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The Prediction of the Thermohydrogravidynamic Theory Concerning the First Subrange of the Strongest Intensifications of the Global Natural Processes of the Earth in 2017 Since 10 April, 2017 and Before 16 July, 2017

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Abstract—

The article presents the prediction (made on 10 April, 2017) of the developed thermohydrogravidynamic theory of the global natural (sesmotectonic, volcanic, climatic and magnetic) processes of the Earth concerning the first subrange of the strongest intensifications (since 10 April, 2017 and before 16 July, 2017) of the global natural processes of the Earth determined by the minimal (near 20 April, 2017) combined integral energy gravitational influence on the internal rigid core of the Earth (and on the Earth as a whole) of the planets (Mercury, Venus, Mars and Jupiter) and the Sun due to the gravitational interactions of the Sun with Jupiter Saturn, Uranus and Neptune.

Keywords*— *Thermohydrogravidynamic Theory, Cosmic Geophysics, Cosmic Seismology, Generalized First Law of Thermodynamics, Seismotectonic, Volcanic, Climatic and Magnetic Activities, Non-stationary Cosmic Gravitation, Natural Disasters.

I. INTRODUCTION

The predictions of the devastating earthquakes ([1]-[4]) and the climatic processes ([4]-[6]) of the Earth are the urgent problems ([7], [8]) for humankind before the founded ([7], [8]) increased intensification (during the forthcoming first subrange 2020÷2026 [7], [8]) of the global natural (sesmotectonic, volcanic, climatic and magnetic) processes ([7], [8]) of the Earth. We presented [9] the confirmed validity of the global prediction thermohydrogravidynamic principle (3) of the thermohydrogravidynamic theory ([2]-[4], [6]-[9]) concerning the strongest intensifications of the global natural (sesmotectonic and climatic) processes of the Earth in 2016 since 1 September, 2016 and before 26 January, 2017. In this article, we present (to the International Journal of Emerging Research in Management and Technology) the prognostication of the thermohydrogravidynamic theory ([2]-[4], [6]-[9]) of the global natural processes concerning the different forthcoming ranges (characterized by the calculated probabilities) of intensifications (since 10 April, 2017) of the global natural (sesmotectonic and climatic) processes of the Earth since 10 April, 2017 and before 16 July, 2017.

In Section 2 we present the established generalized formulation (1) of the first law of thermodynamics ([2]-[4], [6]-[9]) for the symmetric stress tensor $\mathbf{T}$ [10] and the established ([7]-[9]) global prediction thermohydrogravidynamic principles (3) and (4) determining the maximal temporal intensifications of the global and regional natural (sesmotectonic, volcanic, climatic and magnetic) processes of the Earth related with the maximal and minimal combined cosmic integral energy gravitational influences ((3) and (4), respectively, for the time moments $t = t^*(\tau_{c,r})$ and $t = t_*(\tau_{c,r})$) on the considered internal rigid core $\tau_{c,r}$ (of the Earth) subjected to the combined cosmic integral energy gravitational influence of the planets of the Solar System, the Moon and the Sun (owing to the gravitational interaction of the Sun with the outer large planets).

In Section 3 we present the prognostication based on the global prediction thermohydrogravidynamic principle (4) concerning the strongest intensifications of the global natural (sesmotectonic, volcanic, climatic and magnetic) processes of the Earth determined by the minimal (for the time moment $t_*(\tau_{c,r}, 2017) = 2017.3$, which corresponds approximately to 20 April, 2017) combined planetary and solar integral energy gravitational influences on the internal rigid core $\tau_{c,r}$ of the Earth.

In Section 4 we present the conclusions.

II. THE GENERALIZED FORMULATION OF THE FIRST LAW OF THERMODYNAMICS AND THE GLOBAL PREDICTION THERMOHYDROGRAVIDYNAMIC PRINCIPLES

Based on the general equation of continuum movement [10], the classical differential formulation [11] of the first law of thermodynamics for the one-component macrodifferential continuum element, the decomposition $\mathbf{P} = p\boldsymbol{\delta} + \boldsymbol{\Pi}$ [11] for the pressure tensor $\mathbf{P} = -\mathbf{T}$ [10], the viscous-stress tensor $\boldsymbol{\Pi}$ [11] and the symmetric stress

tensor $\mathbf{T}$ [10] ($\boldsymbol{\delta}$ is the Kronecker delta-tensor, p is the thermodynamic pressure), we derived ([2]-[4], [6]-[9], [12]) the generalized differential formulation of the first law of thermodynamics (for individual finite continuum region τ considered in a Galilean frame of reference with respect to a Cartesian coordinate system K shown on Fig. 1):

$$dU_\tau + dK_\tau + d\pi_\tau = \delta Q + \delta A_{np,\partial\tau} + dG, \tag{1}$$

where δQ is the classical ([10], [11], [13], [14]) infinitesimal change of heat across the continuum boundary surface $\partial\tau$ of the continuum region τ, dU_τ is the classical ([10], [11], [13], [14]) infinitesimal change of the internal thermal energy U_τ, dK_τ is the established ([2]-[4], [6]-[9], [12]) infinitesimal increment of the macroscopic kinetic energy K_τ ([15], [16]) of the continuum region τ, $d\pi_\tau$ is the infinitesimal increment of the gravitational potential energy π_τ ([2]-[4], [6]-[9], [12]) determined by the potential ψ of the combined (cosmic and terrestrial) non-stationary gravity field, $\delta A_{np,\partial\tau}$ is the generalized ([2]-[4], [6]-[9], [12]) infinitesimal work done by non-potential terrestrial stress forces acting on the continuum boundary surface $\partial\tau$ of the continuum region τ,

$$dG = dt \iiint_\tau \frac{\partial\psi}{\partial t}\rho dV \tag{2}$$

is the infinitesimal combined (cosmic and terrestrial) non-stationary energy gravitational influence ([2]-[4], [6]-[9], [12]) on the continuum region τ during the time interval dt. The relation (2) for dG takes into account the partial derivative $\partial\psi/\partial t$ of the potential ψ of the combined (cosmic and terrestrial) non-stationary gravitational field, the local mass density ρ of the differential volume dV in the continuum region τ.

The rigorous global prediction thermohydrogravidynamic principles (determining the maximal temporal intensifications near the time moments $t = t^*(\tau_{c,r})$ and $t = t_*(\tau_{c,r})$, respectively, of the thermohydrogravidynamic processes in the internal rigid core $\tau_{c,r}$ and in the boundary region τ_{rf} between the internal rigid core $\tau_{c,r}$ and the fluid core $\tau_{c,f}$ of the Earth) are formulated as follows ([7]-[9], [17]):

$$\Delta G(\tau_{c,r}, t^*(\tau_{c,r})) = \max_t \int_{t_0}^{t} dt' \iiint_{\tau_{c,r}} \frac{\partial\psi_{comb}}{\partial t'}\rho_{c,r}dV - \text{local maximum for time moment } t^*(\tau_{c,r}), \tag{3}$$

and

$$\Delta G(\tau_{c,r}, t_*(\tau_{c,r})) = \min_t \int_{t_0}^{t} dt' \iiint_{\tau_{c,r}} \frac{\partial\psi_{comb}}{\partial t'}\rho_{c,r}dV - \text{local minimum for time moment } t_*(\tau_{c,r}). \tag{4}$$

The global prediction thermohydrogravidynamic principles (3) and (4) define the maximal and minimal combined cosmic integral energy gravitational influences ((3) and (4), respectively, for the time moments $t = t^*(\tau_{c,r})$ and $t = t_*(\tau_{c,r})$)on the considered internal rigid core $\tau_{c,r}$ (of the Earth) subjected to the combined cosmic integral energy gravitational influence of the planets of the Solar System, the Moon and the Sun (owing to the gravitational interaction of the Sun with the outer large planets). We concluded ([7]-[9], [17]) (based on the generalized differential formulation (1) of the first law of thermodynamics used for the internal rigid core $\tau_{c,r}$ of the Earth) that the maximal intensifications of the established thermohygrogravidynamic processes are related with the corresponding maximal intensifications of the global and regional natural (seismotectonic, volcanic, climatic and magnetic) processes of the Earth.

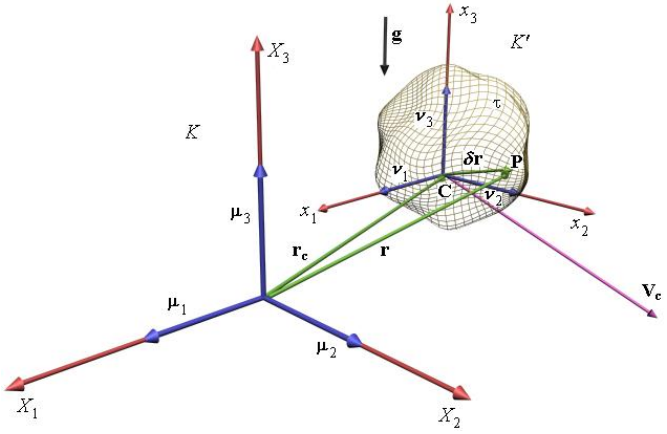

Fig. 1 Cartesian coordinate system K of a Galilean frame of reference and an individual finite continuum region τ subjected to the non-stationary Newtonian gravitation field and non-potential terrestrial stress forces

We used ([9], [17]) the principle (3) to obtain in advance (on 31 August, 2016 [9], [17]) the numerical time moment (for the considered real planetary configurations of the Earth and the planets of the Solar System) $t^*(\tau_{c,r}, 2016)$

$$t^*(\tau_{c,r}, 2016) = 2016.7666, \quad (5)$$

corresponding to the maximal combined planetary and solar integral energy gravitational influence (3) on the considered internal rigid core $\tau_{c,r}$ of the Earth in 2016. We pointed out [9] the unquestionable fact that the date of 6 October, 2016 (when "Hurricane Matthew has gained new muscle over the Bahamas" [18]) is in the perfect agreement with the calculated (in advance [17], on 31 August, 2016) numerical time moment $t^*(\tau_{c,r}, 2016) = 2016.7666$ (corresponding approximately to 6 October, 2016) of the maximal combined planetary and solar integral energy gravitational influence (3) on the internal rigid core $\tau_{c,r}$ of the Earth (and on the Earth as a whole) in 2016. We pointed out [9] that the probability of this perfect agreement (considered as casual coincidence) is approximated by the obvious numerical value $(1/365)\cdot(1/365)$, which is very small number confirming that this perfect agreement is not a casual coincidence. We concluded [9] that this perfect agreement may be considered as the convincing evidence of the validity of the established ([7], [8], [17]) global prediction thermohydrogravidynamic principle (3) concerning the maximal intensifications of the global and regional climatic activities of the Earth. We concluded [9] that this perfect agreement may be considered also as the convincing evidence of the cosmic (combined planetary and solar) energy gravitational genesis of the global and regional climatic (meteorological) activities of the Earth related with strong hurricanes.

By considering (on 10 April, 2017) the additional significant earthquakes (according to the U.S. Geological Survey) in 2016 since 9 December, 2016 and before 13 January, 2017, we have the additional unquestionable facts that the powerful 7.9-magnitude (according to the U.S. Geological Survey) earthquake struck the Papua New Guinea on 17 December, 2016 and the powerful 7.6-magnitude (according to the U.S. Geological Survey) earthquake struck the Chile on 25 December, 2016 confirming the validity of the predicted (in advance, on 7 November, 2016 [9]) range $(28\ \text{June}, 2016 \div 13\ \text{January}, 2017)$ of the probable strongest intensifications (characterized by the corresponding probability $\Pr = 0.916$) of the global seismotectonic and climatic processes of the Earth in 2016 since 28 June, 2016 and before 13 January, 2017. By considering (on 10 April, 2017) the significant additional earthquakes (according to the U.S. Geological Survey) in 2016 since 9 December, 2016 and before 26 January, 2017 (which is the date of the publication [9]), we have the next additional unquestionable fact that the powerful 7.9-magnitude (according to the U.S. Geological Survey) earthquake struck the Papua New Guinea on 22 January, 2017 confirming the validity of the predicted (in advance, on 7 November, 2016 [9]) range $(15\ \text{June}, 2016 \div 26\ \text{January}, 2017)$ of the probable strongest intensifications (characterized by the corresponding probability $\Pr = 0.99$) of the global seismotectonic and climatic processes of the Earth in 2016 since 15 June, 2016 and before 26 January, 2017. The considered [9] strongest intensifications of the global seismotectonic and climatic processes of the Earth (in 2016 since 1 September, 2016 and before 9 December, 2016 [9]) and the additional powerful earthquakes (occurred on 17 December, on 25 December, 2016 and on 22 January, 2017) confirmed the validity of the previous prediction [19] concerning "the cosmic energy gravitational genesis of the forthcoming intensifications of the global seismotectonic, volcanic, climatic and magnetic activities since 2016 AD" [19].

III. THE PREDICTION OF THE THERMOHYDROGRAVIDYNAMIC THEORY CONCERNING THE STRONGEST INTENSIFICATIONS OF THE GLOBAL NATURAL PROCESSES OF THE EARTH SINCE 10 APRIL, 2017 AND BEFORE 16 JULY, 2017

We predict in advance (on 10 April, 2017) the forthcoming strongest intensifications of the global natural processes of the Earth (since 10 April, 2017 and before 16 July, 2017) determined by the minimal (in 2017) combined planetary and solar integral energy gravitational influence (4) on the internal rigid core $\tau_{c,r}$ of the Earth near 20 April, 2017. To predict in advance (on 10 April, 2017) the forthcoming ranges of the next active forthcoming intensifications of the global natural (seismotectonic, volcanic, climatic and magnetic) processes of the Earth since 10 April, 2017 (owing to the absence of the strong earthquakes (characterized by the magnitudes $M \geq 7.0$) in the range from 31 January, 2017 to 10 April, 2017) and before 16 July, 2017, we use the established ([7]-[9], [17]) global prediction thermohydrogravidynamic principle (4) determining the maximal temporal intensification near the time moment $t = t_*(\tau_{c,r})$ of the thermohydrogravidynamic processes ([7]-[9], [17]) in the internal rigid core $\tau_{c,r}$ and in the boundary region τ_{rf} between the internal rigid core $\tau_{c,r}$ and the fluid core $\tau_{c,f}$ of the Earth. The principle (4) is used to obtain (for the considered real planetary configurations of the Earth and the planets of the Solar System) the numerical time moment $t_*(\tau_{c,r}, 2017)$ corresponding to the minimal combined planetary and solar integral energy gravitational influence (4) on the considered internal rigid core $\tau_{c,r}$ (of the Earth) in 2017. Based on the global prediction thermohydrogravidynamic principle (4) and considering the real planetary configurations of the Earth and the planets of

the Solar System for 2017, we obtain the numerical time moment (related with the minimal combined planetary and solar integral energy gravitational influence (4) on the internal rigid core $\tau_{c,r}$ of the Earth in 2017):

$$t_*(\tau_{c,r}, 2017) = 2017.3, \tag{6}$$

which corresponds approximately to 20 April, 2017. Based on the global prediction thermohydrogravidynamic principle (4) used for the range (2004 ÷ 2016), we calculate the dates $t_*(\tau_{c,r}, (2004+m))$ (m = 0, 1, … , 12) corresponding to the different local minimal values (4) of the combined planetary and solar integral energy gravitational influences (for the real planetary configurations during the range (2004 ÷ 2016)) on the internal rigid core $\tau_{c,r}$ of the Earth.

Considering (on 10 April, 2017) the range (2004 ÷ 2016) and analyzing the previous strongest earthquakes (occurred near the calculated dates $t_*(\tau_{c,r}, (2004+m))$, m = 0, 1, …, 12), we calculate (on 10 April, 2017) the probability

$$\Pr\{t_{e,min,2017} \in (16\ \text{April} \div 24\ \text{April},\ 2017)\} = 0.153 \tag{7}$$

of the forthcoming (for 10 April, 2017) strongest earthquakes (and related [4], [7]-[9], [17], [20]-[23] strongest volcanic, climatic and magnetic processes in 2017) near the calculated numerical time moment $t_*(\tau_{c,r}, 2017) = 2017.3$ corresponding approximately to 20 April, 2017) during the forthcoming (for 10 April, 2017) range:

$$(16\ \text{April} \div 24\ \text{April},\ 2017). \tag{8}$$

It means that the dates $t_{e,min,2017}$ of the forthcoming (for 10 April, 2017) strongest earthquakes (and related [4], [7]-[9], [17], [20]-[23] strongest volcanic, climatic and magnetic processes of the Earth determined by the minimal combined planetary and solar integral energy gravitational influence (4) on the internal rigid core $\tau_{c,r}$ of the Earth in 2017 near 20 April, 2017) will occur in the range (8) characterized by the probability (7).

Considering the range (2004 ÷ 2016) and analyzing the previous strongest earthquakes (occurred near the calculated dates $t_*(\tau_{c,r}, (2004+m))$, m = 0, 1, …, 12), we calculate (on 10 April, 2017) the probability

$$\Pr\{t_{e,min,2017} \in (11\ \text{April} \div 29\ \text{April},\ 2017)\} = 0.23 \tag{9}$$

of the forthcoming (for 10 April, 2017) strongest earthquakes (and related [4], [7]-[9], [17], [20]-[23] strongest volcanic, climatic and magnetic processes in 2017) near the calculated numerical time moment $t_*(\tau_{c,r}, 2017) = 2017.3$ corresponding approximately to 20 April, 2017) during the forthcoming (for 10 April, 2017) range:

$$(11\ \text{April} \div 29\ \text{April},\ 2017). \tag{10}$$

It means that the dates $t_{e,min,2016}$ of the forthcoming (for 10 April, 2017) strongest earthquakes (and related [4], [7]-[9], [17], [20]-[23] strongest volcanic, climatic and magnetic processes of the Earth determined by the minimal combined planetary and solar integral energy gravitational influence (4) on the internal rigid core $\tau_{c,r}$ of the Earth in 2017 near 20 April, 2017) will occur in the range (10) characterized by the probability (9).

Considering the range (2004 ÷ 2016) and analyzing the previous strongest earthquakes (occurred near the calculated dates $t_*(\tau_{c,r}, (2004+m))$, m = 0, 1, …, 12), we calculate (on 10 April, 2017) the following probabilities

$$\Pr\{t_{e,min,2017} \in (2\ \text{April} \div 8\ \text{May},\ 2017)\} = 0.307, \tag{11}$$

$$\Pr\{t_{e,min,2017} \in (13\ \text{March} \div 28\ \text{May},\ 2017)\} = 0.46, \tag{12}$$

$$\Pr\{t_{e,min,2017} \in (3\ \text{March} \div 7\ \text{June},\ 2017)\} = 0.538, \tag{13}$$

$$\Pr\{t_{e,min,2017} \in (1\ \text{March} \div 9\ \text{June},\ 2017)\} = 0.615, \tag{14}$$

$$\Pr\{t_{e,min,2017} \in (24\ \text{February} \div 14\ \text{June},\ 2017)\} = 0.769, \tag{15}$$

$$\Pr\{t_{e,min,2017} \in (19\ \text{February} \div 19\ \text{June},\ 2017)\} = 0.846, \tag{16}$$

$$\Pr\{t_{e,min,2017} \in (23\ \text{January} \div 16\ \text{July},\ 2017)\} = 0.923 \tag{17}$$

of the strongest earthquakes (and related [4], [7]-[9], [17], [20]-[23] strongest volcanic, climatic and magnetic processes of the Earth determined by the minimal combined planetary and solar integral energy gravitational influence (4) on the internal rigid core $\tau_{c,r}$ of the Earth in 2017 near the numerical time moment $t_*(\tau_{c,r}, 2017) = 2017.3$ corresponding approximately to 20 April, 2017) during the calculated (on 10 April, 2017) following ranges:

$$(2\ \text{April} \div 8\ \text{May},\ 2017), \tag{18}$$

$$(13\ \text{March} \div 28\ \text{May},\ 2017), \tag{19}$$

$$(3\ \text{March} \div 7\ \text{June},\ 2017), \tag{20}$$

$$(1\ \text{March} \div 9\ \text{June},\ 2017), \tag{21}$$

(24 February ÷14 June, 2017), (22)

(19 February ÷19 June, 2017), (23)

(23 January ÷16 July, 2017). (24)

It means that the dates $t_{e,min,2017}$ of the strongest earthquakes (and related [4], [7]-[9], [17], [20]-[23] strongest volcanic, climatic and magnetic processes of the Earth determined by the minimal combined planetary and solar integral energy gravitational influence (4) on the internal rigid core $\tau_{c,r}$ of the Earth in 2017 near 20 April, 2017) will occur in the ranges (8), (10), (18), (19), (20), (21), (22), (23) and (24) characterized by the probabilities (7), (9), (11), (12), (13), (14), (15), (16) and (17), correspondingly.

These ranges (8), (10), (18) - (24) and the corresponding probabilities (7), (9), (11) - (17) were founded exceptionally (by eliminating the analysis of the strongest global climatic activity of the Earth during the range (2004 ÷2016)) based on the combined analysis of the dates of the previous strongest earthquakes occurred during the range (2004÷2016) near the calculated dates $t_*(\tau_{c,r}, (2004+m))$ (m = 0, 1, … , 12) corresponding to the different local minimal values (4) of the combined planetary and solar integral energy gravitational influences (related with the real planetary configurations during the range (2004 ÷2017)) on the internal rigid core $\tau_{c,r}$ of the Earth and on the Earth as a whole.

IV. CONCLUSIONS

We have presented in Section 2 the established ([2]-[4], [6]-[9], [12], [15], [17], [19]-[22]) generalized differential formulation (1) of the first law of thermodynamics and the established ([7]-[9], [17]) global prediction thermohydrogravidynamic principles (3) and (4) (of the cosmic seismology [7]-[9], [17]) determining the maximal temporal intensifications of the global and regional natural (sesmotectonic, volcanic, climatic and magnetic) processes of the Earth. We have presented in Section 2 the confirmed [9] validity (in addition to the previous "practically confirmed validity of the forecasting aspects of the deterministic thermohydrogravidynamic theory" [22]) of the prognostication ([9], [17]) based on the global prediction thermohydrogravidynamic principle (3) (of the thermohydrogravidynamic theory [2]-[4], [6]-[9], [12], [15], [17], [19]-[22]) concerning the strongest intensifications of the global natural (sesmotectonic and climatic) processes of the Earth in 2016 (since 1 September, 2016 and before 26 January, 2017) near the calculated (in advance [17], on 31 August, 2016) numerical time moment $t^*(\tau_{c,r}, 2016) = 2016.7666$ corresponding approximately to 6 October, 2016.

We have presented in Section 3 the prognostication (derived on 10 April, 2017) based on the global prediction thermohydrogravidynamic principle (4) concerning the strongest intensifications of the global natural (sesmotectonic and climatic) processes of the Earth determined by the minimal (for the time moment $t_*(\tau_{c,r}, 2017) = 2017.3$, which corresponds approximately to 20 April, 2017) combined planetary and solar integral energy gravitational influence on the internal rigid core $\tau_{c,r}$ of the Earth. The founded (on 10 April, 2017) numerical time moment $t_*(\tau_{c,r}, 2017) = 2017.3$ is related with the minimal (for 2017) combined planetary and solar integral energy gravitational influence (4) on the internal rigid core $\tau_{c,r}$ of the Earth and on the Earth as a whole.

We have presented in Section 3 the founded (on 10 April, 2017) ranges (8), (10), (18), (19), (20), (21), (22), (23) and (24) of the dates $t_{e,min,2017}$ of the forthcoming strongest earthquakes (and related [4], [7]-[9], [17], [20]-[23] strongest volcanic, climatic and magnetic processes of the Earth determined by the minimal combined planetary and solar integral energy gravitational influence (4) on the internal rigid core $\tau_{c,r}$ of the Earth in 2017 near the numerical time moment $t_*(\tau_{c,r}, 2017) = 2017.3$ corresponding approximately to 20 April, 2017) characterized by the probabilities (7), (9), (11), (12), (13), (14), (15), (16) and (17), correspondingly.

The founded (on 10 April, 2017) ranges (8), (10), (18), (19), (20), (21), (22), (23) and (24) (characterized by the probabilities (7), (9), (11), (12), (13), (14), (15), (16) and (17), correspondingly) can be considered really as the corresponding ranges from 10 April, 2017 owing to the absence of the strong earthquakes (characterized by the magnitudes $M \geq 7.0$) since 26 January, 2017, which is the date of the publication [9] and the upper date of the predicted [9] range (15 June, 2016 ÷ 26 January, 2017) of the probable strongest intensifications (characterized by the corresponding probability $\Pr = 0.99$) of the global seismotectonic and climatic processes of the Earth in 2016 since 15 June, 2016 and before 26 January, 2017.

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