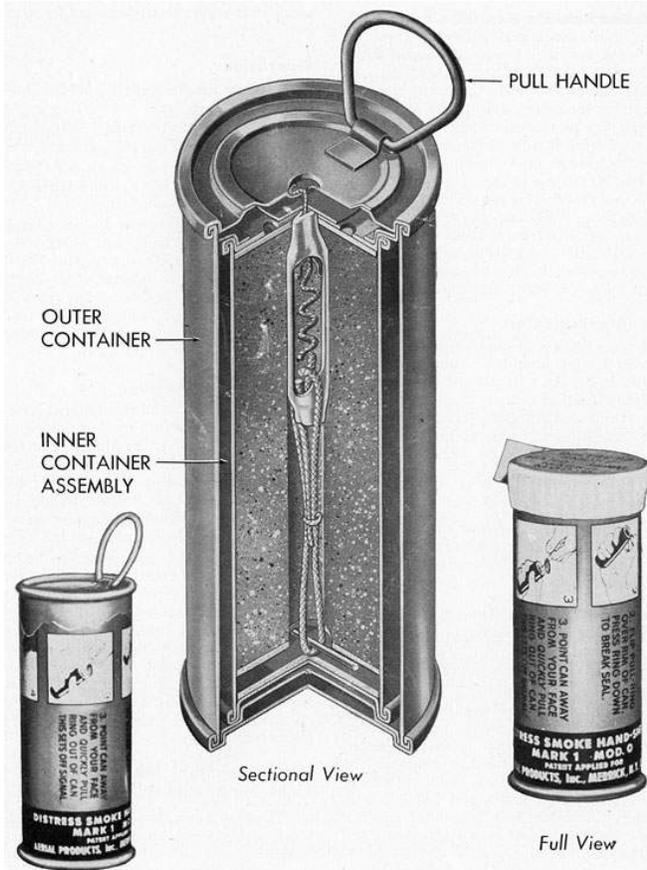


Research on Possible Flare at the Seven Site

Several objects were recovered from the Seven Site that may possibly be part of an emergency signal device.



Were flares carried on the first world flight attempt?

The Luke Field inventory of March 1937 from the first world flight attempt lists a flare gun, along with signal flares, and parachute flares, for a total of 16 flares:

23 *1 " Signal Pistol, No. A-56, Mark III, one inch

33 *14 " Signal Pistol Shell

125 *2 " Parachute flares

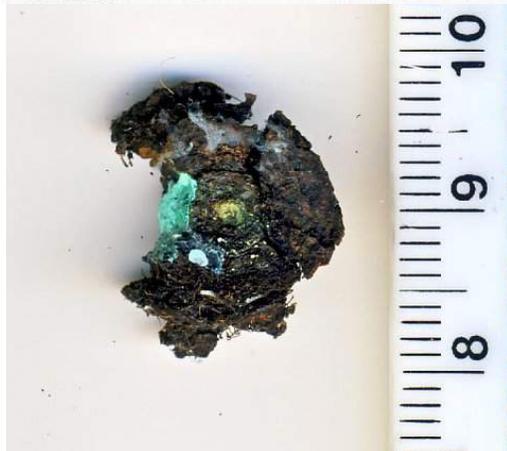
We have no inventory of the second world flight attempt, but it seems logical that some emergency signal equipment, such as flares, would be standard items for any long-range flight of this era.

What did period flares look like?

Some flares of early to mid-20th century vintage were not fired from a gun but instead could be ignited with just the flare itself. These flares were uniformly cylindrical with dimpled ends. (See top left image.)

Which artifacts might be flares?

A circular object (at left) with a dimpled end and containing a bright bluish material about the consistency of toothpaste was recovered from the site.





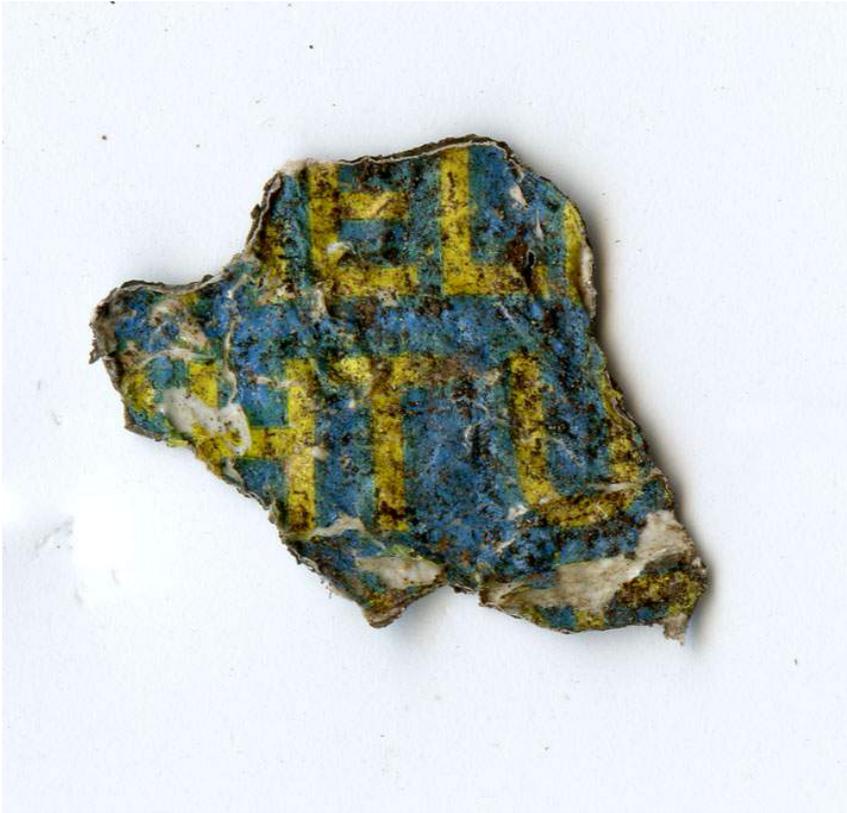
Flares of this vintage had a release pull handle to ignite. A small handle was also found at the site, although it seems slightly large to have been a pull for an igniter. The solder found on the handle ends is also out of character for a release pull on a flare, unless perhaps the handle had been repurposed after use. (Cold solder is among the items in the Luke Field inventory.)



Some flares were strictly "FOR NIGHT USE," as opposed to smoke canisters, which looked nearly identical and were for day use.

This is a Mark 13, Mod 0 Signal (Distress Day or Night) flare set, dated December 1951 and used in the Korean War. They are in unfired condition and were actually two signals in one, depending on which end was fired. The day end releases smoke, and the night end releases a flare.

A blue foil with gold lettering, about the size of a thumbnail, was found in the E-lane of the Seven Site. The photographs at left have been enlarged for legibility. The top line reads (uncertain letters in parentheses): (R)EL(E). The second line reads: (G)HT U.

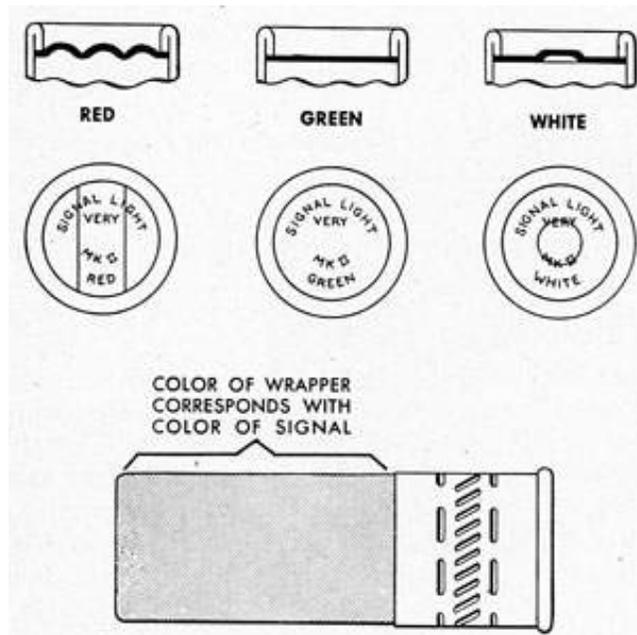


The Mark 13 flare end is marked in capital letters (see photo on p. 2) "FOR NIGHT USE." Could the second line of the foil be an instruction for use of a night flare? Could the top line refer to a release handle?

Could the Foil's Colors Have Significance?

Colors on the packaging of vintage flares were used to identify the color of the star shell inside: "Each of the three colors is identified visually because the color of the paper on each cartridge corresponds to the color of the star contained in it." - from a description of Signal Light Mk 2 from p. 30 in <http://www.maritime.org/doc/pyro/index.htm> (Navy Ordnance Pamphlet 1177)





From p. 31, Navy Ordnance Pamphlet 1177

The navy pamphlet cited above lists no blue flares, but it does list a blue hand torch, the "BLUE LIGHT MK I MOD 1 HAND TYPE." These torches featured tab seals at the top, which could have, in a civilian version, been foil wrappers. No other blue pyrotechnic devices are listed in this manual.

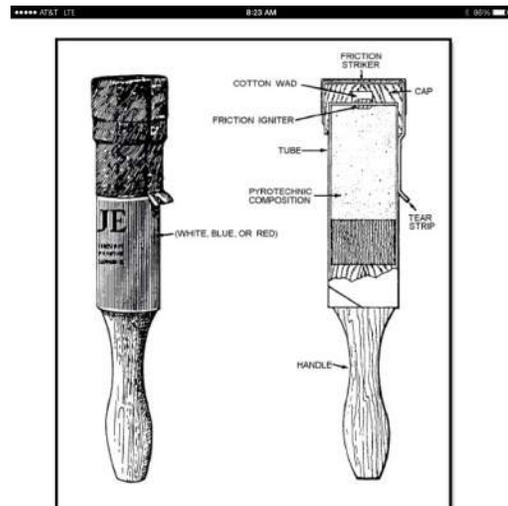
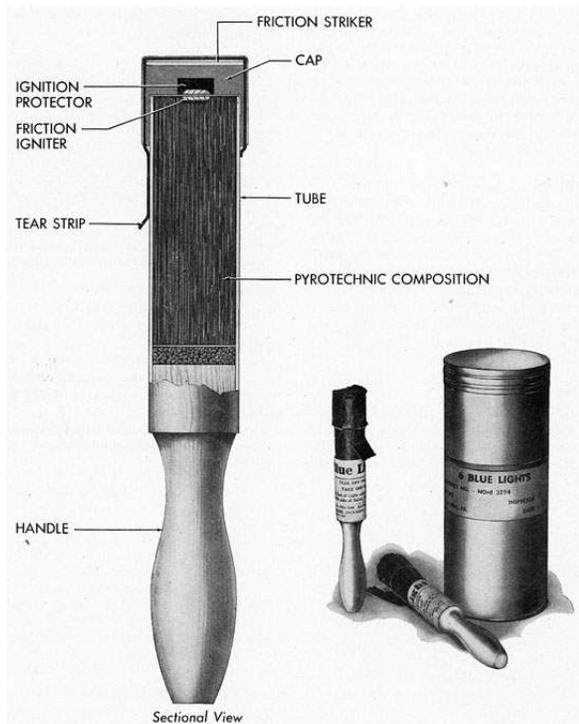


Figure 1-13 The Mk 1 Navy Light

1-30
UNCLASSIFIED

Materials Characterization of the Foil

The presumed inside (non-colored) surface of the foil from the E-lane is not metal at all. According to scanning electron microscopy (SEM) analysis by the Mechanical Engineering Department at the United States Naval Academy, this inside surface is 67% sulphur, 25% silicon, 6% iron, and 2% zinc. All of these elements, especially sulfur, are used in pyrotechnics. Silicon and iron were commonly used in starter compositions. Zinc oxide was used in aircraft "float lights" and night drift signals in the pyrotechnic element of flares. Sulfur, the chief element, is essential for black powders, the "fire starter" in flares and other pyrotechnics. These are odd elements to have been found in an ordinary commercial foil wrapper, and sulfur in such high proportion is extremely odd.



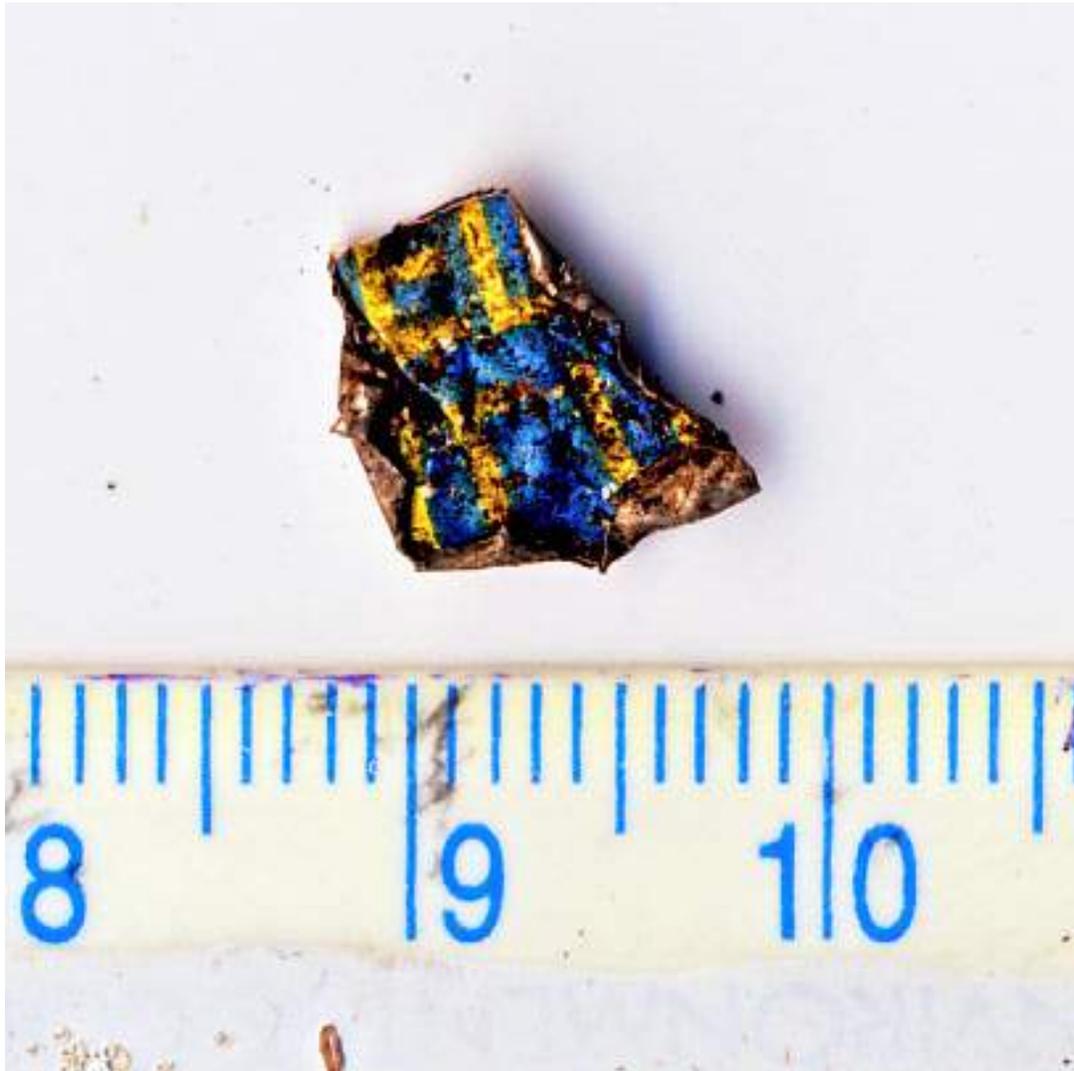
For common pyrotechnic compositions, see <http://www.ammunitionpages.com/download/237/US%20navy%20pyrotechnics.pdf>

The condition of the foil, tiny, fragmented, slightly crumpled, and blackened on one side, is consistent with the explosive effect of a pyrotechnic blast that would accompany the launch of a flare. The foil appears to have been inconsistent with a wrapper for a flat object, since a considerable amount of pressing was required to coax it into a flat surface.

Ric Gillespie, in a message from 12/3/2010, described the artifact as "relatively robust; much more so (in my opinion) than a typical gum or cigarette wrapper. I smoothed it out under a microscope using dental tools and it wasn't easy to persuade the foil to lie flat.

The colored surface tends to flake off the smooth white backing in a way that reminds you of paint. The smooth white backing, by contrast, seems well bonded to the metal foil."

The photo on the next page shows the colored side of the foil before it was subject to materials testing and before it was flattened so that the letters could be seen. Note the vivid colors. Materials testing was non-destructive but dulled the colors, probably through radiolysis of inorganic material from the electron beam.



Does the radio signal inventory at the time of Earhart's disappearance contain any clues that Earhart might have been using flares?

On July 9, 1937, the Sarasota (Florida) Herald reported that Arthur Monsees (1914-2007), a San Francisco radio amateur, had heard Morse code on his short wave radio and transcribed the phrase "lights tonight," among other phrases ("East Howland," "can't hold," "must hurry," "KHAQQ") on his radio. Flares at this time were often called signal lights, or simply "lights." Could this have been a reference to setting off night flares? Due primarily to the unlikelihood of a reception with the quality and characteristics that Monsees claimed, his story has been deemed "not credible" by TIGHAR.

See <http://news.google.com/newspapers?nid=1787&dat=19370709&id=SnYcAAAAIBAJ&sjid=VWQEAAAAIBAJ&pg=5499,559528> for the complete article.

Conclusion:

There is nothing to announce definitively a signal flare remnant at the Seven Site, but there are suggestions from recovered artifacts that pieces of a flare may have been found.

We may be misinterpreting these artifacts. The foil might not be from a flare at all. If the foil is from a flare or torch, it is quite easy to speculate, since most of the best documentation on flares comes from the military, that the Coast Guard had flares or torches, and could have brought them to the Seven Site for amusement.

We have not turned up any siblings to the foil, but the search continues.

Further Research:

On December 12, 2014, Kathryn Gill, the daughter of Leonard Albasi, stated on the TIGHAR site on Facebook that Amelia Earhart had given to Mr. Albasi a signal flare in Miami to lighten the aircraft before departing on the second and final world flight attempt. They stated that Mrs. Gill still has the flare. Obtaining a photo of this flare or the flare itself would be useful in determining what type of flare was carried aboard the Electra during the second world flight attempt and to see whether the flare's attributes correspond with any recovered artifacts.