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;; based on Nick's information in nuft-input_noBF.txt
;; copied from dkm-afc-EBS_Rev10 with 4 modifications
;; 1. dr-up --> dr
;; 2. 4.534 --> 7.2035
;; 3. bfill material is not used.
;; 4. add 2 different invert materials on Tom's email on Feb. 09, 2000.
;;     tcond = 1.52 invert1
;;     tcond = 0.15 invert2 Tom's email on Feb 09, 2000
;; 5. cont-len-fac =0.05 for invert1 and invert2

(lsnf
  (cont-len-fac 1.0e-5) (cont-area-fac 1.0)
  ;; a small value of connected length is used to minimize thermal disequilibrium between the
  fracture and matrix continua
  (exfac-adv (liquid 1.000e+00) (gas 1.000e+00))
  (solid-density 1.5406e+03) (porosity 0.35)
  ;; because the wp is impermeable, porosity does not affect TH behavior
  ;; solid-density calculation is on page 31 of Sept. 20
  ;; because the lsnf properties are applied to both the matrix and fracture continua, which
  are each
  ;; assumed to comprise 50% of the total volume, it is necessary to divide the solid density
  by two
  ;; relative to the calculation on page 31 of Sept. 20
  (Kd (air 0.0) (water 0.0) )
  (KdFactor (air 0.0) (water 0.0) )
  (Cp 4.88860e+02)
  (tcond tcondLin (solid 7.210000)(liquid 7.210000)(gas 7.210000)) ;@@@; Changes
  ;; tcond =1/2 the single continuum value
  (K0 0.000e+00) (K1 0.000e+00) (K2 0.000e+00)
  (tort (gas 1.000e+00) (liquid 0.0))
  (kr (gas krgLinear (Smax 1.000e+00)(Sr 0.000e+00))
      (liquid krLLinear (Smax 1.000e+00)(Sr 0.000e+00)))
  (pc (liquid 0.0))
  (krMC (liquid krMCintrinsic) (gas krMCintrinsic))
)
(m-dr ;; equivalent Kth for thermal radiation in the drift
  (cont-len-fac 1.0e-5) (cont-area-fac 1.0)
  ;; a small value of connected length is used to minimize thermal disequilibrium between the
  fracture and matrix continua
  (exfac-adv (liquid 1.000e+00) (gas 1.000e+00))
  (solid-density 5.92500e-01) (porosity 0.495)
  ;; porosity =1/2 the single continuum value
  ;; solid-density=1/2 the single continuum value
  (Kd (air 0.0) (water 0.0))
  (KdFactor (air 0.0) (water 0.0))
  (Cp 1.006e+03)
  (tcond tcondLin (solid 7.2035) (liquid 7.2035) (gas 7.2035)) ;@@@; Changes
  ;; tcond = 1/2 the single continuum value
  (K0 0.500e-08) (K1 0.500e-08) (K2 0.500e-08)
  ;; permeability =1/2 the single continuum value
  (tort (gas 1.000e+00) (liquid 0.0))
  (kr (gas krgLinear (Smax 1.000e+00)(Sr 0.000e+00))
      (liquid krPower (power 1) (Smax 1.000e+00)(Sr 0.000e+00)))
  (pc (liquid 0.0))
  (krMC (liquid krMCintrinsic) (gas krMCintrinsic))
)
(f-dr ;; equivalent Kth for thermal radiation in the drift
  (cont-len-fac 1.0e-5) (cont-area-fac 1.0)
  ;; a small value of connected length is used to minimize thermal disequilibrium between the
  fracture and matrix continua
  (exfac-adv (liquid 1.000e+00) (gas 1.000e+00))

  (solid-density 5.92500e-01) (porosity 0.495)
  ;; porosity =1/2 the single continuum value
  ;; solid density = 1/2 the single continuum value
  (Kd (air 0.0) (water 0.0))
  (KdFactor (air 0.0) (water 0.0))
  (Cp 1.006e+03)
  (tcond tcondLin (solid 7.2035) (liquid 7.2035) (gas 7.2035))
  ;; tcond = 1/2 the single continuum value
  (K0 0.500e-08) (K1 0.500e-08) (K2 0.500e-08)
  ;; permeability =1/2 the single continuum value
  (tort (gas 1.000e+00) (liquid 0.0))

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(kr (gas krgLinear (Smax 1.000e+00)(Sr 0.000e+00))
 (liquid krPower (power 1) (Smax 1.000e+00)(Sr 0.000e+00)))
(pc (liquid 0.0))
(krMC (liquid krMCintrinsic) (gas krMCintrinsic))
)
(m-bfill ;; matrix-continuum backfill
 (cont-len-fac 1.0e-5) (cont-area-fac 1.0)
;; a small value of connected length is used to minimize thermal disequilibrium between the
fracture and matrix continua
 (exfac-adv (liquid 1.000e+00) (gas 1.000e+00))
 (solid-density 1.350e+03) (porosity 0.205)
;; porosity =1/2 the single continuum value
;; solid density = 1/2 the single continuum value
 (Kd (air 0.0)(water 0.0))
 (KdFactor (water 0.0) (air 0.0))
 (Cp 7.9550e+02)
 (tcond tcondLin (solid 0.16500)(liquid 0.16500)(gas 0.16500))
;; tcond = 1/2 the single continuum value
 (K0 0.715e-11) (K1 0.715e-11) (K2 0.715e-11)
;; permeability =1/2 the single continuum value
 (tort (gas 0.7) (liquid 0.0)) ;;JJN
 (kr (liquid krlVanGen (Sr 0.024) (m 0.5) (Smax 1.0))
 (gas krgVanGenMinus (Sr 0.024) (Sj 0.07) (m 0.5) (Smax 1.0))
 )
 (pc (liquid pcVanGen (alpha 2.7523e-4)(Sr 0.024)(Sj 0.07)(m 0.5)(Smax 1.0)))
 (krMC (liquid krMCintrinsic) (gas krMCintrinsic))
)
(f-bfill ;; fracture-continuum backfill
 (cont-len-fac 1.0e-5) (cont-area-fac 1.0)
;; a small value of connected length is used to minimize thermal disequilibrium between the
fracture and matrix continua
 (exfac-adv (liquid 1.000e+00) (gas 1.000e+00))
 (solid-density 1.350e+03) (porosity 0.205)
;; porosity =1/2 the single continuum value
;; solid density = 1/2 the single continuum value
 (Kd (air 0.0)(water 0.0))
 (KdFactor (water 0.0) (air 0.0))
 (Cp 7.9550e+02)
 (tcond tcondLin (solid 0.16500)(liquid 0.16500)(gas 0.16500))
;; tcond = 1/2 the single continuum value
 (K0 0.715e-11) (K1 0.715e-11) (K2 0.715e-11)
;; permeability =1/2 the single continuum value
 (tort (gas 0.7) (liquid 0.0)) ;;JJN
 (kr (liquid krlVanGen (Sr 0.024) (m 0.5) (Smax 1.0))
 (gas krgVanGenMinus (Sr 0.024) (Sj 0.07) (m 0.5) (Smax 1.0))
 )
 (pc (liquid pcVanGen (alpha 2.7523e-4)(Sr 0.024)(Sj 0.07)(m 0.5)(Smax 1.0)))
 (krMC (liquid krMCintrinsic) (gas krMCintrinsic))
)
(m-invert1
 (cont-len-fac 0.05) (cont-area-fac 1.0)
;; a small value of connected length is used to minimize thermal disequilibrium between the
fracture and matrix continua
 (exfac-adv (liquid 1.000e+00) (gas 1.000e+00))
 (solid-density 1.2565e+03) (porosity 0.2725)
;; porosity =1/2 the single continuum value
;; solid density = 1/2 the single continuum value
 (Kd (air 0.0)(water 0.0))
 (KdFactor (water 0.0) (air 0.0))
 (Cp 9.480e+02)
 (tcond tcondLin (solid 0.7600)(liquid 0.7600)(gas 0.7600)) ;@@@; 1.52 from Tom's email
;; tcond = 1/2 the single continuum value
 (K0 3.076e-10) (K1 3.076e-10) (K2 3.076e-10)
;; permeability =1/2 the single continuum value
 (tort (gas 0.7) (liquid 0.0)) ;;JJN
 (kr (liquid krlVanGen (Sr 0.092) (m 0.6296) (Smax 1.0))
 (gas krgVanGenMinus (Sr 0.092) (Sj 0.1)(m 0.6296) (Smax 1.0))
 )
 (pc (liquid pcVanGen (alpha 1.2232e-3)(Sr 0.092)(Sj 0.1)(m 0.6296)(Smax 1.0)))
 (krMC (liquid krMCintrinsic) (gas krMCintrinsic))
)
;;
(f-invert1
 (cont-len-fac 0.05) (cont-area-fac 1.0)

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;; a small value of connected length is used to minimize thermal disequilibrium between the
fracture and matrix continua
(exfac-adv (liquid 1.000e+00) (gas 1.000e+00))
(solid-density 1.2565e+03) (porosity 0.2725)
;; porosity =1/2 the single continuum value
;; solid density = 1/2 the single continuum value
(Kd (air 0.0)(water 0.0))
(KdFactor (water 0.0) (air 0.0))
(Cp 9.480e+02)
(tcond tcondLin (solid 0.7600)(liquid 0.7600)(gas 0.7600)) ;@@@; 1.52 from Tom's email
;; tcond = 1/2 the single continuum value
(K0 3.076e-10) (K1 3.076e-10) (K2 3.076e-10)
;; permeability =1/2 the single continuum value
(tort (gas 0.7) (liquid 0.0)) ;JJN
(kr (liquid krlVanGen (Sr 0.092) (m 0.6296) (Smax 1.0))
(gas krgVanGenMinus (Sr 0.092) (Sj 0.1)(m 0.6296) (Smax 1.0))
)
(pc (liquid pcVanGen (alpha 1.2232e-3)(Sr 0.092)(Sj 0.1)(m 0.6296)(Smax 1.0)))
(krMC (liquid krMCintrinsic) (gas krMCintrinsic))
)
(m-invert2
(cont-len-fac 0.05) (cont-area-fac 1.0)
;; a small value of connected length is used to minimize thermal disequilibrium between the
fracture and matrix continua
(exfac-adv (liquid 1.000e+00) (gas 1.000e+00))
(solid-density 1.2565e+03) (porosity 0.2725)
;; porosity =1/2 the single continuum value
;; solid density = 1/2 the single continuum value
(Kd (air 0.0)(water 0.0))
(KdFactor (water 0.0) (air 0.0))
(Cp 9.480e+02)
(tcond tcondLin (solid 0.0750)(liquid 0.0750)(gas 0.0750)) ;@@@; 0.15 from Tom's email
;; tcond = 1/2 the single continuum value
(K0 3.076e-10) (K1 3.076e-10) (K2 3.076e-10)
;; permeability =1/2 the single continuum value
(tort (gas 0.7) (liquid 0.0)) ;JJN
(kr (liquid krlVanGen (Sr 0.092) (m 0.6296) (Smax 1.0))
(gas krgVanGenMinus (Sr 0.092) (Sj 0.1)(m 0.6296) (Smax 1.0))
)
(pc (liquid pcVanGen (alpha 1.2232e-3)(Sr 0.092)(Sj 0.1)(m 0.6296)(Smax 1.0)))
(krMC (liquid krMCintrinsic) (gas krMCintrinsic))
)
;;
(f-invert2
(cont-len-fac 0.05) (cont-area-fac 1.0)
;; a small value of connected length is used to minimize thermal disequilibrium between the
fracture and matrix continua
(exfac-adv (liquid 1.000e+00) (gas 1.000e+00))
(solid-density 1.2565e+03) (porosity 0.2725)
;; porosity =1/2 the single continuum value
;; solid density = 1/2 the single continuum value
(Kd (air 0.0)(water 0.0))
(KdFactor (water 0.0) (air 0.0))
(Cp 9.480e+02)
(tcond tcondLin (solid 0.0750)(liquid 0.0750)(gas 0.0750)) ;@@@; 0.15 from Tom's email
;; tcond = 1/2 the single continuum value
(K0 3.076e-10) (K1 3.076e-10) (K2 3.076e-10)
;; permeability =1/2 the single continuum value
(tort (gas 0.7) (liquid 0.0)) ;JJN
(kr (liquid krlVanGen (Sr 0.092) (m 0.6296) (Smax 1.0))
(gas krgVanGenMinus (Sr 0.092) (Sj 0.1)(m 0.6296) (Smax 1.0))
)
(pc (liquid pcVanGen (alpha 1.2232e-3)(Sr 0.092)(Sj 0.1)(m 0.6296)(Smax 1.0)))
(krMC (liquid krMCintrinsic) (gas krMCintrinsic))
)
)

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