Project Title

The PolarDARN Component of SuperDARN

Researcher's Name and Affiliation

Dr. Kathryn A. McWilliams, Univ. of Saskatchewan

Project Location

Clyde River, Nunavut *(in association with Rankin Inlet, NU and Inuvik, NWT)*

Time-frame

Construction to start in July 2012
Radar operation to start in October 2012 and we anticipate a minimum operations period of 10 years.

Project Description

Purpose

The new radar at Clyde River will be Canada's latest contribution to the very successful international SuperDARN (Super Dual Auroral Radar Network) program. Canada was one of the founding members of SuperDARN, and the first "new" generation radar began operations in Saskatoon in 1993 when the original partners from France, the USA and Canada held their first meeting in Saskatoon. The consortium has grown continuously so that ten of the world's top industrialized countries are partners, and there are 27 radars currently in operation around the world, eighteen in the northern hemisphere and nine in the southern hemisphere. There are also nine more radars being built, so there will soon be 36 SuperDARN radars in operation world-wide. Canada, a leader in the international SuperDARN program, will operate five radars after the installation of the radar at Clyde River, which will be operating before the end of 2012. The new radar at Clyde River will be Canada's latest contribution to the international SuperDARN scientific consortium. The three most northerly SuperDARN radars operated by Canada (Rankin Inlet, Inuvik and Clyde River) are known by the special name "PolarDARN," because they monitor the special region of the ionosphere close to the magnetic pole known as the "polar cap."

Goals & Objectives

In the current satellite age, when communications and banking are handled almost exclusively by satellites, billions of dollars' worth of infrastructure has been launched into space. SuperDARN measures the motion of charged particles in the electrified layer of the upper atmosphere, called the "ionosphere." These particle motions are equivalent to voltage patterns on a global scale. These voltage patterns are a measure of how much the Earth's atmosphere is being affected by the solar wind and the interplanetary magnetic field in the Earth's space environment. In the study of "space weather" these voltage patterns are essentially equivalent to maps of atmospheric pressure that drive the "normal" weather that we experience near the Earth's surface. During active times, like during magnetic storms, there can be very dangerous "space weather" conditions. Increased radiation in space makes it necessary for astronauts on the International Space Station to take refuge and for the delicate electronics on board satellites, which facilitate billions of dollars of business, to be protected. Closer to the ground, communication and navigation can be severely disrupted, particularly at high latitudes, and commercial airlines often divert planes from transpolar routes due to radiation penetrating to cruising altitude of airplanes. SuperDARN is contributing to our understanding of the connection between the space environment and the Earth's atmosphere—the Sun-Earth connection. The PolarDARN radars are critical to this research, since they make measurements in the polar cap, which is the region where the Earth's upper atmosphere is most directly connected, via the Earth's magnetic field, to space.

Method of Transportation

The transportation required for doing the research will be minimal since the instrument is a static radar station. During the construction period we will rent a pickup truck from the Municipality of Clyde River to be mainly used for construction crew transport. For maintenance trips during normal operation the local technical assistant will be making use of a personal ATV or snow mobile.

Structures that will be erected (permanent / temporary)

The PolarDARN site structures can be broken down into 3 distinct subsystems:

1) The building
   The site building (an insulated 20ft seacan) will house all the radar electronics and computers. It will also be the base for all site installation, operation and maintenance visits.
2) The Antenna system
   The antenna system will be the most significant part of the structures on site. The antenna system consists of two antenna arrays. The main array and the interferometer array are separated by a distance of 100 meters. The main array is 240 metres long (roughly the length of 2 football fields), and the interferometer array is 60 metres long (roughly the width of a football field).
3) The site power line
   The overhead power line will be installed such that the power line comes into the site perpendicular to the two antenna arrays. The reason for this is to minimize electromagnetic interference of the power line with the radar system.

The building and antenna structures are designed to be long term, but non-permanent, installations.

Restoration / abandonment plans

The deployment plan that has been implemented for the Clyde River PolarDARN radar allows for a complete site installation for which no concrete has to be poured, no pylons have to be sunk into the permafrost (which would result in a permanent installation), and no landscaping is required for road construction.

Methodology

The radar system is designed to be operated remotely, controlled by the engineering team at the University of Saskatchewan, with some input by the local technical assistant, when required. The radar will remotely sense the atmosphere, and the data collected will be entirely digital. No physical samples will be collected on-site.

The community of Clyde River was selected as the best site for our radar installation. From this location, we can achieve the best overlap with another radar system at Resolute Bay, for which the Clyde River radar is a supporting instrument. The distance between Clyde River and Resolute Bay make Clyde River an ideal site for best overlap of the radar fields-of-view for joint observations of the ionosphere.

Data

Each radar in the international SuperDARN network (of which the Clyde River PolarDARN radar is part) makes a full scan every minute, and all radars are synchronized to scan together. These data are uploaded in real-time to Johns Hopkins University Applied Physics Laboratory. The data are then combined to produce vast voltage maps of the ionosphere in the northern and southern regions at mid to high latitudes. The SuperDARN data are used in studies of "space weather"—how conditions in the near-Earth space environment affect the ionosphere (with implications for infrastructure on the ground, like long power transmission lines and pipelines). The data are used in scientific studies, and these tend to fall into two categories: (i) case studies of specific intervals, and (ii) long term statistical studies that can make use of the entire SuperDARN database, which extends over two decades. The data are therefore shared and stored with all SuperDARN partners, and they are archived at multiple and separated sites. The radar data are also useful in conjunction with other instruments. For example, the upcoming satellite missions Swarm (European Space Agency) and ePOP (Canadian Space Agency) will rely heavily on Canadian SuperDARN (including PolarDARN) data to augment their datasets.

Reporting

The results of the research are routinely published in scientific journals and presented at national and international conferences. The SuperDARN community also holds an annual workshop to discuss our work. The 2012 SuperDARN workshop will be hosted by the Chinese team and taking place in Shanghai, and the Canadian team will host the 2013 workshop in Saskatchewan. Communication to the communities in the North is usually done through radio and television interviews. Plans for public talks to be given in the communities of Clyde River, Inuvik and Rankin Inlet have been discussed, but at this time our operating budget does not allow for this.

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ᖃᐅᔨᓴᖅᑎᐅᑉ ᐊᑎᖓ ᐊᒻᒪᓗ ᐱᓕᕆᕝᕕᖓ

ᓗᑦ ᑖᖅ ᑳᑐᓇᓐ ᐊᐃ.ᒪᒃ ᐅᐃᓕᐊᒻᔅ, ᓯᓚᑦ ᑐᓴᕐ ᕕᔾ ᔪᐊᖑᕐ ᓵᔅ ᓯᑳᑦ ᓱᐅᐋᓐ

ᐱᓕᕆᐊᑦ ᓴᖃᕐ ᕕᐅᓂᐊᖅᑐᖅ

ᑲᖏᖅᑐᒑᐱᒃ, ᓄᓇᕗᑦ *(ᑲᑐᔾ ᔨ ᖃᑎᖃᕐ ᓗᑎᒃ ᑲᖏᕐ ᖢᓂᕐ ᒥᑦ, ᓄᓇᕗᑦ ᐊᒻ ᒪᓗ ᐃᓅᕕᒃ, ᓄᓇᑦ ᓯᐊᖅ)*

ᐅᓪ ᓗᕐ ᓯᐅᑎ

ᓴᓇᒋᐊᕋᔭᖅᑐᑦ ᔪᓚᐃ 2012
ᖃᐅᔨᓴᐅᑎᖓᐱᓕᕆᔾ ᔪᑕᐅᓕᕐ ᓗᓂ ᐋᑦ ᑑᑉ 2012 ᐊᒻᒪᓗ ᐃᓱᒪᒋᔭᕗᑦ ᐊᐅᓚᒃ ᑲᔭᓇᐊᖓᐊᕐ ᕌᒍᓄᑦ ᕐᑯᓕᓄᑦ (10).

ᐱᓕᕆᐊᑦ ᓴᐅᑉ ᓇᓗᓇᐃᔭᐃᑎᖓ

ᓴᖅᑭᕈᑎᖓ

ᓄᑖᖑᒐᔭᖅᑐᖅ ᖃᐅᔨᓴᐅᑎ ᑲᖏᖅᑐᒑᐱᒻ ᒥ ᑲᓇᑕᒥᐅᑕᐃᑦ ᓴᖅᑭᑎᓐ ᓂᐊᖅᑕᖓᐃᓚᓕᐅᑎᓂᐊᖅᑐᖅ ᑲᔪᓯᓂᖃᑦ ᓯᐊᑐᒻ ᒪᕆᐅᔪᒍᑦ ᓄᓇᕐ ᔪᐊᕐ ᒥᐅᑕᐃᑦ ᓴᓇᓯᒪᔭᖑᓄᑦ ᓱᐳᕐ ᑖᓐᕐ ᒍᑦ (ᓴᓐᖏᔪᒻ ᒪᕆᐅᔪᖅ ᖃᐅᔨᓴᐅᑎᑦ ᓄᓇᕐ ᔪᐊᑉ ᓯᓚᑖᓂᑦ ᑐᓂᑦ) ᐱᓕᕆᐊᑦ ᓴᖑᓄᑦ. ᑲᓇᑕᒥᐅᑕᐃᑦ ᐃᓚᒋᔭᐅᔪᑦ ᐱᓕᕆᐊᑦ ᓴᒥᑦ ᓴᖅᑮᒋᐊᓐᖢᐅᖅᑐᓄᑦ ᓱᐳᕐ ᑖᕐᓐᒥᑦ, ᐊᒻᒪᓗ ᓯᕗᓪ ᓕᖅᐹᖑᓚᐅᖅᑐᖅ “ᓄᑖᖑᓪ ᓗᓂ” ᖃᐅᔨᓴᐅᑎᑦ ᐱᓕᕆᔾ ᔪᑕᐅᕙᓕᓚᐅᕐ ᒪᑕᓂᑦ ᓵᔅ ᓯᑰᓐᒥ 1993-ᖑᑎᓪ ᓗᒍ ᓯᕗᓪ ᓕᖅᐹᖑᓚᐅᖅᑐᑦ ᑲᑐᔾ ᔨᖅᑎᒌᓐ ᓂᒃ ᑯᑦ ᑲᑎᒪᒋᐊᓐᖢᐅᕐ ᓯᒪᓪ ᓗᑎᒃ ᕗᕌᓐᔅ ᒥᐅᑕᐃᑦ, ᒥᐊᓕᒐᕐ ᒥᐅᑕᐃᑦ ᐊᒻᒪᓗ ᑲᓇᑕᒥᐅᑕᐃᑦ. ᐱᓕᕆᔨᐅᔪᑦ ᑲᑐᔾ ᔨᖅᑎᒌᖑᕙᑦ ᑐᑦ ᐱᕈᖅᐸᓪ ᓕᐊᖏᓐ ᓇᕋᒥᒃ ᑕᐃᒪᓐᖢᓂᑦ ᕐᑯᓕᐅᔪᑦ ᓄᓇᕐ ᔪᐊᕐ ᒥᐅᑕᐃᑦ ᓴᓇᕙᖅᑲᖅᐸᑦ ᑐᑦ ᑲᑐᔾ ᔨᖅᑎᒌᓕᕐ ᓂᑰᔪᑦ, ᐊᒻᒪᓗ ᖃᐅᔨᓴᐅᑎᑦ 27-ᖑᓕᖅᑐᑎᒃ ᐊᐅᓚᑕᐅᔪᑦ ᓇᒥᑐᐃᓐᓇᖅ ᓄᓇᕐ ᔪᐊᕐ ᒥ, 18-ᖑᔪᑦ ᐅᑭᐅᖅᑕᖅᑐᒦᑦ ᑐᑎᒃ ᐊᒻᒪᓗ 9-ᖑᔪᑦ ᓄᓇᕐ ᔪᐊᑉ ᓂᒋᖅᐸᓯᐊᓃᑦ ᑐᑎᒃ. 9-ᖑᔪᓂᑦ ᖃᐅᔨᓴᐅᑎᑦ ᓴᓂᑦ ᓴᓇᕗᓪ ᓕᐊᒻ ᒥᔪᑦ, ᒫᓐ ᓇᕈᓗᒃ 36-ᒦ ᓛᓕᖅᑐᑦ ᓱᐳᕐ ᑖᕐᓐᑯᑦ ᖃᐅᔨᓴᐅᑎᖏᑦ ᓄᓇᕐ ᔪᐊᕐ ᒥ ᓇᒥᑐᐃᓐᓇᖅ. ᑲᓇᑕᒥᐅᑕᐃᑦ, ᓯᕗᓕᖅᑎᒻ ᒪᕆᐅᔪᑦ ᓄᓇᕐ ᔪᐊᕐ ᒥᐅᑕᐃᑦ ᖃᐅᔨᓴᖅᑎᖏᓐ ᓂᑦ, ᐊᐅᓚᑦ ᓯᓛᖅᑐᑦ ᑕᓪ ᓕᒪᓂᑦ ᖃᐅᔨᓴᐅᑎᓂᑦ ᓴᓇᔭᐅᓚᐅᖅᑎᓪ ᓗᒍ ᖃᐅᔨᓴᐅᑎᑦ ᓴᖅ ᑲᖏᖅᑐᒑᐱᒻ ᒥ, 2012 ᓄᖑᓚᐅᕐᒋᓱ ᖑᕐ ᓂᖓᓂ ᐊᐅᓚᑕᐅᒋᐊᓕᓛᖅᑐᖅ. ᑕᑉ ᐱᑲᓂ ᓄᑖᖅ ᖃᐅᔨᓴᐅᑎᑦ ᓴᖅ ᑲᓇᑕᒥᐅᑕᓄᑦ ᓴᖅᑭᖅᑕᐅᓛᖅᑐᖅ ᐃᓚᒋᔭᐅᓂᐊᓕᕐ ᓗᓂ ᓱᐳᕐ ᑖᕐᓐᑯᑦ ᓄᓇᕐ ᔪᐊᕐ ᒥ ᖃᐅᔨᓴᐅᑎᖏᓐ ᓄᑦ. ᐱᖑᓲᔪᑦ ᐅᑭᐅᖅᑕᖅᑐᓂ ᖃᐅᔨᓴᐅᑎᑭᔭᕐ ᓱᐳᕐ ᑖᕐᓐᑯᑦ ᐊᐅᓚᑕᐅᔪᑦ ᑲᓇᑕᒥᐅᑕᓄᑦ (ᑲᖏᕐ ᖢᓂᕐ ᒥ, ᐃᓅᕕᒻ ᒥ ᐊᒻᒪᓗ ᑲᖏᖅᑐᒑᐱᒻ ᒥ) ᖃᐅᔨᒪᐅᒍᑎᖃᖅᑐᑦ “ᐳᓗᕐ ᑖᕐᓐᒥᑦ”, ᐱᔾ ᔪᑎᒋᓪ ᓗᒋᑦ ᖃᐅᔨᓴᖅᐸᒻ ᒪᑕ ᐊᔾ ᔨᐅᖏᑦ ᑐᒥᑦ ᓄᓇᕐ ᔪᐊᑉ ᐊᕙᓗᐊᓃᑦ ᑐᒥᑦ ᖃᓂᑦ ᓴᕐ ᓂᖓᓂᑦ ᓄᓇᕐ ᔪᐊᑉ ᑲᔾ ᔨᖏᑦ ᓂᐱᖅᑲᕐ ᓇᖏᓐ ᓂᑦ ᖃᐅᔨᒪᔭᐅᔪᒥᑦ ‘ᐅᑭᐅᖅᑕᖅᑑᑉ ᑲᔾ ᔨᖓ ᐊᕙᓗᐊ”.

ᑐᕌᒐᐃᑦ ᐊᒻᒪᓗ ᓴᖅᑭᖅᑕᐅᔭᒪᓂᐊᖅᑐᑦ
ᐅᓪ ᓗᒥᐅᓕᖅᑐᖅ ᐊᕐ ᕌᒍᓂ ᓄᓇᕐ ᔪᐊᑉ ᓯᓚᑖᓄᑦ ᖃᓄᖅ ᑕᖅᑎᑕᐅᓯᒪᔪᓂᑦ ᐊᑐᖅᐸᓕᖅᑎᓪ ᓗᒋᑦ, ᑐᓴᐅᒪᐅᑎᑦ ᐊᒻᒪᓗ ᑮᓇᐅᔭᒃ ᑯᕕᓕᕆᓂᐅᔪᑦ ᐱᓕᕆᐊᖑᕙᓕᖅᑎᓪ ᓗᒋᑦ ᖃᓄᖅ ᑕᖅᑎᑕᐅᓯᒪᔪᓄᑦ ᑭᓯᐊᓂ, ᐱᓕᕆᔾ ᔪᑎᑦ ᓴᓂᑦ ᐊᑭᑐᔪᕐ ᔪᐊᕌᓗᓐ ᓂᑦ ᖃᓄᖅ ᑕᖅᑎᑦ ᓯᓯᒪᓕᖅᑐᑦ ᐊᓂᕐ ᓂᖅᑲᕐ ᓇᖏᑦ ᑐᒍᑦ. ᓱᐳᕐ ᑖᕐᓐᑯᑦ ᐆᑦ ᑕᐃᕙᑦ ᑐᑦ ᐆᒻ ᒪᖅᑯᑎᓄᑦ ᐊᖅᑯᑕᐅᕙᑦ ᑐᒥᑦ ᑕᒫᓂᖅᑭᕙᑦ ᑐᓂᑦ ᓄᓇᕐ ᔪᐊᕐ ᐊᕙᑎᐊᓂ, ᑕᐃᔭᐅᔪᒥᑦ “ᐊᐃᓄᔅ ᕕᐅᕐ”ᖃᓪ ᓗᓈᑎᑐᑦ. ᑕᒪᒃ ᑯᐊᓕ

ᖃᐅᔨᓴᖅᑕᐅᕙᑦᑐᑦ ᐊᔾᔨᖃᖅᑐᑦ ᐆᒻᒪᖅᑯᑎᓂᑦ ᐊᑐᖅᑕᐅᕙᑦᑐᒥᑦ ᓄᓇᕐᔪᐊᕐᒥᐅᑕᓄᑦ. ᑕᒪᒃᑯᐊᓕ ᐆᑦᑑᑕᐅᔪᓐᓇᐸᑦᑐᑦ ᖃᓄᖅ ᓄᓇᕐᔪᐊᑉ ᐊᕙᓗᐊ ᐊᑦᑐᖅᑕᐅᓂᖃᖅᐸᓪᒪᖔᖅ ᐊᓂᕐᓂᖃᕐᓇᖏᑦᑐᒥᑦ ᐊᓄᕆᒧᑦ ᐊᒻᒪᓗ ᓄᓇᕐᔪᐊᑉ ᓂᐱᖃᕐᓇᖓᓄᑦ ᐊᓂᕐᓂᖃᕐᓇᖏᑦᑑᓂᖓ ᓄᓇᕐᔪᐊᑉ. ᖃᐅᔨᓴᖅᑕᐅᑎᓪᓗᒍ “ᐊᓂᕐᓂᖃᕐᓇᖏᑦᑑᑉ ᓯᓚᖓ” ᑕᒪᒃᑯᐊ ᐆᒻᒪᖅᑯᑎᖃᐅᖅᑐᑦ ᐊᔾᔨᑐᐃᓐᓇᑦ ᓯᐊᓇᕙᐃᑦ ᓄᓇᓐᖑᐊᑦ ᓯᓚᓕᕆᔾᔪᑎᐅᕙᑦᑐᑦ ᐃᖏᕐᕋᑎᑦᓯᕙᑦᑐᑦ “ᓯᓚᓇᕙᑦᑕᑎᓐᓂᑦ ᖃᐅᔨᕙᑦᑕᑎᓐᓂᑦ” ᓄᓇᕐᔪᐊᕐᒥᐅᑕᐅᔪᒧᑦ. ᐊᐅᓚᓂᖃᓗᐊᓕᕋᐃᓪᒪᑕ, ᓲᕐᓗ ᓯᓚᕈᔪᓪᒪᓇᑦᑎᑐᑦ ᐃᕗᓘᒥᖃᑦᑕᐸᑦᑐᓂ, “ᐊᓂᕐᓂᖃᕐᓇᖏᑦᑑᓂᖓᓂ ᓯᓚ” ᐅᓗᓇᐊᓇᓕᕈᓐᓇᐸᑦᑐᑦ. ᐊᓂᕐᓂᖃᕐᓇᖏᑦᑐᒥ ᐆᑕᕐᓇᖅᑐᖃᓗᐊᓕᕐᓂᖓᐱᓪᓗᒍ ᐊᓂᕐᓂᖃᕐᓇᖏᑦᑐᒥ ᐃᖃᓇᐃᔭᖅᐸᑦᑐᑦ ᐊᒻᒪᓗ ᐱᓕᕆᔾᔪᑎᒋᕙᑦᑕᖏᑦ ᐆᒻᒪᖅᑯᑎᓂᑦ ᐊᑐᓇᐊᖃᖅᐸᑦᑐᑦ ᐊᑭᑐᔪᐊᓗᑦᓗᑎᒃ ᓴᐳᒻᒥᔭᐅᕆᐊᖃᓕᖅᐸᑦᑐᑦ. ᓄᓇᕐᔪᐊᕐᒥᑦ ᖃᓂᑦ ᓴᓂᕐ ᓴᐅᓂᖏᑦ, ᐊᑲᐅᓐᖏᓕᐅᕈᑎᖃᕈᓐᓇᖅᑐᑦ ᑐᓴᐅᒪᐅᑎᓕᕐᔪᑎᑦ ᐊᒻᒪᓗ ᖃᐅᔨᒪᐅᑎᐅᔪᑦ ᓇᒧᑦ ᑐᕋᖅᑐᖃᓕᕐᓗᐊᕐ ᒪᖔᖅ, ᐱᓗᐊᖅᑐᒥ ᓯᓚᐅᑉ ᖁᑦ ᓯᓐᓂᖔᓂᑦ ᑐᑦ, ᐊᒻᒪᓗ ᖃᖓᑦᑕᓕᕐᔪᐅᔭᑦ ᖃᖓᑦᑕᕐᖁᑎᒥᓂᒃ ᐊᓯᐊᒍᖔᖅ ᐊᖅᑯᑎᖅᑎᑦ ᓯᓇᓯᐊᖅᐸᓪᒥᔭᑦ ᐱᔾᔪᑎᐅᓪᓗᑎᒃ ᐅᑖᕐ ᓇᖅᑐᑦ ᖃᓂᑦ ᓴᓗᐊᕐ ᓂᐅᓴᓕᕐ ᓂᖏᑦ ᖃᖓᑦᑕᓯᓂᑦ ᖁᑦ ᓯᑦᑐᑲᓪᓚᒃ ᑯᑦ ᖃᖓᑦᑕᔪᓂᑦ. ᓯᐳᕐ ᑖᕐᓇᑯᑦ ᐱᓕᕆᔭᑎᒃ ᑯᑦ ᑐᓂᕐ ᕿᑎᖅᐸᓪᓕᐊᓕᖅᑐᑦ ᑐᑭᓯᐅᒪᐅᑎᑦ ᓴᒃ ᑯᑦ ᐊᑦᑐᐊᓂᖕᒋᓂᑦ ᐊᓂᕐ ᓂᖃᕐ ᓇᖏᑦᑐᑉ ᐊᕙᑎᐊᓂᑦ ᐊᒻᒪᓗ ᓄᓇᕐᔪᐊᑉ ᓯᓚᖕᒪᓂᑦ -ᓯᕿᓂᐅᑉ-ᓄᓇᕐᔪᐊᑉ ᐊᑦᑐᐊᓂᖕᒋᓂᑦ. ᐅᓗᕐ ᑖᕐ ᓇᑯᑦ ᖃᐅᔨᓴᐅᑎᖏᑦ ᑕᒪᑦ ᓯᒍᖕᒪᖃᐅᔨᓴᕐ ᓂᐅᔪᒍᑦ ᐊᑐᖅᑐᓪᒪᓇᐅᕗᑦ, ᐆᑦ ᑕᐃᕙᓪ ᒪᑕ ᓱᓇᓂᑦ ᐅᑭᐅᖅᑕᖅᑑᑉ ᑲᔾ ᔨᖕᒪᓂᑦ ᖃᓂᑦ ᓴᖅᑐᓂᑦ, ᑕᑉ ᐸᐅᓇᓂ ᓄᓇᕐ ᔪᐊᑉ ᓯᓚᖕᒪᖁᑦ ᓯᓐᓂᖔᑦ ᑐᒍᑦ ᐊᑦ ᑐᐊᓂᖃᑦ ᓯᐊᖅᑐᖅ, ᓲᕐ ᓗ ᓄᓇᕐ ᔪᐊᑉ ᓂᐱᖃᕐ ᓇᖕᒪᓂᑦ, ᐊᓂᕐ ᓂᖃᕐ ᓇᖏᑦ ᑐᒍᑦ.

ᐃᖏᕐᕋᔾᔪᑎᑦ ᓴᐃᑦ

ᐃᖏᕐᕋᔾᔪᑎᐅᓲᖅᑐᑦ ᖃᐅᔨᓴᕐ ᓂᖕᒪᓂ ᐊᒥᓯᐊᑐᓲᖕᒪᕐᑐᑦ ᐱᓕᕆᔭᐅᔭᖅ ᖃᐅᔨᓴᕐ ᕝᕕᐅᓪᒪᑦ. ᓴᓇᔭᐅᓂᖕᒪᓂ ᐊᑐᖅᑐᐊᓲᖅᑐᒍᑦ ᓄᓇᓯᐅᓪᒥᑦ ᐅᓯᑲᑦ ᑕᐅᑎᓕᓪᒥᑦ ᐅᖕᒪᓲᒍᑦ ᓄᓇᓕᖕᒥᒥ ᑲᖕᒋᑐᓚᐱᐅᑉ ᐊᑐᖅᑕᐅᖅᑦ ᑕᓲᖅᑐᒥᑦ ᓴᓇᓲᖅᑐᓄᑦ ᖃᐅᔨᓴᕐ ᕝᕕᑦ ᓴᒥᑦ. ᓄᓇᓕᕐ ᒥᐅᑕᖅ ᐱᓕᕆᐅᓲᖅᑐᖅ ᖃᐅᔨᓴᕆᐊᖅᐸᓲᖅᑐᖅ ᖃᐅᔨᓴᕐ ᕝᕕᓪ ᒥᑦ ᓴᓇᕆᐊᖅᑐᖅᑲᓐᖏᑦ ᑲᓗᐊᕐ ᒪᖕᒪᖅ ᐊᑐᕐ ᓗᓂ ᓇᖕᒥᓂᖅᑯᑎᒥᓂᒃ ᐱᓲᑎᑲᓪᓚᓪᒥᑦ ᖃᒧᑕᐅᔭᓂᓗᓐᓂᑦ.

ᓇᐸᖅᑕᐅᓲᖅᑐᑦ (ᓇᐸᐃᓐᓇᓕᕐ ᓗᑎᒃ/ᓇᐸᑎᑕᐅᑲᐃᓐᓇᕐ ᓗᑎᒃ ᐊᑐᖅᑕᐅᓂᖕᒥᓂᑦ)

ᐅᓗᕐ ᑖᕐ ᓇᑯᑦ ᖃᐅᔨᓴᐅᑎᓯᑦ ᐱᖕᒥᐃᓕᖕᒪᑎᒃ ᐱᓕᕆᔭᑎᒍᑦ ᐊᑐᖅᑕᐅᓲᖅᑐᑦ:

1) ᐃᔾ ᓗᑦ ᑕᖕᒪ
   ᐃᓪ ᓗᑦ ᑕᓇᓲᖅᑕᖕᒪ(20 ᕖᑦ ᖁᓚᔭᖅᑐᖅ ᐅᒥᐊᕐ ᔪᐊᒃ ᑯᑦ ᓯᓇᒃ ᑯᑖᒃ ᑯᕕᒥᓂᖅ) ᐃᓗᓕᖅᑲᓲᖅᑐᖅ ᖃᐅᔨᓴᐅᑎᓂᑦ ᐊᒻᒪᓗ ᖃᕋᑕᐅᔭᓂᑦ. ᖃᐅᔨᓴᐅᑎᓄᑦ ᐃᓕᒥᔭᐅᔭᓂᑦ ᓴᓇᕕᐅᓲᕐᒥᔭᖅ, ᐊᐅᓚᑦ ᓯᕕᐅᓗᓂ ᐊᒻᒪᓗ ᖃᐅᒋᐊᖅᑕᐅᕙᓪ ᓗᓂᓴᓇᕆᐊᖅᑕᕐ ᒪᖕᒪᖅ ᑲᓗᐊᕐ ᒪᖕᒪᕐ ᐃᓗᓕᖕᒪᑦ.

2) ᐱᓕᕆᔭᑎᓄᑦ ᓈᒪᓯᑦ ᑎᑦ ᓯᔾ ᔭᑎᖕᒪ
   ᓈᒪᓯᑦ ᑎᔾ ᔭᑎᑦ ᓴᖕᒪᑦ ᑕᑯᑦ ᓴᐅᓂᖅ ᐸᓲᖅᑐᑦ ᓴᓇᔭᐅᓲᖅᑐᓂ. ᓈᒪᓯᑦ ᑎᔾ ᔭᑎᑦ ᓴᖕᒪᑦ ᒪᕐ ᑭᐃᓕᖕᒪᓲᖅᑐᑦ. ᐊᑐᖅᑕᐅᑦ ᑕᓇᓲᖅᑐᖅ ᐊᒻᒪᓗ ᕿᓐ ᖁᑎᖅᑲᕐ ᕝᕕᑦ ᓴᖕᒪᑦ ᐅᖕᒪᐲᓐ ᓂᐊᖅᑐᑦ 100 ᒦᑕᓂᑦ. ᖃᐅᔨᓴᐅᑎᖕᒪ 240 ᒦᑕᓂᑦ ᑕᑭᓂᒃ (ᒪᕐ ᑮᓐ ᖁᐊᒃ ᐹᑦ ᐸᕐ ᕖᒃ), ᐊᒻᒪᓗ ᕿᓐ ᖁᑎᖕᒪ 60 ᒦᑕᐅᑦ ᓗᑎᒃ (ᐹᑦ ᐸᕐ ᕖᒃ ᓴᓂᒧᑦ ᑕᑭᓂᖕᒪᓐ ᑐᐸᓗᒃ).

3) ᓴᓇᕖᓪᒥ ᐅᐊᔭᖅᑲᕐᕖᑦᓴᖅ
   ᐊᑐᖅᑕᐅᓲᖅᑐᖅ ᐅᐊᔭᖅᑲᕐ ᕖᑦ ᓴᖅ ᓴᓇᔭᐅᓯᒪᓲᖅᑐᖅ ᖃᐅᔨᓴᕐ ᕖᓪ ᔫᖕᒪᓂ ᕿᓪ ᔫᑦ ᐋᖅᑭᑦ ᓯᒪᓗᓂ ᒪᕐ ᑭᐃᓄᑦ ᓴᓇᔭᐅᓯᒪᓂᐊᖅᑑᓐᓄᑦ. ᑕᐃᒪ ᐃᓕᖕᒪᑎᑕᐅᓚᔭᖅᑐᖅ ᐊᐁ ᕖᐊᓗᐊᕐ ᑯᔭ ᐅᓚᓂ ᐅᐊᔭᖕᒪᖃᐅᔨᓴᐅᑎᓄᑦ.

ᐃᓪ ᓗᑦ ᑕᖕᒪᑦ ᐊᒻᒪᓗ ᓈᒪᓯᑦ ᑎᔾ ᔭᑎᖅᑲᕐ ᕖᑦ ᓴᖕᒪᑦ ᓴᓇᔭᐅᓯᒪᓂᐊᖅᑐᑦ ᐊᑯᓂᑲᓪ ᓚᒃ ᐊᑐᖅᑐᑦ ᓴᐅᓗᑎᒃ ᑭᓯᐊᓂ ᓇᐸᐃᓐᓇᕐ ᓴᔭᕐ ᒪᖕᒪᑦ ᑐᑦ ᖃᖕᒪᐃᓐ ᓇᖅ ᐲᔭᖅᑕᐅᔭᕐ ᓇᕐ ᓗᑎᒃ.

ᓄᓇᐅᑉ ᑕᐅᑦ ᑐᐊᓄᑦ ᐅᑎᖅᑎᑦ ᓯᓂᖅ/ᕿᒪᑦ ᑕᐅᓕᖅᐸᑦ ᐸᕐ ᓇᐅᑎᑦ ᓴᑦ

ᐱᓕᕆᔾ ᔪᑕᐅᒐᔭᕐ ᓂᖕᒋ ᓄᑦ ᖃᓄᖅ ᐸᕐ ᓇᐅᑎᐅᔪᖅ ᐱᒋᐊᖅᑎᑦ ᓯᔾ ᔪᑕᐅᓯᒪᓕᖅᑐᖅ ᑲᖏᖅᑐᓚᐱᒻ ᒥ ᐳᓗᑖᕐᓐ ᖃᐅᔨᓴᐅᑎᒧᑦ ᐃᓂᓕᐊᖑᒐᔭᖅᑐᖅ ᖁᐊᖅᑕᖅᑐᓕᕐ ᓱᖅᑕᐅᖏᓐ ᑐᓂ, ᓄᓇᒧᑦ ᐋᖅᑭᑦ ᓯᕕᐅᓐᖏᓐ ᑐᓂ ᖁᐊᖑᐃᓐ ᓇᖅᑐᒧᑦ (ᐲᖅᑕᐅᔪᑦ ᓴᐅᔪᓐ ᓅᕐ ᑐᓂ ᕿᓯᐊᓂ ᐋᖅᑭᑦ ᑕᐅᒐᔭᖅᑐᑦ), ᐊᒻᒪᓗ ᓄᓇᑦ ᑕᖖᐊᑐᓇᐊᒥᑦ ᓴᓇᕕᐅᒐᔭᓐᖏᓐ ᑐᖅ.

ᐱᓕᕆᔾ ᔪᑎᐅᓛᖅᑐᑦ

ᖃᐅᔨᓴᐅᑎᑦ ᓴᑦ ᓴᓇᔭᐅᔪᑦ ᓴᐅᑎᑕᐅᓯᒪᔪᑦ ᓄᓇᓕᓐᓂᑦ ᐅᖓᓯᑦ ᓴᓂᐊᕐ ᑐᓂ, ᐊᐅᓚᑦ ᓯᔨᐅᑐᑎᒃ ᓵᓯᑳᑦ ᓯᐋᓐ ᓯᓚᑦ ᑐᓴᕐ ᕕᔾ ᔪᐊᖖᓂᒥᐅᑕᓄᑦ, ᓄᓇᓕᕐ ᒥᐅᑕᒧᑦ ᐃᑲᔪᖅᑕᐅᕙᓪ ᓗᑎᒃ, ᐃᑲᔪᖅᑕᐅᕆᐊᖄᓕᕋᐃᒍᑎᒃ. ᖃᐅᔨᓴᐅᑎ ᓯᓚᒥᑦ ᖃᐅᔨᓴᐅᑎᐅᓂᐊᖅᑐᖅ, ᐊᒻᒪᓗ ᖃᐅᔨᓴᐅᑎᑦ ᓄᐊᑕᐅᕙᓪ ᓗᑎᒃ ᖄᑕᐅᔭᒃ ᑯᑦ ᐱᓕᕆᔾ ᔪᑎᓄᑦ. ᐊᒃ ᒐᒻ ᒧᑦ ᓄᐊᑕᒥᓂᕐ ᓂᒃ ᖃᐅᔨᓵᓐᖏᑦ ᑐᑦ.

ᓄᓇᓕᖓ ᑲᖏᖅᑐᒑᐱᐅᑉ ᓂᕈᐊᖅᑕᐅᓚᐅᕐ ᓯᒪᔪᖅ ᐱᐅᓂᖅᐹᖑᕆᔭᐅᓪ ᓗᓂ ᖃᐅᔨᓴᐅᑎᓂᑦ ᓴᓇᕕᐅᕆᐊᖅ. ᑕᑉ ᐱᑲᓐᖑᑦ ᖃᐅᔨᓴᕐ ᓗᑕ, ᐱᐅᓂᖅᐹᒃ ᑯᑦ ᖃᐅᔨᓴᕈᓐ ᓇᓂᐊᖅᑐᒍᑦ ᐱᓕᕆᔾ ᔪᑎᖅᑳ ᓗᑕᑦ ᑕᐅᖅ ᐊᑕᐅᑦ ᓯᒃ ᑯᑦ ᖃᐅᔨᓴᐅᑎᓗ ᖃᐅᓯᐃᑦ ᑐᒦᑦ ᑐᖅ, ᑕᐃᓐ ᓇᓕ ᑲᖏᖅᑐᒑᕕᒻ ᒦᑦ ᑐᒧᑦ ᐃᑲᔪᕐ ᓯᔾ ᔪᑎᐅᔪᖅ ᖃᐅᔨᓴᐅᑎᒃ ᑯᑦ. ᐅᖓᓯ ᖃᑎᒌᓐ ᓂᖏ ᑲᖏᖅᑐᒑᐱᐅᑉ ᐊᒻᒪᓗ ᖃᐅᓯᐃᑦ ᑑᑉ ᑲᖏᖅᑐᒑᐱᒻ ᒥᑦ ᐊᑲᐅᔪᐊᓗᒻ ᒪᑦ ᖃᐅᔨᓴᖅᑕᐅᓂᐊᖅᑐᑦ ᖁᓪ ᓕᐅᑎᖃᑎᑉᐸᓐ ᓂᖏ ᐱᓪ ᓗᒋᑦ ᖃᐅᔨᓴᖅᑕᐅᑎᓪ ᓗᒍ ᐃᓚᓗᐅᔭᐅᑉ ᐃᓗᐊ.

ᐱᓕᕆᔾ ᔪᑎᑦ ᓄᐊᑕᐅᒐᔭᕐ ᓂᖏ

ᖃᐅᔨᓴᐅᑎᑦ ᐊᑐᓂ ᓄᓇᕐ ᔭᐊᕐ ᒥᐅᑕᓄᑦ ᖃᐅᔨᓴᐅᑎᖕᒋ ᓂᓯᐳᕐ ᑖᕐ ᖓ ᑯᑦ (ᑖᒃ ᑯᓄᖕᒐᐃᓚᒋᔭᐅᔭᖅ ᑲᖏᖅᑐᒑᐱᒻ ᒥ ᐳᓗᕐ ᑖᕐ ᖓ ᖁᔭᖅ ᖃᐅᔨᓴᐅᑎᓕᐊᖁᔭᖅ) ᐅᐊ ᒪᓇᒥ ᓈᓚᐃᒻ ᒪᑦ ᖃᐅᔨᓴᖅᐸᑦ ᑐᑦ ᖃᐅᔨᓴᖅᑕᓕᒫᒥᓂᒃ, ᐊᒻᒪ ᖃᐅᔨᓴᐅᑎᓕᒫᑦ ᓯᐊᑦ ᓴᓇᔭᐅᓯᒪᔪᑦ ᐊᑕᐅᑦ ᓯᒃ ᑯᑦ ᖃᐅᔨᓴᐅᑎᐅᒍᒫᖕᓂᐊᖅᑐᑎᒃ. ᖃᐅᔨᓴᐅᑎᑦ ᖃᕋᑕᐅᔭ ᓄᑦ ᐃᓕᐅᖅᑲᖅᑕᐅᓕᖅᐸᑦ ᑐᑦ ᔮᓐ Hᐋᑉ ᑭᓐᔅ ᓯᓚᑦ ᑐᓴᕐ ᕕᔾ ᔪᐊᖕᑕ ᐱᓕᕆᐊᓂᑦ ᖃᐅᔨᓴᕐ ᕕᖕᒥᓄᑦ. ᖃᐅᔨᓴᐅᑎᑦ ᓄᐊᑕᐅᓯᕙᑦ ᑐᑦ ᓄᓇᖕᒍᐊᓕᐅᕈᑕᐅᓕᖅᑐᑎᒃ ᐃᓚᓗᐅᔭᐅᑉ ᐃᓗᐊᓂᑦ ᐅᑭᐅᖅᑕᖅᑐᐃᑦ ᐊᒻᒪᓗ ᓂᒋᖅᐸᓯᒻᒥ ᑳᔅ ᓱᖅᑯᓕᖕᒋ ᓂᑦ ᐊᑯᓐ ᓅᕿᔪᒥᑦ ᐳᖅᑐᓂᖕᒧᑦ. ᓯᐳᕐ ᑖᕐ ᖓ ᑯᑦ ᖃᐅᔨᓴᖅᑕᐅᓯᒪᔪᑦ ᓄᐊᑕᐅᕙᑦ ᑐᑦ ᐊᑐᖅᑕᐅᕙᑦ ᑐᑦ ᖃᐅᔨᓴᖅᑎᓄᑦ "ᐊᓂᕐ ᓂᖅᕐ ᓇᖕᒋ ᑐᒥ ᓯᓚᒥᑦ"-ᖃᓄᖅ ᐊᑦ ᑐᐃᔾ ᔪᑎᖅᑲᖅᐸᒻ ᒪᖕᒋᑕ ᓄᓇᕐ ᔭᐊᑉ ᖃᓂᒋᔭᖕᒋᓂ ᐊᓂᕐ ᓂᖅᕐ ᓇᖕᒋ ᑐᒥᑦ ᓯᓚ ᐃᓚᓗᐅᔭᐅᑉ ᐃᓗᐊᓂᑦ (ᓄᓇᒥᑦ ᑐᓂᑦ ᐱᓕᕆᕝᕕᓂᖅ ᓗ, ᓃᕐ ᓗ ᑕᑭᔩᑎᑦ ᐅᐊᔭᖅᕐ ᕖᑦ ᐊᒻᒪᓗ ᓯᖅ ᓗᓃᑦ).
ᓄᐊᑕᐅᓯᒪᔪᑦ ᖃᐅᔨᓴᐅᑎᒥᓂᑦ ᐊᑐᖅᑕᐅᕙᑦ ᑐᑦ ᖃᐅᔨᓴᖅᑎᓄᑦ ᓰᓇᑐᐃᓐ ᓇᕐ ᓂᑦ, ᐊᒻᒪᓗ ᒪᕐ ᕈᐃᓕᖕᒐᕙᑦ ᑐᑎᒃ: (i) ᖃᐅᔨᓴᐅᑎᑦ ᓇᓗᓇᐃᔭᖅᑕᐅᓯᒪᖅ ᓗᑎᒃ ᖃᓄᐃᒍᑎᐅᔪᑦ, ᐊᒻᒪᓗ (ii) ᐊᕐ ᖁᒍᑲᓴᓄᑦ ᖃᐅᔨᓴᐅᑎᐅᓯᒪᔪᑦ ᐊᑐᖅᑕᐅᔾ ᔪᑎᖅᑯᕐ ᓇᖅᑐᑎᒃ ᓯᐳᕐ ᑖᕐ ᖓ ᑯᑦ ᖃᐅᔨᓴᐅᑎᒋᓯᒪᔭᓕᒫᖕᒋ ᓄᑦ, ᑖᒃ ᑯᐊ ᐊᕙᑎᐅᓗᐊᓄᑦ ᐊᕐ ᖁᒍᓄᑦ ᖃᐅᔨᓴᖅᑕᐅᓯᒪᔪᑦ.
ᖃᐅᔨᓴᐅᑎᑦ ᓇᒧᑐᐃᓐ ᓇᖅ ᐅᖃᐅᓯᐅᕙᑦ ᑐᑦ ᑕᑯᔭᐅᕙᑦ ᑐᑎᓪ ᓗ ᐊᒻᒪᓗ ᐱᓯᒪᔭᐅᕙᑦ ᑐᑎᒃ ᓯᐳᕐ ᑖᕐ ᖓ ᑯᑦ ᑲᑐᔾ ᔨᖅᑎᕖᕙᑦ ᑕᖕᒋ ᓄᑦ, ᐊᒻᒪᓗ ᑐᖅᑯᖅᑕᐅᓯᒪᕙᑦ ᑐᑎᒃ ᐊᒥᓱᓂ ᐊᒻᒪᓗ ᑲᑎᖕᖑᖕᒋᑦ ᑐᓂ ᐃᓂᖅᕐ ᑐᑎᒃ. ᖃᐅᔨᓴᐅᑎᒃ ᑯᑦ ᖃᐅᔨᓵᒥᓃᑦ ᐊᑐᖅᑕᐅᔪᓇᓱᐊᕐ ᒥᔪᑦ ᐊᓯᖕᒋ ᓄᑦ ᖃᐅᔨᓴᐅᑎᓄᑦ ᐱᓕᕆᔾ ᔪᑎᐅᓗᑎᒃ. ᐆᑦ ᑑᑎᒋᓗᒍ, ᖃᖕᒍᑦ ᑕᖅᑎᑕᐅᕙᑦ ᑐᓂᑦ ᓴᓇᔅᑦ Swarm (ᑕᕆᐅᑉ ᐊᑭᐊᓂᒥᐅᑕᐃᑦ ᐊᓂᕐ ᓂᖅᕐ ᓇᖕᒋ ᑐᓕᕆᔅᑦ) ᐊᒻᒪᓗ ePOP (ᑲᓇᑕᒥᐅᑕᐃᑦ ᐊᓂᕐ ᓂᖅᕐ ᓇᖕᒋ ᑐᓕᕆᔅᑦ) ᑕᑎᒋᔭᖅᒪ ᒪᕆᒃᖅᑐᑦ ᑲᓇᑕᒥᐅᑕᐃᑦ ᓯᐳᕐ ᑖᕐ ᖓ ᓕᕆᔅᖕᒋ ᓂᑦ (ᐊᒻᒪᓗ ᐳᓗᕐ ᑖᕐ ᖓ ᑯᖓ ᓂᒃ) ᖃᐅᔨᓴᐅᑎᒃ ᑯᑦ ᐃᓚᒋᐊᕈᑎᒋᒐᔭᕐ ᓗᒋᑦ ᐱᓕᕆᔾ ᔪᑎᒋᕙᑦ ᑕᖕᒋ ᓄᑦ ᖃᐅᔨᓵᒥᓂᕐ ᓄᑦ.

ᐅᓂᒃ ᑳᓕᐅᕐ ᓂᖅ

ᖃᐅᔨᓴᕐ ᓂᒃ ᑯᑦ ᖃᐅᔨᒍᑎᐅᔪᑦ ᑎᑎᕋᖅᑕᐅᓃᖁᔪᑦ ᖃᐅᔨᓴᖅᑎᓄᑦ ᑐᕋᖕᖑᐃᓄᑦ ᐅᖃᓕᒫᕙᕐ ᓄᑦ ᐊᒻᒪᓗ ᐅᓂᒃ ᑳᑕᔪᐅᕙᑦ ᑐᑎᒃ ᑲᓇᑕᒥᐅᑕᓄᑦ ᐊᒻᒪᓗ ᓄᓇᕐ ᔭᐊᕐ ᒥᐅᑕᓄᑦ ᖃᐅᔨᓴᖅᑎᑦ ᑲᑎᒪᕕᔾ ᔭᐊᕐ ᕕᖕᒋᓂ. ᓯᐳᕐ ᑖᕐ ᖓ ᑯᑦ ᐱᓕᕆᔪᖕᒋᑦ ᐊᕐ ᖁᒍᑕᒫᕐ ᓯᐅᑎᖅᑲᖅᐸᒻ ᒥᔪᑦ

ᐱᓕᕆᐊᒥᓂᕐᒥᓂᒃ ᐱᓕᕆᐊᒥᓂᓪᓗ ᐅᖃᐅᓯᖃᕈᒪᔪᑦ. 2012-ᒥ ᓱᐳᕐ ᑖᕐᓐᑯᑦ ᑲᑎᒪᓂᖃᓛᖅᑐᑦ ᑐᓐᖓᓱᑦ ᑎᑦᓯᔮᐅᓗᑎᒃ ᓴᐃᓅᓲᑦ ᖃᐅᔮᓴᖅᑎᑦ ᐊᒻᒪᓗ ᓴᐃᓐHᐊᐃᒦᓛᖅᑐᑦ, ᓴᐃᓅᓯᑦ ᓄᓇᓕᖃᕐᕕᖏᓐᓂ, ᐊᒻᒪᓗ ᑲᓇᑕᒥᐅᑕᐃᑦ ᑐᓐᖓᓱᑦ ᑎᑦᓯᓛᖅᑐᑦ ᓵᓯᑳᔅ ᐅᐊᓐᒥ ᑲᑎᒪᓂᖅᑲᖅᑎᓪᓗᒋᑦ 2013-ᒥ. ᐅᑭᐅᖅᑕᖅᑐᒥᐅᑕᐃᑦ ᑐᓴᐅᒪᑎᑕᐅᓚᔪᑦᑐᑦ ᓈᓚᐅᑎᒃᑯᑦ ᐊᒻᒪᓗ ᑏᕖᒃᑯᑦ ᐊᐱᕐᓱᖅᑕᓂᑦ ᑕᑯᓐᓇᖅᑎᑕᐅᓗᑎᒃ. ᐸᕐᓇᐅᑕᐅᓯᒪᔪᑦ ᐅᖃᓕᒪᕕᐅᔭᕐᓂᖏᓄᑦ ᑲᖏᖅᑐᒑᐱᒻᒥᐅᑕᐃᑦ, ᐃᓅᕕᒻᒥᐅᑕᐃᑦ ᐊᒻᒪᓗ ᑲᖏᖅᖠᓂᕐᒥᐅᑕᐃᑦ ᐅᖃᐅᓯᐅᓯᒪᔫᓗᐊᑦ, ᑭᓯᐊᓂ ᒫᓐᓇᐅᔪᖅ ᑮᓇᐅᔭᖁᑎᒍᑦ ᐊᐅᓚᑦᓯᔾᔪᑎᑦ ᐱᓕᕆᕝᕕᑎᓐᓄᑦ ᐱᔾᔪᑎᑦᓴᐅᖏᑦᑐᑦ ᑕᒪᑐᒥᖓ.