

1 June 2009

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## **EXPERT SUMMARY – IN RE : C-TRACK**

This document is submitted with any C-track evidence type document signed by Mark Hill. The document was drafted after consultation with Counsel regarding Ctrack evidence prepared by Mark Hill.



**DigiCore**  
FLEET MANAGEMENT

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## **INTRODUCTION**

Take notice that the below described expert, Mr Mark Winston Hill ("Hill"), will express the view that the C-Track system is reliable and that this honourable forum should admit such evidence as may be generated by the C-Track System and placed before this honourable forum.

## **QUALIFICATIONS**

The designated expert witness is Hill, a Regional Director for DigiCore Fleet Management SA (Pty) Limited.

Notable highlights of Mr Hill's employment history are :

**1986    Obtained Bachelor of Commerce degree. Unisa.**

**Between 1985 and 1987 employed by Control Instruments (obtained specialist training in the field of tachographs and microscopic tachograph chart analysis);**

**1992 entered into membership of the Institute of Tachograph Chart Analysts and Related Onboard Recording Instruments of South Africa; Membership No. 6061**

**Between 1987 and 1999 was proprietor of Tachograph and Instrument Specialists, which company specialised in tachograph, onboard computer vehicle control systems and satellite tracking systems;**

**1999 to date, employed as regional director for DigiCore Fleet Management SA (Pty) Ltd with special obligation to consider and present C-Track data analysis and reports for litigation purposes.**

Within DigiCore Fleet Management SA (Pty) Ltd, Hill is the most senior representative responsible for preparing, submitting and explaining C-Track evidence across the country and has given evidence on a number of occasions before the High Court of South Africa.

By virtue of his experience (of more than 15 years) in the relevant industry, Hill is a proper person to give expert evidence on the C-Track system and on the results generated by that system.



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\*Non-Executive



## C-TRACK SYSTEM

### Nature of C-Track System

The C-Track unit fitted in vehicles is made up of various components, namely :

**The C-track unit itself, which records GPS position, vehicle status, speed, etc; and transmits this data periodically, via GSM means, back to the DigiCore Hub and ultimately to the clients C-track software base.**

**The C-track wiring harness, which provides power and allows for recording of ignition on / off statuses, etc; connection to the GPS Antenna and Speed Sensor.**

**A GPS antenna, which is responsible for obtaining satellite GPS positions;**

**A road speed sensor, which is a mechanical device calibrated to provide a record of speed and distance.**

In colloquial terms the system can be described as a combination of a GPS system (eg Garmin), a cellular telephone (for communication purposes) and a vehicle information system (such as that found on formula one motor cars or long distance trucks).

### Certification

There is no SABS standard for certifying a product of this nature. Nonetheless, DigiCore Fleet Management is a member of the panel convened by the SABS for the purposes of designing such a standard.

In the interim, the SABS regards a European certification as a sufficient mark of quality. Annexed hereto marked "SABS Nov08.Pdf" is a letter addressed to the Editor of the Mercury Newspaper, Durban by the SABS reflecting that the European standard is an appropriate mark of approval.

In this regard certification has been received by the Netherlands equivalent of the SABS. Annexed hereto marked "E Cert Solo Nov08.Pdf and E Cert Assist Nov08.Pdf" are copies of the certificates of such approval.

### Capability of C-Track System

The C-Track system is designed to deliver the following information :

**GPS positioning information reflected by Latitude and Longitude, Date and Time and recorded at various intervals (Standard interval settings are at two minute intervals however this can vary from customer to customer due to resultant costs);**

**Direction information;**

**Vehicle status (idling, parked, ignition off, driving, etc);**

**Speed information; (And on certain models of C-track – Engine Rev information)**

**Indications of harsh braking or improper acceleration.**



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The C-Track system is widely used by both South African and foreign companies of excellent repute.

In South Africa, as at November 2008, the following companies and entities make use of the system :

**The South African Police Services – installed base of 19 000 units;**

**Telkom (debis Fleet);**

**the KZN Department of Health;**

**the Unitrans Group;**

**the Value Group;**

**the Imperial Motors Group;**

**Umgeni Water;**

**eThekweni Municipality;**

**Kwadukuza Municipality.**

Internationally the system is in use by :

**BHP Billiton Group;**

**Thames Water (UK);**

**Royal Mail (UK).**

### **Accuracy and Tolerances**

The C-Track system is designed to operate in the following tolerances :

**date and time reporting – better than 5 seconds;**

**position reporting – better than 30 metres;**

**speed reporting – better than 1% variance from actual;**

**harsh braking – better than 5 m/s/s;**

**virtual odometer – better than 5% variance from actual.**

### **Potential Anomalies**

Certain potential errors may arise in this system. The sources of such errors are known, do not affect the validity of surrounding data and are easily accounted for on proper consideration of the data and reports generated by the system.

Certain errors may result if the system is unable to lock to the GPS satellite system. In the event that there is an improper locking, that will be reflected on the system as a GPS Unlock status. The system will however remain generally accurate even if there is only limited access to the satellite required.



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## **Potential Anomalies (Continued)**

GPS Speed of travel is in part a derived calculation: determined by dividing the distance between two recorded points by the time it takes to travel that distance. Where a connection to the system is lost, and then regained, the distance travelled may be reflected as being unusually long. For that reason a sudden speed spike may show in the records. Such a spike will be immediately evident as an error and may be discounted by virtue of practical considerations. Speed sensor derived speed is a pulse calibrated calculation. If an incorrect calibration factor is used by the installation technician, this can also result in incorrect reflection of speeds. The system has access to both speed inputs for verification purposes in the presentation of reports prepared by Hill.

On occasion, significant positioning anomalies may be apparent from the report. For example, a vehicle known to be in Durban may appear to be in Antarctica, Cape Town, or Europe. That is generally affected by mechanical failure of the GPS unit and will be a persistent error. The information is also clearly anomalous and can be discounted.

It is almost impossible that an error in positioning will reflect as merely an error within a smaller municipality or even a province. For example, a system is highly unlikely to show that a vehicle is positioned to the south of Durban when it is in fact to the north. Any mechanical error will show a much wider variance of positioning.

Save for mechanical errors, which can be verified at any stage, the system is widely regarded as accurate. Moreover, errors are immediately apparent to the trained eye.

## **Analysis of Data in this Dispute**

**This document is submitted together with any and all documents submitted by Hill in the presentation of his findings.**

## **Conclusion on the system**

For the reasons set out above, Hill will conclude that the C-Track system is reliable and an accurate representation of the movement of vehicles properly installed with the system.

In brief the evidence arising out of the C-Track system is prima facie admissible on the grounds of relevance

the weight to be accorded to the C-Track evidence is dependent upon :

- the number and severability of errors
- the expert evidence used to explain the system
- whether there is any other evidence that corroborates the C-Track evidence

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Thus submitted and signed by Mark Hill on 1 June 2009.



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