

# Why didn't missing jet passengers use their cellphones?

March 19 2014, by Daniel Rook

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Malaysian children are silhouetted as they watch a Malaysia Airlines (MAS) plane taxi on the runway at Kuala Lumpur International Airport in Sepang on March 17, 2014

In the age of smartphones and social media, one question surrounding the disappearance of the Malaysian airliner is why none of the passengers tried to contact relatives, as they did during the 9/11 attacks.

Even the absence of phone calls or emails from those on board the Malaysia Airlines Boeing 777 could provide clues for investigators struggling to solve one of the greatest mysteries of modern aviation.

It may indicate that the plane was flying too high or was over water, or that the passengers were unconscious, possibly due to a change in cabin pressure.

Experts say the chances of the 239 people on board Flight 370 being able to use their mobile devices would have been better the closer they were to a mobile network on the ground.

Many are sceptical that the passengers or crew would have been able to establish and maintain a call using cellphones while travelling at speed, particularly at cruising altitude.

For mobile phones to be used, there must be a contact between the handset and the network—known as a "handshake". This requires a strong enough signal from both a transmission tower and the phone.

"Theoretically, 23,000 feet (7,000 metres) and 45,000 feet are a cell range that terrestrial mobile network could work with," said Singapore-based telecommunications consultant Koh Chee Koon, referring to unconfirmed reports of changes in the plane's altitude after it lost radar contact.

But given the limited transmission power of a commercial mobile phone, as well as the barrier presented by the plane body, "for the [mobile phone](#) to connect to the [mobile network](#) with acceptable strength and quality would require some luck", added Koh.

Experts note that in the case of the September 11, 2001 attacks in the United States, the planes were flying at relatively low altitude over areas

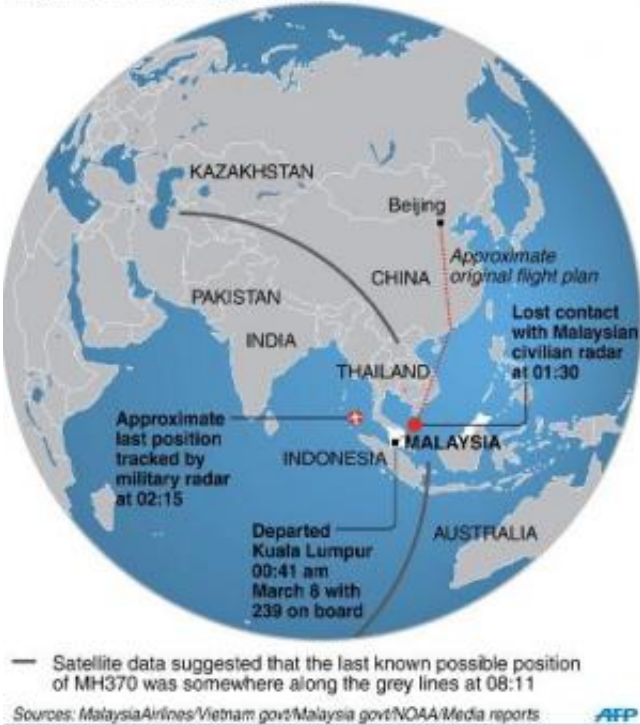
with [cellphone](#) coverage.

In any case most of the calls are believed to have been made from seatback phones and not mobile devices.

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## Malaysia Airlines MH370

Search for the lost plane now involves 26 countries over an area larger than the land mass of Australia



Fact file on the main movements of the missing Malaysia Airlines MH370

Recently some airlines have introduced technology to enable passengers to use their phones in the air using a small cellular base station on board, but Malaysia Airlines said this service was not available on Flight 370.

Without this, a cellphone cannot be used at an altitude of more than roughly 0.5 kilometres in the case of a commercial airliner, and must not

be too far from a cell tower, according to A.K. Dewdney, professor emeritus of computer science at the University of Western Ontario in Canada.

"No cellphone could possibly succeed from an airliner in mid-ocean, even if flying low over the water," he said.

"At normal cruising altitude no cellphone could possibly succeed in making ground contact as it is completely out of reach of the network of towers, in any case," added Dewdney, who conducted experiments after the 9/11 attacks to test the capability of mobile telephones to make calls from the air.

## **Phone records under investigation**

Malaysia Airline chief executive Ahmad Jauhari Yahya said on Monday there was no evidence of any attempt by the people on board to make calls, but he added that "millions of records" needed to be processed.

"It's being done as part of the investigation," he said, without elaborating on the type of records being checked.

Deepening the mystery, Chinese media have reported that relatives heard ringing tones when trying to call passengers' mobile phones.

But experts believe this does not necessarily mean the phones were still functioning.



Students write on a placard carrying messages for the passengers of missing Malaysia Airlines flight MH370 at Kuala Lumpur International Airport (KLIA) in Sepang, outside Kuala Lumpur on March 19, 2014

Even if nobody on board the plane tried to make a call, logs of the "handshakes" might provide some clues about the route taken by the jet after it disappeared.

While many phones would have been switched off in line with airline rules, some people may have forgotten to deactivate their devices.

But to trace any "handshakes" investigators face the challenge of collecting the unique identity numbers for the passengers' [mobile devices](#), as well as signal data from network operators in countries along the possible flight paths, such as Myanmar which still has limited network coverage.

As the flight turned back and crossed over Malaysia after disappearing from radar en route to Beijing, it probably passed over a network area.

After that, the chances of any "handshakes" depend on how low and close to [mobile](#) towers the plane flew.

"Police track cellphones all the time by the last phone call they made," said Ken Dulaney, a US-based analyst with technology research firm Gartner.

But he added that this was only possible if the devices were in reach of a network.

"If they are not in coverage then no one can do anything," he said.

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