Mars Society
11111 W. 8th Ave., unit a
Lakewood, CO 80215
303-980-0890 (phone) 303-980-0753 (fax)
www.marssociety.org

September 30, 2009

Richard Dwyer
Licensing Administrator
Nunavut Water Board
PO Box 119
Gjoa Haven, NU X0B 1J0
PH: 867-360-6338 ext.29
FX: 867-360-6369

Dear Mr. Dwyer;

The Mars Society's application to renew its water license is attached. Our existing license is number 3BC-MAR0709. There are no changes in our project. We simply wish to renew our license to continue our work.

Regards,

Dr. Robert Zubrin
President, Mars Society

Effective June 16, 2006

P.O. Box 119
Gjoa Haven, NU X0B 1J0
Tel: (867) 360-6338
Fax: (867) 360-6369

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NUNAVUT IMALIRIYIN KATIMAYINGI
NUNAVUT WATER BOARD
OFFICE DES EAUX DU NUNAVUT

WATER LICENCE
APPLICATION FORM

Application for: (check one)

☐ **New** ☒ **Renewal** ☐ **Amendment** ☐ **Assignment** ☐ **Cancellation**

LICENCE NO:
(for NWB use only)

1. NAME AND MAILING ADDRESS OF APPLICANT/LICENSEE

Mars Society
11111 W. 8th Ave. unit A, Lakewood, CO 80215 USA

Phone: 303-980-0890
Fax: 303-980-0753
E-mail: zubrin@aol.com

2. ADDRESS OF CORPORATE OFFICE IN CANADA (if applicable)

Phone:
Fax:
E-mail:

3. LOCATION OF UNDERTAKING (describe and attach a topographical map, indicating the main components of the Undertaking)

Latitude: (75°25'53" N) Longitude: (89°49'27" W)
NTS Map Sheet No. 58II/7 Scale: ____

4. DESCRIPTION OF UNDERTAKING (attach plans and drawings)

The Mars Society plans to use its research station to conduct studies of Mars exploration techniques. This is a continuation of activities conducted under NWB Licence No. 3BC-MAR0709

5. TYPE OF PRIMARY UNDERTAKING (A supplementary questionnaire must be submitted with the application for undertakings listed in "**bold**")

☐ **Industrial**
☐ **Mining and Milling**(includes exploration/drilling)
☐ **Municipal** (includes camps/lodges)
☐ Power
☐ Agricultural
☐ **Conservation**
☐ Recreational
☒ **Miscellaneous** (describe below):

Research

See Schedule II of *Northwest Territories Waters Regulations* for Description of Undertakings

6. WATER USE

☒ To obtain water
☐ To cross a watercourse
☐ To modify the bed or bank of a watercourse
☐ Flood control
☐ To divert a watercourse
☐ To alter the flow of , or store, water

☐ Other (describe):

7. QUANTITY OF WATER INVOLVED (cubic metres per day including both quantity to be used and quality to be returned to source)

Water use ☒ 100m^3/day or less We use less than 1 m^3/day
☐ Greater than 100m^3/day: if greater, indicate quantities to be used for each purpose (camp, drilling, etc.)

Water returned to source
all m^3/day

8. WASTE (for each type of waste describe: composition, quantity (cubic metres per day), methods of treatment and disposal, etc.)

☒ Sewage
☒ Solid Waste) incineration
☐ Hazardous
☐ Bulky Items/Scrap Metal
☐ Waste oil
☒ Greywater – disposed to sump
☐ Sludges
☐ Other describe):

9. OTHER PERSONS OR PROPERTIES AFFECTED BY THIS UNDERTAKING (give name, mailing address and location; attach if necessary)

Land Use Permit # N2003J0001

DIAND	☒ Yes	☐ No	If no, date expected ____
Regional Inuit Association	☐ Yes	☐ No	If no, date expected ____
Commissioner	☐ Yes	☐ No	If no, date expected ____

10. PREDICTED ENVIRONMENTAL IMPACTS OF UNDERTAKING AND PROPOSED MITIGATION MEASURES (direct, indirect, cumulative impacts, etc.)

NIRB Screening ☒ Yes ☐ No If no, date expected ____

11. INUIT WATER RIGHTS

Will the project or activity substantially affect the quality, quantity, or flow of water flowing through Inuit Owned Lands and the rights of Inuit under Article 20 of the Nunavut Land Claims Agreement?

If yes, has the applicant entered into an agreement with the Designated Inuit organization to pay compensation for any loss or damage that may be caused by the alteration. If no compensation agreement has been made, how will compensation be determined?

12. CONTRACTORS AND SUB-CONTRACTORS (name, address and functions)

South Camp Inn, PO Box 300, Resolute Bay, NU X0A 0V0 logistic support
Ken Borek Air Ltd. PO Box 210. Resolute Bay, Nunavut, CA
air transport

13. STUDIES UNDERTAKEN TO DATE (list and attach copies of studies, reports, research, etc.)

V. Pletser, P. Lognonne, M. Diament, V. Ballu, V. Dehant, P. Lee, and R. Zubrin, "Subsurface Water Detection on Mars by Active Seismology: Simulation at the Mars Society Arctic research Station," Conference on the Geophysical Detection of Water on Mars, 2001.

R. Zubrin, "The Flashline Mars Arctic Research Station: Dispatches from the First Year's Mission Simulation," AIAA 2002-0993 40th AIAA Aeropace sciences Meeting and Exhibit, Reno, NV January 14-17, 2002.

V. Pletser, R. Zubrin, and K. Quinn, "Simulation of Martian EVA at the Mars Society Arctic Research Station," presented to World Space Congress, Houston, Texas, October, 2002. (attached)

R. Zubrin, "Mars on Earth," Tarcher Penguin, New York, 2003 (book)

W. J. Clancey "Principles for integrating Mars Analog Science, Operations, and Technology Research," Workshop on analog Sites and Facilties for the Human Exploration of the Moon and Mars," Colorado School of Mines, Golden, CO May 21-23, 2003

L. Wynn et al, "The Geophysical Study of an Earth Impact Crater as an Analogue for Studying Martian Impact Craters," On to Mars 2, Frank Crossman and R. Zubrin editors, Apogee Publishers, Burlington, Ontario, 2005

S. Sklar and S. Rupert, "A Field Methodoloy Approach Between and Earth Based Remote Science Team and a Planetary-Based Field Crew," AAS 06-260, Mars Analog research, edited by Jonathan Clarke, Univelt, San Diego, 2006.

14. THE FOLLOWING DOCUMENTS MUST BE INCLUDED WITH THE APPLICATION FOR THE REGULATORY PROCESS TO BEGIN

Supplementary Questionnaire (where applicable: see section 5) ☐ Yes ☐ No If no, date expected ____

Inuktitut and/or Inuinnaqtun/English Summary of Project ☒ Yes ☐ No If no, date expected ____

Application fee of $30.00 (Payee Receiver General for Canada) ☒ Yes ☐ No If no, date expected ____

Water Use fee of $30.00 (unless otherwise indicated in Section 9 of the *NWT Waters Regulations;* Payee Receiver General for Canada)

☒ Yes ☐ No If no, date expected ____

15. PROPOSED TIME SCHEDULE (unless otherwise indicated, the NWB will consider the application for a five (5) year term)

☐ one year or less (or) ☒ Multi Year

Start Date: October 1, 2009Completion Date: Sept 2014

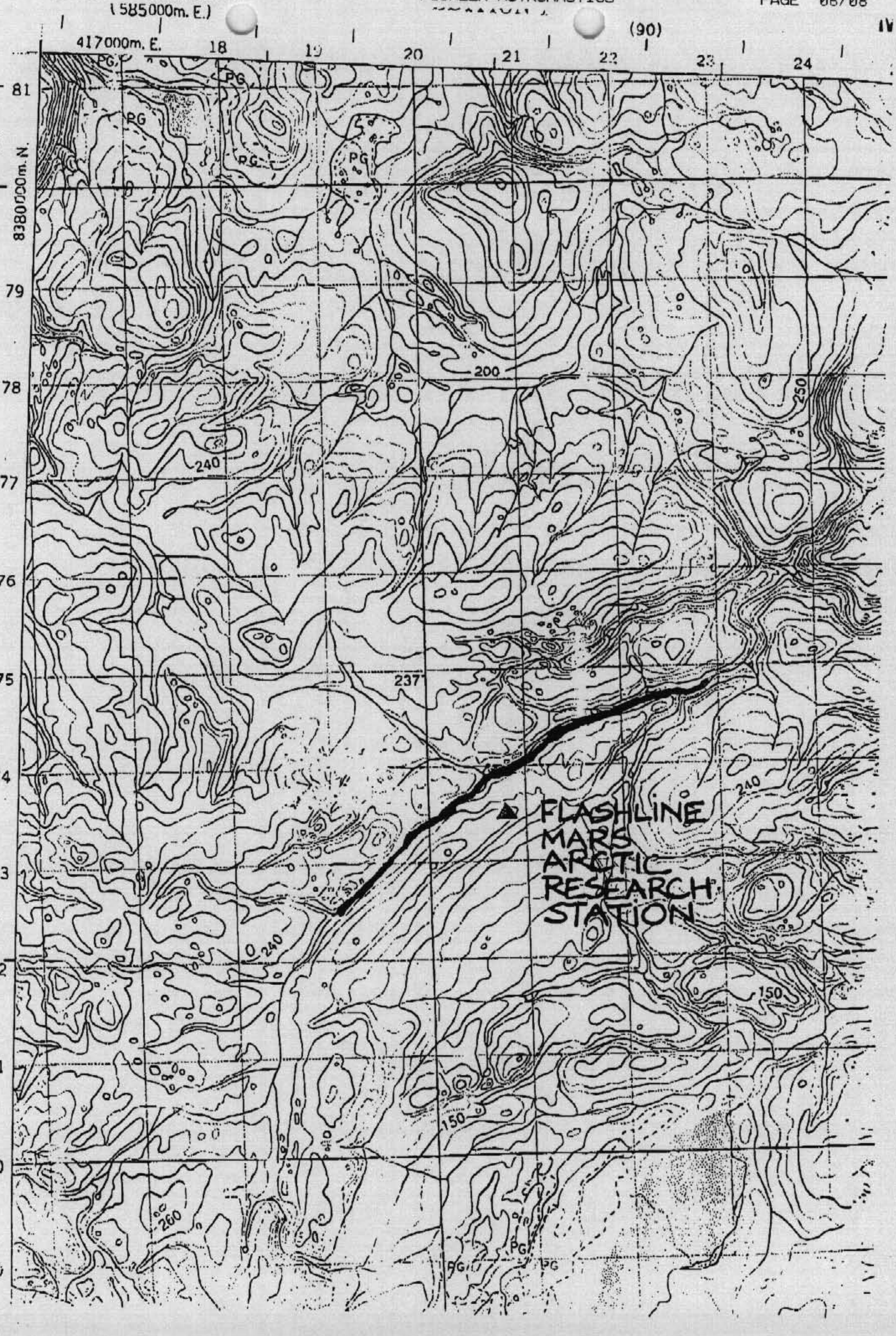
Robert Zubrin	**President**		**September 30. 2009**
Name (Print)	**Title (Print)**	**Signature**	**Date**

For Nunavut Water Board office use only

APPLICATION FEE **Amount: $** ____ **Pay ID No.:**

WATER USE DEPOSIT **Amount: $____** **Pay ID No.: ____**

Topographic Map Sheet 58H/7 (Haughton Dome)



The Mars Society's Flashline Mars Arctic Research Station Project

Dr. Robert Zubrin
President, Mars Society

The Mars Society is a private international society dedicated to furthering the human exploration and settlement of the planet Mars. In July 2000, the Mars Society established a research facility at the Mars-like Haughton impact crater site on Devon Island, Nunavut, called the Flashline Mars Arctic Research Station (FMARS). Designed to simulate a landed spacecraft on Mars, the FMARS project serves three goals:

1) To provide a testbed for studying the many aspects of field exploration operations on a human mission to Mars.
2) To provide a capable field research laboratory to help further our understanding of the Arctic, the Earth, Mars, and the possibilities and limits of life on our planet and beyond.
3) To inform and inspire people around the world to greater interest in space and science by bringing before them in a tangible form the vision of human exploration of Mars.

The research program carried out at the FMARS is unique. For four to five weeks, a six person crew of scientists and engineers attempts to conduct a sustained program of field exploration in Devon Island's polar desert, while working under the same operational constraints as a human expedition exploring Mars. The crew lives in a combination habitat/laboratory module that is an architectural duplicate of a Mars mission unit. Anyone leaving the station to do field research needs to wear a simulated spacesuit, that limits the mobility, agility, dexterity, and sensory abilities of the wearer much as a real spacesuit would, and communication between EVA team members separated by more than a few feet has to be done by suit radio. While in the station, crewmembers also perform laboratory analysis of samples brought in from the field, repair equipment, write reports (which are exchanged with Mars Society's Mission Support group via a satellite link that imposes a Mars-like delay on communications), and engage in the chores of daily life living together as a team. The purpose of conducting such simulated operations is to gain essential knowledge of Mars exploration tactics, human factors issues, and engineering requirements – in short, to start learning how to explore Mars.

We have conducted highly successful field programs from the station during the 2001, 2002, 2003, 2004, 2005, and 2007 field seasons. These have added a great deal to our understanding of the requirements for human Mars exploration. In addition, press coverage of this activity has served to inspire many young people with the adventure of science, thereby encouraging them to consider a career path that will be of great benefit to both them and society at large.

ᐊᓂᕐᓂᖃᕐᓇᖏᑦᑐᒦᑦᑐᖅ ᓄᓇᕐᔪᐊᖅ (ᒫᔅ) ᓴᓴᐃᔭᑎᒃᑯᖏᑦ ᖃᐅᔨᓴᕐᕕᓯᖏᓐᓂ ᐱᓕᕆᐊᖑᓂᐊᖅᑐᖅ

ᖃᐅᔨᒪᔨᑕᓪᓚᕆᒃ ᕉᐳᑦ ᓲᐳᕆᓐ
ᐊᖏᔪᖅᑳᖅ, ᒫᔅ ᓴᓴᐃᔭᑎᒃᑯᖏᓐᓄᑦ

ᒫᔅ ᓴᓴᐃᔭᑎᒃᑯᖏᑦ ᓇᒻᒥᓂᖅᑯᖅᑎᐅᔪᑦ ᓯᓚᕐᔪᐊᒥ ᑎᒥᐅᓪᓗᑎᒃ ᑲᒪᖅᑕᖅᑐᑦ ᖃᐅᔨᓴᖅᑐᑎᒃ ᐃᓄᓐᓄᑦ ᐊᒻᒪᓗ ᓄᓇᕐᔪᐊᒥᑦ ᒫᔅᒥᑦ. ᔪᓚᐃ 2000-ᒥ, ᒫᔅ ᓴᓴᐃᔭᑎᒃᑯᖏᑦ ᓴᖅᑮᑕᐅᖅᓯᒪᓪᓚᑕ ᖃᐅᔨᓴᕈᒪᓪᓗᑎᒃ ᒫᓐᑎᑐᑉᐸᓗᑦᑐᒥᒃ ᑲᑕᖅᕚᐊᓘᒃᑲᓚᐅᖅᓯᒪᔪᒥᑦ ᐃᓯᖅᓴᖏᒥᑦ ᑕᐅᕙ ᕿᑭᖅᑕᖏᓐᓂ, ᓄᓇᕗᒻᒥ, ᑕᐃᔭᐅᓪᓗᓂ ᐊᑦᑐᐃᓂᖃᕐᓂᖅᒧᑦ ᒫᔅᒥᑦ ᐅᑭᐅᖅᑕᖅᑐᒥ ᖃᐅᔨᓴᕐᓂᕐᒥᑦ. ᐊᔾᔨᒌᙱᑦᑐᓄᑦ ᖃᓄᖅ ᒥᒃᑲᔭᓯᒪᓪᓚᑕ ᐊᓂᕐᓂᖃᕐᓇᖏᑦᑐᒦᑦᑐᑦ ᖃᓪᓚᑦᓯᕐᔪᐊᑦ ᒫᔅᒧᑦ. ᑖᒃᑯᐊ ᖃᐅᔨᓴᕐᕕᐅᔪᑦ ᐱᖓᓱᓂᒃ ᑐᕌᒐᖃᖅᐳᑦ:

1) ᖃᐅᔨᓴᕐᓗᑎᒃ ᖃᐅᔨᓴᕙᓂᐊᖅᑐᓂᒃ ᑭᓯᑐᐃᓐᓇᑦᑎᐊᕐᓂᑦ ᖃᓄᖅ ᐊᐅᓚᑦᑎᕙᓯᒪᖕᒪᑕ ᒫᔅᒧᑦ ᒥᒃᑯᑎᒃ, ᐃᓄᖏᓐᓂ ᖃᐅᔨᓴᕐᓗᑎᒃ ᒫᓕᐊᑲᔭᖅᑐᓂᒃ.
2) ᖃᐅᔨᓴᕐᕕᖃᕐᒥᓗᑎᒃ ᖃᐅᔨᓴᕐᑲᔭᙱᓚᑕ ᑐᑭᓯᑎᐊᕈᒪᓪᓗᑎᒃ ᐅᑭᐅᖅᑕᖅᑐᒥ, ᓯᓚᕐᔪᐊᒥᑦ, ᒫᔅᒥᑦ ᐊᒻᒪᓗ ᖃᓄᖅ ᐱᔪᓐᓇᖅᑎᑦᑎᒪᙱᓚᑎᒃ ᐃᓅᓯᑦ ᖃᐅᔨᓴᕐᑲᔭᒥᔪᑦ ᓯᓚᕐᔪᐊᑎᓐᓂ ᐊᕝᕙᙵᒃᑲᓂᒪᓇᐊᓗᓗ.
3) ᑐᑭᓯᑎᑦᑎᓗᑎᓗ ᒪᓂᒪᔾᔪᑎᖃᓗᑎᒃ ᓇᒧᐃᓐᓇᑦᑎᐊᖅ ᓯᓚᕐᔪᐊᓕᒫᓂ ᐊᓂᕐᓂᖃᕐᓇᖏᑦᑐᑦ ᒥᓯᓄᑦ ᖃᐅᔨᓴᕐᓂᔪᐊᒥᓗ ᐅᓂᒃᑳᕆᑦᑎᐊᕐᓗᑎᒃ ᑕᕝᕙᓐᓂᓗ ᑕᑯᔅᓴᐅᑎᑦᑎᕙᓕᕐᓗᑎᒃ ᖃᓄᖅ ᐃᓄᐃᑦ ᖃᐅᔨᓴᕐᓇᖅᓯᒪᙱᓚᑕ ᒫᔅᒥᑦ.

ᑕᒪᓐᓇ ᐊᐳᕆᐅᓐᖏᑦᑐᖅ ᖃᐅᔨᓴᕐᓂᐅᓂᐊᖅᑐᖅ ᖃᐅᔨᓴᕐᕕᒃᒥᑦ. ᑎᓴᒪᓄᑦ ᑕᑦᑎᒪᓄᑦᑐᖓᓂᑦ ᐱᓇᓱᐊᕈᓯᓄᑦ ᖃᐅᔨᓴᖃᑦᑕᖅᑐᑦ, ᐱᖓᓱᖅᓯᖅᑐᓗᑎᒃ ᐃᓄᖏᑦ ᖃᐅᔨᓴᖅᑎᒻᒪᕆᓕᐅᑦ ᑲᒪᔪᒪᕆᐅᓗ ᖃᐅᔨᓴᖅᓴᖅᑐᖅ ᑕᑉᐸᓂ ᑕᕝᕙ ᕿᑭᖅᑕᓗᒃ ᐱᕈᖅᑐᖅᓯᒪᑦᑎᐊᖅᑐᐊᓗᒥ. ᖃᓄᖅ ᐃᓗᓯᐅᕈᓇᖅᓯᒪᙱᓚᑦ ᖃᐅᔨᓴᖅᓯᑐᑦ ᑕᒪᒃ ᐃᓗᓯᐅᖅᓯᒪᙱᓚᑦ ᒫᔅ ᑲᒪᓗᑎᒃ. ᖃᐅᔨᓴᕋᓐᖑᑦ ᖃᐅᔨᓴᖅᓯᒪᔪᑦ ᐊᖏᖅᑲᖅᓯᒪᓗᑎᒃ ᖃᐅᔨᓴᕐᕕᖏᓐᓇᓂ ᐃᓚᐅᓂᐊᖅᑐᑦ ᐊᑦᑕᕐᖃᒧᑦᑐᓂᒃ ᐊᓂᕐᓂᖃᕐᓇᖏᑦᑐᒥ ᐊᑐᖅᑕᐅᓯᒪᔪᓂᒃ ᖃᐅᔨᓴᓯᓐᓇᖅᑐᓂᒃ ᖃᓄᑎᒋ ᐊᐅᓚᑎᑦᑐᒐᖅᓯᒪᓪᓚᑕ ᐊᑦᑕᒃᑳᖅᓯᒪᓪᓗᑎᒃ, ᐃᓐᓇᕈᖅᐸᓪᓕᐊᓂᖏᑦ, ᑐᓴᓂᖏᓐᓂ, ᐊᒻᒪᓗ ᐃᑉᐱᓐᓂᐊᓂᖏᓐᓂ ᐅᕝᕙᓂᖏᓐᓂ ᑕᒪᒃ ᐊᑦᑕᒃᑳᖅᓯᒪᓗᑎᒃ, ᖃᓄᖅ ᑐᓴᐅᒪᒃᑲᑕᐅᑎᑦᑎᐊᕈᓇᖅᓯᒪᙱᓚᑕ ᖃᐅᔨᓴᖅᑎᒥᓗᑎᒃ ᖃᐅᔨᓴᕐᕕᒥ ᑰᑐᑎᒃᑲᑕᖅᑐᑎᒃ ᐅᖓᓯᓗᐊᖓᖕᒥᓗᑎᒃ ᐊᑦᑕᒃᑳᖅᓯᒪᔪᓂᒃ ᑰᕈᑎᒃᑯᑦ ᖃᐅᔨᓴᕐᓗᑎᒃ. ᓇᓴᕐᓯᒪᔪᖏᓐᓂᓗ ᖃᐅᔨᓴᐅᑎᒃᑐᑎᒃ ᖃᐅᔨᓴᕐᓗᑎᓗ, ᓴᓇᕆᐊᖃᑕᖅᑐᑎᒃ, ᓯᓇᑯᑦᑕᖅᑎᖃᐅᖅᑐᑎᒃ, ᖃᐅᔨᓴᖏᓐᓂᓗ ᐅᓂᒃᑲᓕᐅᖃᑕᖅᑐᑎᒃ (ᑖᒃᑯᐊᓗ ᐅᓂᒃᑲᓕᐊᕈᔪᑦ ᒫᔅ ᓴᓴᐃᔭᑎᒃᑯᑦ ᐸᖅᓇᐃᔾᔪᑎᖓᓄᑦ ᑐᔪᕐᑕᐅᖃᑕᖅᑐᑎᒃ ᖃᐅᓪᓚᖕᒪᖅᑕᖅᑎᑕᐅᓯᒪᔪᒃᑯᑦ ᑐᔪᕐᑕᐅᖃᑕᖅᑐᑎᒃ ᖃᓄᑎᒋ ᐱᐅᑎᒋᓯᒪᙱᓚᑦ ᑕᒪᒃ ᑐᔪᐃᖃᑕᕈᑎᒃ ᒫᔅᒥᑦ ᖃᐅᔨᓴᕐᒥᑐᑦ), ᐊᒻᒪᓗ ᐃᓄᐃᓯᒃᑲᓗᐊᖅᑐᑎᓗ ᐃᖏᐊᕐᓗᖃᑦᑕᐅᑎᑦᑎᕙᕆᒃᑲᓗᐊᙱᓚᑦ ᖃᐅᔨᓴᖑᒥᑐᑎᒃ. ᑕᒪᒃ ᖃᐅᔨᓴᕈᒪᓕᕿᔪᑦ ᑐᑭᓯᑎᐊᕈᒪᓚᑕ ᖃᓄᖅ ᒫᓲᖅᑐᖅᑲᒃ ᖃᓄᑎᒋ ᐱᐅᓯᒪᙱᓚᑦ. ᐃᓅᖃᑎᖃᕐᓂᒥᓗ, ᓴᓇᒃᑯᑖᖅᑎᓗ ᐱᐅᑎᑦᑎᐊᕈᓯᕈᑎᐊᙱᓚᑦ - ᑕᒪᓐᓇ ᓇᐃᑦᑎᑎᕐᓯᒪᑐᐃᓐᓇᖅᑐᖅ ᐅᓂᒃᑳᖅ, ᐃᑎᑉᐸᑦᑎᐊᕆᐊᖃᖅᑎᓯᑦ ᖃᓄᖅ ᖃᐅᔨᓴᕈᓐᓇᖅᑎᒋᓚᐅᓚᑦ ᒫᔅᒥᑦ ᓄᓇᕐᔪᐊᒥᑦ ᐊᓂᕐᓂᖃᕐᓇᖏᑦᑐᒦᑦᑐᒥᑦ.

ᖃᐅᔨᓴᕐᓂᖃᖅᑕᖅᓯᒪᔪᖅ ᑲᔪᓯᑎᐊᖅᑕᖅᓯᒪᕗᑦ ᑕᐃᑲᓂ ᖃᐅᔨᓴᕐᕕᐅᔪᒥᑦ ᐱᒋᐊᖅᑐᑦ 2001-ᒥᑦ, 2002-ᒥᑦ, 2003-ᒥᑦ, 2004-ᒥᑦ, 2005-ᒥᑦ ᐊᒻᒪᓗ 2007-ᒥᑦ. ᐊᓯᐊᓄᑦ ᑐᑭᓯᐊᒃᓯᓚᐅᖅᓯᒪᔪᑦ ᖃᐅᔨᓴᕐᓂᑎᓐᓂ ᖃᓄᐃᑦᑐᓯᓇᐊᖅᑲᓂᖏᓐᓂ ᐃᓄᐃᑦ ᑕᑉᐸᓃᑉᐸᑕ. ᐊᒻᒪᓗ ᑕᒪᒃᑯᐊ ᖃᐅᔨᓴᐅᑉᑲᓐᓂᕈᒪᓕᖅᑎᐊᖅᑐᖅ ᐃᓅᓯᑐᓄᑦ ᐃᑎᒃᑲᓐᓂᕈᒪᓂᖅᑲᑎᐊᖅᑐᑎᒃ ᖃᐅᔨᓴᕐᓚᓇᓂᒥᑦ. ᐃᓯᒪᖅᓯᒪᓯᐅᒃᑲᓂᕈᓇᓕᖅᓱᖅᑐᑦ ᑕᒪᐃᑐᒥᑦ ᖃᐅᔨᓴᓂᒥᑦ ᐃᖅᑲᓇᐃᔭᖅᑲᕈᒪᓚᓯᒪᓪᓚᑕ ᐊᒻᒪᓗ ᐃᑲᔪᖅᑎᓪᓚᓂᐊᖅᑐᑎᒃ ᑕᒪᒃᑯᐊ ᐅᑦᓯᑎᖓᓐᓂ ᐃᓄᓐᓄᑦ ᑭᒃᑯᐃᓐᓇᓄᑦ.