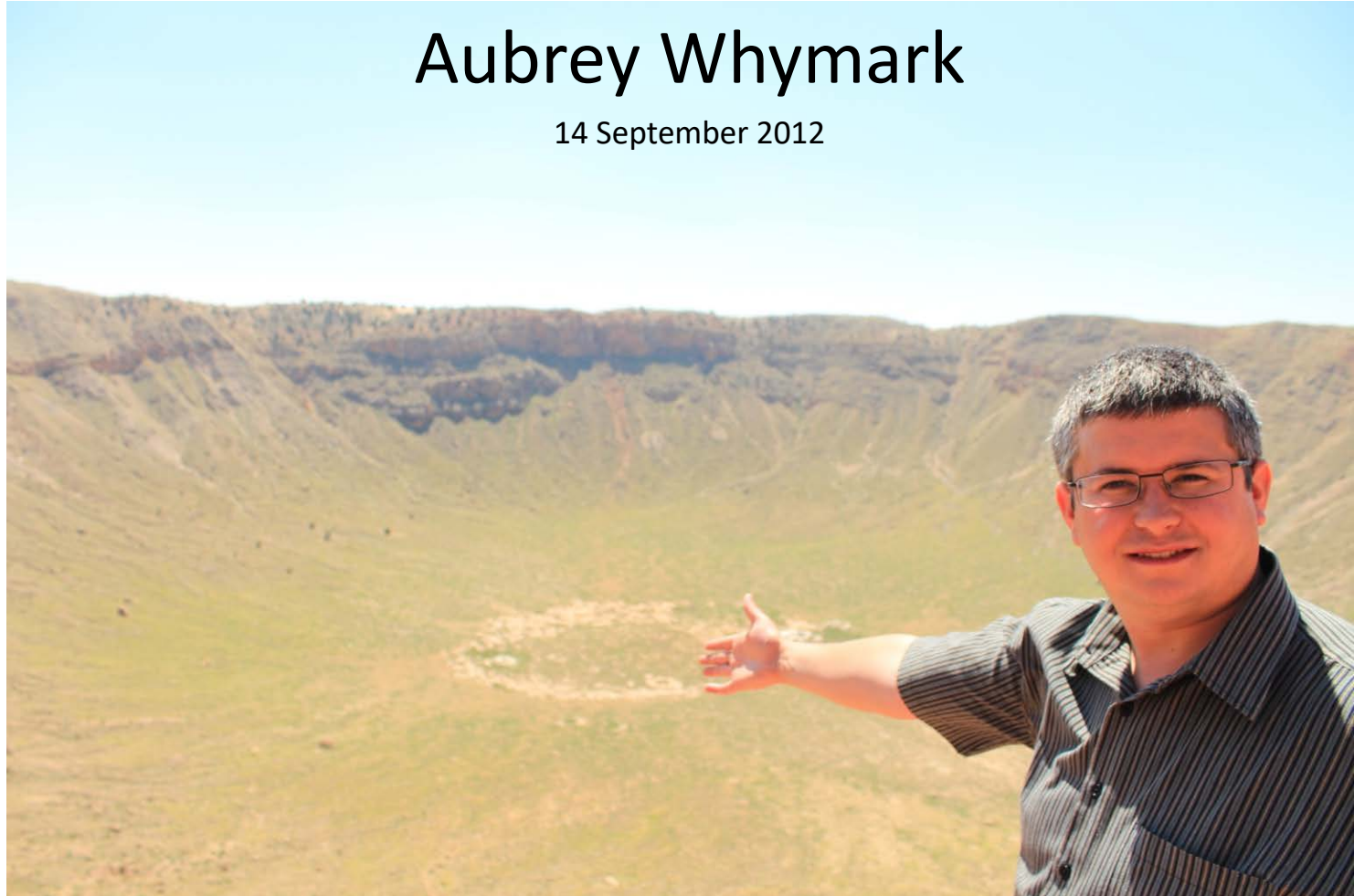


Meteor Crater, AZ

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If you are coming from the west on Interstate-40 look out for Two Arrows and the Two Guns. You will see a sign for Canyon Diablo, close to where the largest meteoritic fragment was found. Turning off Interstate-40, it is a 9 km drive to Meteor Crater. Take time to enjoy the uplifted rim.

Impacts of this magnitude occur roughly every 2,000 years. This is not a tektite forming event as the impact is too small and the target rock is primarily not siliceous.



The museum complex can be seen on the left of the crater rim.







There is a supervised tour of 0.5 km of the crater rim, which is well worth taking. If you wish to walk the entire rim then arrangement must be made prior – I'm not sure how available this is.





Mid-way we have an opportunity to examine some fossils from the rocks of Meteor Crater. These include ammonites, bivalves, burrows and ripples.



....and the short walk continues towards the former museum.



This was the former museum on the rim of the crater. In 1960 a wind storm ripped the roof off the building. I believe the building was finally abandoned after a fire.



Note that this was the official Meteor Crater Museum and not the unrelated American Meteorite Museum run by Harvey Nininger.



An old stove and kettle next to the former museum.



Opposite the former museum a tunnel can be found. This was used to store food out of the summer heat.







The former museum is seen again from this vantage point.



From this vantage point one can also make out the wing of a light aircraft that crashed in the crater on 08 August 1964. Although injured, the two occupants survived the crash.



This is the view at the end of the 0.5 km walk of the crater rim.





Meteor Crater is the Best Preserved and First Proven meteor crater on Earth.

COLLISION & IMPACT



Meteor Crater was formed about 50,000 years ago by a 160-foot diameter meteorite that struck the Earth. The crater is the only one in the world that has been dated and is the only one that has been proven to be the result of a meteorite impact. It is the only one in the world that has been dated and is the only one that has been proven to be the result of a meteorite impact.

Without impact, Earth, Mars, Venus, and Mercury wouldn't exist.



This the largest meteoritic fragment found and it came from nearby Canyon Diablo. It is known as the Holsinger Meteorite and weighs 1406 lbs

TEKTITES... An Unsolved Mystery

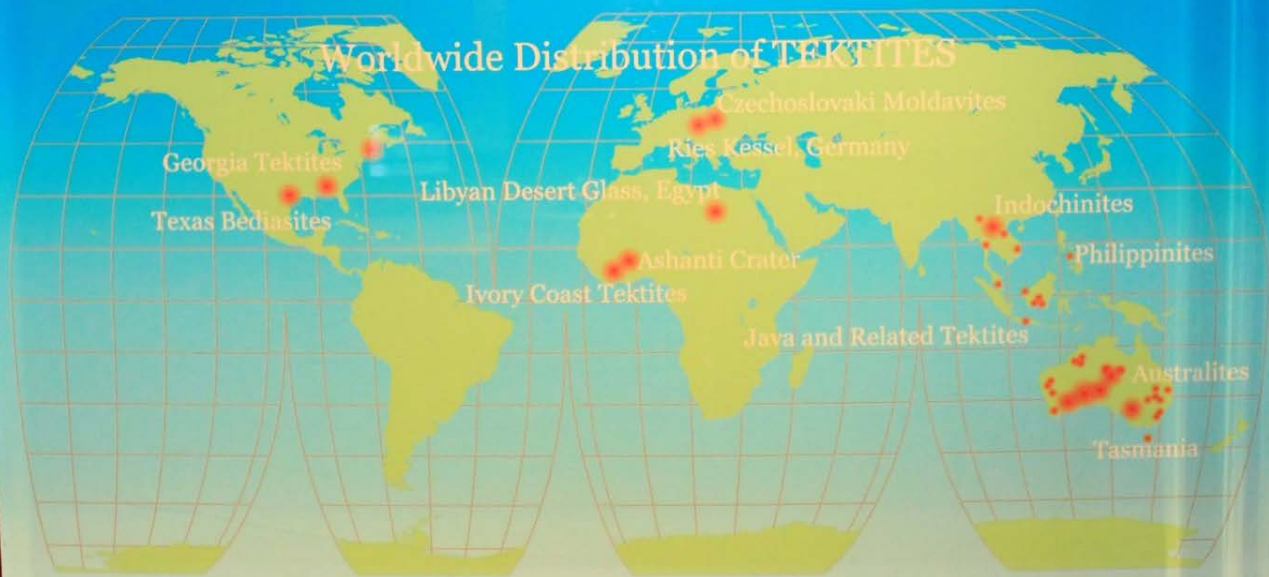
Splashed out of very large impact craters, but where are the craters?

TEKTITES are dark, glossy fragments that appear to have been shock-melted as they splashed after impact. Their peculiar forms and aerodynamic surfaces indicate that they passed through the Earth's atmosphere at speeds great enough to cause remelting.

TEKTITES from Czechoslovakia may have originated from the 14,000,000 year old Ries-Basin, a 15 mile diameter impact crater in Southern Germany.

But what about the younger Australian-Asian **TEKTITE** field... where is the giant crater that formed this?

TEKTITES from various fields have been given distinctive names. These samples are called **INDOCHINITES**.

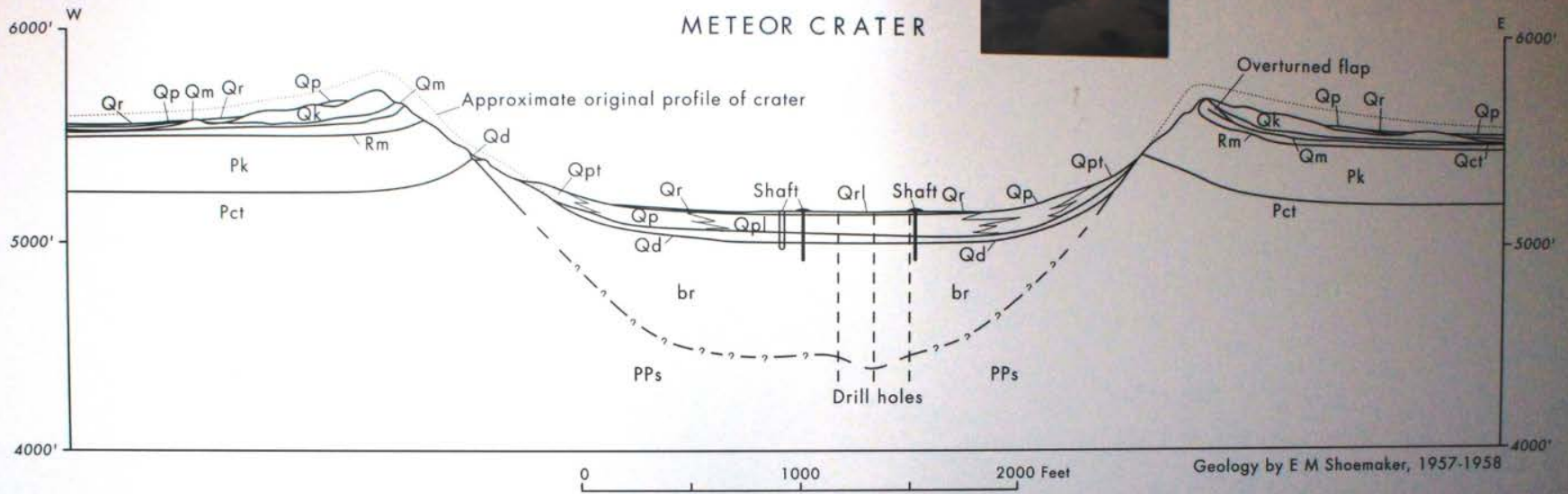


At last, some tektites I hear you say!

Of course, these are not from Meteor Crater. The absence of tektites relates to the size of the impact and the target composition.

Interestingly Darwin Crater is of identical size and has produced mainly impactites (including layered forms) with a few rare bodies that could probably just about be called true tektites. This shows the importance of the target material in tektite production.

METEOR CRATER



Dr. Eugene Shoemaker's
cross-section sketch
of Meteor Crater.

Qr, Recent alluvium
Qrl, Recent playa beds
Qp, Pleistocene alluvium
Qpl, Pleistocene lake beds
Qm, Pleistocene talus

Qd, mixed debris from Coconino, Toroweap, Kaibab and Moenkopi formations; includes lechatelierite and meteoritic material
Qct, debris from Coconino and Toroweap formations
Qk, debris from Kaibab limestone
Qm, debris from Moenkopi formation
br, breccia (includes lechatelierite and meteoritic material)

Rm, Moenkopi formation (Triassic)
Pk, Kaibab limestone (Permian)
Pct, Coconino and Toroweap formations (Permian)
PPs, Supai formation (Permian and Pennsylvanian)

The geology of Meteor Crater:

Moenkopi Formation (shallow marine sandstone & mudstone formed 200 million years ago)

Kaibab Formation (dolomite formed 250 million years ago)

Toroweap Formation (limestone & sandstone formed 255 million years ago)

Coconino Formation (aeolian sandstone formed 260 million years ago)



My son, Atom, is super-keen on astronauts and planets. His definition of a tektite is 'asteroid impact'.

My definition is that tektites are naturally occurring glasses formed by the melting and distal ejection of surface layers of silica-rich rock by large cosmic impacts.

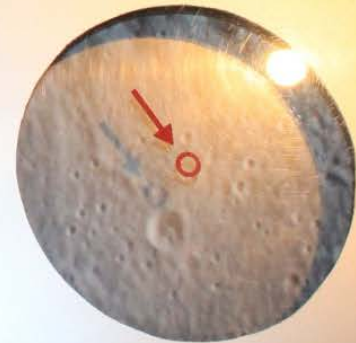
He's just turned two though, so we'll let him off. On the tour we were told that picking up rocks was strictly prohibited, which was rapidly followed by Atom repeatedly saying 'I want to pick up rocks Daddy'.



In the museum you can have a photo taken as if you were at the bottom of the crater. In reality you're not allowed into the crater.



This ring represents the size of Meteor Crater, which is about three-quarters of a mile (1.2 kilometers) in diameter. Slide the ring to compare it to some of the craters on the moon. What do you notice?



This puts things into perspective. Meteor Crater is compared with lunar craters.



The museum was very good in terms of explanation.



Another view of part of the museum.



From here you can see the three observation decks. One at the top and two lower down.



This is a view from the lower observation deck.



This 30 ton limestone boulder is the size of a house. It was thrown out during the impact.



The same house-sized boulder.



Drilling in the southern part of the crater. The red colour is from a mine in 1929 – the final attempt to find the meteorite. Later efforts to find the meteorite were focused in this area as the meteorite was believed to have come from the North. Of course today we know the meteorite would have been almost wholly vaporized by the impact.















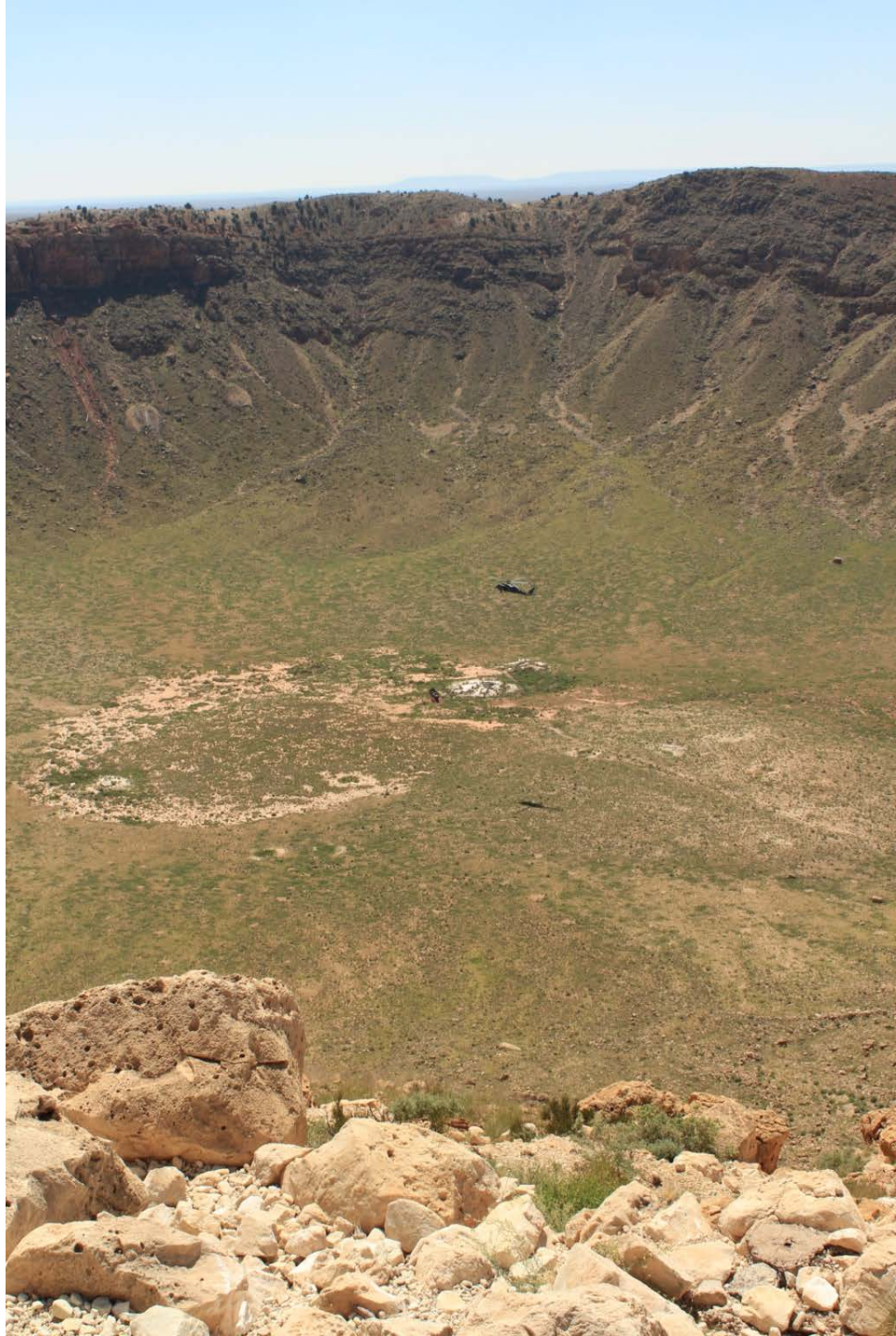


The middle viewing deck. A total of three viewing decks exist, one slightly below and one slightly above this one. You are not allowed to walk into the crater.





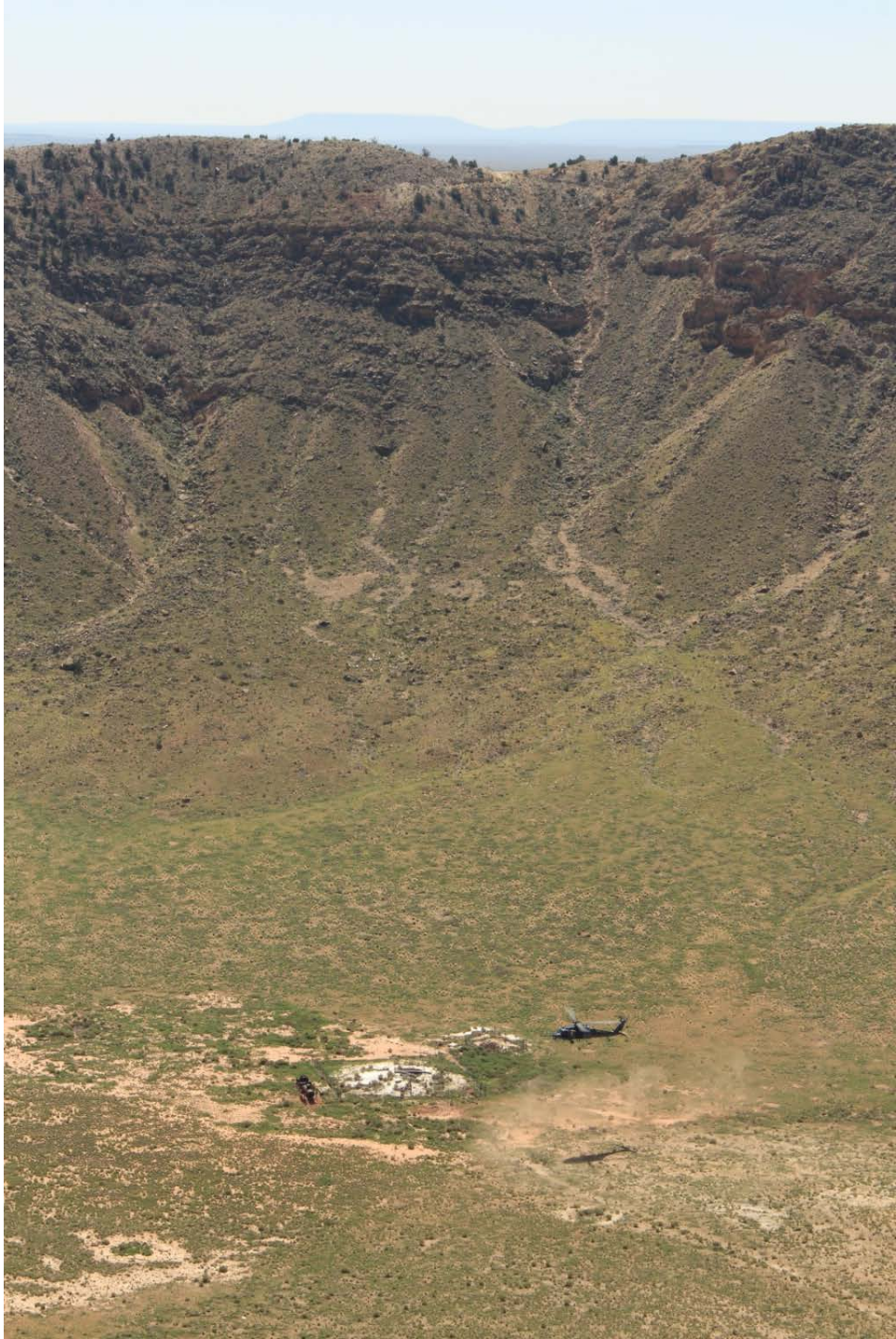
A military Black Hawk helicopter is spotted. These are 64 ft 10 in or 19.76 m in length. This helicopter circled the crater and then went in for closer inspection. It gives a good sense of scale.











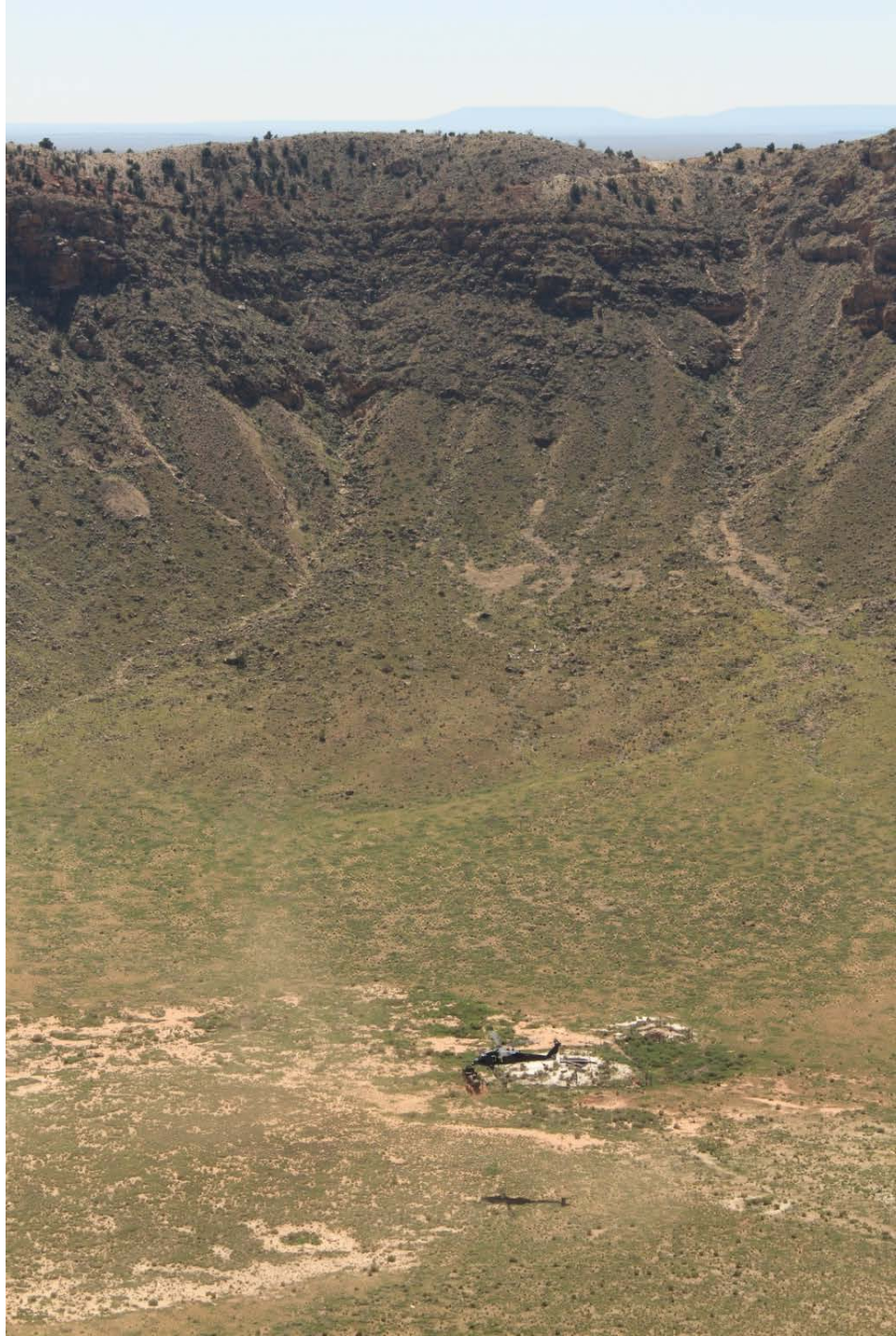




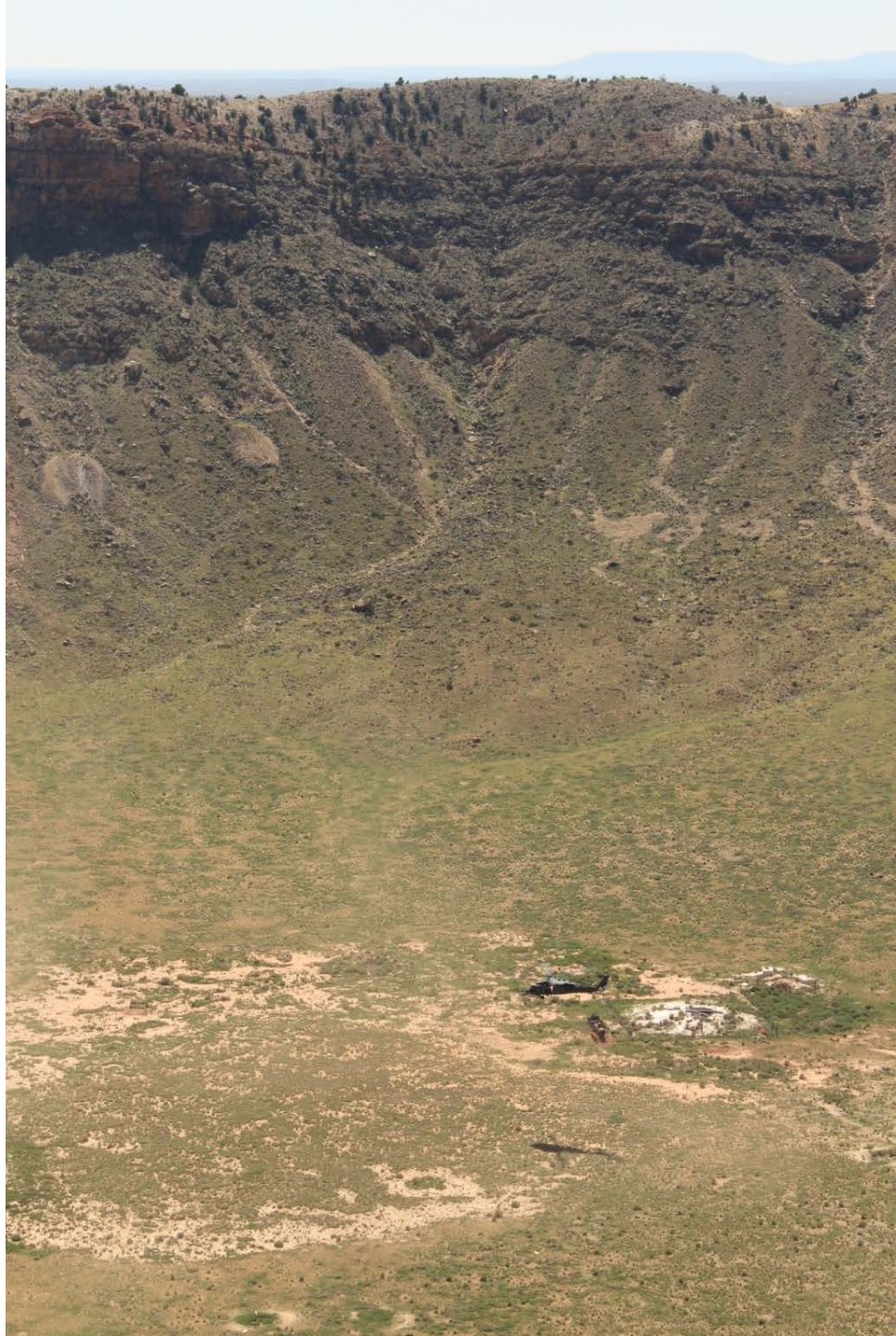




Note the machinery left behind. The main shaft is behind the tail of the helicopter. Against the fence you will also see an American Flag and a cut-out astronaut for scale.















... the Basket Meteorite returned home.



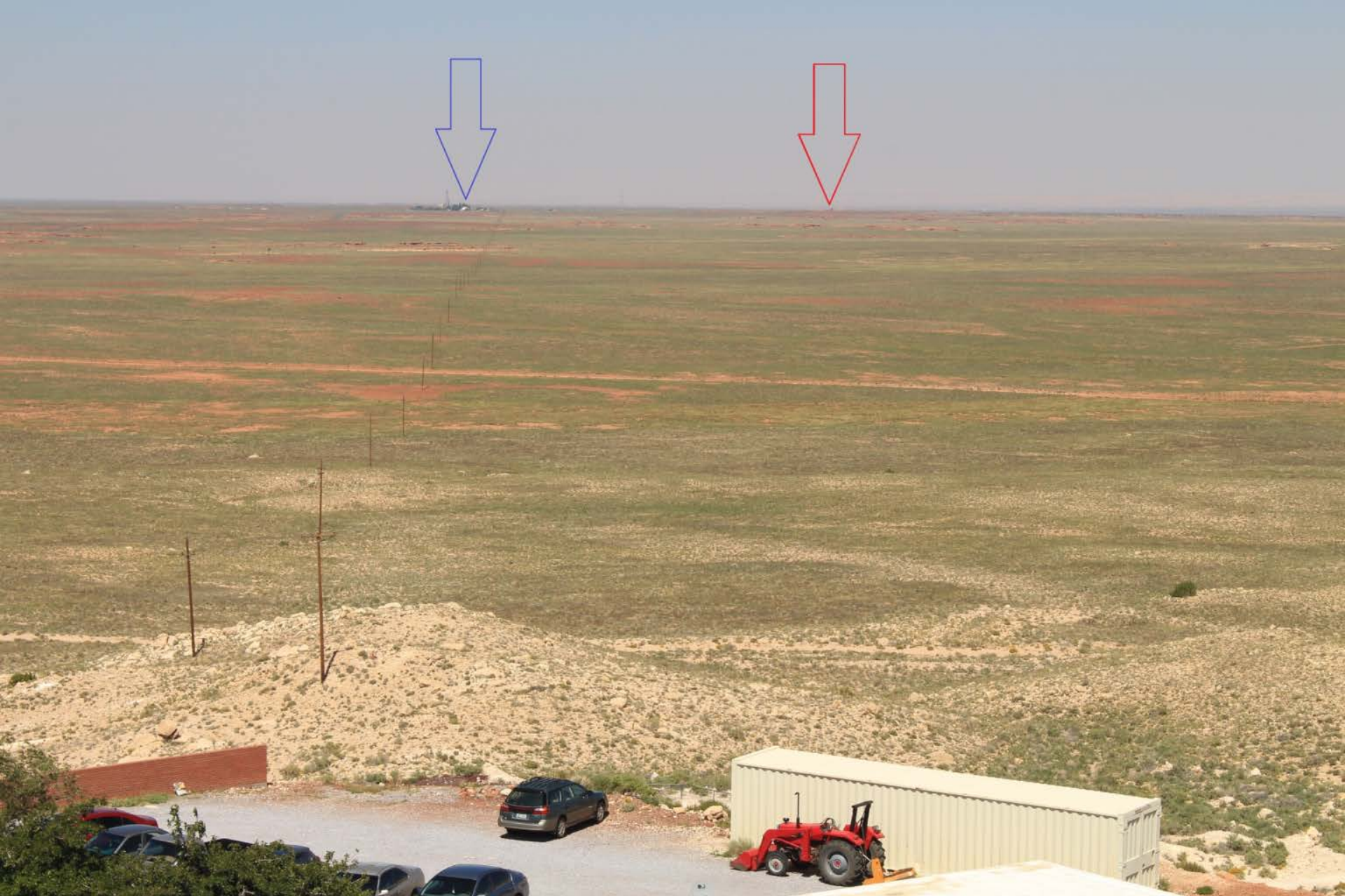
The Basket Meteorite. Stolen from the museum in 1968, now returned.



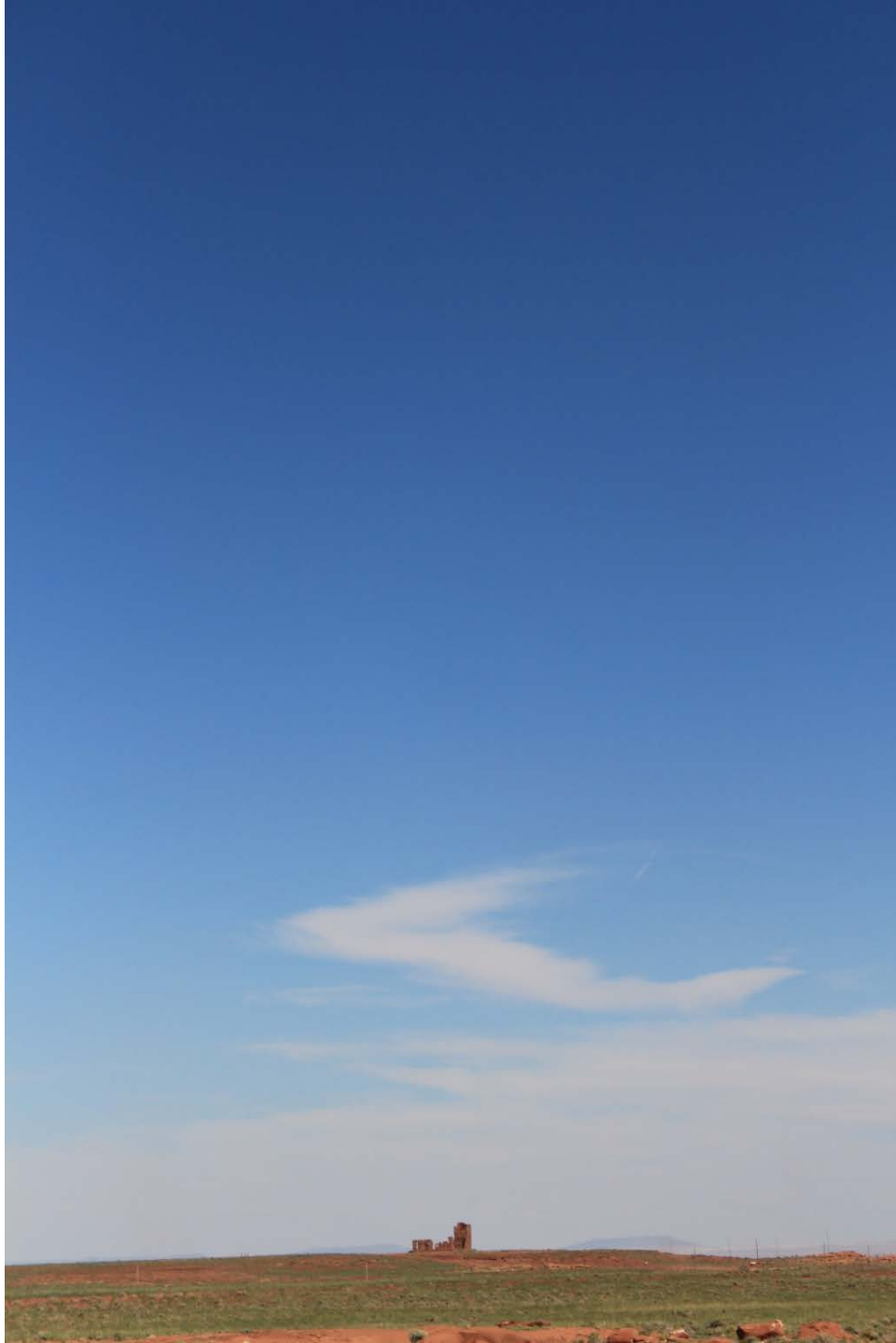
This test capsule, named Boiler Plate 29A, never flew into space. Instead, the capsule was built in 1965 to test the systems that helped Apollo space capsules float upright after splash-down at sea. It can be seen in the museum (outside).



My son, Atom, practising to be an astronaut.



The Harvey Nininger American Meteorite Museum is actually 8 km from Meteor Crater and is marked by the red arrow. The blue arrow is the gas station and RV park.



Although in disrepair and in a state of collapse, the former American Meteorite Museum is still a historical attraction for meteorite collectors.

This museum was close to the main road. It was open from 1946 to 1953. The road to the crater was not paved until 1957, so many people probably simply viewed the crater from this museum.







This is as close as you can get. No trespassing I'm afraid.



The former American Meteorite Museum is located 1 km down a road opposite this gas station and adjacent RV park.



The view of Meteor Crater (red arrow) from close to the former American Meteorite Museum.



This is as close as we got to the former American Meteorite Museum, about 700 metres away.

I hope you enjoyed this presentation



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