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ACCEPTANCE TRIALS OF OERLIKON DISTRESS HAND ROCKET SIGNAL

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AEROPLANE AND ARMAMENT EXPERIMENTAL ESTABLISHMENT
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Acceptance Trials of Oerlikon Distress Hand Rocket Signal

A. & A.E.E. Ref: AAEE/5909/39
H. O. S. Ref: 7/Armts/3091
Period of Trial: November, 1953

Summary

1. Trials to assess the Oerlikon Distress Hand Rocket Signal as a device for marking the position of survivors of aircraft crashes in the jungle have been completed.
2. It is recommended that the Oerlikon signal be accepted for Service use subject to the modification in para. 7.1.1 being incorporated.

This report is issued with the authority of



Air Commodore,
Commanding A. & A.E.E.

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Table 1 - Air and ground observations on Oerlikon and
2 star red signals

/1. Introduction.....

1. Introduction

1.1 Acceptance trials of the Oerlikon Distress Hand Rocket Signal have been completed in accordance with H.O.S. Trials Pro-forma R.D.Am.2,3/53 dated 21st September, 1953.

2. Object of trial

2.1 The object of the trial was to assess the suitability of the Oerlikon Distress Hand Rocket Signal as a device for marking the position of survivors of aircraft crashes in the jungle.

3. Description of the Oerlikon Signal

3.1 The Oerlikon Distress Hand Rocket Signal is a self contained signal which does not require a firing device. Externally it consists of a metal cylinder closed at each end with a screwed cap. Both these caps must be removed before the signal is fired. The measurements of the signal are as follows:-

Length	8.5 inches approx.
Diameter	1.2 inches approx.
Weight	8 ounces approx.

3.2 The following markings were on the Oerlikon signals sent for the trial:-

3.2.1 Firing instructions in French and German.

3.2.2 An arrow indicating the direction of fire.

3.2.3 The figures and letters 00-53 Oe.

3.2.4 A red disc on the muzzle end cap with the figure 1 in the centre.

3.3 The Oerlikon signal is fired by pulling a firing cord, which is exposed when one of the end caps is removed. The firing instructions are as follows:-

3.3.1 Hold the signal by the centre with the left hand so that the arrow on the side of the signal is pointing upwards.

3.3.2 With the right hand remove the end caps from both ends of the signal.

3.3.3 Stretch the left arm out until it is horizontal and point the signal in the required direction, ensuring that the other end of the signal is not pointing at the body.

3.3.4 Hold the firing cord with the right hand so that the hand is clear of the rear opening.

3.3.5 Fire the signal by pulling the cord.

4. Method of trial

4.1 The trial consisted of firing twelve Oerlikon signals alternatively and together with twelve Signals, Distress 2 Star Red from the centre of a group of high trees. The signals were observed from the ground outside the trees and from an aircraft orbiting the firing area.

5. Results of trial

5.1 The details of the signals fired and the air and ground observations are in the Appendix.

5.2 It was the unanimous opinion of both ground and air observers that the Oerlikon signal was far superior to the 2 Star red signal as a distress signal for use by survivors in jungle terrain.

5.3 The handling and operation of the Oerlikon signal was easier than the 2 Star red signal. One of the Oerlikon signal firing cords broke during firing, this was repaired.

5.4 All the Oerlikon signals including that referred to in para. 5.3 functioned satisfactorily. Two of the 2 Star red signals had failures of one star and in six instances one of the stars failed to reach 100 feet.

5.5 The Oerlikon signals were clearly visible from the air at a range of five miles whereas the 2 star red signal was easily missed if the observer was not looking at the exact area from which it was fired. Both air and ground observers considered that the Oerlikon stars were at least three times as bright as the 2 star red stars.

5.6 The height which the stars reached was not measured accurately, but was estimated by the ground observers. From the observing aircraft which was orbiting at a height of 1,000 ft., it was noted with two exceptions, that the Oerlikon stars reached a height of approximately 1,000 feet. In two instances both types of signal were fired through the foliage of the trees, and all the stars struck branches. The Oerlikon stars penetrated the foliage and reached approximately 150 feet where they were seen from the air whereas the 2 star red stars did not even penetrate the foliage.

5.7 The stars of the Oerlikon signal burnt for an average time of about 20 seconds and were visible from the air for an average of 10 seconds. The stars of the 2 star red signal burnt for an average of 5 seconds for each star and were visible from the air for an average of about 3 seconds.

5.8 Recoil from the Oerlikon signal was fairly heavy, being at least twice that from the 2 star signal.

5.9 The Oerlikon signal became hot during firing and it was necessary to wear a glove to protect the hand.

6. Conclusions

6.1 It is concluded that the Oerlikon Distress Hand Rocket Signal is a suitable device for marking the position of survivors of aircraft crashes in the jungle, and in this respect is superior to the Signal Distress 2 Star Red.

7. Recommendations

7.1 It is recommended that the OERLIKON Distress Hand Rocket Signal be accepted for Service use subject to the following modification being incorporated.

7.1.1 Fit a stronger firing cord."

7.2 It is advisable that some form of hand protection is used with the OERLIKON signal. This can be achieved by:-

7.2.1 Ensuring that crews are aware that they must utilise some form of protection (i.e. glove or pocket handkerchief) for the hand when firing the signal.

Circulation List

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Table 1 - Air and Ground Observations on Oerlikon and Two Star Red Signals

Weather: - Overcast 1/4th 5,000 ft. - - Visibility 7-10 miles

Serial No. of Signal	Type of Signal	GROUND OBSERVATIONS				AIR OBSERVATIONS				Remarks
		Star	Estimated height (feet)	Time of burning (secs)	Remarks	Height of aircraft (g)	Distance from signal (h)	Star (j)	Smoke (k)	
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(j)	(k)	(l)
1	2 Star Red	1st 2nd	50 ft. 200 ft.	3 secs. 5 secs.	(i)	1000 ft.	3 miles	Not seen 3 secs.	Nil Nil	(i) Difficult to see stars unless looking at firing point.
2	Oerlikon	Single	800 ft.	20 secs.	(i) Signal became too hot to hold when fired. (ii) Recoil heavy	1000 ft.	3 miles	11 secs.	Nil	(i) Much brighter and more easily seen than 2 Star Red.
3	2 Star Red	1st 2nd	200 ft. 200 ft.	6 secs. 7 secs.		1000 ft.	4 miles	2 secs. 4 secs.	Nil	
4	Oerlikon	Single	1000 ft.	20 secs.	(i) as (i) and (ii) in Signal 2	1000 ft.	4 miles	9 secs.	Nil	(i) Easily seen
5	2 Star Red	1st 2nd	100 ft. 150 ft.	3 secs. 5 secs.		1000 ft.	4 miles	Not seen 3 secs.	Nil	
6	Oerlikon	Single	1500 ft.	20 secs.	(i) as (i) and (ii) in Signal 2	1000 ft.	4 miles	9 secs.	Nil	(i) Easily seen
7	2 Star Red	1st 2nd	Dud 150 ft.	5 secs.		1000 ft.	5 miles	Not seen 3 secs.	Nil	
8	Oerlikon	Single	1500 ft.	20 secs.	(i) as (i) and (ii) in Signal 2	1000 ft.	5 miles	11 secs.	Nil	(i) Easily seen
9	2 Star Red	1st 2nd	30 ft. 100 ft.	3 secs. 5 secs.		1000 ft.	5 miles	Not seen 2 secs.	Nil	
10	Oerlikon	Single	1500 ft.	20 secs.	(i) as (i) and (ii) in Signal 2	1000 ft.	5 miles	12 secs.	Nil	(i) Easily seen
11	2 Star Red	1st 2nd	150 ft. 120 ft.	5 secs. 4 secs.		1000 ft.	5 miles	3 secs. Not seen	Nil	
12	Oerlikon	Single	1700 ft.	25 secs.	(i) as (i) and (ii) in Signal 2	1000 ft.	5 miles	15 secs.	Nil	(i) Easily seen
13	2 Star Red	1st 2nd	100 ft. 25 ft.	5 secs. 2 secs.	(i) Signal fired through foliage. 2nd star struck	1000 ft.	5 miles	2 secs. not seen	Nil	

/contd.

Serial No. of Signal	Type of Signal	Star	GROUND OBSERVATIONS			AIR OBSERVATIONS				Remarks
			Estimated height (feet)	Time of burning (secs)	Remarks	Height of aircraft (g)	Distance from signal (h)	Visibility time		
								Star	Smoke	
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(j)	(k)	(l)
14	Oerlikon	Single	120 ft.	5 secs. in air 15 secs. on ground	(i) Signal fired through foliage. Star struck branch.	1000 ft.	5 miles	3 secs.	2 secs.	Observed burning through trees
15	2 Star Red	1st 2nd	60 ft. 100 ft.	3 secs. 5 secs.	(i) Signal fired through foliage.	1000 ft.	5 miles	Not seen 2 secs.	Nil	
16	Oerlikon	Single	150 ft.	5 secs. in air 15 secs. on ground	(i) Signal fired through foliage. Struck branch.	1000 ft.	5 miles	4 secs.	6 secs.	Observed burning through trees.
17	2 Star Red	1st 2nd	60 ft. 100 ft.	3 secs. 5 secs.		1000 ft.	5 miles	Not seen 4 secs.	Nil	
18	Oerlikon	Single	700 ft.	15 secs.		1000 ft.	5 miles	6 secs.	Nil	Easily seen
19	2 Star Red	1st 2nd	250 ft. Dud	7 secs. -		1000 ft.	5 miles	5 secs. Not seen	Nil	
20	Oerlikon	Single	1200 ft.	20 secs.		200 ft.	5 miles	11 secs.	Nil	Easily seen
21	2 Star Red	1st	60 ft.	3 secs.		1000 ft.	5 miles	Not seen	Nil	
		2nd	150 ft.	5 secs.	4 secs.					
22	Oerlikon	Single	1500 ft.	25 secs.	(i) Ignition cord broke Signal fired when cord repaired	1000 ft.	5 miles	11 secs.	Nil	Easily seen
		1st	120 ft.	5 secs.						
	2 Star Red	2nd	120 ft.	5 secs.		200 ft.	5 miles	Not seen	Nil	
	Oerlikon	Single	1700 ft.	25 secs.		200 ft.	5 miles	12 secs.	Nil	Easily seen



*Information Centre
Knowledge Services*
[dstl] Porton Down,
Salisbury
Wiltshire
SP4 0JQ
22060-6218
Tel: 01980-613753
Fax 01980-613970

Defense Technical Information Center (DTIC)
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