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11th December, 1985.

Dr. P. Foster,  
 Protein Fractionation Centre,  
 Ellen's Glen Road,  
 Edinburgh,  
 EH17 7QT.

Dear Peter,

Thank you for your letter of 13th November with its interesting enclosures. David Evans is now in contact with Scomag on a gradient generator and we will let you know what transpires.

We have recently revamped our freeze-drying conditions at Oxford, and our old Usifroid drier does not give us all the measurements we would wish. Until a month or two ago, the product temperature during primary drying was about  $-37^{\circ}$  and nitrogen was injected at up to 0.9 mB. In the secondary phase, a condenser temperature of at least  $-60^{\circ}$  was maintained and the product held at approximately  $20^{\circ}$  for >6h at about 0.07 mB. We now dry at a lower primary temperature, at least  $-40^{\circ}$  with injection to  $\pm 0.1$  mB. Secondary drying is now done at a shelf temperature of  $40^{\circ}$  (the product probably  $25-30^{\circ}$ ) purging with dry nitrogen in three pulses before evacuating to the final 0.07 mB. The latter is a precaution to ensure that any gas present is nitrogen rather than oxygen. We are only now getting our hands on Karl Fischer data to see whether there is any significant variation in moisture content within or between batches.

With my best wishes.

Yours sincerely,



J.K. Smith.  
 Chief Project Scientist.

PROTEIN FRACTIONATION CENTRE	
Received: 17/12/85	
File No: FVIII / JKS 2.167	
Received	Action taken
PJL	
R BRY	✓
Anna	✓
John	✓