

SITAF - SFTRF

*First aid intervention in the tunnel of Frejus
on December 11, 1999*



Servizi Aerei Industriali

Firs aid intervencion carried out during the drilling operation of the resque staff of SITAF and SFTRF in the inside of the Tunnel of the Frejus on December 11, 1999 since 23.20 h up to 24.10 h approx.

DESCRIPTION OF EQUIPMENT

- Integrated & Patented SAI-PTR/1 System with pan&tilt traverse
- Resque Car of SITAF provided with revolving turret with fire extinguisher
- Service Car of SITAF

AMBIENT CONDITIONS

- Poor visibility inside of tunnel obscured by smoke after 3200 m approx from the entry from Italy-France side
- Temperature inside of tunnel going from 15°C up to 80°C as shown in the graphics of figures 1 and 2
- Flame temperature 550°C approx.

SYSTEM FEATURES

Equipment:

Integrated &SAI-PTR/1 System with pan & tilt traverse


- No cooling Planar array 320x240 SAI-FPA/1
- Elaborator Unit System SAI-TLC/1

Displays:

LCD color monitor, H.R. integrated
in the SAI-TLC/1 uNIT
Global Position System integrato
nell'unità SAI-TLC/1

Filing of images:

- DVD (recorder) Videocassette integrated
- Freeze under Tiff 14-bit format on PCMCIA card integrated in the SAI-FPA/1 Unit



On December 11, 1999 during a fire fighting rescue operation organised by the Staff of SITAF and SFTRF inside of Tunnel of Frejus, the SAI Servizi Aerei Industriali Company, participated to this first rescue intervention by putting at disposal its infrared equipment to detect persons and things surrounded by the smoke.

For this purpose, a car positioned inside of Tunnel of Frejus midway between Italy and France has been fired.

The drilling operation was consisting in reaching as soon as possible - through the fire fighting rescue means - the accident locality by facing the smoke caused by the fire.

For this intervention, the integrated SAI-PTR/1 infrared systems have been positioned on the rescue means; in particular, an infrared detecting system has been positioned on a fire fighting rescue car of SITAF and on a service car of SITAF.

As the smoke direction caused by the fire was fortuitous, both the means equipped with the infrared systems have been positioned, respectively, from the Italy side (SITAF fire fighting car) and from the France side (SITAF service car).

At 23.20h approx the sound of a fire fighting alarm system on both the sides of tunnel started the drilling operation off.

Owing to a strong wind blowing from France towards Italy, the Italian rescue car has been surrounded by the smoke at 3200 m approx. From the entry of tunnel.

Thanks to the infrared system installed above the extinguisher turret of the rescue car, it was possible to reach the fire locality in an efficient and rapid manner, by overcoming all obstacles dislocated along the route.

The visibility inside of tunnel in presence of smoke was 10 m approx. And the time employed to reach the fire locality has been of 4.30 hours by travelling throughout the Italy side towards France.

On the ground of the recording carried out during the rescue drilling, it was possible to chart the graphics shown at figures 1 and 2 which represent the heat propagation from the tunnel entry - on the Italy side - up to the fire point. The temperature resulting on the fire site was of 80-90°C approx., while the flame temperature was of 550°C approx.

These graphics represent the heat propagation from the fire point situated at 7500 m approx. From the Italy-France side towards the tunnel entry on the Italy side. The meters travelled in absence of smoke are blue-colored, while those travelled with a visibility obscured by smoke at 10 m. Approx. Are red-colored.

Fig.1:

This graphic represents the trend of temperature inside of tunnel depending on the elapse from the tunnel entry up to the fire point.

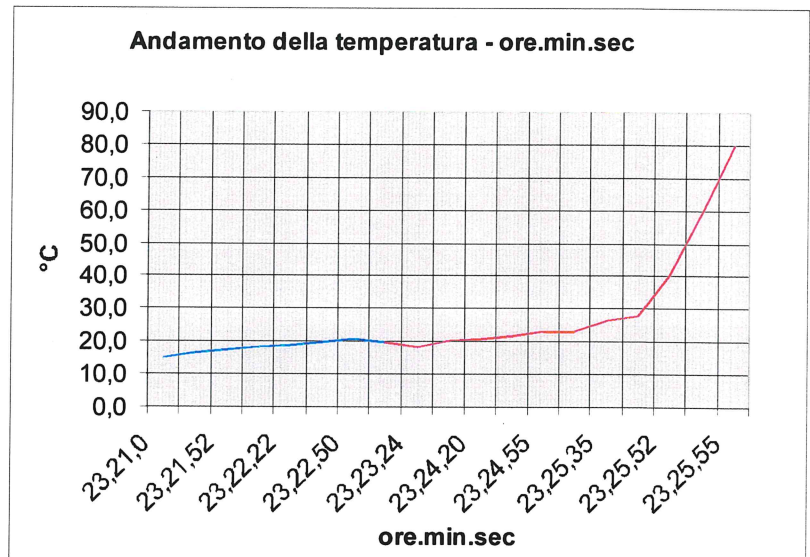


Fig.2:

This graphic represents the trend of temperature inside of tunnel depending on the meters travelled from the tunnel entry up to the fire point. (An average speed of car of 90 km/h has been considered)

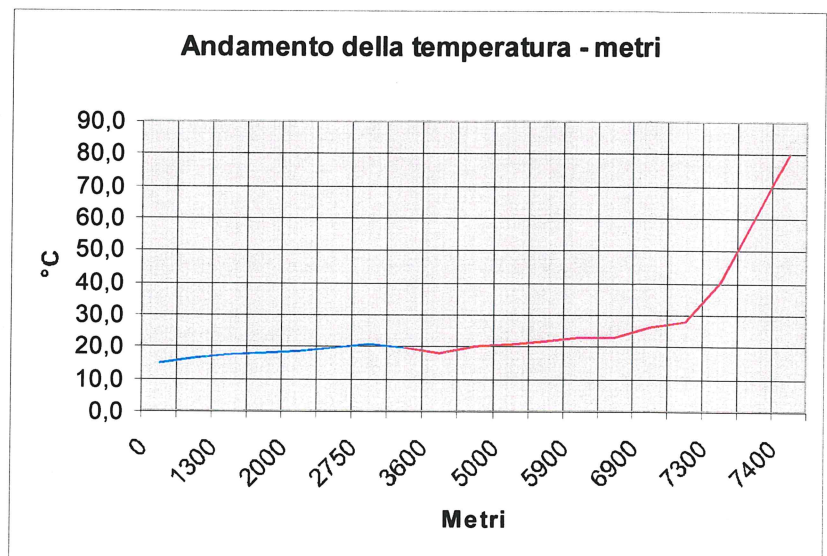


Fig.3:

The integrated SAI-PTR/1 System has been installed rapidly on a service car of SITAF.

The integrated SAI-PTR/1 System is equipped with pan&tilt traverse to offer a higher checking of thermographic sensor SAI-FPA/1.



Fig.4:

The integrated SAI-PTR/1 system has been installed above the extinguisher turret of a fire fighting rescue car of SITAF.



Fig.5:

The SAI-TLC/1 unit is fit for checking of thermographic sensor SAI-FPA/1 and pan&tilt traverse. It is besides equipped with an integrated GPS positioning system near the digital recording systems.

