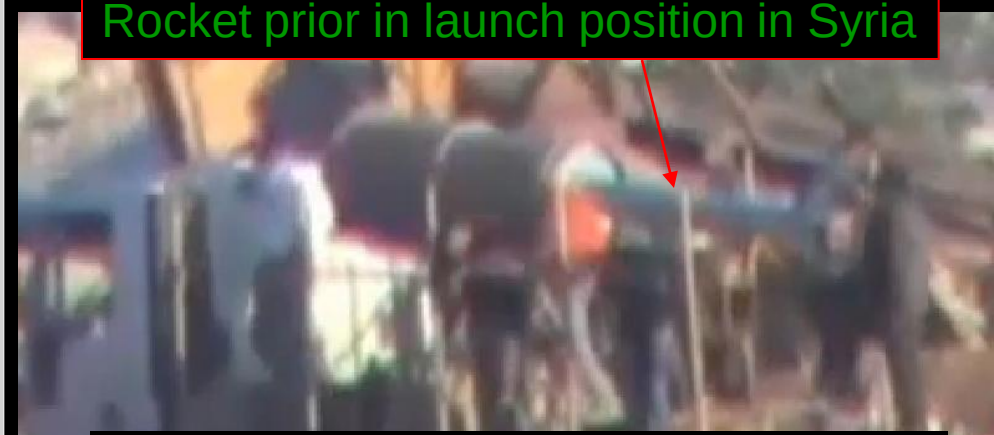
Technical Specifications:

Maximum Range in sea level	10. 8 km
Maximum flight altitude	3200 m
Fragmentation radius	300 m
Maximum speed	376 m/s
Average time of motor operation	1/85 m/s
Rocket length	1820 m/s
Rocket caliber	333 mm
Rocket weight	256 kg
Warhead weight	117 kg
Quantity per wooden box (can)	one round
Type of warhead	high explosive
Type of propellant	Double base



Pasdaran St., P.O.BOX:19585-777 Tehran,Iran.
Tel:+98 21 22 77 11 51 - 22 59 57 57 - 22 55 19 36 Fax:+98 21 22 77 11 53

Rocket prior in launch position in Syria



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Analysis Of Improvised Warheads In Syria

By: Richard M. Lloyd
Warhead Technology
Tesla Laboratory Inc.
(509) 979-3995
rlloyd@tesla.net

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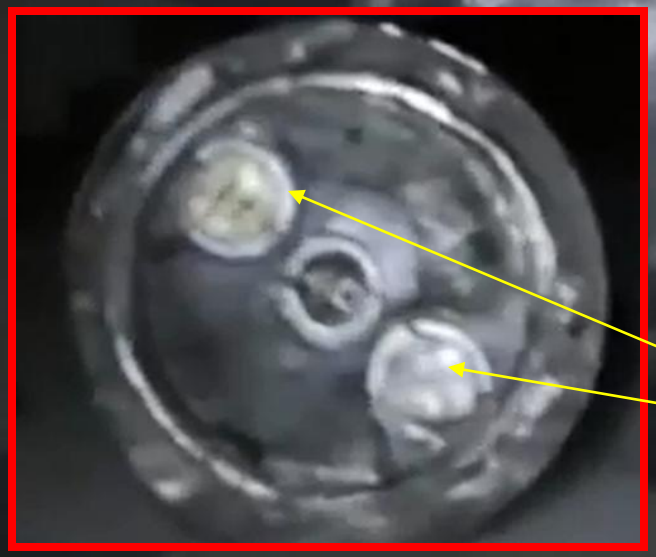
Russian S-25 Warhead Found In Syria

Side View Of Payload

Aft End



Payload contains 2 holes that appears to be filling ports for chemical agent

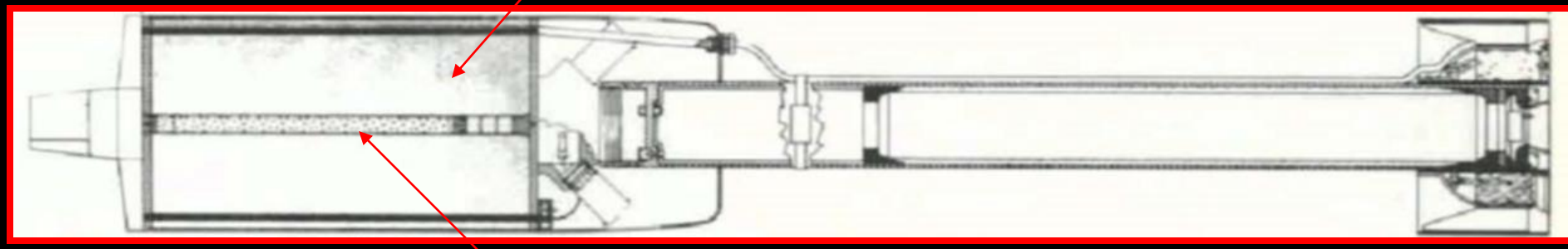
Enhanced View Of Warhead Aft Side Showing Bulk Head Design

Hole Port For Missile Attachment

Filling Port

Known SLUFAE Weapon Has Similar Features To Potential Chemical Weapons Found In Syria

SLUFAE Weapon



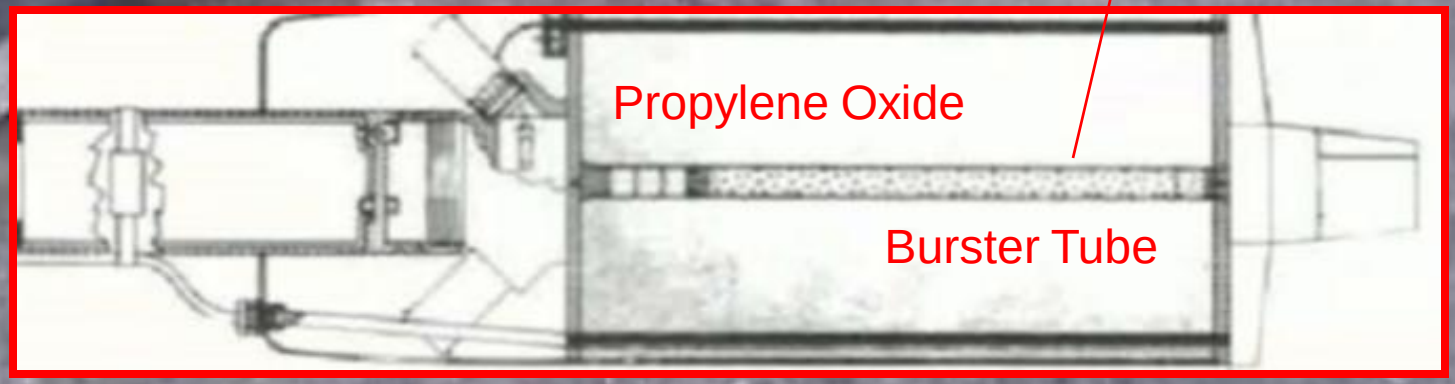
Syria Weapon

Close Up Of Weapon Detonated In Syria That Killed Many Animals With in 100 Yards From Device

Close up of filling port from another attack in Syria

Chemical Filling Port

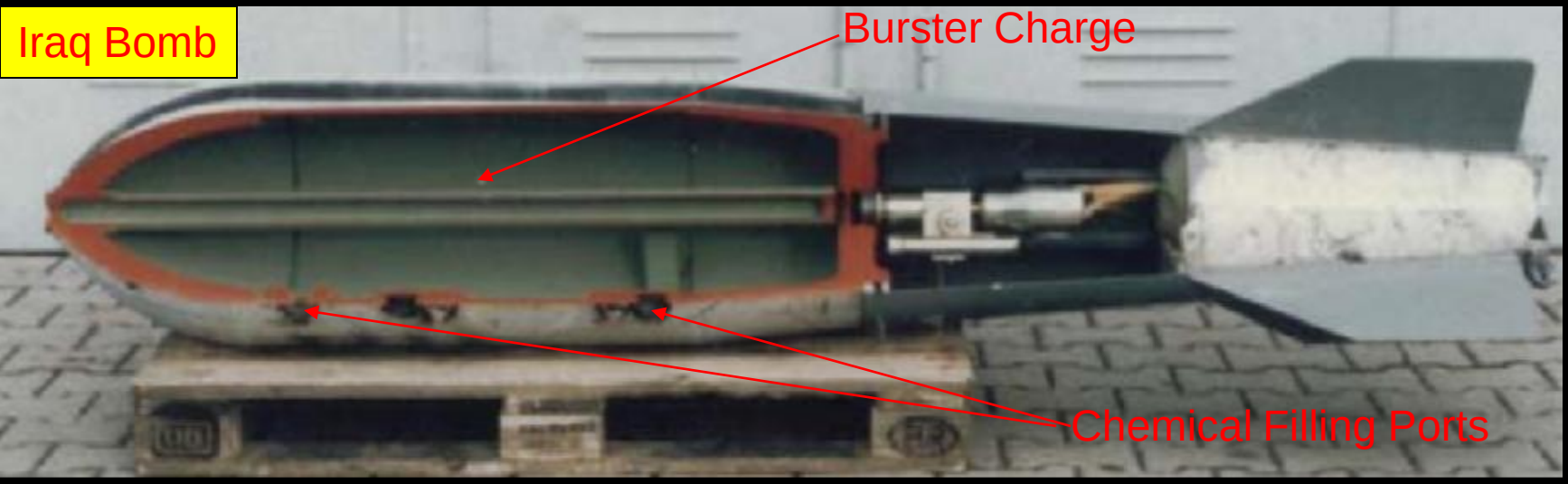
Explosive Buster Charge



SLUFAE Weapon

Iraq R400 Bulk Chemical Bomb Compared To Syrian Found Bomb

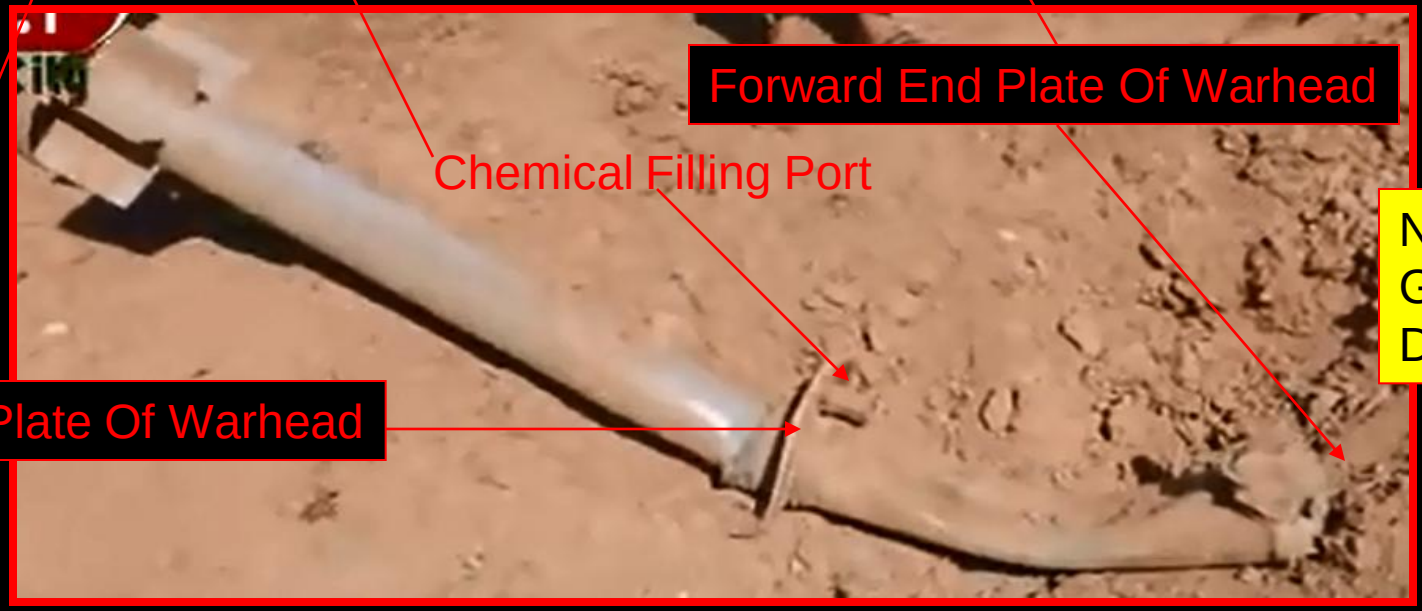
Iraq Bomb



Syrian Found Bomb

Potential Filling Port

Both Warhead End Plates Analyzed From Ground Impact
(Minimal Damage To Ground From Warhead Burst Strongly Suggests Chemical Attack)



Unique Payload Discovered In Syria

-The site I found this suggested it was a thermobaric or FAE payload.
1. Its not thermobaric because the payload would be totally destroyed
2. This payload can either be Fuel-Air-Explosive (FAE) or chemical payload
3. FAE warheads are complex and do not fit into the technology constraints of Syria. They also detonate above the ground (require altimeter).

Description of Payload Section

(No Damage Observed On Ground From Explosive Detonations)

Unique Barrel Bomb Found In Syria Are Dropped From A Helicopter in Populated Areas.

(This Device Could Also Use Chemicals)

I believe the dirt is packaged inside the payload to occupy volume so the explosive charges do not move.

Barrel Bomb

Steel Rebar Packaged Inside Bomb

Dirt Packaged Around Explosive Charges

Explosive Submunitions Are Packaged Inside The Barrel Bomb To Accelerate Rebar Rods

(Chemical Agents Could Also Be Used)

Submunitions Shell

Explosive Munitions Discovered Inside Barrel Bomb

Explosives

Explosive

Barrel Bomb

This weapon could also use chemicals inside the barrel instead of explosives

Barrel Bomb Deployment Scenario Can Either Use Explosive Or Chemicals As Shown Below

Bomb Prior Deployment

Explosive Timer Used To Initiate Device Where Altitude Must Be accounted For

Barrel falling to the ground

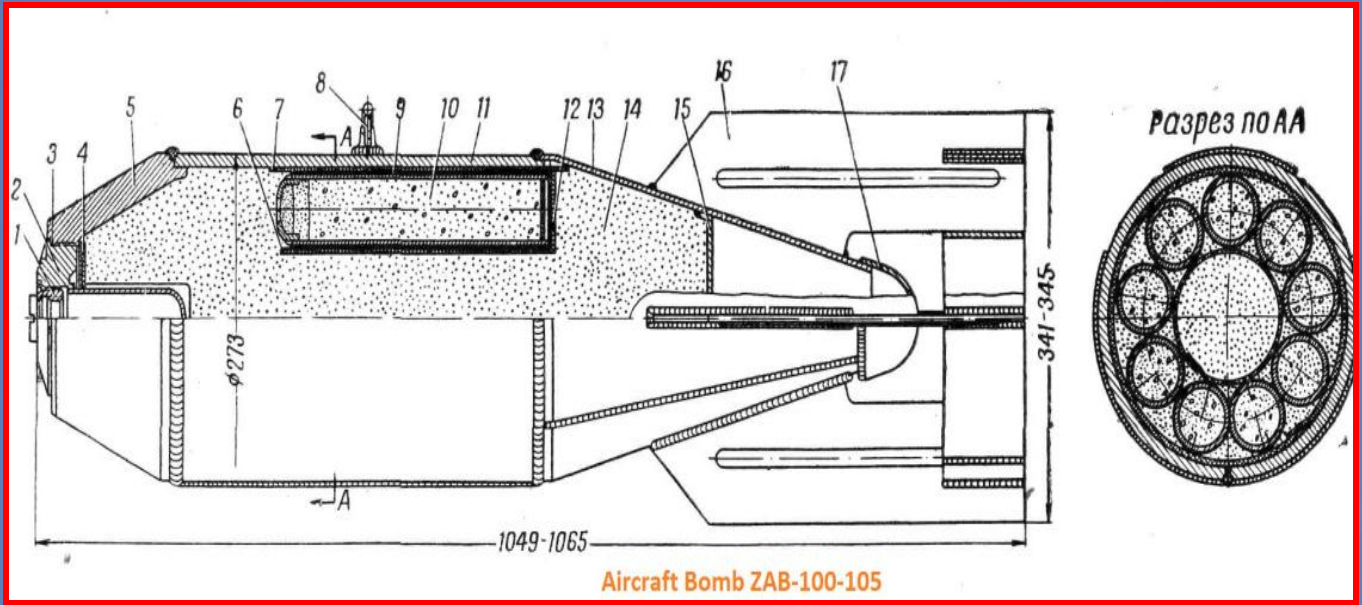
Detonation and Bomb Damage

Explosive/Incendiary Submunitions Have Been Used Extensively In Syria

(Chemical Submunitions Can Easily Be Configured In Design)

Free Falling Submunition Bomb Could Contains Chemical As Well As High Explosives

Russian Derived Design



Bomb Deployed From Helicopter

هذه هي الحاوية التي ترميها الطائرات ويصل وزنها الى 300 كغ وذات قوة تدميرية عالية

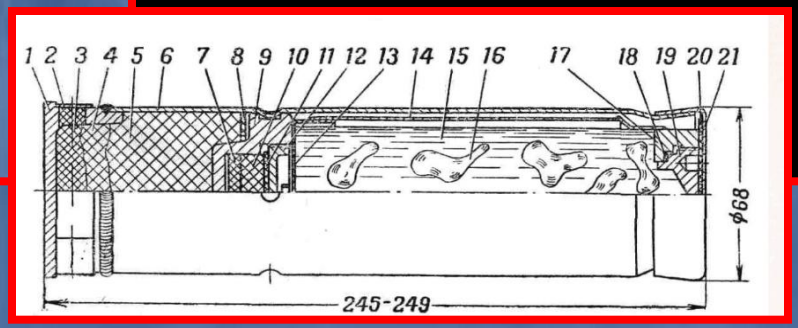
Submunitions Deployed From Bomb

Bomb Detonated

Deployed submunitions found on ground

Falling Submunitions From 1st Bomb

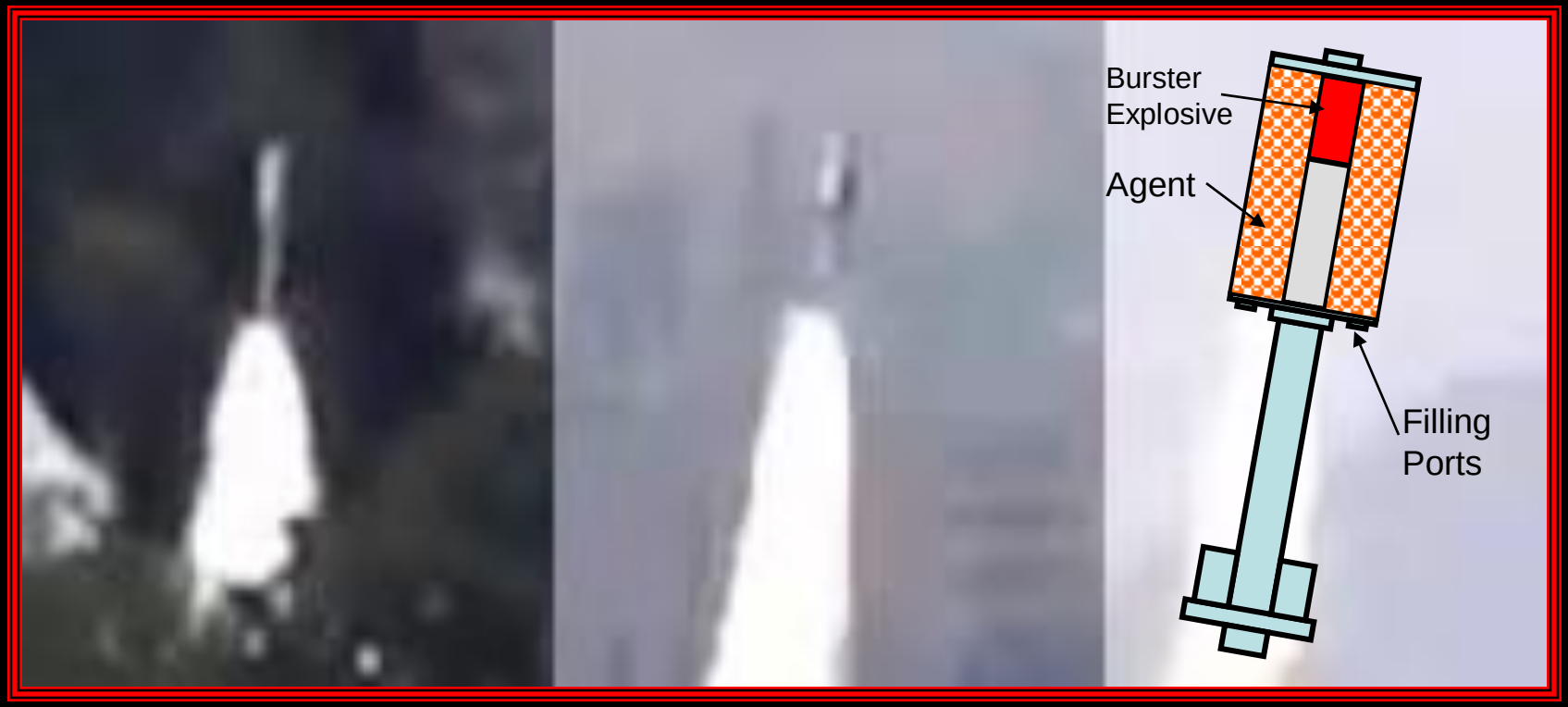
Incendiary Submunitions Falling To The Ground



Spherical Incendiary Device
Found In Syria

Submunitions Seen Falling
To The Ground

Chemical Deployment Concept Derived From Syrian Photos



By: Richard M. Lloyd
Warhead Technology
Tesla Laboratory Inc.
(509) 979-3995
rlloyd@tesla.net

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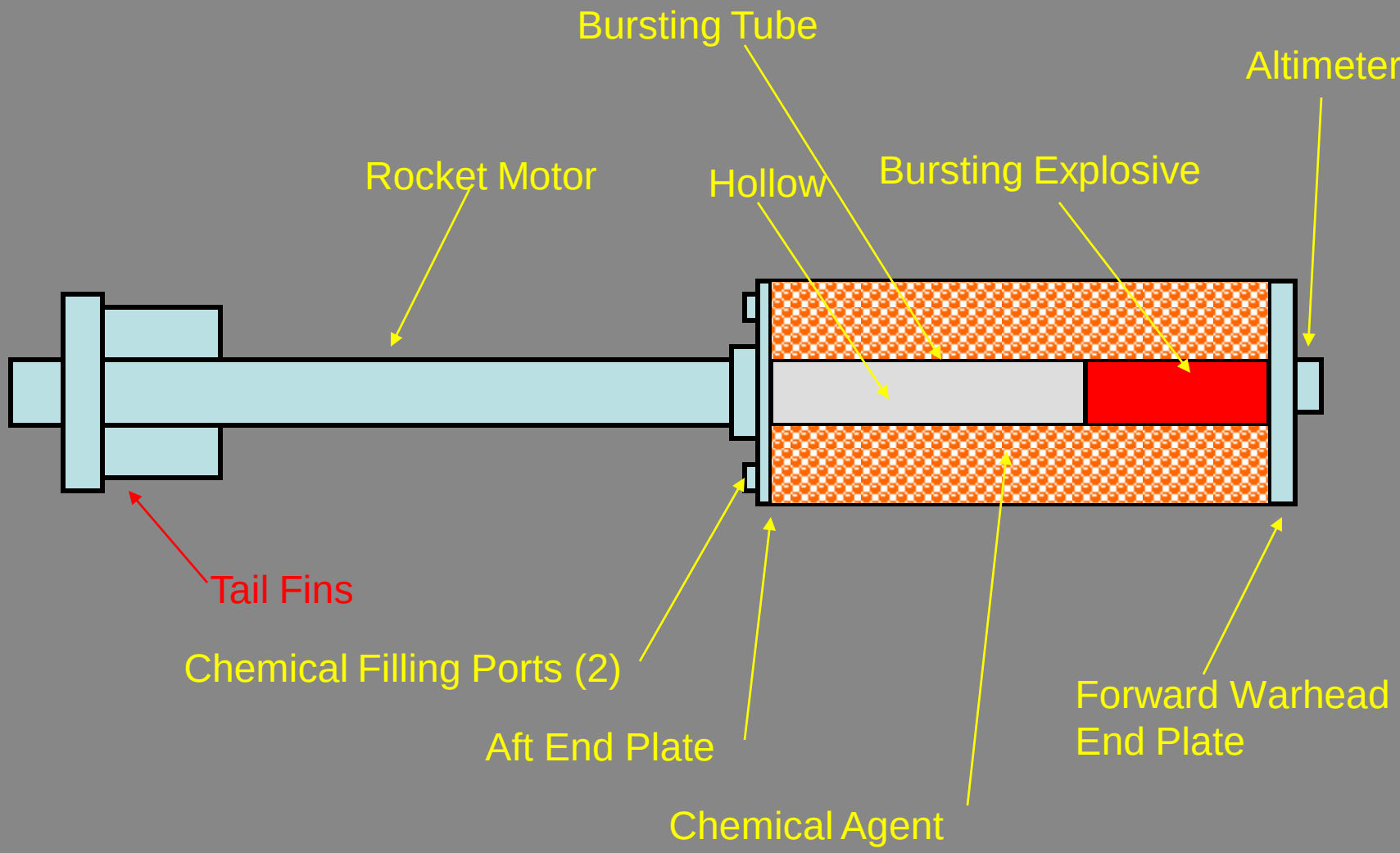
Estimate Of Chemical Weapon Based On Video And Photo Analysis

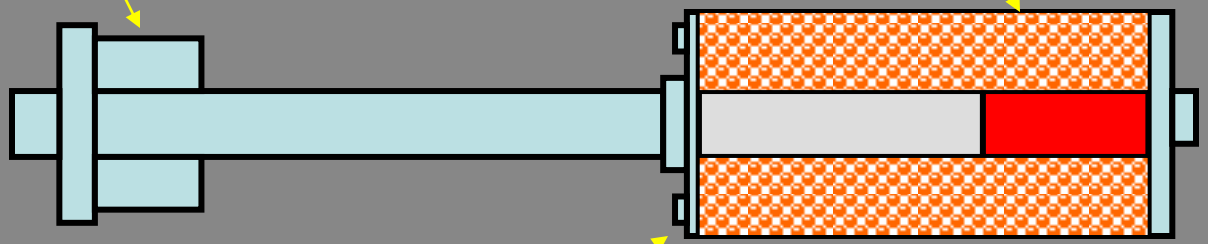


Proposed Chemical Device Compared To Actual Photos From Syria

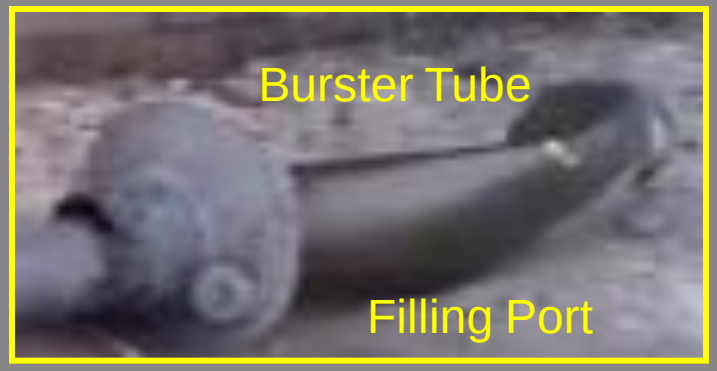
Fins/Rocket Motor

Removed Payload Skin

Russian Fuse

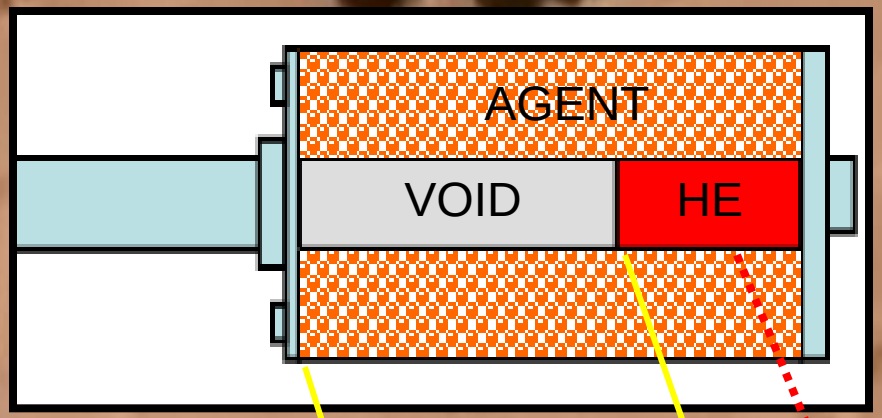


Aft Endplate



Forward
End Plate

All Warhead Burster Charges Are Destroyed at The End of The Warhead Suggesting Small Explosive Charge Is Incorporated At the End of the Payload



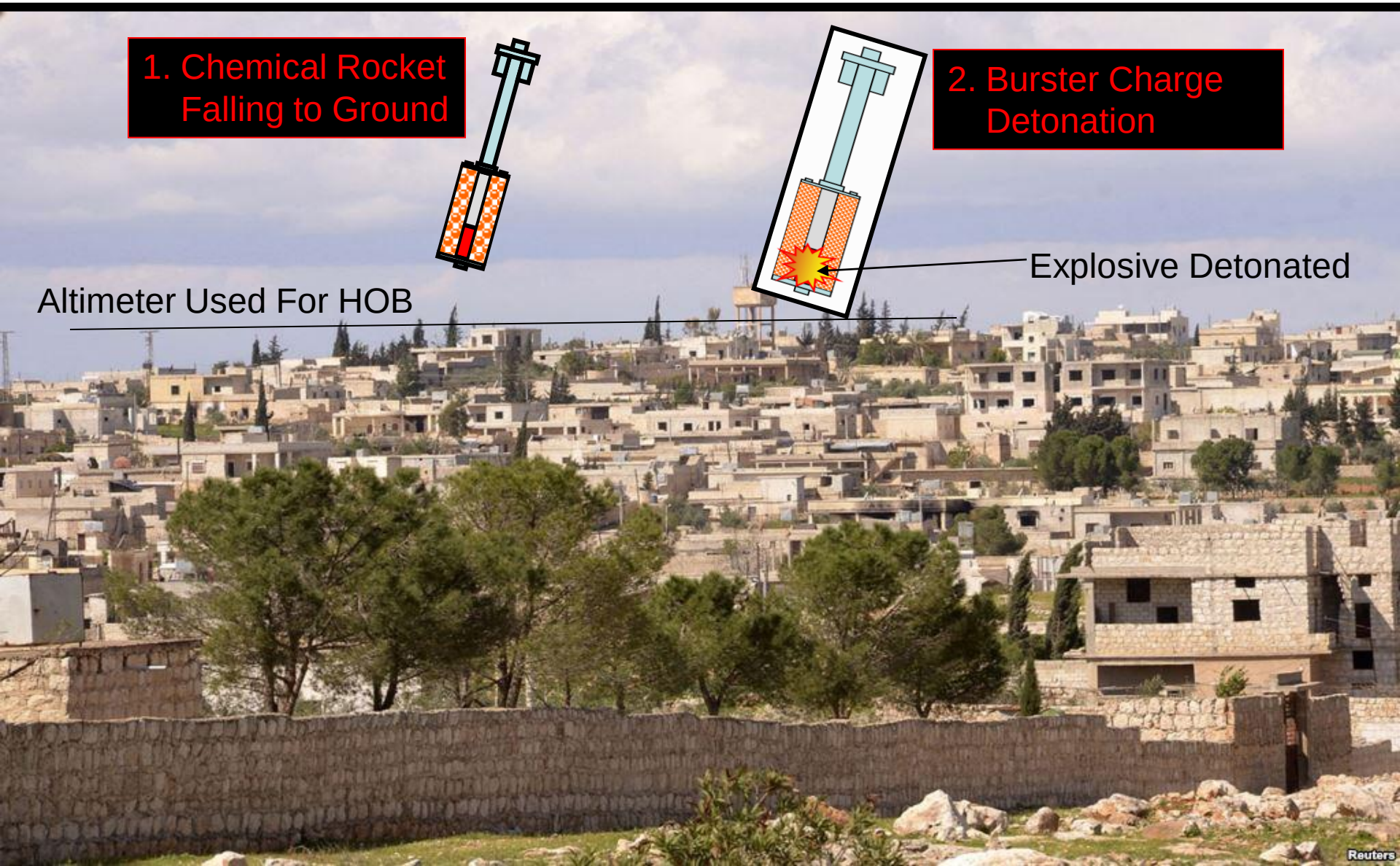
Payload Description

Destroyed Section Of Burster Tube

The Tube Is Bent From Impacting The Ground

Burster Charge Not Destroyed From High Explosive Burst

Predicted Mode Of Operation Of Syrian Chemical Weapon

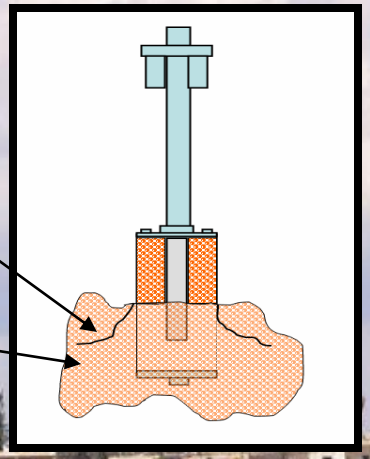


Predicted Mode Of Operation Of Syrian Chemical Weapon

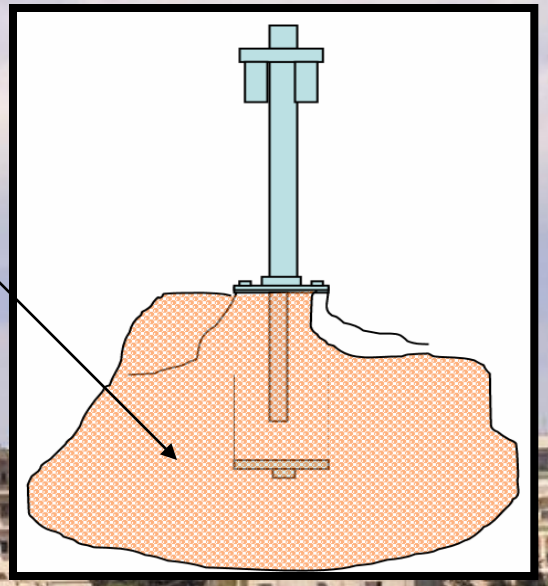
3. Chemical Deployment

Payload Skin Peels Back

Expansion of Agent From Burster Charge

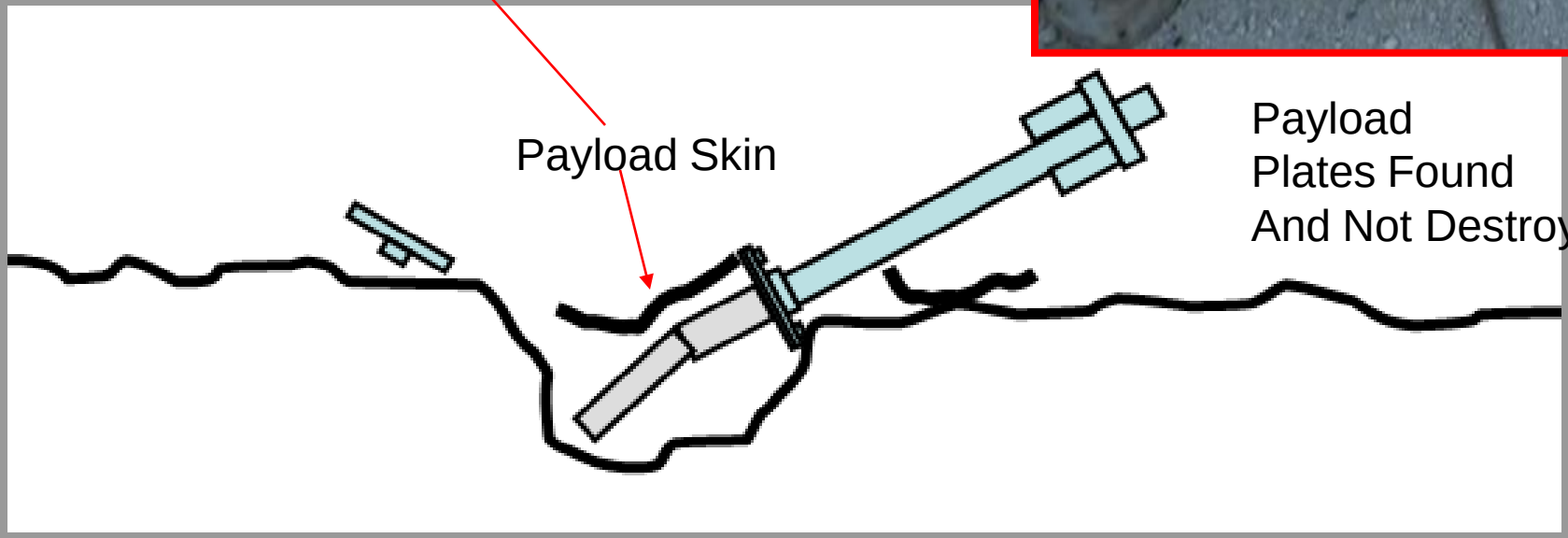


Expansion Of Agent From High Shear Stripping From Rocket Velocity



Rocket Payload Impacts Ground Ahead Of Agent And Breaks Apart

Small Craters And Intact Payloads Strongly Suggest Minimal High Explosive Was Used In This Weapon System.



Selected Burster Charges From Rocket Warheads Deployed In Syria

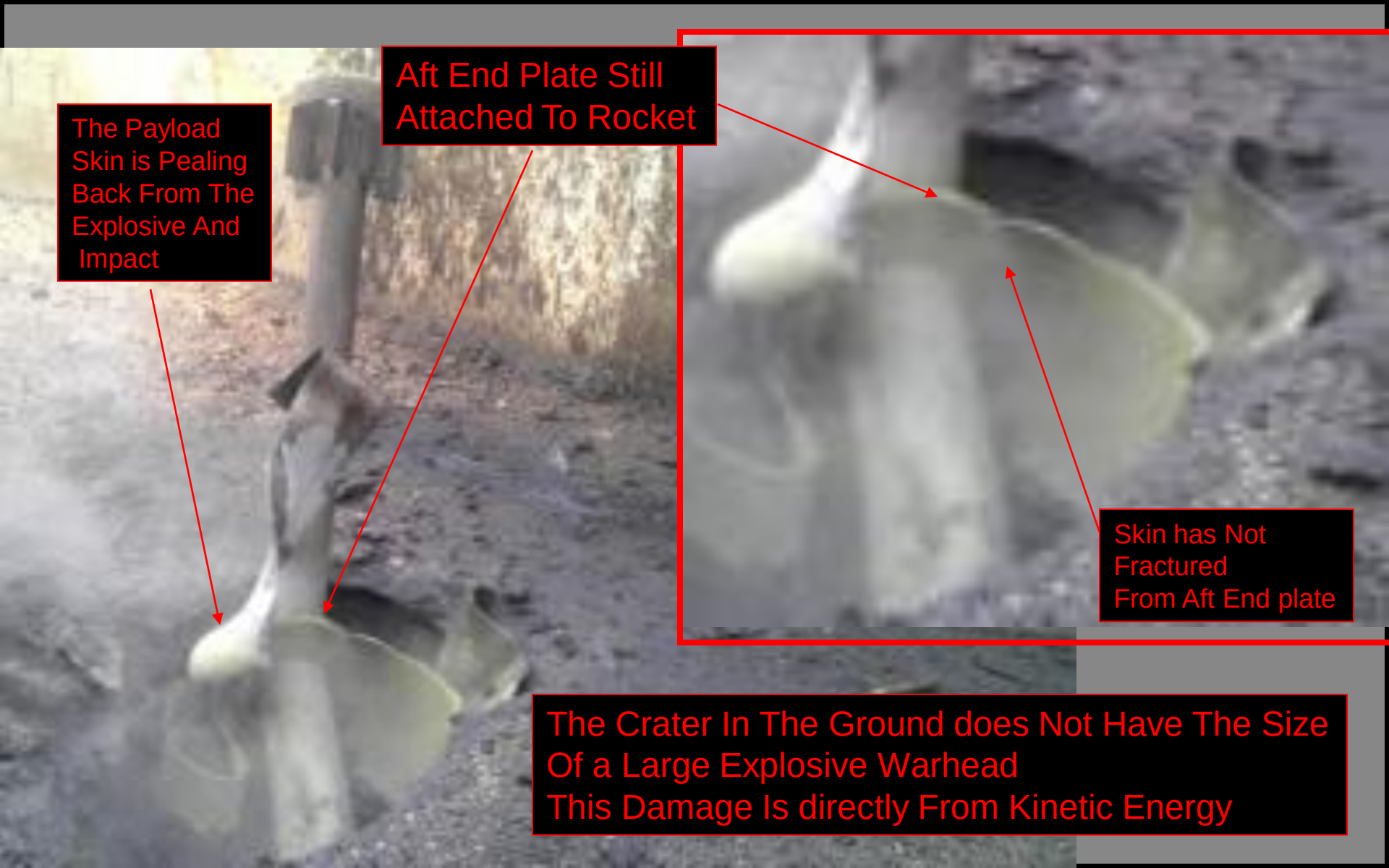
All Burster Charges Show Explosive Damage Near The End OF The Payload

Burster Tube

Burster Tube Is Bent From Hitting The Ground

Destroyed Section Of Burster Tube From Explosive Deployment OF Chemical

Syrian Payload Skin Is Blown Back From Explosive Burster Charge



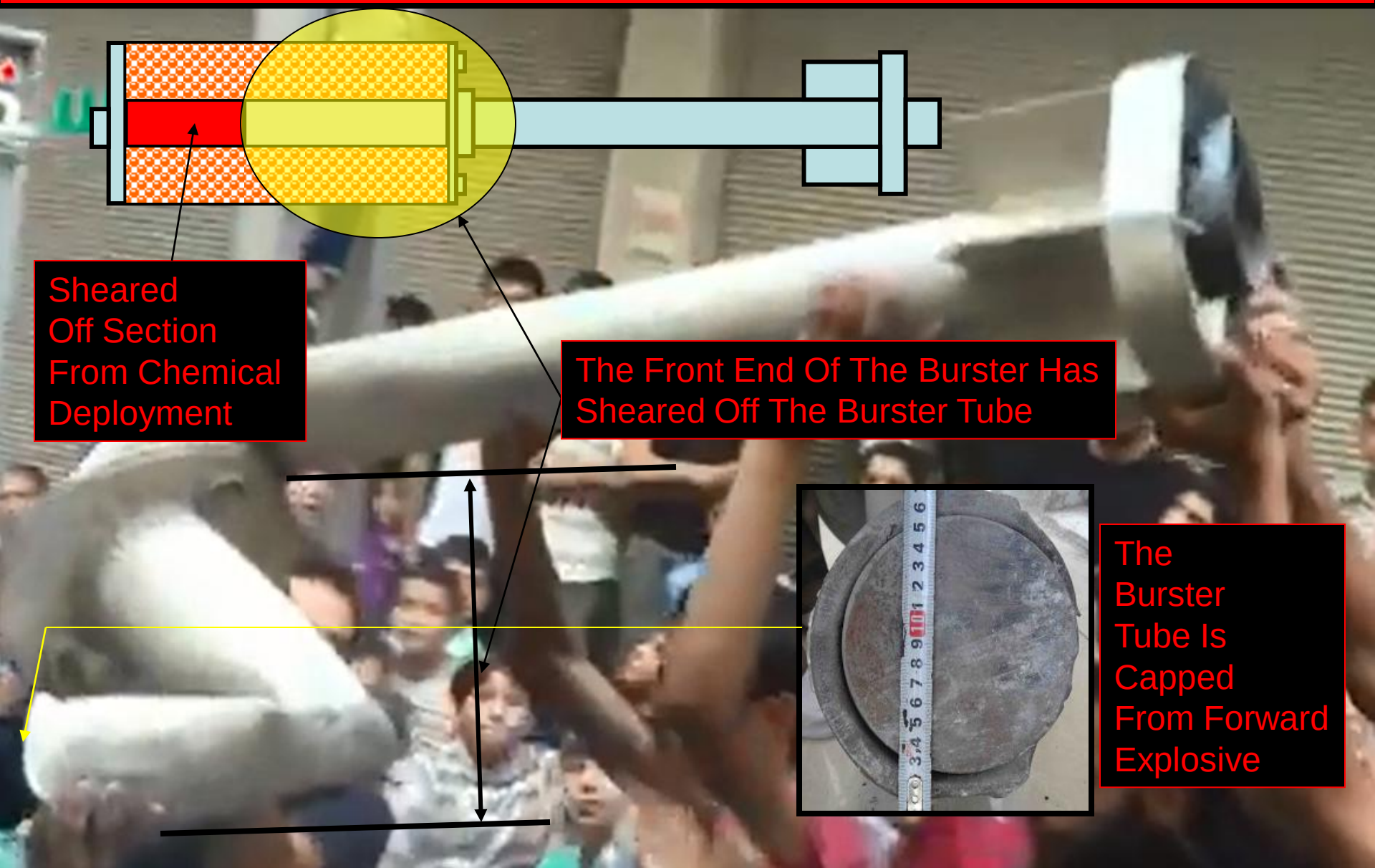
Payload Skins Found Attacked Or Near Rocket Warhead On The Ground

Warhead Skins Discovered Next To Payloads From 3 Different Attacks

Payload Skins

Explosive Detonator

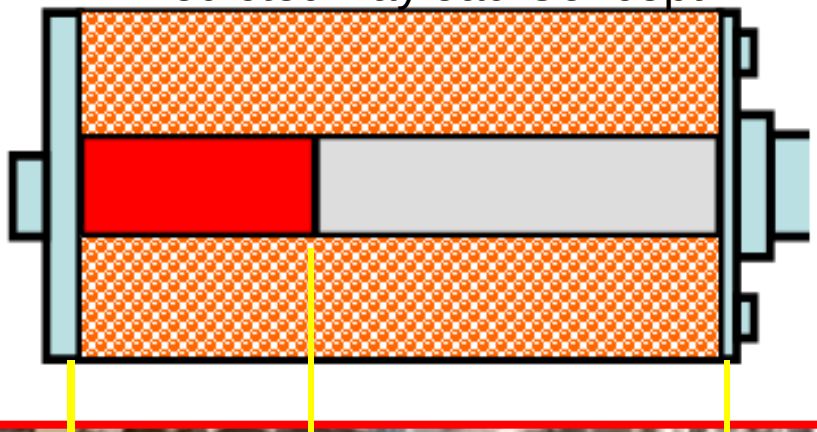
This Payload is Slightly Different Where The Front Burster Charge Sheared Off The Burster Tube



Another View Of Weapon Showing Burster Is Capped Off From Explosive Charge

Burster Tube Also Capped

Predicted Payload Concept



Capped Burster Tube

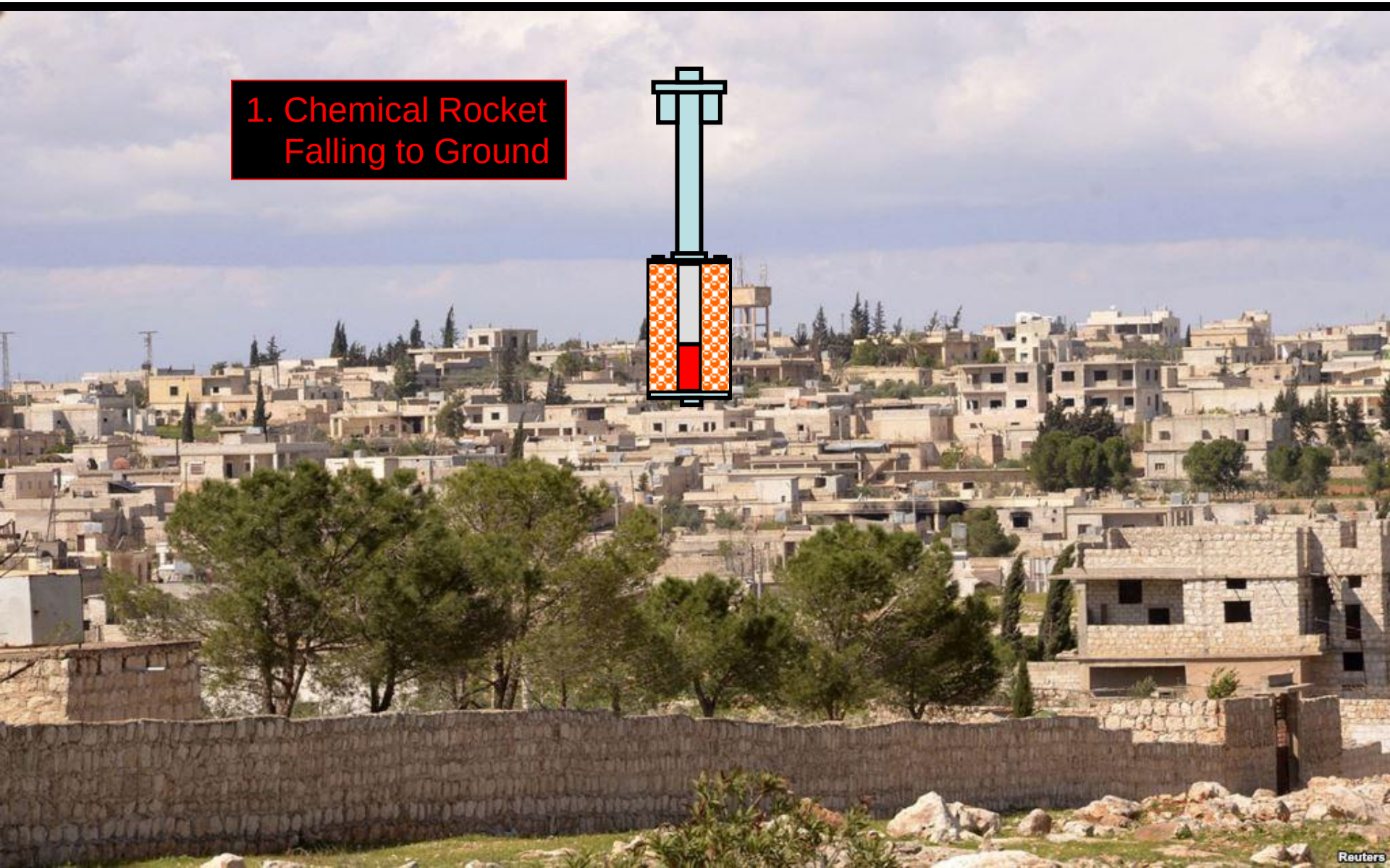
Rocket

Agent Filling Port

Destroyed Warhead Section

Recovered Warhead Section

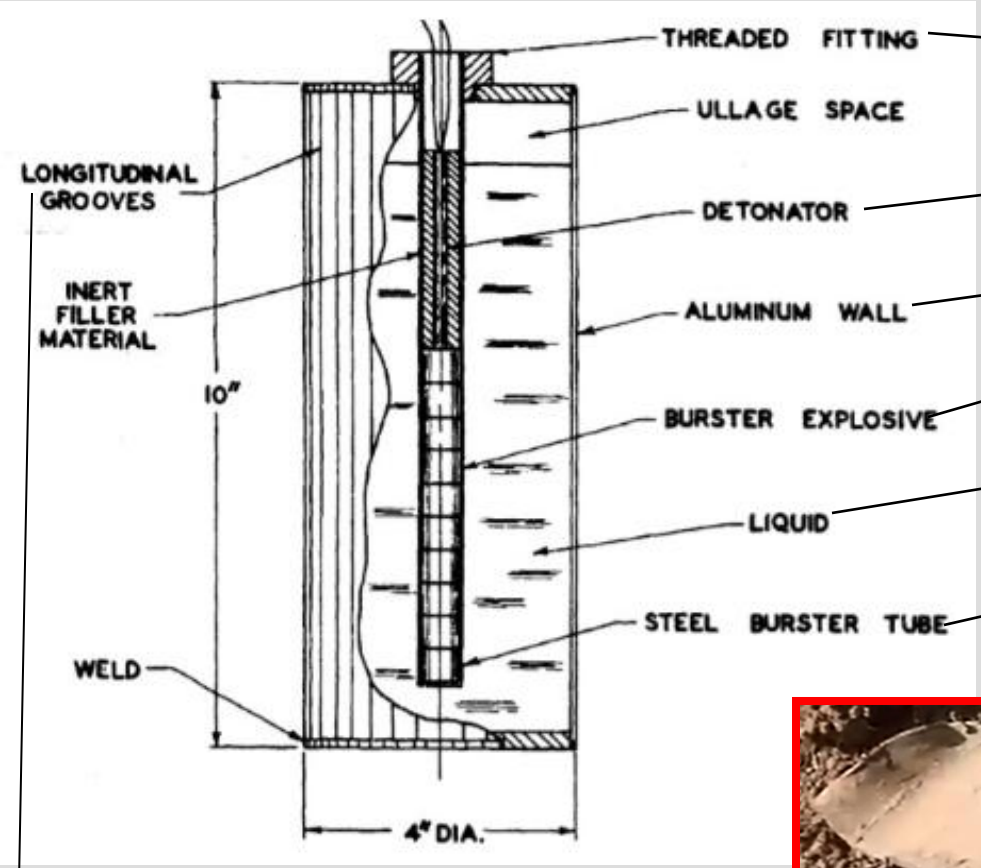
Predicted Mode Of Operation Of Syrian Chemical Weapon Given Ground Impact

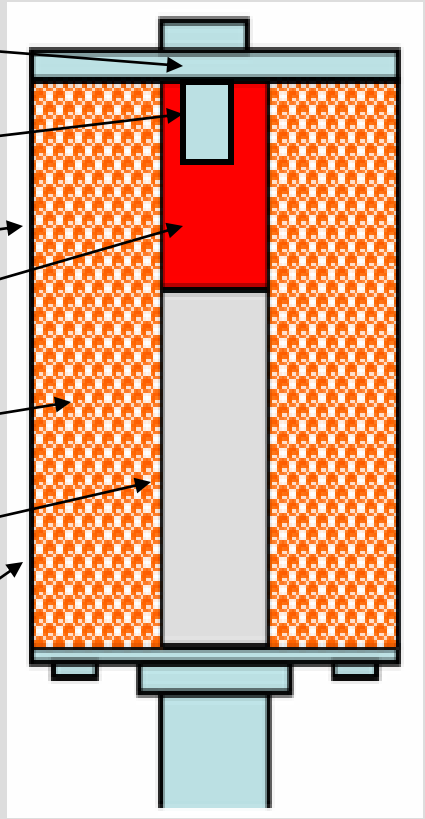


Key Chemical Warhead Design Parameters That Syrian Designers Followed

- The design of the rocket is intimately related to the method of ejecting the agent at the target and the resulting ground contamination achieved.
- The angle of fall and velocity of the rocket during the period of ejection of the agent are important to the determination of the ejection system, fuse functioning, particle size distribution, and ground contamination pattern.
- The agent and ejection mechanism are the payload that the rocket must carry and all the rocket payloads have the key characteristics of chemical payloads.

Comparison Of Proposed Syrian Chemical Warhead To US Test Munitions





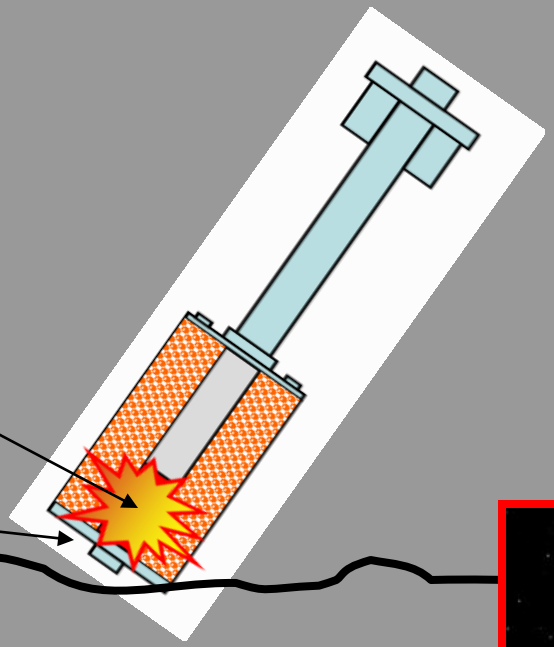
The Syrian Found Warhead Cases Look Rectangular and Slight Scoring Could Have Been Performed

Warhead Panel Shows No Sings Of Fracture

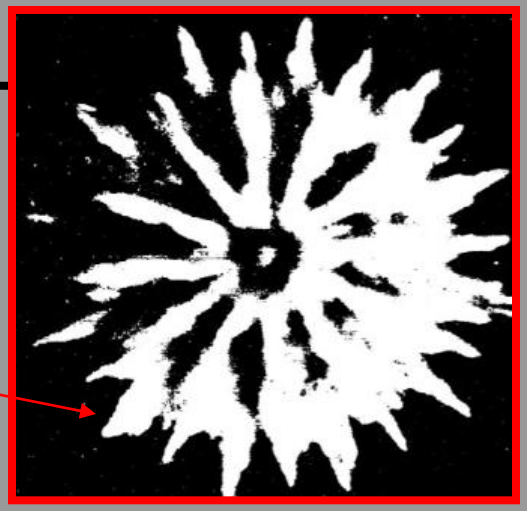
Predicted Mode Of Operation Of Syrian Chemical Weapon Given Ground Impact

-The explosive energy and kinetic energy would generate a small crater in the ground.

2. Burster Charge Detonation



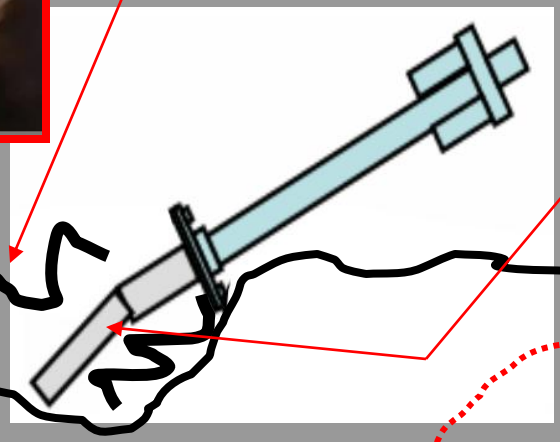
Chemical Weapon Deployment



Predicted Mode Of Operation Of Syrian Chemical Weapon Given Ground Impact

3. Chemical Agent Reflects Off The Ground Into The Air

Skin Folds From Energy Of Ground Impact



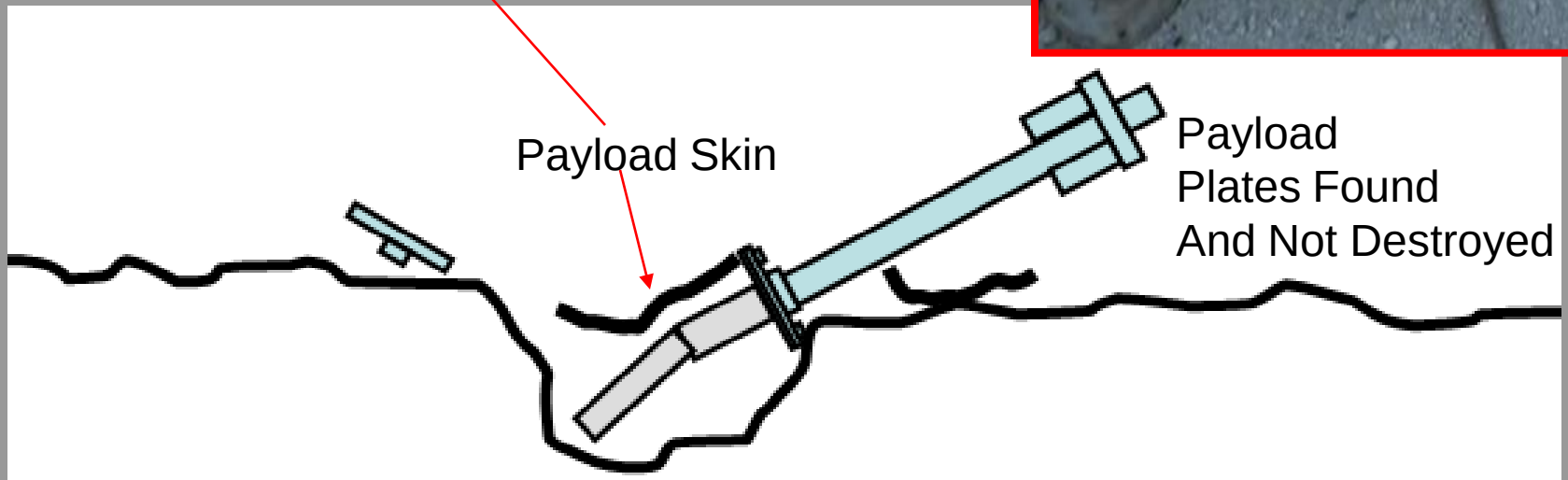
Folding Of Skin And Bending of Hollow Burster Tube

Ground

Large Crater if High Explosive Payload Was Used

Ground Impact Generates Small Crater From Small Burster Charge And Rocket Kinetic Energy

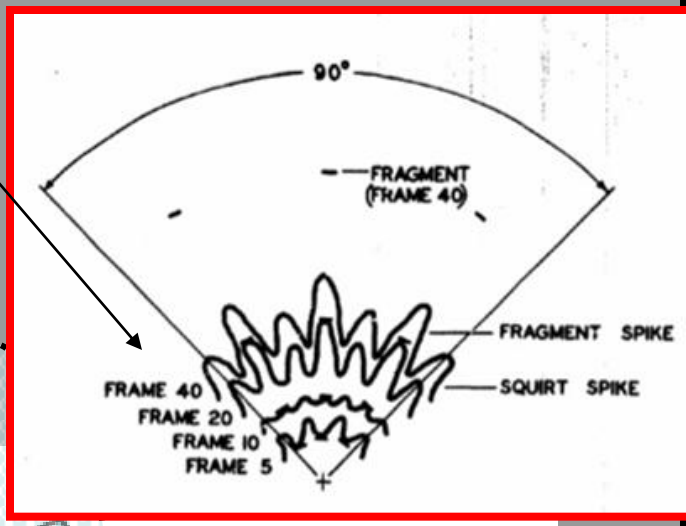
Small Craters And Intact Payloads Strongly Suggest Minimal High Explosive Was Used In This Weapon System.



Small Crater As Shown In Actual Syrian Impact

Ground Impact Generates Small Crater From Small Burster Charge And Rocket Kinetic Energy

Chemical Agent Reflects Off The Ground And Forms A Cloud Of Particles OF Many Different Sizes



Agent Release Off Ground

Wind Effects

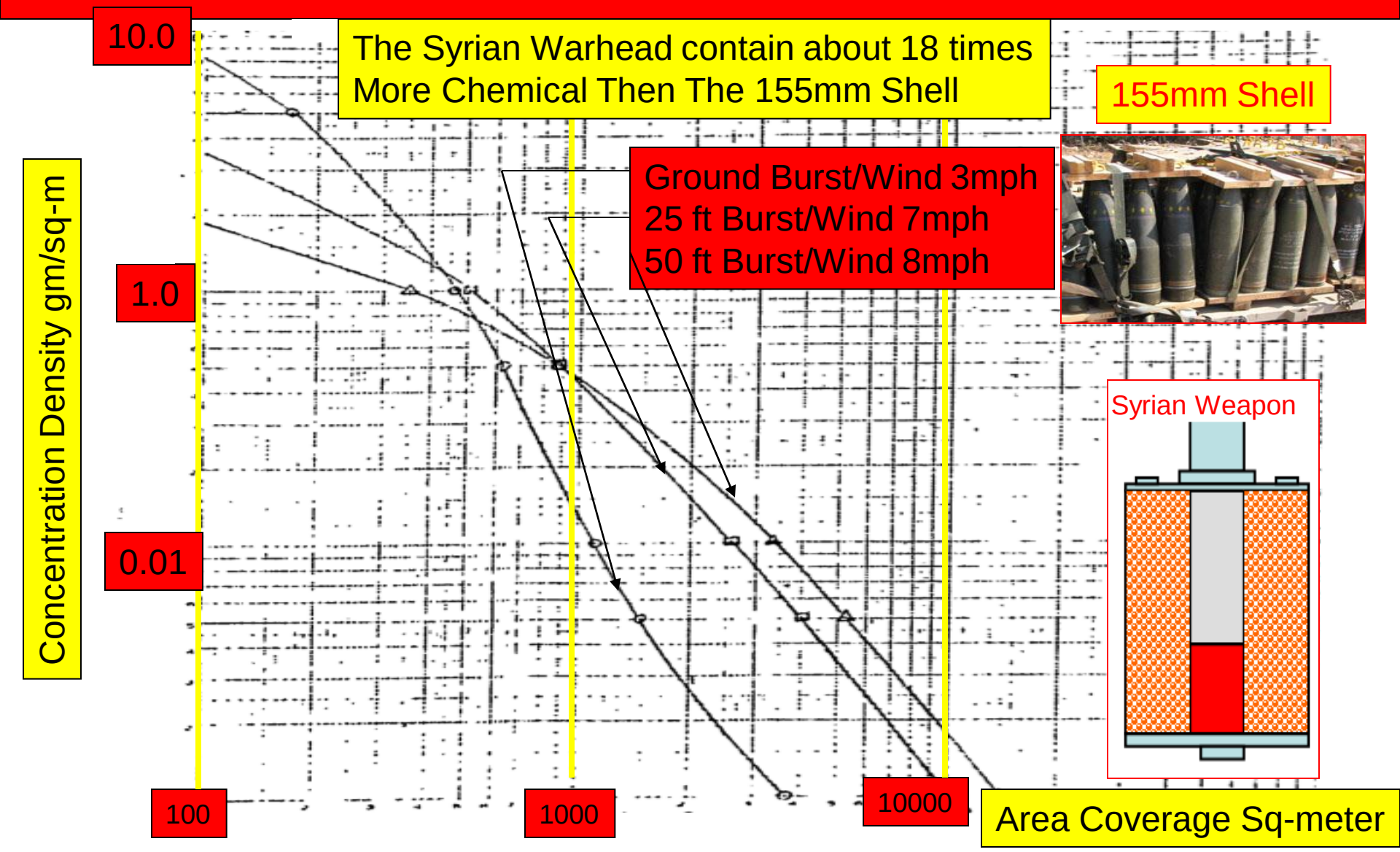
Deployed Chemical Agent

Payload Plates Found And Not Destroyed

Payload Skin

Small Crater As Shown In Actual Syrian Impact

Area Coverage Of Actual Chemical Agent For Data 155mm Shell



Total Area Coverage by Ground Deposition From Weapon Detonation From Real Data

Field test	Agent/ burster ratio	Height of burst	Agent	Contamination density (s.m.)						
		ft.		0.01	0.05	0.1	0.5	1	5	10
1781	2/1	gr.	Bis	3,700	1,500	1,150	620	480	170	60
355 [illegible]	2/1	25	Bis	23,000	[illegible]	1,900	600	280	0	
E1	2/1	25	VX	10,000	3,700	2,200	650	387	110	0
E2	2/1	25	VX	11,000	4,700	3,200	1,200	640	10	0
F1	2/1	50	VX	17,300	5,600	3,680	990	270	0	0
F2	2/1	50	VX	20,900	6,500	3,900	910	230	0	0
F3	2/1	50	VX	14,560	5,700	3,700	870	290	0	0
F4	2/1	50	VX	11,670	5,000	3,400	900	400	0	0
F5	2/1	50	VX	10,800	5,700	3,800	1,040	560	0	0
354 B1	2/1	50	Bis	11,000	4,400	2,700	650	330	0	0
B2	2/1	50	Bis	10,300	3,800	1,900	700	400	0	0
1784	2/1	50	Bis	18,500	7,700	5,100	920	215	0	0
1785	2/1	50	Bis	12,600	4,600	3,100	1,180	370	0	0
1783	18/1	gr.	Bis	1,700	990	760	370	270	140	90
179[illegible]	[illegible]	50	Bis	5,750	3,600	2,900	1,450	820	65	0
1791	[illegible]	50	Bis	4,900	2,250	1,550	820	520	150	20
1792A	18/1	50	Bis	12,640	3,810	2,140	930	500	100	0
355 G2	18/1	50	VX	17,500	6,500	4,200	1,450	700	0	0
G3	18/1	50	VX	8,200	4,300	3,100	1,100	590	80	0

Ground Burst

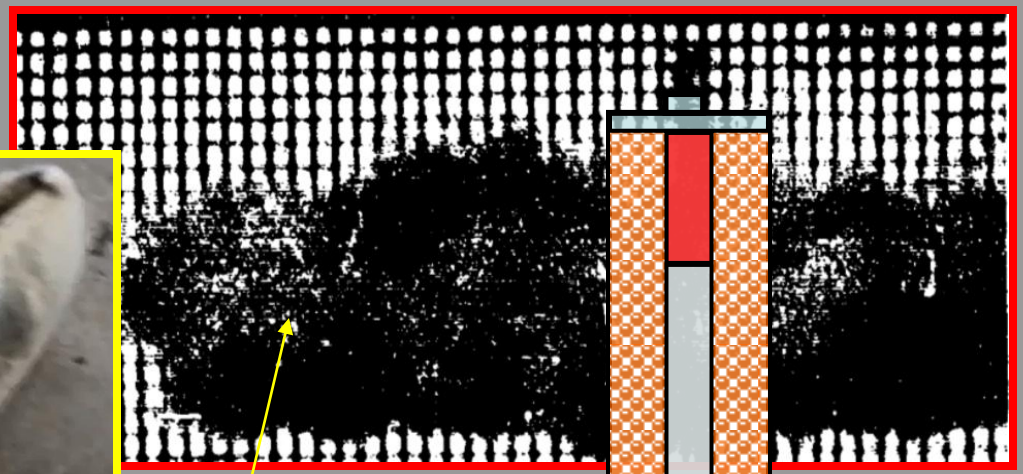
Ground Burst

Cloud Speed as Function of Volume For 83 Pound Device

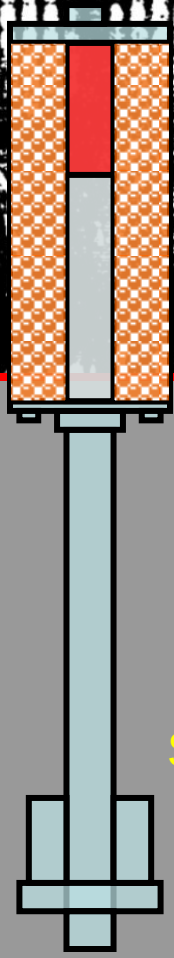
(Similar To Syrian Device Weight)

Bend in hollow burster tube
Caused from ground impact

Syrian Device



Expansion Of
Chemical Agent



Syria Rocket

Chemical Cloud
Expansion Velocity