

From: [John Bennett](#)
To: [King, Galen L \(DNR\)](#)
Subject: RE: Protractions
Date: Monday, September 30, 2019 9:24:00 AM

Ha! That seems to be a recurring problem of mine in that people give me what I ask for and not what I really need... Thanks for mentioning the SDMS NAD 83 Epoch 86 issue. I will need to rerun that translation. Our project coordinate system is NAD 83 (2011) (EPOCH 2010.000). I will have the SDMS provide me with both the NAD 27 values and the NAD 83 (Using EPOCH 86) and run the translations on both to see if there is much if any difference. I don't think I have mentioned this but I plan on a second retirement on 12/31/19. After that date I might take on a short term interesting assignment but I won't be coming into the office any more. So no more protraction questions after New Year's Day! JohnB

From: King, Galen L (DNR) [mailto:larry.king@alaska.gov]
Sent: Monday, September 30, 2019 9:12 AM
To: John Bennett <JBennett@rmconsult.com>
Subject: RE: Protractions

It appears you need the supplementals. Sorry I just sent what you asked for, and didn't check that.



From: John Bennett <JBennett@rmconsult.com>
Sent: Monday, September 30, 2019 8:51 AM
To: King, Galen L (DNR) <larry.king@alaska.gov>
Subject: RE: Protractions

Larry, my apologies for having to come back again on this but my reading of the protraction index map apparently went awry. You in fact sent me grid S-16-6&7, which is what I asked for but they reflect T5-8S, R9-12W and T5-8S, R5-8W. I'm working in T5N, R3-5W. Using the BLM Protraction Diagram index that I'm pretty sure you sent me on the Newtok project, it sure looks like those townships should be in diagrams S-16-6&7. Does DNR use a different system for protraction diagram designations or am I reading the index wrong? I'm not quite sure what I'm doing wrong here other than I haven't yet had a full cup of coffee yet this morning. JohnB

From: John Bennett
Sent: Monday, September 30, 2019 8:35 AM
To: King, Galen L (DNR) <larry.king@alaska.gov>

Subject: RE: Protractions

Perfect! Thanks Larry -

From: King, Galen L (DNR) [<mailto:larry.king@alaska.gov>]

Sent: Monday, September 30, 2019 8:33 AM

To: John Bennett <JBennett@rmconsult.com>

Subject: RE: Protractions

John,

We usually run the protraction in an old DOS program called BOGO. Check the NW and SE corners verses the protraction diagram and it usually works great. Same if we use SDMS, run it and then confirm with the protraction diagram. It usually works good. There can be a few quirks especially near the 141° parallel where the SE corner is outside, and the programs has issues.

One problem that often recurs is when a private surveyor runs SDMS and obtains the NAD83 coordinate, stakes the corners, does the conversion to NAD27, and there is a bust. What is not obvious is imbedded deep in the SDMS metadata that the NAD83 coordinates are Epoch 86. The private surveyors don't make the transformation to their staking NAD83 Epoch, usually Epoch 2011, and there is the bust of about 5 feet.

We have run SDMS and confirmed that if you treat the NAD83 as Epoch 86, translate to NAD 83 Epoch 2011, then convert to NAD 27 it works.

Attached requested protraction diagrams.

Please let me know if you need anything else.



From: John Bennett <JBennett@rmconsult.com>

Sent: Monday, September 30, 2019 8:14 AM

To: King, Galen L (DNR) <larry.king@alaska.gov>

Subject: Protractions

Good morning Larry – The last time we talked about protractions it had to do with the state asserting section line easements over protracted section lines and then you managed to find some

protraction diagrams that I couldn't find. The subject today is again protractions but it has to do with the process of computing the corner positions. I'm working on a highway base mapping project near Cooper Landing on the Sterling Highway between MP 44 and 58. Back in 2014 Karen did the base mapping for MP 58-79. The current project covers three townships, T5N, R3-5W, SM. The west half of the current project is under USFWL management in the Kenai Moose Range and the East half is in the Chugach Forest with several private, State and Kenai Borough inholdings within the Forest. Within the two easterly townships there are only a few sections surveyed. So my task is to generate protracted coordinates for the un-surveyed sections. Generally my view is that the protraction diagrams are the only official representation of the corner positions. I was looking on Karen's MP 58-79 project and I see a note where she used a utility in the BLM SDMS site under "Tools and Utilities" called "Query Protracted and Surveyed Township and Section Corners". (I could get more info from Karen on this but she is currently on the East coast for a couple of weeks.) The BLM Utility has the following note:

For GIS mapping and analytical use. These protracted coordinates precisely map the township and section coordinates as defined on the official BLM protraction diagrams. Not for use in determining area computations. Please consult official BLM protraction diagrams for the record protracted area.

I ran the utility for NAD 27 values against T8N, R88W, SM, which is shown on one of the Newtok airport protraction diagrams you provided me with. The values that the BLM utility generated exactly match the township corners shown on the official protraction diagram. So I was wondering whether you had used this utility and if so had found any fault with it? I suppose I should at least run the utility to generate the NAD 27 for the specific townships of my project and if they check out, then I would feel more confident in the values for the section corners it generates. Specifically I am having the BLM utility generate NAD 83 protraction values, then I am converting them to one of Central Region DOT's Low Distortion Projections using "Global Mapper".

I can't remember whether I obtained the Newtok Protraction diagram from BLM or you. I remember I was having a problem finding some at BLM and you were able to find them on your server. I'm hoping you can provide me with the protraction diagrams S-16-6 and S-16-7 and that should cover my project. Thanks, JohnB

John F. Bennett, PLS, SR/WA *Senior Land Surveyor – Right of Way Services*

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