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      /_____/_____
    /
  / UNCONVENTIONAL
 / WARFARE          Devices and Techniques //
\
 \_____ Written By   //
  \_____ Video Vindicator //
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/  SHADOWS OF IGA  /\_ _ \
/          707-528-7238 / /
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FUSE CORD:

- (1) This item consists of a continuous train of explosive or fastburning material enclosed in a flexible waterproof cord or cable. It is used for setting off an explosive or combustible mixture of powders by action of the fuse flame on the material being ignited. Fuse cord can be initiated by a match flame, using a specific procedure, or with a punk (like you get with sparklers). Fuse cord burns at a uniform rate allowing the user to be away from the functions.
- (2) Fuse cord does not directly ignite any incendiaries listed in File 4 but is a primary initiator for all igniters listed in File 3 except:

Powdered Aluminum-Sulfur Pellets and Subignitors for Thermite

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.....      1- Black Powder Core
.:   3  :.    2- Fiber Wrapping
.:  =2=  :.    3- Waterproofing
:   =   =  4   4- Outer Covering
.:  = 1  = :.
.:  ===  :.
:.....:

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cord is 0.2 inches (a little larger than 3/16 of an inch). The fuse burns inside the wrapping at a rate of about 40 seconds per foot. It must be tested before use to verify the exact burning rate.

.....	1- Black Powder Core
.. 3 ..	2- Fiber Wrapping
.. =2= ..	3- Waterproofing
: = = 4	4- Outer Covering
.. = 1 = ..	
.. === ..	
:.....:	

Safety Fuse M700: This fuse is similar to the above fuse and may be used interchangeably with it. The fuse is dark green cord 0.2 inches in diameter with a plastic cover, either smooth or with single painted abrasive bands around the outside at 1 foot or 18 inch intervals and double painted abrasive bands at 5 foot or 90 inch intervals depending on the time of manufacture. These bands are provided to make measuring easy. They are abrasive so that they can be felt in the dark. The fuse burns inside the wrapping at a rate of about 40 seconds per foot. It must be tested as above to verify the exact burning time.

NOTE: A commercial item can be substituted for either of the above US Army issue items. The commercial fuse is 0.1 inch (about 3/32 inch) in diameter and is coated only with waterproofing lacquer. This fuse can be easily ignited by holding the free end in a match flame because the outside covering is flammable.

-Preparation

NONE.

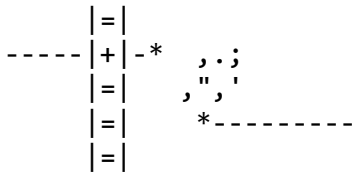
-Application

(1) GENERAL

- (A) Cut and discard a 6-inch length from the free end of the fuse roll. Do this to be sure that there is no chance of misfire from a damp powder train because of absorption of moisture from the open air. Then cut off a measured length of fuse to check the burning rate before actual use.
- (B) Cut the fuse long enough to allow a reasonable time delay in initiation of the incendiary system. The cut should be made squarely across the fuse.
- (C) Prepare the fuse for ignition by splitting the fuse at one end to a depth of about one inch. Place the head of an unlighted match in the powder train.

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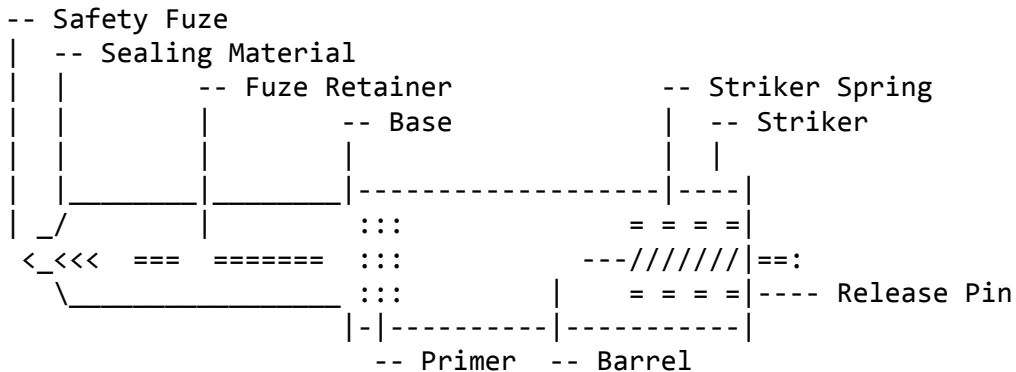
- (D) Insert the other end of the fuse into a quantity of an igniter mixture so that the fuse end terminates near the center of the mixture. Be sure the fuse cord is anchored in the igniter mixture and cannot pull away. In case of a solid igniter material such as Fire Fudge, the fuse is split to about one-half inch at the end opposite the end containing the match in the powder train. This split fuse end is wedged over a sharp edge of the solid igniter material. Be sure the black powder in the fuse firmly contacts the solid igniter. If necessary, the fuse cord can be held firmly to the solid igniter with light tape.
- (E) The fuse is initiated by lighting the match head inserted in the split end of the fuse with a burning match.



- (F) Two standard fuse lighters, the M2 and M60 are available in demolition kits for positive lighting of Blasting Time Fuse and Safety Fuse M700 under all weather conditions--even underwater if it is properly water-proofed. The devices are manually operated. A pull on the striker retaining pin causes the striker to hit the fuse.

NOTE: These devices are not recommended where silence is required because a report is heard when the primer is fired.

(2) M2 FUSE LIGHTER



The attachment and operation of the M2 Fuse Lighter are as follows:

- (A) Slide the pronged fuse retainer over the end of the fuse and firmly seat it.
- (B) Waterproof the joint between the fuse and the lighter, if necessary, by applying a seal compound (putty or mastic).
- (C) In firing, hold the barrel in one hand and pull on the release pin with the other hand.

(3) M60 FUSE LIGHTER

The attachment and operation of the M60 Fuse Lighter are as follows:

- (A) Unscrew the fuse holder cap two or three turns
- (B) Press the shipping plug into the lighter to release the split grommet, and rotate the plug as it is removed.
- (C) Insert end of fuse in place of the plug until it rests against the primer.
- (D) Tighten the fuse holder cap sufficiently to hold the fuse tightly in place and thus waterproof the joint.
- (E) To fire, remove the safety pin, hold the barrel in one hand, and pull on the pull ring with the other hand

IMPROVISED STRING FUSE:

-Description

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Igniter
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  :.....: .....:
  :.....: .....:
  :.....: .....:
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String Fuse

- (1) This item consists of string, twine, or shoelaces that have been treated with either a mixture of Potassium Nitrate and Granulated sugar or Potassium Chlorate and Granulated sugar.
- (2) Improvised string fuse does not directly ignite any incendiaries listed in File 4 but is a primary initiator for all igniters listed in File 3 except:

Potassium Permanganate-Glycerin
White Phosphorus

Powdered Aluminum-Sulfur Pellets
and Subignitors for Thermite

-Materials and Equipment

String, twine, shoelaces made of cotton or linen
Potassium Nitrate or Potassium Chlorate
Granulated Sugar
Small Cooking Pot
Spoon
Stove or hot plate
Soap

-Preparation

- (1) Wash string or shoelaces in hot soapy water; rinse in fresh water.
- (2) Dissolve one part potassium nitrate or potassium chlorate and one part

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granulated sugar in two parts hot water.

- (3) Soak string or shoelaces in the hot solution for at least five minutes.
- (4) Remove the string from the hot solution and twist or braid three strands of string together.
- (5) Hang fuse up to dry.
- (6) Check actual burning rate of the fuse by measuring the time it takes for a known length to burn.

-Application

- (1) This fuse does not have a waterproof coating and it must be tested by burning a measure of length before actual use.
- (2) Cut the fuse long enough to allow a reasonable time delay in initiation of the incendiary system.
- (3) Insert one end of the fuse in a quantity of an igniter mixture so that the fuse end terminates near the center of the mixture. Be sure the fuse cord is anchored in the igniter mixture and cannot pull away. In case of a solid igniter material such as Fire Fudge, the improvised string fuse is securely wrapped around a piece of solid igniter material.
- (4) The fuse is initiated by lighting the free end of the fuse with a match.
- (5) This fuse does not burn when it is wet. Its use is not recommended where there is the possibility of the fuse getting wet.

CONCENTRATED SULFURIC ACID (OIL OF VITRIOL):

-Description

- (1) This material is a heavy, corrosive, oily, and colorless liquid. Storage is recommended in a glass container with a glass lid or stopper. Commercially available sulfuric acid is approximately 93% concentrate with a specific gravity of 1.835. This is commonly referred to as Concentrated sulfuric acid.
- (2) Concentrated sulfuric acid chars wood, cotton, and vegetable fibers, usually without causing fire. The addition of water to concentrated sulfuric acid develops much heat which may be sufficient to cause a fire or an explosion. This depends on the quantity of acid, quantity of water, and rate of addition of water

CAUTION: Always add concentrated sulfuric acid to water. NEVER add water to concentrated acid!

- (3) Certain igniter materials can be reliably brought to flaming by the addition of concentrated sulfuric acid. This is brought about by the chemical reaction between the sulfuric acid and the igniter materials. The following igniters are initiated by concentrated sulfuric acid:

Sugar-Chlorate	Fire Fudge	Sugar-Sodium Peroxide
Aluminum Powder	Match Head	Silver Nitrate-Magnesium Powder

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- (4) The most important use for concentrated sulfuric acid as an initiator is in conjunction with delay mechanisms. The acid is held away from the igniter for a period of time by making use of the corrosive action of the acid to work its way through a barrier. If the delay mechanism is placed in a cold environment, the concentrated sulfuric acid will remain fluid at extremely low temperatures. The following delay mechanisms are recommended for use with concentrated sulfuric acid:

Gelatin Capsule	Rubber Diaphragm	Paper Diaphragm
Tipping delay	Stretched Rubber Band	

-Material and Equipment

Concentrated Sulfuric Acid.

-Preparation

NONE-If only battery grade sulfuric acid is available (specific gravity 1.200), it must be concentrated before use to a specific gravity of 1.835. This is done by heating it in an enameled, heat resistant glass or porcelain pot until dense, white fumes appear. Heat only in a well ventilated area. When dense, white fumes start to appear, remove the heat and allow acid to cool. Store the concentrated acid in a glass container.

-Application

(1) GENERAL

- (A) Commercial sulfuric acid is available in 13 gallon carboys. Smaller quantities of this acid are available in chemical lab reagent storage containers. It is recommended that a small quantity of acid, about one pint, be secured and stored in a glass container until it is used.

(2) USE WITH DELAY MECHANISMS

- (A) Construction of a specific delay mechanism is described in File 5. Within the delay mechanism, there is a container filled with acid. The acid corrodes this container, is absorbed by the container until it comes in contact with the igniter mixture.
- (B) Carefully fill the container in the delay mechanism with concentrated sulfuric acid. This can easily be accomplished with a small glass funnel. A medicine dropper is used when the delay mechanism container is small.

CAUTION: Concentrated sulfuric acid must be handled carefully because it is very corrosive. If it is splashed on clothing, skin or eyes, the affected area must be immediately flushed with water. This may not always be practical. It is recommended that eye protection be worn by the user when pouring concentrated sulfuric acid. Many types are available for this purpose. Rubber gloves can be worn to protect the

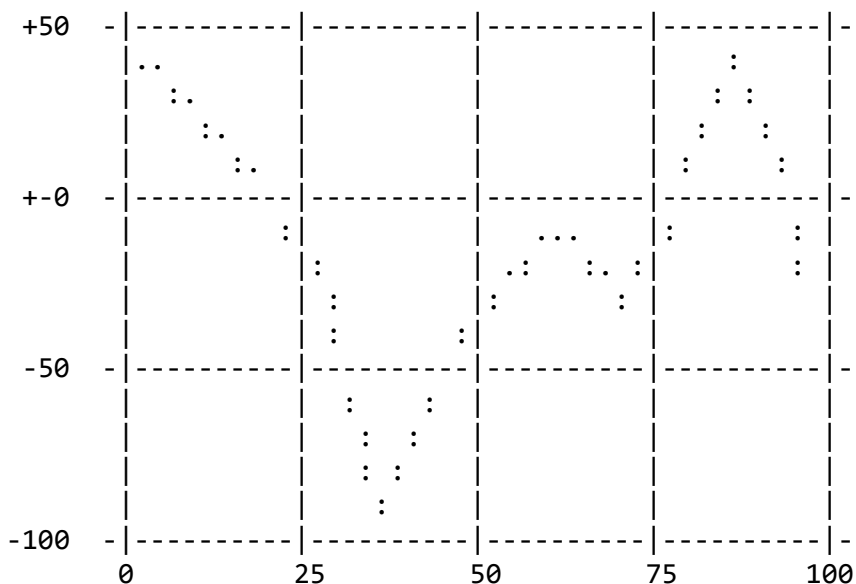
hands. A small bottle of water can be carried to flush small areas of skin or clothing which may be contaminated with the acid.

(3) MANUAL APPLICATION

- (A) Manual application of concentrated sulfuric acid for direct initiation of an igniter is not recommended when fuse cord is available. It is possible to employ this acid for direct initiation by quickly adding three or four drops of igniter material. This can be done with a medicine dropper. Keep hands and clothing clear of the igniter; ignition may take place almost instantly with addition of acid.

CAUTION: Do not allow materials such as wood, sugar, cotton, or woolen fibers to fall into the boiling acid. A violent reaction could occur with splattering of acid.

- (B) Since sulfuric acid has a unique freezing point relation to acid concentration, the information shown below is useful when this acid is used with delay mechanisms in low temperature surroundings. Be sure of acid concentration by checking with a hydrometer.



Sulfuric Acid Concentration (%)	Specific Gravity	Freezing Point (°F.)
0	1.000	+32
10	1.074	+23
20	1.151	+5
30	1.229	-39
39	1.295	-97
40	1.306	-91
50	1.408	-31

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60	1.510	-22
70	1.611	-40
75	1.686	-7
77	1.706	+12
80	1.726	+27
81	1.747	+39
89	1.818	+24
90	1.824	+13
92	1.830	-1
93	1.835	-29

WATER:

-Description

- (1) Water causes spontaneous combustion of certain igniter mixtures. This is caused by a chemical reaction of the igniter materials in the presence of water. The following igniters are initiated by water:

Sugar-Sodium Peroxide	Aluminum Powder-Sodium Peroxide
Silver Nitrate-Magnesium Powder	

- (2) The most important use for water as an initiator is in conjunction with delay mechanisms. Since only a few igniter mixtures are initiated by water and it cannot be used at a freezing temperatures, its uses are limited. When tactics so dictate, water can be reliably used with the following delay mechanisms:

Gelatin Capsule	Overflow
Tipping Delay	Blancing Stick
Stretched Rubber Band	

-Material and Equipment

Water.

-Preparation

None.

-Application

- (1) Use with delay mechanisms. Construction of specific delay mechanisms is presented in File 5. Within the delay mechanism, there is a container filled with water. The water dissolves the container or is spilled from the container and comes in contact with igniter mixture, initiating the fire train.

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- (2) Manual Application. Fuse cord, when available, is recommended in preferences to water as an initiator. Water is used for direct ignition or a specific igniter by adding drops as with a medicine dropper. Keep hands and clothing clear of the igniter; ignition may take place almost instantaneously with addition of water.

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