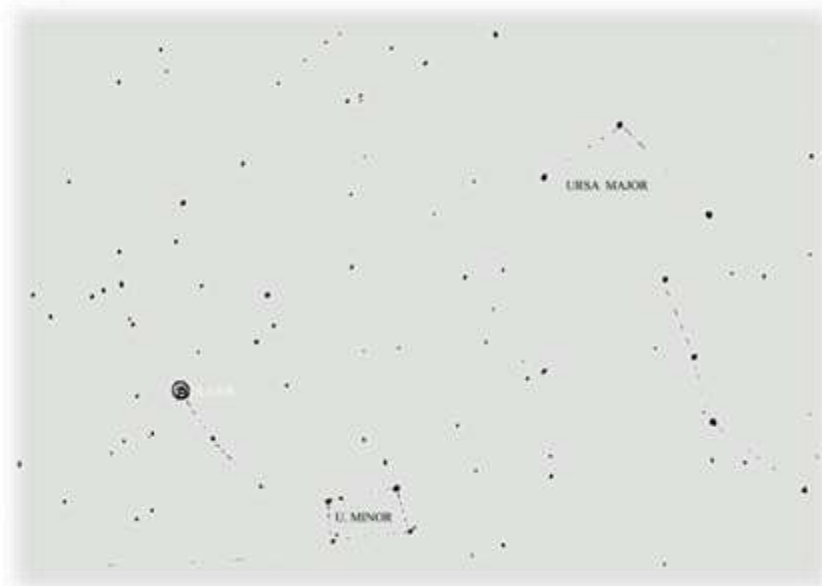


## PREHISTORIC CARDINAL POINTS AT USGALIMAL, GOA – 7

*...shaman-priests kept track of celestial cycles, counted out the days in a lunar calendar, and established the times for important public events like the harvest festival and the winter solstice ceremony. Many people gathered for these holidays...*

**E.C. Krupp, Echoes of the Ancient Skies**



The fixed Polaris (North Star) seen every night with the stars, the Small Dipper and Big Dipper (Ursa Major) circumambulating around.

Now dependent on farming for their lively hood, it was imperative to know about the optimal time for planting, harvesting and thanksgiving that led to the development of first Neolithic calendar.

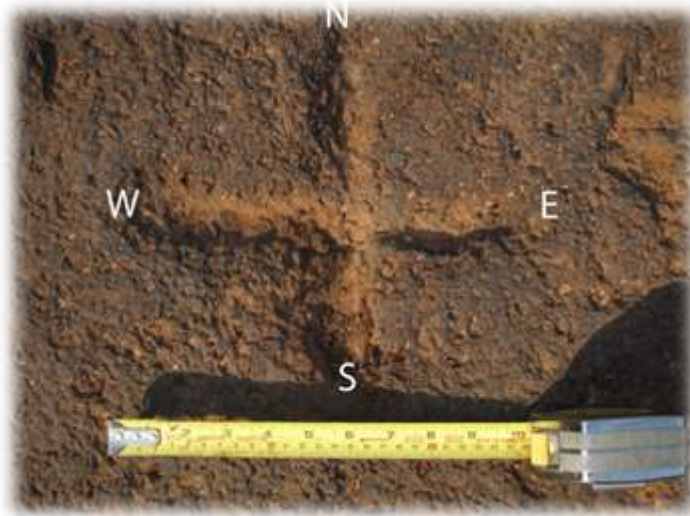
The predictable risings and the settings of the sun were a daily experience – associated with the cycle of birth and death and re-birth. This is also reflected in the carvings of the bulls, moving from east to west. More importantly, it was necessary to have the knowledge of the heavenly bodies of the night sky and the importance of the fixed position of Polaris (Alpha Draconis in 3000 BC), relative to all the other stars and constellations. From their vantage point at the rivers' bank, Polaris would have appeared every night from a fixed position, and was a navigational marker.

There is archaeological evidence to indicate that the earliest settlers of Goa were keen sky watchers and knowledgeable at determining the correct orientation

of their surroundings, measuring time and scheduling their periodic ceremonies and rituals.



Located to the west and close to water's edge



Enlarged view of the carving and its size

When a compass was placed at the intersection of the carved unequal arms, located to the west of the pools, the cardinal points matched perfectly, as shown in the above photograph. The different lengths of the arms may have helped to easily distinguish the four cardinal directions.

References and Notes.

1. E.C. Krupp, *Echoes of the Ancient Skies: The Astronomy of Lost Civilizations*, **Dover Publications, Inc.** N.Y. 2003.
2. The night sky picture of Usgalimal was adapted from Google Night Sky Map seen from ground level. (Elevation at Usgalimal is 167ft.)
3. Thanks to 6-yr. old Erwin Rodrigues (see above), for toying with his compass during the visit and placing in the middle of the carving. This was witnessed by others in the group.