

KOKINO CALENDAR

At the end of the third millennium B.C. and at the beginning of the second millennium B.C. people that were living on the Balkan Peninsula started to depart from the nomad way of living. Land cultivation and planned crop-growing obtainable people with huge and stabile quantities of food as a guarantee for peaceful live and survival in the severe surrounding. People started building permanent settlements, and crafts alongside with the agriculture and livestock breeding started to appear. All these diverse activities impose the need for better and greater organization of the community as well as division of the tasks and responsibilities.

Even earlier to the occurrence of these developments, people has notice the link between the Sun movement and the changes happening within the biological cycle of the plants. Base on their accumulated experience they all knew how and when to collect the fruits of the plants, but in order to have better crops it was necessary accurately to determine the plants seeding time periods. Therefore the need for time measuring and determination of the periods for the beginning and finishing of the agricultural works emerged. In the past, places such as the Megalithic Observatory Kokino actually had this role and purpose.

Same as in the other ancient observatories, movements of the Sun and the Moon were observed and marked on Kokino as well. Three stone markers have been clearly identified on Kokino which purpose is marking the places of the Sun raise in the days of the winter solstice, summer solstice and equinox. Also, four other stone markers as identified for marking the position of the Moon raise in the days of the summer and winter major standstills of the Moon, as well as the places for the summer and winter minor standstills of the Moon. Researches in the last few months have shown that there are two other markers used for measuring the length of the synodic or lunar month. In addition to this as additional information the length of the lunar month in winter is 29 days, and in summer the length is 30 days. Thus, for the first time there are evidences that in one observatory not just Moon movement and the phases were observed but also the time was really measured.



Figure 1. Moonrise 05.12.2006

Stone block found in the Observatory Kokino is with specially crafted markers for marking the places of the Moon raise in the day of winter major standstill (fig.1) and in the day of next raise of the Full Moon, 29 days later (fig.2) known as a lunar month length (fig.3). Same stone block as the above mentioned can be

found for the summer period used for measuring the lunar month length, when the length of the lunar month is 30 days.



Figure2. Moonrise 03.01.2007



Figure3. Lunar Month

This leads us to the fact clearly emerging from the evidences that on the Megalithic Observatory Kokino people knew about the cycle of 19 years when in the same calendar day we have appearance of the same phase of the Moon, and that the length of the winter months is 29 days, and summer months is 30 days. Observing the Sun movements, ancient inhabitants around Kokino knew that in the course of one year

there were 12 or 13 months, taking into consideration the fact that they knew that in the cycle of 19 years there are 12 years with 12 lunar months and 7 years with 13 lunar months. In accordance to the existing markers it can be confirmed that the year was divided on two seasons: winter and summer. During the winter, each of those six months had 29 days, and during the summer each of the six summer months had 30 days of length. In the “leap years“, those seven years, one summer month was added with 30 days of length. In the 19 years cycle each 2, 5, 8, 10, 13, 16, 18 year had 13 months. Measured in such way, the difference between the length of the lunar and tropical years disappears each 8 years, and at the end of the 19 years cycle only 3 days are added. This is the method used for development of the Kokino Calendar.

This method of calendar development is similar to the so called Metonic cycle, discover with theoretical methods and measurements by the Meton in the 5th century B.C. In this cycle again we have cycle of 19 years where 7 years contain 13 lunar months, where in six years we have one lunar month with a length of 30 days added, and in the seventh year we have one lunar month with 29 days length added. Meton calculations are base on the tropical year length of 365 days in which way at the end of the 19 years cycle we have equalization of the lengths of the lunar and the solar cycle.

Kokino Calendar development principles and the differences with the cycle of Meton are presented in the following table:

KOKINO CALENDAR				METON IC CYCLE		
Year in the Kokino Calendar	Number of the Lunar months	Number of days	Number of days in a tropical year	Difference in days with the tropical year	Number of days in the Metonov Cycles	Difference in days with the tropical year
1	12	354	365	-11	354	-11
2	13	384	365	+8	354	-22
3	12	354	365	-3	384	-3
4	12	354	366	-15	354	-15
5	13	384	365	+4	354	-26
6	12	354	365	-7	384	-7
7	12	354	365	-18	354	-18
8	13	384	366	0	354	-30
9	12	354	365	-11	384	-11
10	13	384	365	+8	354	-22
11	12	354	365	-3	384	-3
12	12	354	366	-15	354	-15
13	13	384	365	+4	354	-26
14	12	354	365	-7	384	-7
15	12	354	365	-18	354	-18
16	13	384	366	0	354	-30
17	12	354	365	-11	384	-11
18	13	384	365	+8	354	-22
19	12	354	365	-3	383	-4

The archaeoastronomical analyze has shown that the starting years of the Kokino Calendar were the years such 1848 B.C., 1829 B.C., 1810 B.C., 1792 B.C., etc. New Year started on a day of a winter solstice. In all 19 years, only in the starting years the night with New Moon was followed by the morning of the day of the solstice. This was of a special importance for the people in that time, not just as a start of the new calendar cycles but also in religious sense as a day with the enormous potential for new birth and renovation of the power of the Sun and the Moon, and as part of that of the renovation of the faith of the people for renewal of the life of the people, animals and plants.