



GREEN
CANYON
VENTURES

STRUCTURAL FIRES

THE SOLUTION



FS-02

GREEN CANYON VENTURES

We sell the only product in the world capable of stopping wildfires in their tracks. It is not a fire retardant, it is a FIRE SUPPRESSANT (FS-02), and it is **Non-toxic** and **100% biodegradable**.



THE SOLUTION: FS-02 (Fire Suppressant)

FS-02 is the first non-toxic and biodegradable product capable of suppressing fires.

Currently, fire management and suppression efforts involve the use of fire retardants, which merely slow the advance of a fire enough so that fire fighters can combat the flames with water. These retardants release toxic fumes which are harmful to fire fighters and animal life and can seep into the ground water and hurt wildlife long after the fire has been put out.

FS-02 produces a chemical reaction upon contact with fire which causes the fire to extinguish. This reduces the amount of water and time necessary to control the flames. It continues to protect the area from reignition for up to 30 days after application. FS-02 is non-toxic in humans and animals and is completely biodegradable.

COMPETITIVE ADVANTAGE



- While retardants are considered highly contaminant, FS-02 is completely NON TOXIC and BIODEGRADABLE.
- The more aggressive the fire, the faster it will go out.
- There is no need for special equipment. FS-02 uses the same equipment (airplanes, helicopters, water pumps, etc.) and personnel used to apply water and fire retardant, without the need for any modifications.
- FS-02 is already being used in Europe on real structural fires and wildfires with 100% success rate.



A few of the Certificates of effectiveness we have obtained



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Como puede apreciarse en la tabla 5, en la zona tratada con el agente extintor se produjo una reducción drástica de la temperatura máxima alcanzada, tanto en el matorral como en la hojarasca.
Igualmente las duraciones de temperaturas superiores a los umbrales indicados cayeron totalmente a valores propios de ausencia de llama.

CONCLUSIONES

- 1) La quema que se llevó a cabo puede ser considerada como un fuego típico en estas formaciones de matorral, que suelen generar intensidades altas, debido a la edad, altura y carga del matorral presente en ellas. En algunos momentos el avance del fuego se vio frenado por el efecto de un viento de baja velocidad y desviado respecto al eje longitudinal de la parcela. Sin embargo, en el tramo donde el fuego alcanzó la zona tratada con producto, desarrolló una gran intensidad, gracias a que el viento sopló con más velocidad (7 km/h) y más alineado con el eje de la parcela.
- 2) Las estimaciones efectuadas y los datos de las temperaturas obtenidas indican que, en las proporciones utilizadas, la mezcla presentó una efectividad total en la extinción del frente de llamas, ya que el fuego se extinguió sin sobrepasar el límite de la zona tratada.
- 3) En esta experiencia no se consideró la comparación con la aplicación de la misma dosis de riego con agua sin la adición del agente extintor.
- 4) Esta prueba puede considerarse solo como un ensayo demostrativo, siendo necesario efectuar un testado del producto con una base experimental mas amplia para obtener un resultado mas concluyente y homologable.

Vº Bº Director del Centro

Fdo: Gabriel Toval Hernández

Jefe Departamento

Fdo: José Antonio Vega Hidalgo



7. Conclusão

Os incêndios florestais são a principal ameaça à nossa área florestal, pelo que encontrar soluções eficazes na prevenção e aplicar novas tecnologias no combate é muito importante.

A demonstração do produto LICET-F, teve como principal objectivo apresentar a sua eficiência no combate, no caso demonstrado pode-se dizer combate indirecto.

Ficou aqui demonstrada a todos os presentes a sua elevada eficiência dado a parcela de demonstração apresentar todas as especificações de uma situação real, associada às condições atmosféricas adversas (vento forte e baixa humidade).

A época de Verão está próxima e nada melhor do que num grande incêndio, com a presença de diversas entidades com carácter decisivo, poder aplicar este produto e tirar se dúvidas houvesse as suas conclusões.

Vila Nova de Gaia, 4 de Abril de 2011.

O Técnico Superior

Luís Moita
(Eng.º Florestal)

O Director Municipal da DMBPC
Comandante Operacional Municipal

Salvador de Pinho Ferreira Almeida
(Eng.º Civil e Mestre Eng.º Sanitário
Pós-graduado Eng.º Ambientista
Técnico Europeu de Segurança
Pós-graduado Gestão de Riscos Naturais)

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SERVIÇO PÚBLICO FEDERAL
MINISTÉRIO DO MEIO AMBIENTE - MMA
INSTITUTO BRASILEIRO DO MEIO AMBIENTE E DOS RECURSOS NATURAIS RENOVÁVEIS - IBAMA
Ofício Nº 322 /2008- IBAMA/DIRETORIA DE PROTEÇÃO AMBIENTAL

Brasília-DF, 3 de setembro de 2008.

Prezado Senhor,

Após demonstrações do produto LICET-F realizadas por essa empresa para os técnicos especializados do Centro Nacional de Prevenção e Combate aos Incêndios Florestais - PREVFOGO, vinculado a esta Diretoria de Proteção Ambiental - DIPRO do IBAMA, vimos comunicar que o referido produto foi considerado tecnicamente eficiente para o bloqueio e redução da violência das chamas, pelo que esta Diretoria decidiu por desencadear processo específico e qualificado para a aquisição do produto LICET-F com vistas ao suprimento das equipes de brigadistas distribuídas ao longo das 80 bases que estão sendo estruturadas na região do "Arco do Fogo" na Amazônia.

Assim, e considerando que nos encontramos no auge do período de estiagem na Região Centro-Oeste e na porção sul da Região Norte do País, consultamos V.Sa. quanto as condições efetivas de produção e de logística de distribuição que esta empresa apresenta para fornecimento inicial de aproximadamente 100 ton do produto LICET-F no prazo aproximado de 30 dias.

Atenciosamente,

Atenciosamente,

Flávio Montiel da Rocha
Diretor de Proteção Ambiental

Ilmo. Sr.

Paulo Habinoski

Diretor Administrativo

Rio Sagrado Industrial Química Ltda

Rodovia Régis Bittencourt Br 116 Km 71

Quatro Barras - PR CEP 83420-000

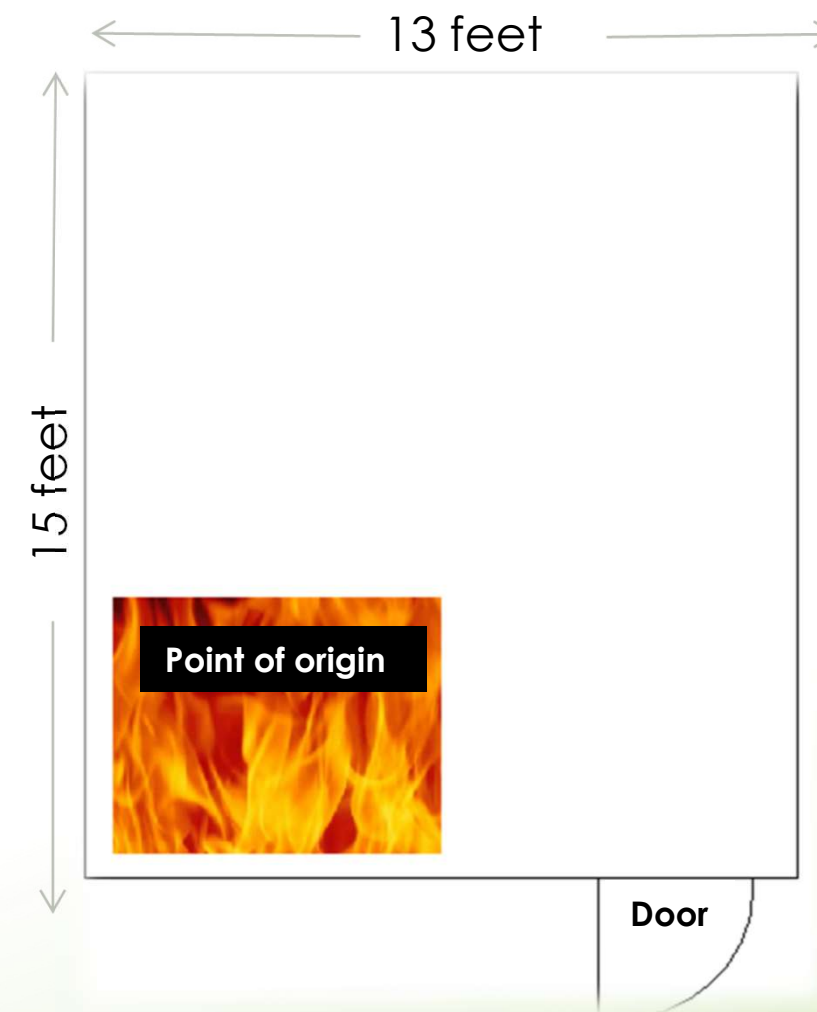
Fax: (41) 3672 2031

NON TOXIC PRODUCT

Scientific Test	Concentrated Sample	Sample Mixed with Water
Biodegradability	96% after 28 days Practically Biodegradable	100% after 28 days Biodegradable
Scientific Tests	Sample Mixed with Water	
Fish Toxicity Brachydanio rerio	LC-50 (96h) = 5930 mg/L	Classified as Non Toxic
Worm Toxicity Eisenia foetida	LC-50 (96h) = 4697,3 mg/L	Calssified as Non Toxic
Daphnidae Toxicity Daphnia magna	CE-50 (48h) = 10000 mg/L	Calssified as Non Toxic
Oral Toxicity	DL-50 (OCDE 423) = 2000 mg/kg	Calssified as Non Toxic and Non Irritating
Dermal Toxicity	DL-50 (OCDE 402) = 2000 mg/kg	Classified as Non Toxic and Non Irritating
Eye Irritation	BCOP 8.74	Classified as Non Irritating
Eye Corrosion	OCDE 405	Classified as Non Corrosive
Metal Corrosion	Aluminum = 0.009 mm/year Copper = 0.004 mm/year Cast Iron = 0.094 mm/year Brass = 0.094 mm/year Stainless Steel = 0.002 mm/year	Classified as Non -Corrosive

BIODEGRADABLE PRODUCT

TEST ON STRUCTURE (2023)



A fire was started in one of the rooms of the structure with flammable fuel mixed with an accelerant (gasoline).

POINT OF ORIGIN OF THE FIRE



A metal container was filled with straw and dry wood. A convector aided in the expansion of the heat.

The flammable material was mixed with a liquid accelerant (gasoline) in order to ensure substantial combustion and high temperatures.

METHODS USED

Firefighting backpack

- Capacity: 4 Gall.
- Adjustable nozzle.



- Flameproof suit, helmet, boots and gloves
- self-contained breathing apparatus
- Communication system(walkie-talkie)



TEST PROTOCOL

TEST WITH WATER:

- The fire was ignited, and the area of origin was allowed to reach 800 degrees Celsius (the maximum temperature reached in these structural fire tests; the maximum temperature in a real fire is about 1,100 – 1,200 degrees Celsius). At that point, firefighters began indirect combat (without aiming right at the origin of the flames) in order to cool down the area so they could enter the room. Six applications of water were made from the outside of the room using a 4 Gall. backpack, on the top, middle, and lower portion of the room. The door was then closed and fire personnel waited 10-20 seconds and then the operation was repeated. After these two series of applications, firefighters entered the room and commenced direct combat efforts. The elevated temperatures forced them to go outside when they could no longer stand the heat; after a few seconds outside, they would re-enter the room and continue direct combat until the fire was contained.
- In this test, firefighters were not able to extinguish the fire with that amount of water.

TEST WITH FS-02:

- For the test carried out with FS-02, the process described above was repeated, except that the product caused such a rapid and drastic decrease in temperature that it eliminated the need for indirect combat. Only direct combat was used until the fire was completely extinguished, and it was not necessary for firefighters to leave the room, since the temperature was low enough for them to continue their efforts from the inside.
- This amount of FS-02 (4 Gall.) was more than enough to extinguish the fire. **We ONLY used 3 Gall.**
- The test with FS-02 shows the indirect combat is not needed.

FIRST TEST USING WATER

Using backpacks filled only with water, firefighters were **NOT** able to extinguish the fire.



SECOND TEST USING FS-02

This time the efficacy of the product allowed firefighters to extinguish the fire in less time and more safely.



TABLE I

Combat with water. The fire could not be extinguished.

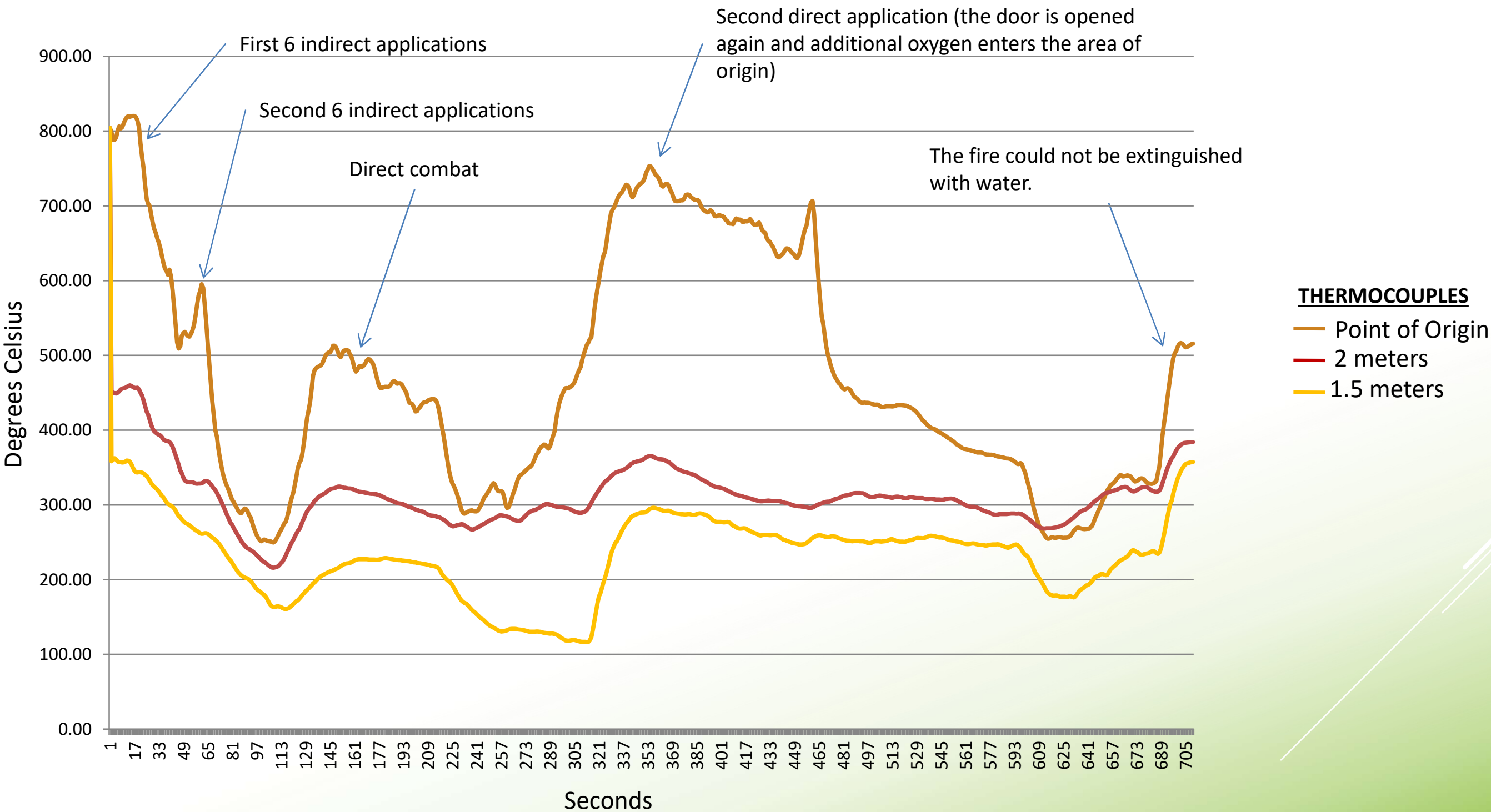


TABLE 2

Combat with FS-02

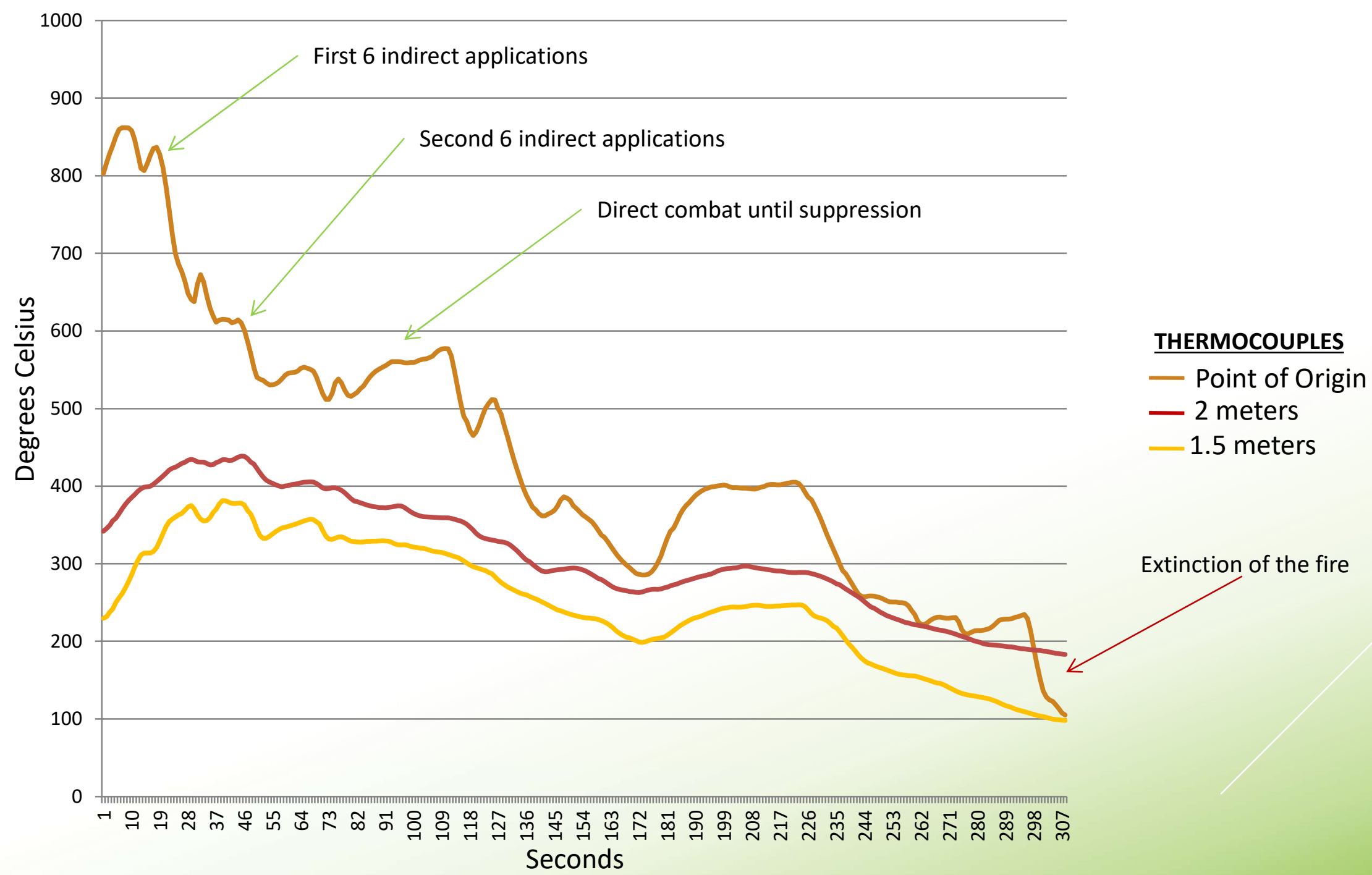


TABLE 6

Combat with 15-Liter backpacks of FS-02. Direct combat.

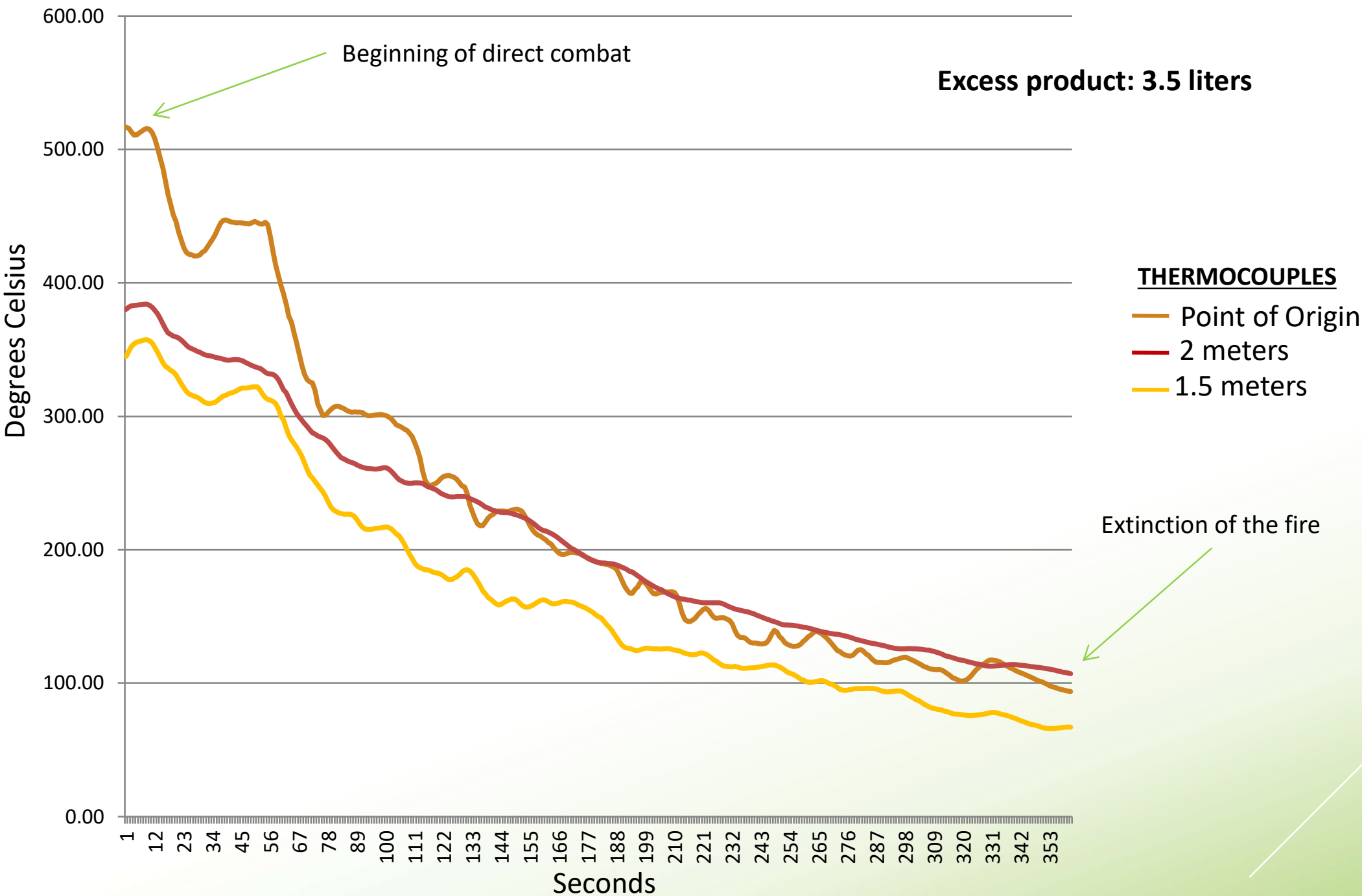


TABLE 7

Combat with water Vs. combat with FS-02

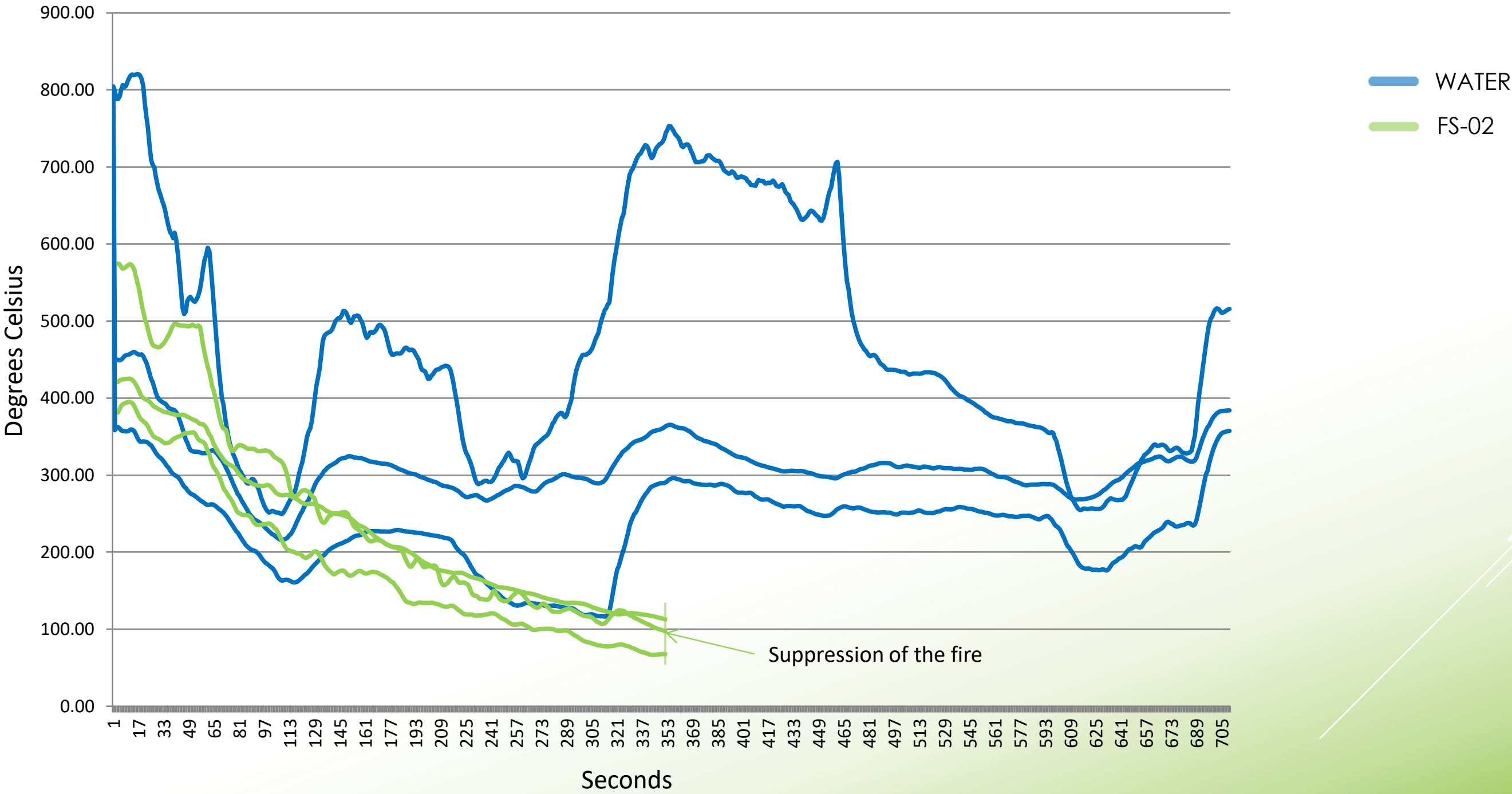
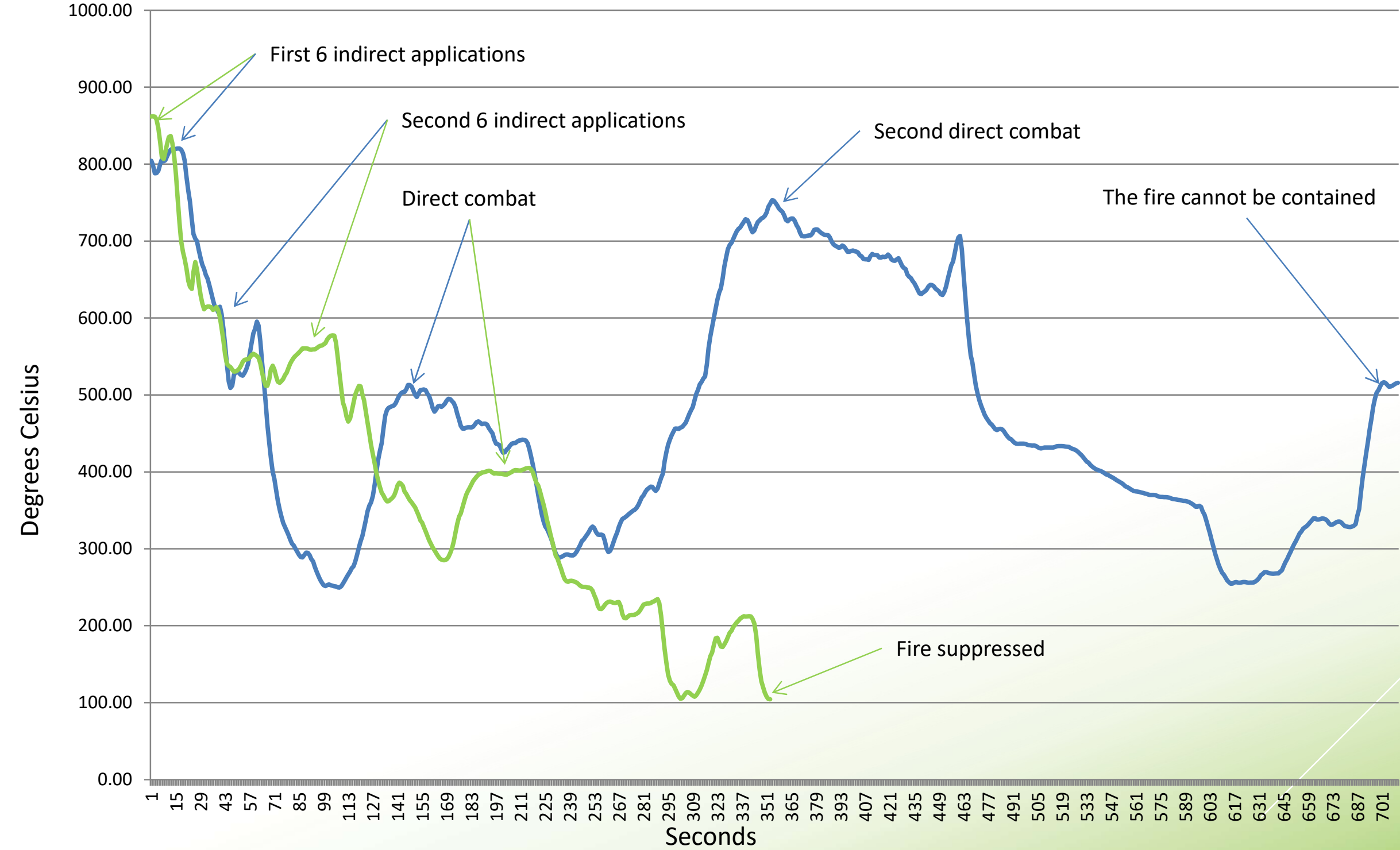


TABLE 3

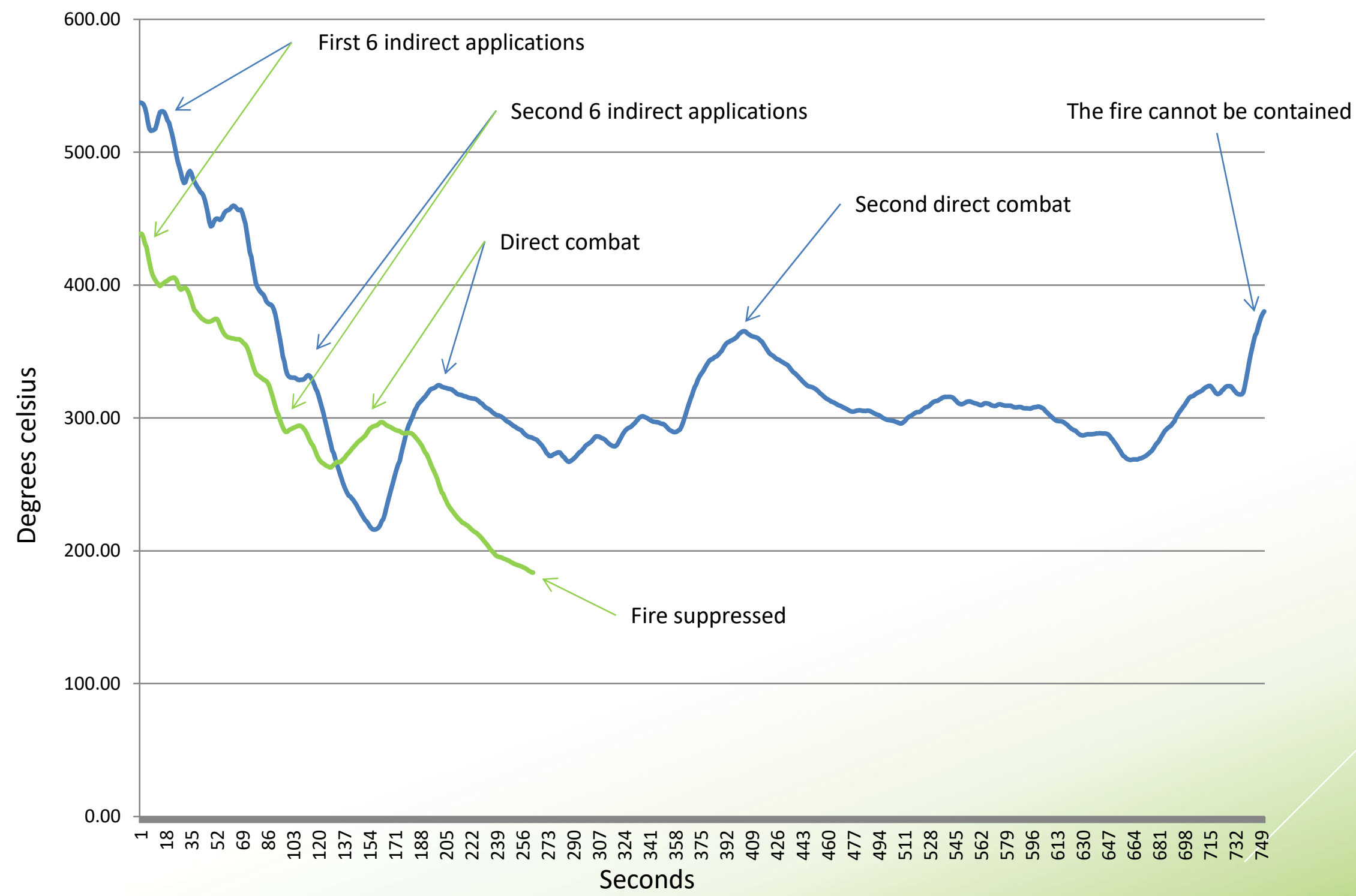
Thermocouple at the point of origin.



Water
FS-02

TABLE 4

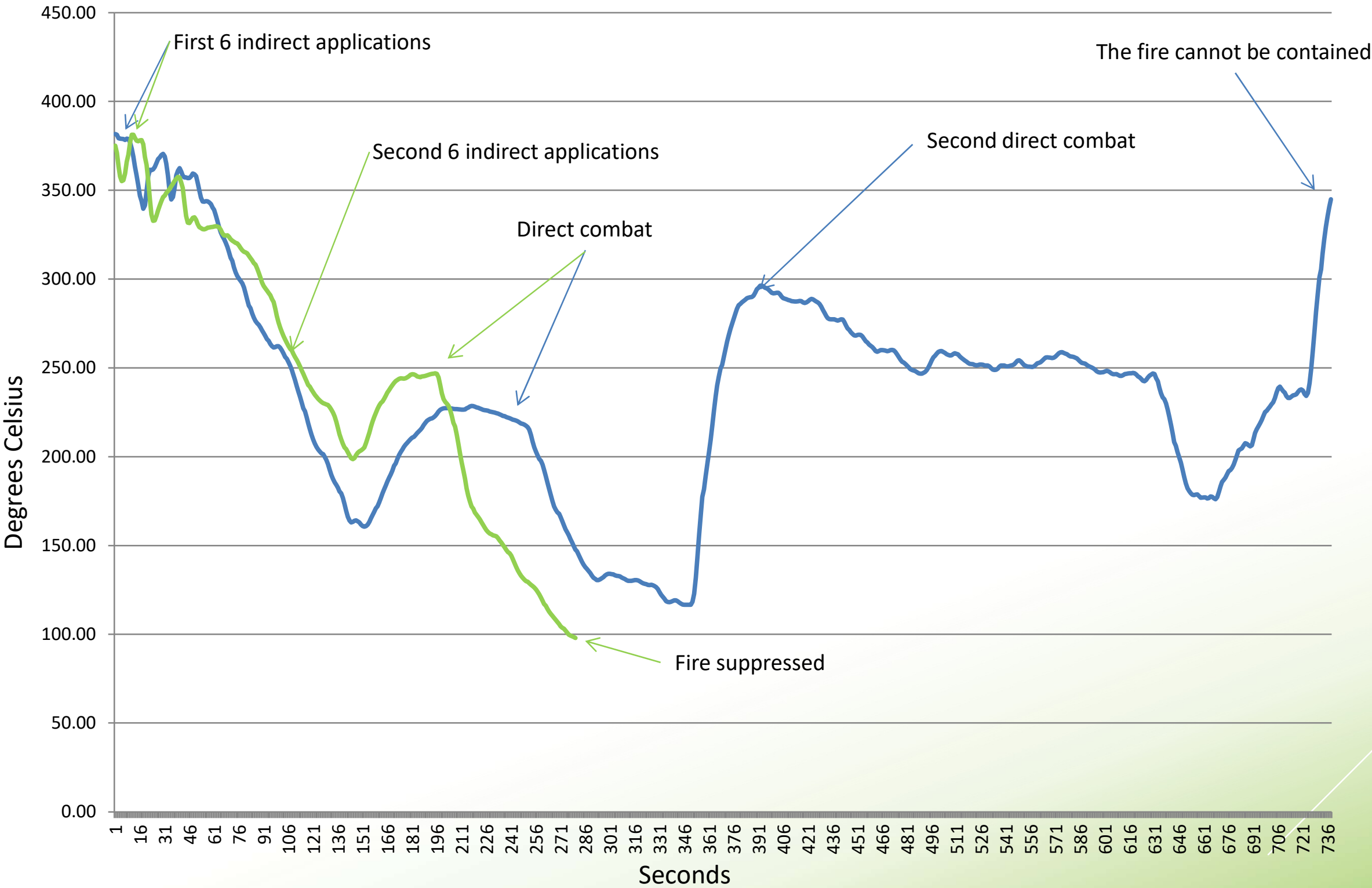
Thermocouple at 2 meters



Water
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TABLE 5

Thermocouple at 1.5 meters



Water
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THANK YOU

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