



NSB Rapport

OL-94

Simulering

av

strømforsyning

NSB Engineering
Desember 1990

Jernbaneverket
Biblioteket

FORORD

NSB Engineering har utført simuleringer av OL-tog-opplegget for ulike mateforhold på strekningen Lillestrøm - Fåberg på oppdrag fra o.ing. Knut Skaugstad, BrN. Simuleringene er utført av o.ing. Peter Milsom.

Simuleringene er utført på hovedplan-nivå og er ment å skulle gi oppdragsgiver et utgangspunkt for valg av det mest aktuelle mate-alternativet.

| INNHOLD | side |
|-------------------|------|
| 1. FORUTSETNINGER | 2 |
| 2. FREMGANGSMATE | 4 |
| 3. RESULTATER | 5 |
| 4. KONKLUSJON | 7 |
| VEDLEGG | |

1. FORUTSETNINGER

Utgangspunktet for trafikk-forutsetningene er notatet: Rtrr Oslo 13.8.90/Nhs og tilhørende grafiske ruter.

Søndags trafikken i tidsrom 08.45 - 09.45 over strekningen Lillestrøm - Fåberg ble simulert som representativt av spisstrafikken under OL. Belastningen som skyldes trafikk sør for Lillestrøm og nord for Fåberg er derved ikke tatt med. Togene er vist i tillegg 1 med 4-gns koder. De fem togene som trafikkerer strekningen i det tidsrommet idag er forutsatt med, dvs. P37 + P351, 1 + 2, PT41 + P351. I simuleringene besto disse tre av hhv E 32, EL10 + 6 vogn, BM69 med 3 vogn, EL17 + 7 vogn og EL18 + 6 vogn.

For alle tog i alle simuleringene er maksimal trekkraft forutsatt inntil maksimal tillatt hastighet er nådd. Det betyr at ingen buffertid er her tatt i betraktning.

Som vist i tabell 1 forklares betyngelsenene for de 15 OL-togene i simuleringene slik: de første og to siste bokstavene er hhv fra og til. OS, HA og HA er hhv Oslo, Lillehammer og Hamar. LA, LB,.... M er også Lillehammer for de første og siste togene. De andre togene besto av hhv OSKB, HALI, P37 og OSK besto av E 16 + 12 vogn. De andre togene besto av hhv E 16 + 12 vogn, BM69C med 9 vogn.

I tillegg til det som er beskrevet i tillegg 1 (spor, signaller, osv) er det forutsatt fire nye knutepunkter (med samtidig innkjør) som vist i tabell 2.

TABELL 1

| nordgående tog | | materiell | |
|----------------|--------------------|-----------|--------|
| OSLA | Oslo-Lillehammer A | BM69C | 9vogn |
| OSLB | Oslo-Lillehammer B | EL16 + | 12vogn |
| HALI | Hamar-Lillehammer | EL16 + | 12vogn |
| OSLC | Oslo-Lillehammer C | BM69C | 9vogn |
| OSLD | Oslo-Lillehammer D | BM69C | 9vogn |
| OSLE | Oslo-Lillehammer E | BM69C | 9vogn |
| OSLF | Oslo-Lillehammer F | BM69C | 9vogn |
| PT41 | Oslo-Trondheim | EL17 + | 7vogn |
| OSLG | Oslo-Lillehammer G | EL16 + | 12vogn |
| OSLH | Oslo-Lillehammer H | BM69C | 9vogn |
| OSLI | Oslo-Lillehammer I | BM69C | 9vogn |
| OSLJ | Oslo-Lillehammer J | BM69C | 9vogn |
| OSLK | Oslo-Lillehammer K | EL16 + | 12vogn |
| P351 | Oslo-Åndalsnes | EL13 + | 6vogn |
| OSLL | Oslo-Lillehammer L | BM69C | 9vogn |
| OSLM | Oslo-Lillehammer M | BM69C | 9vogn |
| sørgående tog | | materiell | |
| L109 | Lillehammer-Oslo | BM69C | 9vogn |
| P372 | Hamar-Oslo | BM92 | |
| 1612 | Eidsvoll-Skøyen | BM69C | 3vogn |
| P342 | Lillehammer-Oslo | EL13 + | 6vogn |

TABELL 2

| kryssingsspor | km | lengde |
|---------------|-------|--------|
| Brøter | 24,2 | 900 m |
| Sand | 53,6 | 900 m |
| Molykkja | 79,7 | 900 m |
| Bergsvika | 163,1 | 900 m |

Strekningens kretsforhold er vist på tegningene og det vil nettpunkt definert som (nn) og nettledd (g BRnn) hvor nn er toifferte tall resultatet for å vise hvilke spenn

å tegningene i vedlegg 2. er (knutepunkt/nodes ner/branches definert som Disse er brukt i g og strøm er beregnet.

I tillegg til de nåværende mater oppgraderingstilstand som definert de alternative materforhold forkl

tuasjonen er det 3 tabell 3. Betegnelsene for es som følgende:

- G. Nåværende materiasjoner og kor nsatorbatterier
- H. Nåværende materiasjoner og til gs-kondensatorbatterier
- J. Oppgraderte materiasjoner og gs-kondensatorbatterier
- K. Oppgraderte materiasjoner og til gs-mestasjoner

TABELL 3

| alt | MATESTASJONER (MVA) omtrent ved km. | | | | | KONDENSATORBATTERIER (OHM) omtrent ved km. | | | |
|-----|----------------------------------------|------|-------------|------|------------|-----------------------------------------------|------|-----|-----|
| | 20 | 75 | 103 | 148 | 191 | 41 | 81 | 123 | 171 |
| G. | 3,58 3,58 3,58 5,8 | ... | 5,8 7,0 | ... | 5,8 5,8 | 7,35 | 7,35 | ... | ... |
| H. | 3,58 3,58 3,58 5,8 | ... | 5,8 7,0 | ... | 5,8 5,8 | 7,35 | 7,35 | 7,5 | 7,5 |
| J. | 3,58 3,58 3,58 10,0 | ... | 7,0 10,0 | ... | 7,0 7,0 | 7,35 | 7,35 | 7,5 | 7,5 |
| K. | 3,58 3,58 3,58 10,0 | 10,0 | 7,0 10,0 | 10,0 | 7,0 7,0 | 7,35 | 7,35 | ... | ... |

Listen inneholder Tange Kretsbygdet Følger

2. FREMGANGSMÅTE

British Rails simuleringprogram OSLO ble brukt. Dette gir bl.a. en detaljert bilde av hvordan strøm og spenning varierer med tid i forhold til belastning på togene.

Data som beskriver strekningens infrastruktur (matestasjoner, kondensatorbatterier, sporforbindelser, signaler, stigninger, kurver, osv), trafikk og andre spesielle egenskaper, og rute og andre driftforhold er lagret på diskett. Datamengden (uten treningsdata som brukes for andre applikasjoner) er ca. 170 kb tes.

Disse data ble overført til British Rails simuleringprogram OSLO slik at selve simuleringene kunne utføres ved deres forsknings-senter i Derby.

I utgangspunktet kunne det tenkes å simulere alle fire alternativene med samme antall trafikk-alternativer (var antall OL-simuleringer-undersøkt). Alternativer med ulike blanding av elektriske og dieselgrunner til å undersøke dette for elektriske tog kunne strøm være + lav.

simulere alle fire alternativene. For hver av dem var det samme (15) der elektriske tog hadde ulike effekter. Det var to alternativer med høy annehøy og eller spenningsfor

Først ble trafikken simulert med alle OL-togene elektrisk drevet. Ytterligere simuleringer ble gjennomført med lavere andel elektriske tog. Trafikk alternativene var definert til å gi en så uniform spredning av elektrisk trekkraft for OL-togene som mulig. Tabell 4 viser hvordan alternativene var definert (E og D er hhv elektrisk og diesel trekkraft). Alternativene har følgende elektrisk/diesel blanding: 15/0, 12/3, 9/6, 6/9.

Parallelt med dette oppdraget verifiserer NSB Engineering simulering-resultater med å sammenligne med målinger både på tog og ved matestasjoner.

TABELL 4

| TOG | ANTALL OL-TOG MED ELEK TREKKRAFT | | | |
|------|----------------------------------|----|----|----|
| | 15 | 12 | 09 | 06 |
| OSLA | E | E | D | D |
| OSLB | E | E | E | E |
| HALI | E | E | E | D |
| OSLC | E | E | E | E |
| OSLD | E | D | D | D |
| OSLE | E | E | E | E |
| OSLF | E | E | E | D |
| OSLG | E | E | D | D |
| OSLH | E | E | E | E |
| OSLI | E | D | D | D |
| OSLJ | E | E | E | E |
| OSLK | E | E | D | D |
| OSLL | E | E | E | D |
| OSLM | E | E | E | E |
| L105 | E | D | D | D |
| P372 | D | D | D | D |
| P342 | E | E | E | E |
| 1612 | E | E | E | E |
| PT41 | E | E | E | E |
| P351 | E | E | E | E |

3. RESULTATER

For hvert simuleringalternativ er det skrevet ut resultater både på tabellform og grafiske måte (se vedlegg 3), bl.a.

- tabeller med RMS spenning og strøm for 15 min perioder identifisert med følgende betegnelse i vedlegg 3
ELECTRICAL RESULTS: RMS VALUE FOR TIME PERIOD
- NODE RMS VOLTAGE (KV)
- BRANCH RMS CURRENT (AMPS)
- FEEDER RMS CURRENT (AMPS)
- tabell med bl.a. maks. og min. strøm for togene identifisert med følgende betegnelse i vedlegg 3
ELECTRICAL RESULTS: TRAIN SUMMARY FOR TIME PERIOD

- tabell med min. spenning og maks. strøm i nettet identifisert med følgende betegnelsene i vedlegg 3
 OUTPUT OF ELECTRICAL RESULTS: MAXIMUM/MINIMUM VALUES
 NODE VOLTAGES
 MAXIMUM FEEDER STATION INSTANTANIOUS CURRENTS
 MAXIMUM BRANCH INSTANTANIOUS CURRENTS
- grafiske fremstillinger av strøm, spenning og effektfaktor identifisert med følgende betegnelsene i vedlegg 3
 CURRENT AT START OF BRANCH
 CURRENT IN FEEDER
 VOLTAGE AT NODE
 DISPLACEMENT FACTOR OF FEEDER

Tabell 5 oppsummerer maks. strøm for alternativene som kunne gjennomføres. I noen av alternativene var den elektriske belastningen slik at det var et uakseptabelt spenningsfall (under 11KV) ved begynnelsen av simuleringen slik at disse simuleringene ikke kunne startes opp.

Tabell 6 oppsummerer RMS-strøm for de fire 15-minutters perioder for de ulike alternativene hvis resultater finnes i vedlegg 3. For eksempel, ved ND12 (Tangen) mellom 08.45 og 09.00 var RMS-strøm 632 A (merket *) for alternativ J09 (dvs mate-alternativ J med 9 av OL-togene under elektrisk drift). Det var det høyeste som var registrert. Tilsvarende maks. (momentan) strøm var 1129 A.

Vedlegg 1 er også produsert av simuleringen og viser den planlagte ruten samt tilleggs-bremsinger og -akselerasjoner som skyldes kryssinger. I et av tilfellene klarte to tog å krysse hverandre nesten uten bremsing. Dette skjedde like etter 09.30 ved Brøter som er forutsatt utstyrt for samtidig innkjør (se pil på vedlegg 1). Som nevnt tidligere er ingen buffertid tatt i betraktning. Gjennomsnittshastighet over den simulerte strekningen er ca. 80 - 90 km/h.

TABELL 5

| | i aks. trær (amper) | | | | | ved matestasjoner | | | | |
|-----------------|---------------------|-----|------|---|------|-------------------|-----|-----|-----|--|
| | E 6 | H06 | H09 | J | J09 | K06 | K09 | K12 | K15 | |
| ND01 Lillestrøm | 5 3 | 572 | 822 | 5 | 761 | 715 | 733 | 895 | 900 | |
| ND20 Minnesund | . . | ... | ... | . | ... | 460 | 754 | 780 | 786 | |
| ND12 Tangen | E 5 | 827 | 1037 | E | 1129 | 540 | 708 | 797 | 372 | |
| ND21 Rudshøgda | . | ... | ... | . | ... | 589 | 759 | 763 | 773 | |
| ND15 Fåberg | 4 1 | 563 | 679 | E | 642 | 413 | 530 | 533 | 616 | |

TABELL 6

| RMS-strøm (ampere) ved matestasjoner for 15-minutters-perioder | | | | | | | | | | | |
|----------------------------------------------------------------|------|----------------|------|------|------|----------------|----------------|------|------|------|------|
| | | 06 ELEK DL TOG | | | | | 09 ELEK DL TOG | | | | |
| | | 0845 | 0900 | 0915 | 0930 | 0945 | 0845 | 0900 | 0915 | 0930 | 0945 |
| G | ND01 | 310 | 379 | 231 | 213 | | | | | | |
| | ND12 | 427 | 417 | 277 | 366 | | | | | | |
| | ND15 | 241 | 225 | 168 | 184 | | | | | | |
| H | ND01 | 311 | 376 | 232 | 215 | 352 | 383 | 267 | 388 | | |
| | ND12 | 429 | 438 | 284 | 370 | 607 | 520 | 373 | 440 | | |
| | ND15 | 261 | 268 | 190 | 202 | 340 | 348 | 283 | 282 | | |
| J | ND01 | 301 | 370 | 234 | 211 | 338 | 385 | 261 | 391 | | |
| | ND12 | 440 | 436 | 293 | 366 | * 632 | 527 | 382 | 437 | | |
| | ND15 | 255 | 263 | 166 | 189 | 326 | 338 | 279 | 262 | | |
| K | ND01 | 260 | 334 | 181 | 165 | 271 | 333 | 210 | 324 | | |
| | ND20 | 189 | 176 | 182 | 156 | 261 | 184 | 191 | 194 | | |
| | ND12 | 245 | 242 | 173 | 233 | 368 | 294 | 207 | 258 | | |
| | ND21 | 214 | 220 | 116 | 146 | 284 | 284 | 243 | 195 | | |
| | ND15 | 143 | 135 | 99 | 91 | 189 | 213 | 138 | 155 | | |
| K | | 12 ELEK DL TOG | | | | 15 ELEK DL TOG | | | | | |
| | | ND01 | 324 | 415 | 372 | 377 | 426 | 501 | 400 | 378 | |
| | | ND20 | 295 | 262 | 274 | 256 | 330 | 301 | 333 | 321 | |
| | | ND12 | 403 | 325 | 340 | 345 | 472 | 419 | 395 | 507 | |
| | | ND21 | 300 | 287 | 250 | 235 | 408 | 487 | 317 | 320 | |
| | | ND15 | 226 | 214 | 134 | 166 | 317 | 278 | 211 | 209 | |

4. KONKLUSJON

Denne undersøkelsen har kartlagt bl.a. belastningsforholdene og spenningsforholdene på strekningen Lillestrøm - Fåberg med DL-spisstrafikk for ulike kombinasjoner av mateforhold og elektrisk/diesel drift. Disse opplysninger vil hjelpe med å velge den mest hensiktsmessige kombinasjonen.

Hovedkonklusjonen er at det er et akseptabelt resultat dvs. alternativ K som gir et med to matestasjoner i tillegg til de eksisterende tre er bedre i denne matesituasjonen med en kjøretid på 15 minutter og en elektrisk trekkraft tilfredsstillende til hva angår matstatustilførsel og kontaktledningen. Spenningsforholdene er også tilfredsstillende.

Med de andre tre alternativene ble den elektriske belastningen så stor at spenningen falt under 11 kV allerede ved starten av simuleringen. Selv med alternativ K var kontaktlednings-spenningen ned til 12,3 kV (ved Jessheim). Nedre grense i hht UIC er 12 kV.

Det er viktig å understreke at konklusjonen gjelder for de gitte forutsetningene, dvs. verst tilfelle. Hvis man derimot tillot en slakkere rute slik at maksimal trekraft ikke var nødvendig kunne alternativene H eller J muligens vært aktuelle. I så fall ville noen tilleggs-simuleringer vært nødvendige å teste dette.

For alternativ K hvor alle OL-togene har elektrisk trekraft er maks. strøm mindre enn for alternativene H og J selv om de måtte bruke diesel trekraft for noen av OL-togene.

Ovenstående bekrefter tidligere antagelser om at det blir nødvendig å forsterke Tangen og Lillestrøm omformerstasjoner samt at det etableres midlertidige matestasjoner ved Minnesund (evt. Bøn) og Rudshøgda. Konsekvensene på tele- og sikringsanlegg må også vurderes.

Siden grunndata er nå etablert og testet, vil eventuelle tilleggs-simuleringer kunne tilbys til en lavere enhetspris. NSB Engineering vil gjerne diskutere slike eller andre oppfølgingsarbeid etter behov. Nå da et hoved alternativ har pekt seg ut, kunne det gjennomføres en følsomhets analyse av dette. For eksempel, kunne ulike plassering av de nye matestasjonene testes. Med andre ord kunne man introdusere trafikk- og andre forstyrrelser for å identifisere hvor sårbar denne løsningen er overfor ulike parametere.

Simuleringen kunne også brukes for å se på driftsmessige spørsmål, f. eks. plassering av nye kryssingsspor, ulike rutemodeller, de nye terminaler nord for Lillehammer kunne inkluderes, m.m.

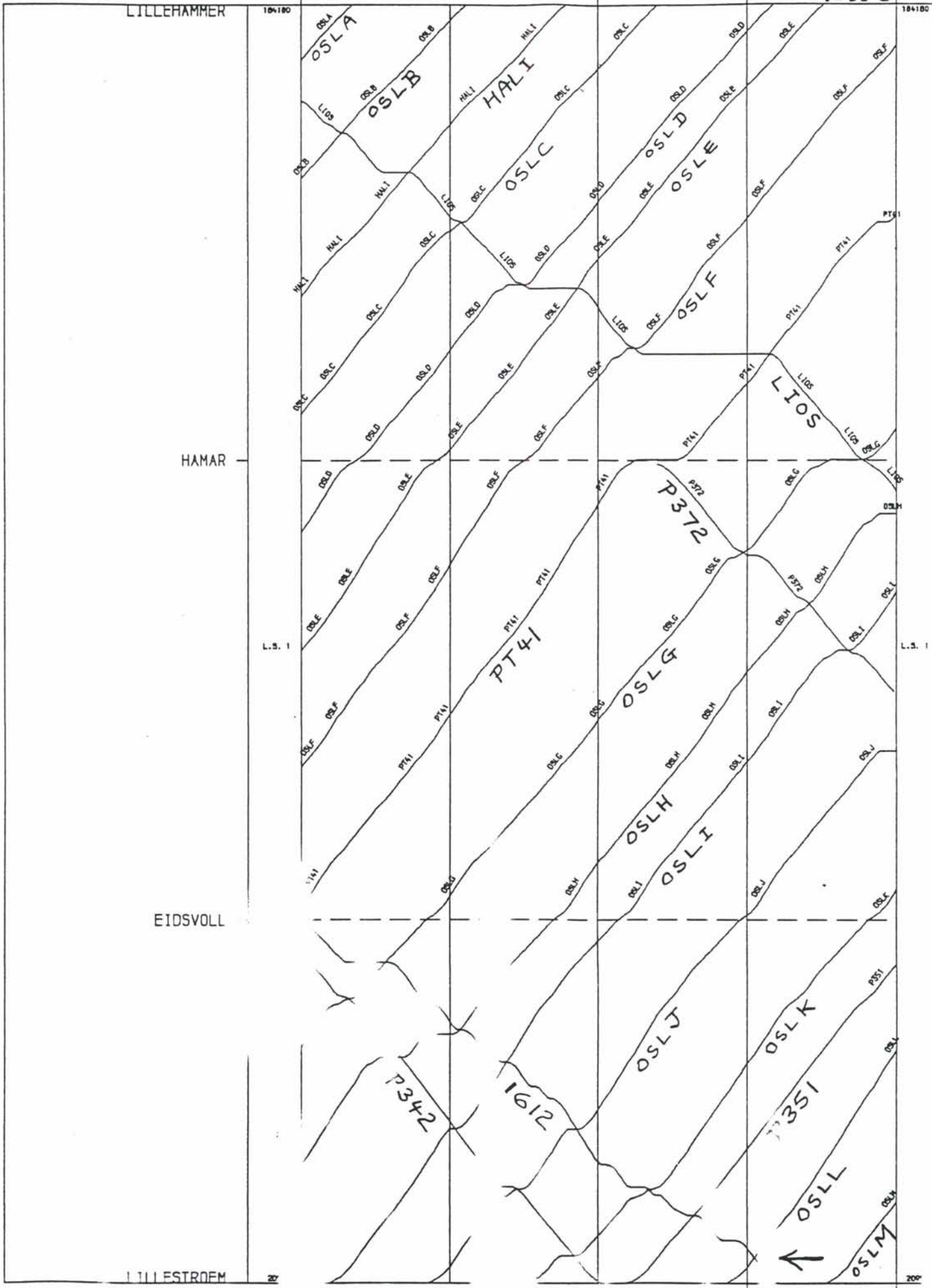
LILLEHAMMER

Vedlegg 1

104180

104180

07.00



HAMAR

L.S. 1

L.S. 1

EIDSVOLL

LILL ESTROEM

09.00

31

45

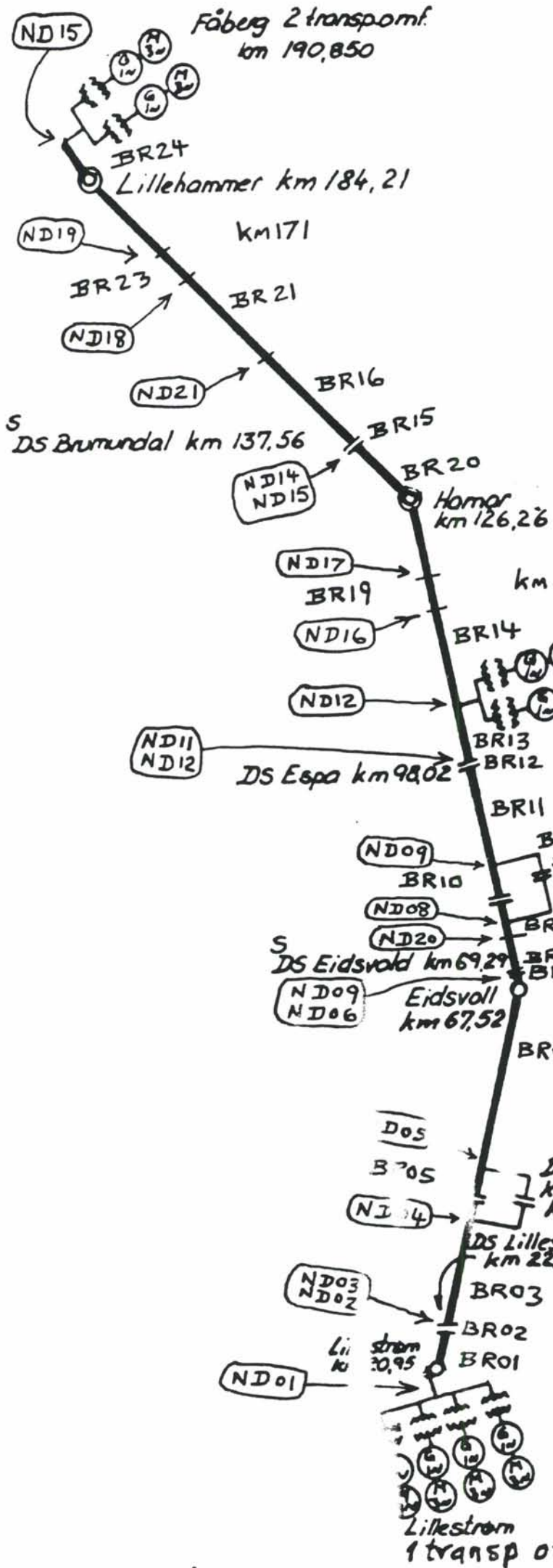
OL

4

K15

A1 L73

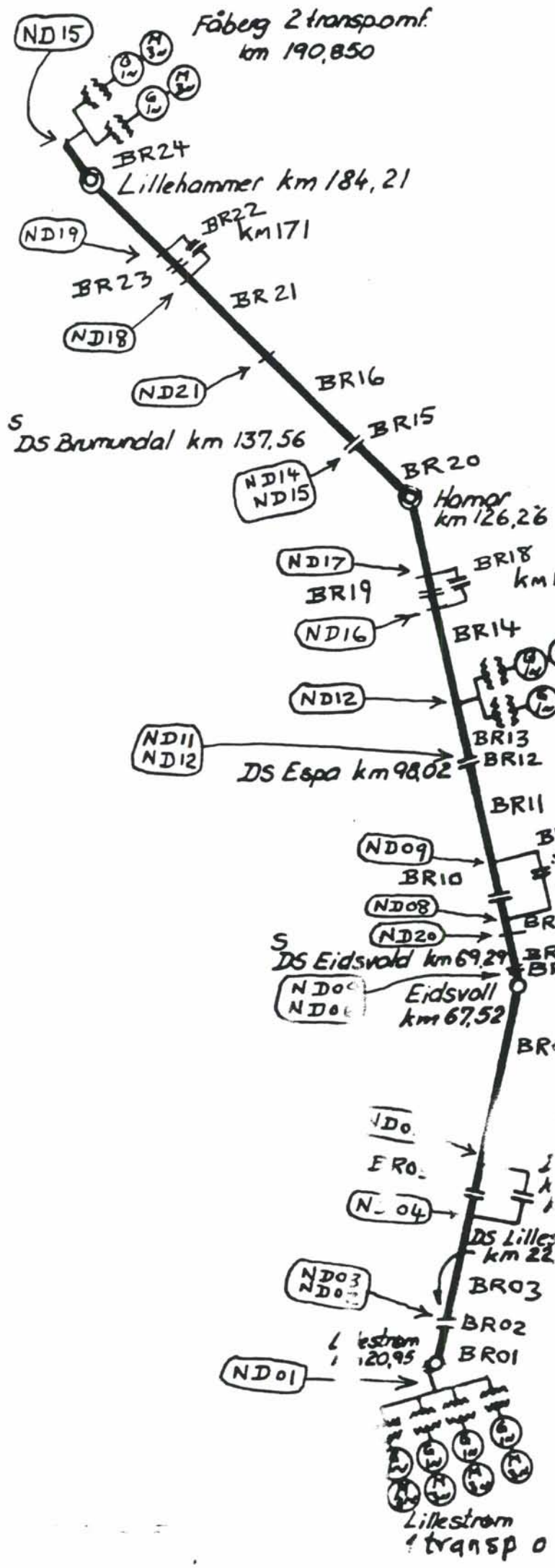
DRAWN BY PROGRAM GATTS
SOFTWARE ENGINEERING UNIT, RRDD



| Matestasjoner (MVA) | | |
|---------------------|----------|-----|
| Fåberg | 5.8 | 5.8 |
| Rudshøgda | — | — |
| Tangen | 5.8 | 7.0 |
| Minnesund | — | — |
| Lillestrøm | 3 @ 3.58 | 5.8 |

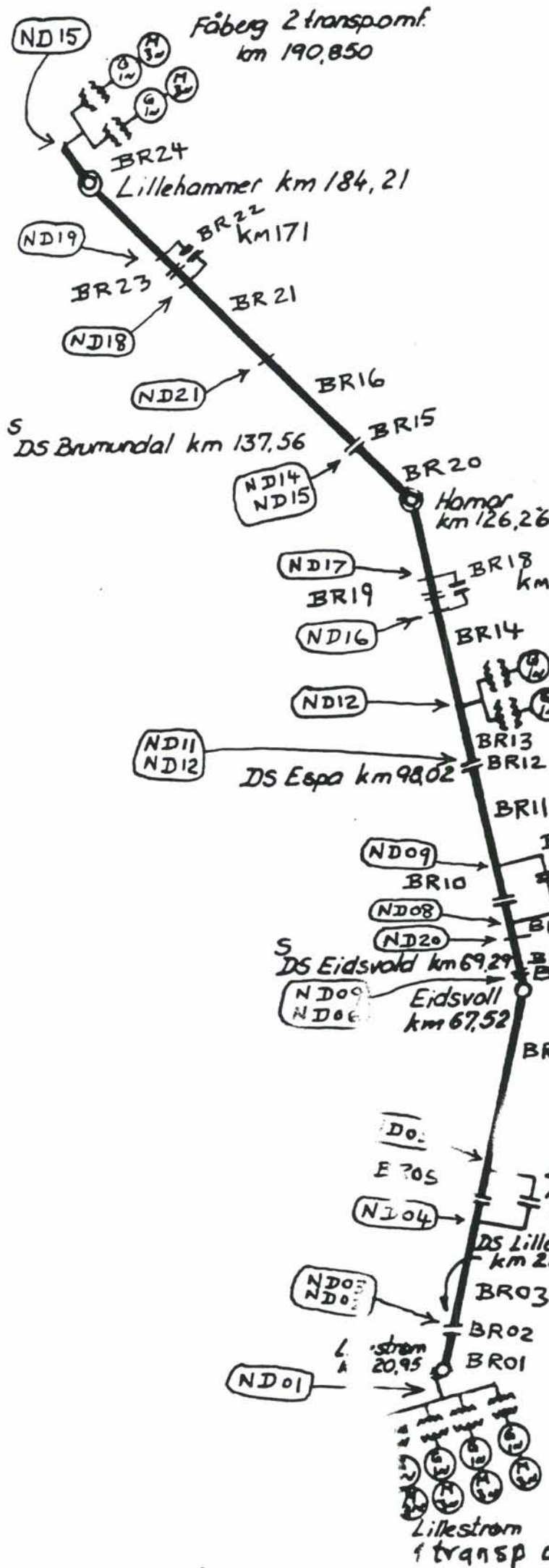
| Kondensatorbatterier (Ω) | |
|--------------------------|------|
| km 171 | — |
| km 123 | — |
| km 81 | 7.35 |
| km 41 | 7.35 |

VEDLEGG 2.2
ALT. H



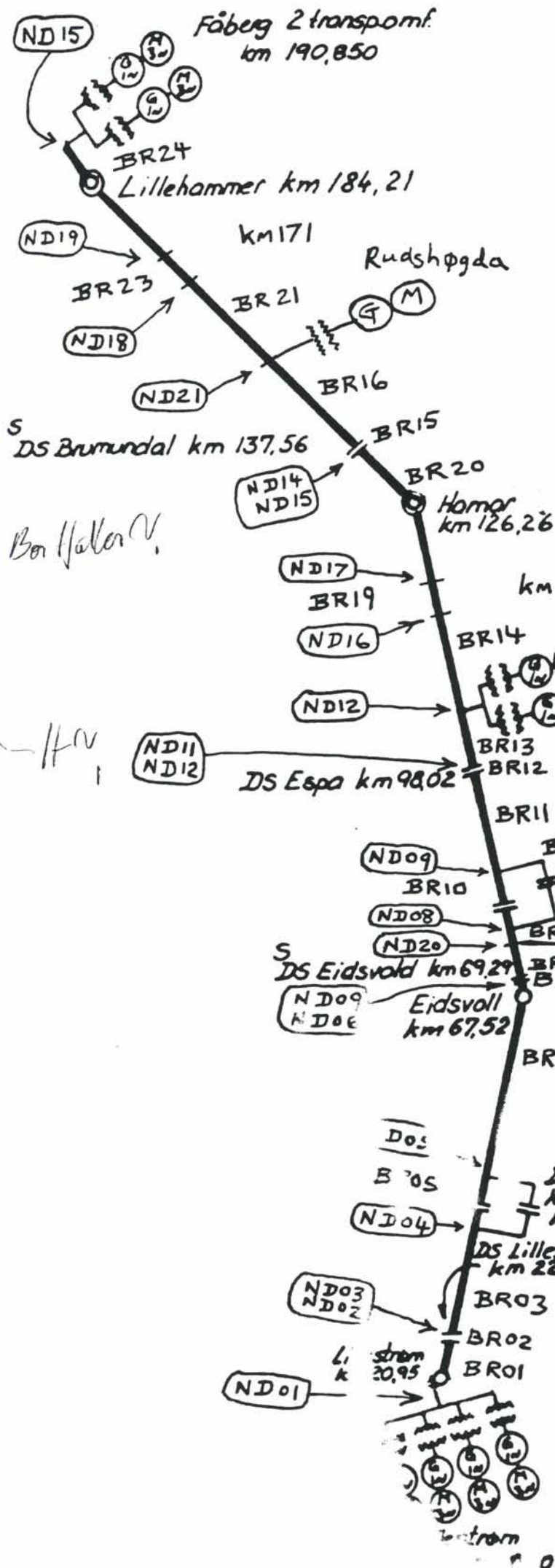
| Matestasjoner (MVA) | | |
|---------------------|--------|-----|
| Fåberg | 5.8 | 5.8 |
| Rudshøgda | — | — |
| Tangen | 5.8 | 7.0 |
| Minnesund | — | — |
| Lillestrøm | 3@3.58 | 5.8 |

| Kondensatorbatterier (Ω) | |
|--------------------------|------|
| Km 171 | 7.5 |
| km 123 | 7.5 |
| km 81 | 7.35 |
| km 41 | 7.35 |



| Matestasjoner (MVA) | |
|---------------------|-------------|
| Fåberg | 7.0 7.0 |
| Rudshøgda | — |
| Tangen | 7.0 10.0 |
| Minnesund | — |
| Lillestrøm | 3@3.58 10.0 |

| Kondensatorbatterier (Ω) | |
|--------------------------|------|
| km 171 | 7.5 |
| km 123 | 7.5 |
| km 81 | 7.35 |
| km 41 | 7.35 |



Matestasjoner (MVA)

| | | |
|------------|--------|------|
| Fåberg | 7.0 | 7.0 |
| Rudshøgda | 10.0 | |
| Tangen | 7.0 | 10.0 |
| Minnesund | 10.0 | |
| Lillestrøm | 3@3.58 | 10.0 |

Kondensatorbatterier (Ω)

| | |
|--------|------|
| Km 171 | — |
| km 123 | — |
| km 81 | 7.35 |
| km 41 | 7.35 |

S
DS Brumundal km 137,56
Ber Høker V.

HFV

G06 L106

LILLESTROEIM-LILLHAMMER OLYMPIC GAMES SUNDAY

REGULATOR (JLJ04NSB)

REPORTS : RMS VALUES FOR THE PERIOD 0: 8.45.00 TO 0: 9.00.00

| | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.278 | BR01 | 310.1 | 297.1 | ND01 | 310.1 |
| ND02 | 16.105 | BR03 | 297.1 | 249.4 | ND12 | 427.4 |
| ND03 | 16.105 | BR04 | 249.4 | 249.4 | ND15 | 241.4 |
| ND04 | 15.060 | BR06 | 249.4 | 109.3 | | |
| ND05 | 15.293 | BR08 | 109.3 | 151.3 | | |
| | 15.028 | | 151.3 | 162.6 | | |
| | 15.168 | | 162.5 | 162.5 | | |
| | 15.331 | | 162.5 | 192.6 | | |
| | 14.796 | BR13 | 192.6 | 209.3 | | |
| ND09 | 14.796 | BR14 | 273.9 | 131.0 | | |
| ND10 | 15.441 | BR20 | 131.0 | 108.3 | | |
| ND11 | 15.441 | BR16 | 108.3 | 106.6 | | |
| ND12 | 15.673 | BR21 | 106.5 | 190.9 | | |
| ND16 | 14.874 | BR24 | 190.9 | 241.4 | | |
| ND17 | 14.874 | | | | | |
| ND13 | 14.530 | | | | | |
| ND14 | 14.530 | | | | | |
| ND21 | 14.478 | | | | | |
| | 14.969 | | | | | |
| ND19 | 14.969 | | | | | |
| ND15 | 16.033 | | | | | |

VEDLEGG 13

SIMULATOR (JLJO4NSB)

LILLESTROEII-LILLEHAMMER OLYMPIC GAMES SUNDAY G06 L106

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 9.00.00 TO 0: 9.15.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 15.957 | BR01 | 379.2 | 377.7 | ND01 | 379.2 |
| ND02 | 15.693 | BR03 | 377.7 | 186.5 | ND12 | 417.5 |
| ND03 | 15.693 | BR04 | 186.5 | 186.5 | ND15 | 225.0 |
| ND04 | 14.470 | BR06 | 186.5 | 148.6 | | |
| ND05 | 14.789 | BR08 | 148.6 | 177.4 | | |
| ND06 | 14.906 | BR17 | 177.4 | 177.4 | | |
| ND07 | 14.906 | BR09 | 177.4 | 177.4 | | |
| ND20 | 15.131 | BR11 | 177.4 | 202.1 | | |
| ND08 | 15.375 | BR13 | 202.1 | 231.8 | | |
| ND09 | 14.778 | BR14 | 231.8 | 160.1 | | |
| ND10 | 15.502 | BR20 | 160.1 | 111.8 | | |
| ND11 | 15.502 | BR16 | 111.8 | 100.9 | | |
| ND12 | 16.777 | BR21 | 100.9 | 188.8 | | |
| ND16 | 14.953 | BR24 | 188.8 | 225.0 | | |
| ND17 | 14.953 | | | | | |
| ND13 | 14.556 | | | | | |
| ND14 | 14.556 | | | | | |
| ND21 | 14.501 | | | | | |
| ND18 | 15.096 | | | | | |
| ND19 | 15.096 | | | | | |
| ND15 | 16.106 | | | | | |

SIMULATOR (JLJ04NSB)

LILLESTRUEN-LILJHAMMER OLYMPIC GAMES SUNDAY (G06) L106

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 9.15.00 TO 0: 9.30.00

| NODE | RMS VOLTAGE (KV) | BRANCH | P'S CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.277 | BR01 | 231.4 | 220.5 | ND01 | 231.4 |
| ND02 | 16.137 | BR03 | 220.5 | 130.0 | ND12 | 277.1 |
| ND03 | 16.137 | BR04 | 130.0 | 130.0 | ND15 | 167.8 |
| ND04 | 15.488 | BR06 | 130.0 | 89.3 | | |
| ND05 | 15.686 | BR08 | 89.3 | 89.4 | | |
| ND06 | 15.443 | BR17 | 89.4 | 116.5 | | |
| ND07 | 15.443 | BR09 | 116.5 | 116.5 | | |
| ND20 | 15.483 | BR11 | 116.5 | 201.8 | | |
| ND08 | 15.535 | BR13 | 201.8 | 223.5 | | |
| ND09 | 15.249 | BR14 | 92.6 | 91.8 | | |
| ND10 | 15.741 | BR20 | 91.8 | 64.6 | | |
| ND11 | 15.741 | BR16 | 64.6 | 64.6 | | |
| ND12 | 16.002 | BR21 | 64.6 | 102.0 | | |
| ND16 | 15.660 | BR24 | 102.0 | 167.8 | | |
| ND17 | 15.660 | | | | | |
| ND13 | 15.530 | | | | | |
| ND14 | 15.530 | | | | | |
| ND21 | 15.497 | | | | | |
| ND18 | 15.615 | | | | | |
| ND19 | 15.615 | | | | | |
| ND15 | 16.227 | | | | | |

1//GATTS SIMULATOR (JLJ04NSB)

LILLESTROFF-LILLEHAMMER OLYMPIC GAMES SUNDAY (GO)

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 01 9.30.00 TO 01 9.45.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.326 | BR01 | 212.8 | 196.4 | ND01 | 212.8 |
| ND02 | 16.210 | BR03 | 196.4 | 112.3 | ND12 | 366.5 |
| ND03 | 16.210 | BR04 | 112.3 | 112.3 | ND15 | 184.1 |
| ND04 | 15.756 | BR06 | 112.3 | 92.9 | | |
| ND05 | 15.799 | BR08 | 92.9 | 106.3 | | |
| ND06 | 15.463 | BR17 | 106.3 | 124.4 | | |
| ND07 | 15.463 | BR09 | 124.4 | 124.4 | | |
| ND20 | 15.477 | BR11 | 124.4 | 155.3 | | |
| ND08 | 15.543 | BR13 | 155.3 | 196.1 | | |
| ND09 | 15.189 | BR14 | 255.6 | 78.4 | | |
| ND10 | 15.638 | BR20 | 78.4 | 60.9 | | |
| ND11 | 15.638 | BR16 | 80.9 | 92.6 | | |
| ND12 | 15.830 | BR21 | 92.6 | 105.8 | | |
| ND16 | 15.405 | ER24 | 105.8 | 184.1 | | |
| ND17 | 15.405 | | | | | |
| ND13 | 15.305 | | | | | |
| ND14 | 15.305 | | | | | |
| ND21 | 15.332 | | | | | |
| ND18 | 15.721 | | | | | |
| ND19 | 15.721 | | | | | |
| ND15 | 16.306 | | | | | |

GATTS SIMULATOR (JLJ04NSB)

LILLESTROEM-LILLHAIMER OLYMPIC GAMES SUNDAY (G00

ELECTRICAL RESULTS : TRAIN SUMMARY RESULTS FOR TIME PERIOD 01 8.45.00 TO 01 9.45.00

| TR/CODE | DISTANCE GONE (METRES) | MINIMUM VOLTAGE (KV) | TIME OF MINIMUM VOLTAGE | MAXIMUM VOLTAGE (KV) | TIME OF MAXIMUM VOLTAGE | AVERAGE VOLTAGE (KV) | ENERGY CONSUMPTION REAL (KWH) | REACTIVE (KVARH) | TIME BELOW 12.500 KV (SECS) |
|---------|------------------------|----------------------|-------------------------|----------------------|-------------------------|----------------------|-------------------------------|------------------|-----------------------------|
| USLB | 22661 | 12.714 | 01 8.48.40 | 16.403 | 01 9.02.00 | 14.922 | 444.87 | 332.27 | 0 |
| USLC | 52696 | 12.072 | 01 8.54.40 | 16.363 | 01 9.22.20 | 14.683 | 1011.11 | 642.42 | 80 |
| USLE | 82654 | 12.544 | 01 9.00.40 | 16.331 | 01 9.26.20 | 15.035 | 1386.95 | 856.31 | 0 |
| USLH | 88454 | 13.136 | 01 8.45.20 | 16.375 | 01 9.40.20 | 15.091 | 1930.87 | 1236.50 | 0 |
| USLJ | 72289 | 12.937 | 01 9.13.00 | 16.422 | 01 9.05.20 | 15.186 | 1585.06 | 1023.68 | 0 |
| USLK | 10367 | 14.337 | 01 9.44.20 | 16.424 | 01 9.41.40 | 15.616 | 267.36 | 172.69 | 0 |
| USLM | 41275 | 12.581 | 01 8.46.00 | 16.412 | 01 9.05.20 | 15.006 | 372.56 | 117.27 | 0 |
| USLN | 46632 | 12.626 | 01 8.46.00 | 16.541 | 01 9.33.20 | 15.000 | 662.17 | 372.02 | 0 |
| USLO | 88343 | 12.798 | 01 8.46.00 | 16.336 | 01 9.40.20 | 15.228 | 1618.54 | 119.34 | 0 |
| USLP | 40853 | 14.153 | 01 9.29.40 | 16.440 | 01 9.22.00 | 15.760 | 382.60 | 106.24 | 0 |

OSLO/GATTS SIMULATOR (JLJDANSB)

2 OUTPUT OF ELECTRICAL RESULTS : MAXIMUM/MINIMUM VALUES FOR

4 NODE VOLTAGES

906

6 *****

| 8 | | MINIMUM | TIME OF |
|----|------|---------|------------|
| 10 | NODE | VOLTAGE | MINIMUM |
| | | (KV) | VOLTAGE |
| 12 | ND01 | 16.384 | 01 9.07.40 |
| 14 | ND02 | 14.975 | 01 9.07.40 |
| | ND03 | 14.975 | 01 9.07.40 |
| 16 | ND04 | 12.875 | 01 8.54.40 |
| | ND05 | 12.833 | 01 9.13.00 |
| 18 | ND06 | 12.824 | 01 8.46.00 |
| | ND07 | 12.824 | 01 8.46.00 |
| 20 | ND20 | 13.246 | 01 8.46.00 |
| | ND08 | 13.505 | 01 9.20.40 |
| 22 | ND09 | 12.555 | 01 9.37.20 |
| | ND10 | 14.182 | 01 9.37.20 |
| 24 | ND11 | 14.182 | 01 9.37.20 |
| | ND12 | 14.689 | 01 9.37.20 |
| 26 | ND16 | 12.873 | 01 8.54.40 |
| | ND17 | 12.873 | 01 8.54.40 |
| 28 | ND13 | 12.437 | 01 8.54.40 |
| | ND14 | 12.437 | 01 8.54.40 |
| 30 | ND21 | 12.159 | 01 8.54.40 |
| | ND18 | 12.793 | 01 8.54.40 |
| 32 | ND19 | 12.793 | 01 8.54.40 |
| | ND15 | 15.214 | 01 8.54.40 |

34 MAXIMUM FEEDER STATION INSTANTANEOUS CURRENTS

36 *****

| 38 | FEEDER | NORMAL CURRENT | TIME |
|----|--------|----------------|------------|
| | | (AMPS) | |
| 40 | ND01 | 572.8 | 01 9.00.00 |
| 42 | ND12 | 845.3 | 01 9.37.20 |
| | ND15 | 495.2 | 01 8.54.40 |

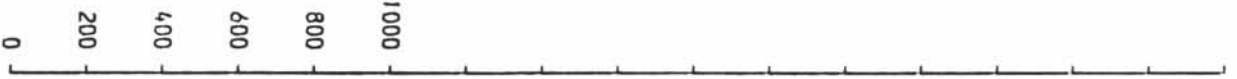
44 MAXIMUM BRANCH INSTANTANEOUS CURRENTS

46 *****

| 48 | BRANCH | CURRENT (AMPS) * | TIME |
|----|--------|------------------|------------|
| 50 | BR01 | 572.8 | 01 9.00.00 |
| | BR03 | 572.8 | 01 9.00.00 |
| 52 | BR04 | 531.8 | 01 8.50.00 |
| | BR06 | 531.8 | 01 8.50.00 |
| 54 | BR08 | 377.2 | 01 8.45.40 |
| | BR17 | 377.2 | 01 8.45.40 |
| 56 | BR09 | 377.2 | 01 8.45.40 |
| | BR11 | 445.1 | 01 9.27.20 |
| 58 | BR13 | 546.9 | 01 8.45.20 |
| | BR14 | 574.1 | 01 9.35.40 |
| 60 | BR20 | 370.0 | 01 9.00.20 |
| | BR16 | 255.4 | 01 9.09.00 |
| 62 | BR21 | 424.7 | 01 8.50.20 |
| | BR24 | 495.2 | 01 8.54.40 |

64 * - BASED ON MAXIMUM CURRENT AT EITHER END OF BRANCH

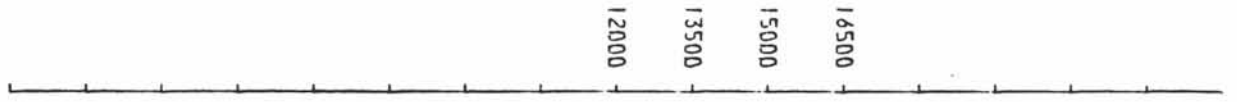
CURRENT AT START OF BRANCH BRO1 (A)



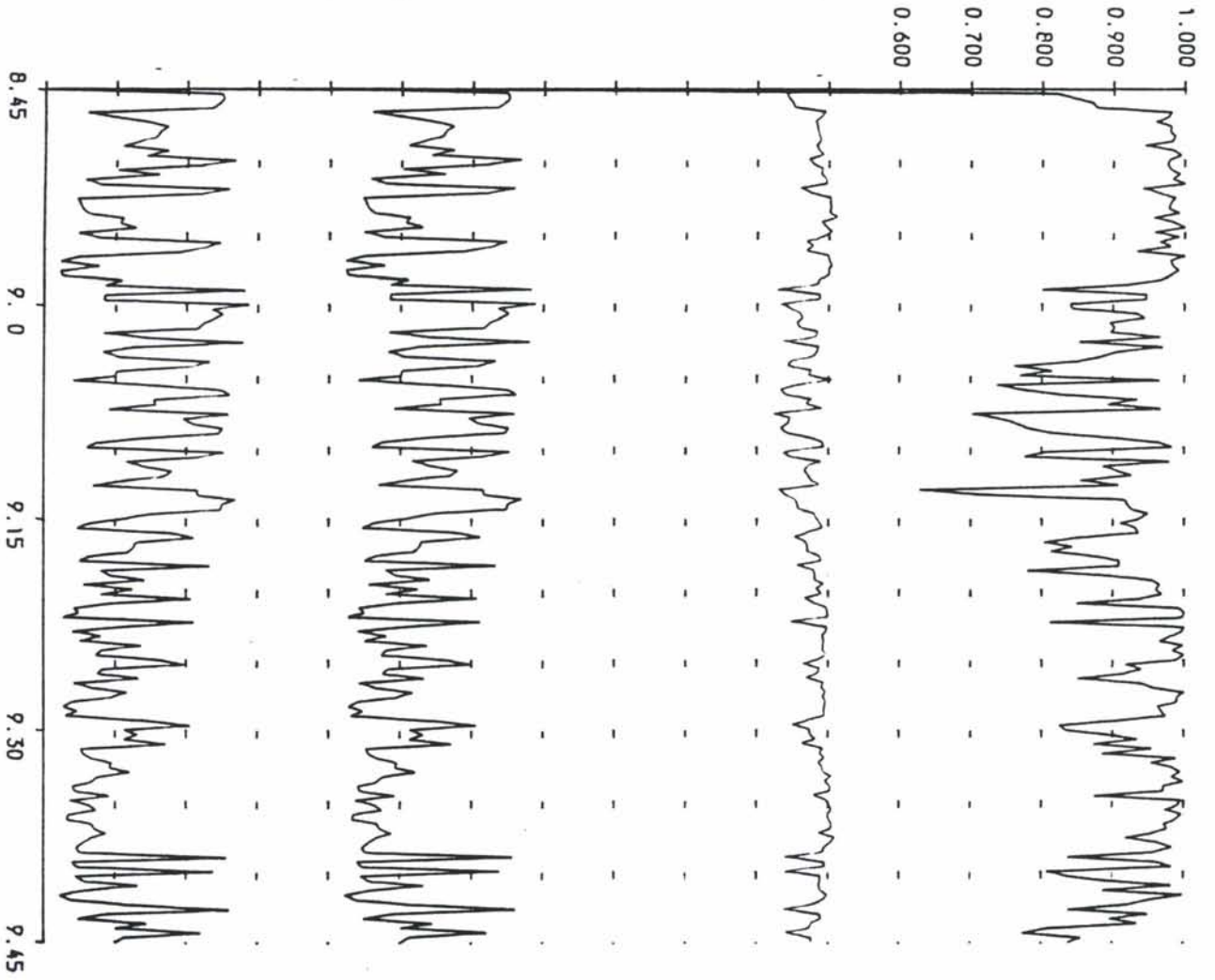
CURRENT IN FEEDER ND01 (A) LILLESTRØM



VOLTAGE AT NODE ND01 (V)



DISPLACEMENT FACTOR OF FEEDER ND01 AT RAILWAY BUS-BAR



G06

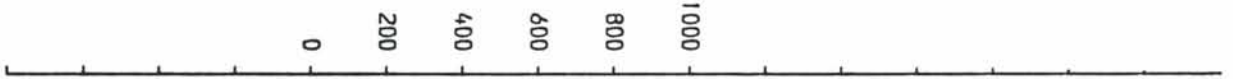
L106

G06

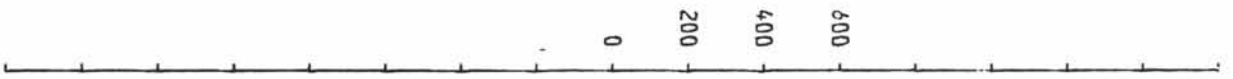
CURRENT AT END OF BRANCH BR13 (A)



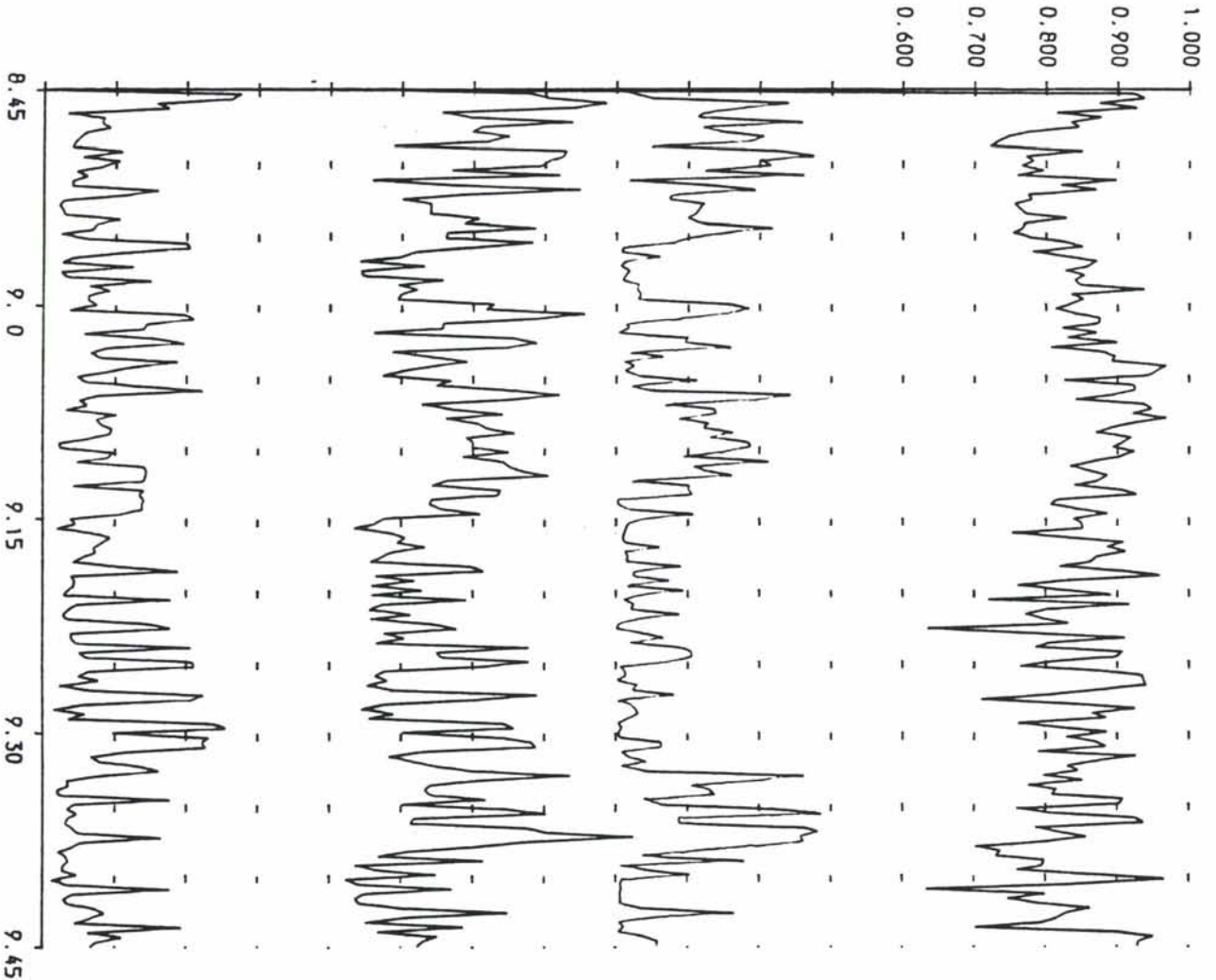
CURRENT IN FEEDER ND12 (A) TANGEN



CURRENT AT START OF BRANCH BR14 (A)



DISPLACEMENT FACTOR OF FEEDER ND12 AT RAILWAY BUS-BAR



G06

L106

G06

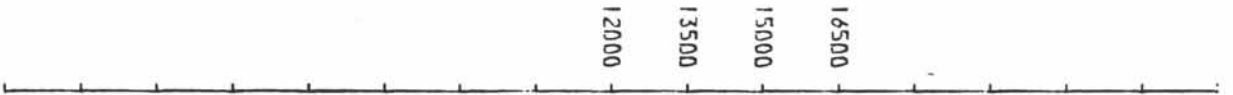
CURRENT AT END OF BRANCH BR24 (A)



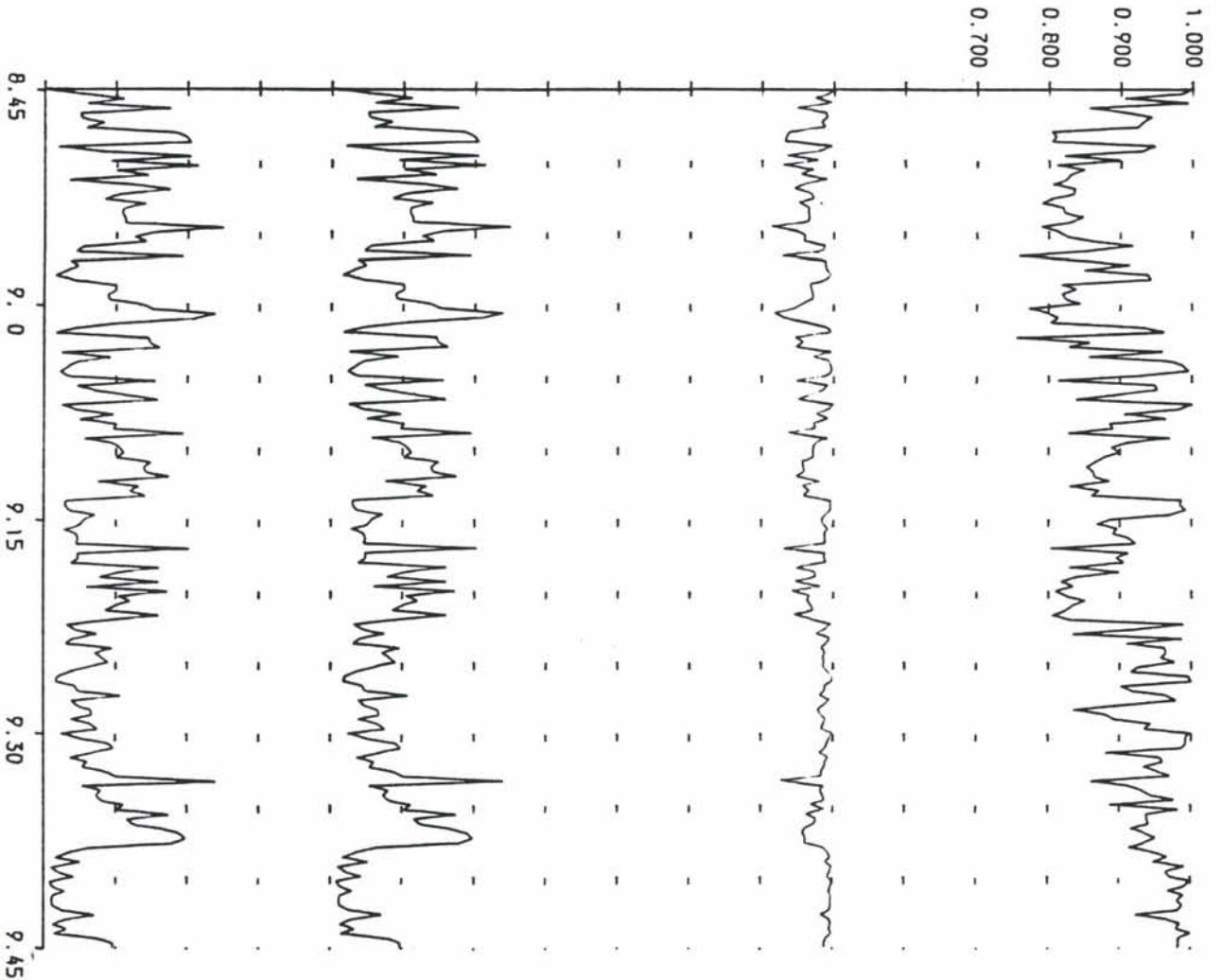
CURRENT IN FEEDER ND15 (A) FÄBERG



VOLTAGE AT NODE ND15 (V)



DISPLACEMENT FACTOR OF FEEDER ND15 AT RAILWAY BUS-BAR



906

L106

906

SIMULATOR (JLJ04NSB)

LILLESTROEM-LILLEHAMMER OLYMPIC GAMES SUNDAY H06 L101

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 6.45.00 TO 0: 9.00.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.284 | BR01 | 311.0 | 298.0 | ND01 | 310.9 |
| ND02 | 16.111 | BR03 | 298.0 | 252.4 | ND12 | 429.3 |
| ND03 | 16.111 | BR04 | 252.4 | 252.4 | ND15 | 261.1 |
| ND04 | 15.067 | BR06 | 252.4 | 108.4 | | |
| ND05 | 15.297 | BR08 | 108.4 | 147.5 | | |
| ND06 | 15.013 | BR17 | 147.5 | 158.3 | | |
| ND07 | 15.013 | BR09 | 158.3 | 158.3 | | |
| ND20 | 15.150 | BR11 | 150.3 | 189.9 | | |
| ND08 | 15.308 | BR13 | 189.9 | 206.5 | | |
| ND09 | 14.772 | BR14 | 206.5 | 153.6 | | |
| ND10 | 15.406 | BR18 | 153.6 | 155.6 | | |
| ND11 | 15.406 | BR20 | 155.6 | 140.5 | | |
| ND12 | 15.635 | BR16 | 140.5 | 130.6 | | |
| ND16 | 14.771 | BR21 | 130.6 | 219.9 | | |
| ND17 | 15.361 | BR22 | 219.9 | 219.9 | | |
| ND13 | 14.957 | BR24 | 219.9 | 261.1 | | |
| ND14 | 14.957 | | | | | |
| ND21 | 14.898 | | | | | |
| ND18 | 15.439 | | | | | |
| ND19 | 15.082 | | | | | |
| ND15 | 16.125 | | | | | |

SIMULATOR (JLJ04NSB)

LILLESTROEVI-LILLHAMMER OLYMPIC GAMES SUNDAY H06 L101

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 9.00.00 TO 0: 9.15.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 15.976 | BR01 | 376.1 | 374.6 | ND01 | 376.1 |
| ND02 | 15.717 | BR03 | 374.6 | 189.1 | ND12 | 430.0 |
| ND03 | 15.717 | BR04 | 189.1 | 189.1 | ND15 | 267.6 |
| ND04 | 14.484 | BR06 | 189.1 | 146.8 | | |
| ND05 | 14.786 | BR08 | 146.8 | 174.5 | | |
| ND06 | 14.881 | BR17 | 174.5 | 174.5 | | |
| ND07 | 14.881 | BR09 | 174.5 | 174.5 | | |
| ND20 | 15.100 | BR11 | 174.5 | 200.6 | | |
| ND08 | 15.339 | BR13 | 200.6 | 230.9 | | |
| ND09 | 14.732 | BR14 | 267.0 | 194.9 | | |
| ND10 | 15.442 | BR18 | 194.9 | 194.9 | | |
| ND11 | 15.442 | BR20 | 194.9 | 151.0 | | |
| ND12 | 15.714 | BR16 | 151.0 | 120.1 | | |
| ND16 | 14.748 | BR21 | 120.1 | 222.9 | | |
| ND17 | 15.608 | BR22 | 222.9 | 222.9 | | |
| ND13 | 14.992 | BR24 | 222.9 | 267.6 | | |
| ND14 | 14.992 | | | | | |
| ND21 | 14.885 | | | | | |
| ND18 | 15.489 | | | | | |
| ND19 | 15.107 | | | | | |
| ND15 | 16.157 | | | | | |

SIMULATOR (JLJD4NS8)

LILLESTROEM-LILLEHAMMER OLYMPIC GAMES SUNDAY H06 L101

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 9.15.00 TO 0: 9.30.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.278 | BR01 | 231.8 | 221.0 | ND01 | 231.8 |
| ND02 | 16.138 | BR03 | 221.0 | 130.2 | ND12 | 283.6 |
| ND03 | 16.138 | BR04 | 130.2 | 130.2 | ND15 | 190.2 |
| ND04 | 15.487 | BR06 | 130.2 | 89.6 | | |
| ND05 | 15.682 | BR08 | 89.6 | 89.8 | | |
| ND06 | 15.440 | BR17 | 89.8 | 114.9 | | |
| ND07 | 15.440 | BR09 | 114.9 | 114.9 | | |
| ND20 | 15.480 | BR11 | 114.9 | 200.1 | | |
| ND08 | 16.533 | BR13 | 200.1 | 221.7 | | |
| ND09 | 15.248 | BR14 | 100.5 | 100.1 | | |
| ND10 | 15.735 | BR18 | 100.1 | 100.1 | | |
| ND11 | 15.735 | BR20 | 100.1 | 70.5 | | |
| ND12 | 15.993 | BR16 | 70.5 | 70.5 | | |
| ND16 | 15.623 | BR21 | 70.5 | 150.3 | | |
| ND17 | 15.823 | BR22 | 150.3 | 150.3 | | |
| ND13 | 15.681 | BR24 | 150.3 | 190.1 | | |
| ND14 | 15.681 | | | | | |
| ND21 | 15.634 | | | | | |
| ND18 | 15.789 | | | | | |
| ND19 | 15.585 | | | | | |
| ND15 | 16.254 | | | | | |

(H06) L101

.. SIMULATOR (JLJD4NSB)

LILLESTROEM-LILLEHAMMER OLYMPIC GAMES SUNDAY

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 9.30.00 TO 0: 9.45.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.320 | BR01 | 215.0 | 198.3 | ND01 | 215.0 |
| ND02 | 16.202 | BR03 | 198.3 | 113.1 | ND12 | 370.1 |
| ND03 | 16.202 | BR04 | 113.1 | 113.1 | ND15 | 202.2 |
| ND04 | 15.736 | BR06 | 113.1 | 92.6 | | |
| ND05 | 15.793 | BR08 | 92.6 | 106.4 | | |
| ND06 | 15.440 | BR17 | 106.4 | 123.8 | | |
| ND07 | 15.440 | PR09 | 123.8 | 123.8 | | |
| ND20 | 15.461 | BR11 | 123.8 | 153.6 | | |
| ND08 | 15.514 | BR13 | 153.6 | 193.9 | | |
| ND09 | 15.172 | BR14 | 267.3 | 90.9 | | |
| ND10 | 15.612 | BR18 | 90.9 | 90.9 | | |
| ND11 | 15.612 | BR20 | 90.9 | 82.3 | | |
| ND12 | 15.601 | BR16 | 82.3 | 86.2 | | |
| ND16 | 15.366 | BR21 | 96.2 | 115.6 | | |
| ND17 | 15.458 | BR22 | 115.6 | 115.6 | | |
| ND13 | 15.342 | BR24 | 115.6 | 202.2 | | |
| ND14 | 15.342 | | | | | |
| ND21 | 15.362 | | | | | |
| ND18 | 15.712 | | | | | |
| ND19 | 15.766 | | | | | |
| ND15 | 16.342 | | | | | |

GATTS SIMULATOR (JLJ04NSB)

LILLESTRØM-LILLEHAMMER OLYMPIC GAMES SUNDAY (H06)

ELECTRICAL RESULTS : TRAIN SUMMARY RESULTS FOR TIME PERIOD 01 8.45.00 TO 01 9.45.00

| H/CODE | DISTANCE GONE (METRES) | MINIMUM VOLTAGE (KV) | TIME OF MINIMUM VOLTAGE | MAXIMUM VOLTAGE (KV) | TIME OF MAXIMUM VOLTAGE | AVERAGE VOLTAGE (KV) | ENERGY CONSUMPTION | | TIME BELOW 12,500 KV (SECS) |
|--------|------------------------------|----------------------------|-------------------------------|----------------------------|-------------------------------|----------------------------|--------------------|---------------------|-----------------------------------|
| | | | | | | | REAL (KWH) | REACTIVE (KVARH) | |
| 09LB | 22661 | 12.853 | 01 8.54.40 | 16.379 | 01 8.58.00 | 15.185 | 461.11 | 345.09 | 0 |
| 09LC | 52608 | 12.306 | 01 8.54.40 | 16.318 | 01 9.13.40 | 15.079 | 1065.42 | 678.25 | 20 |
| 09LE | 82813 | 12.868 | 01 8.54.40 | 16.371 | 01 9.23.00 | 15.226 | 1638.67 | 1024.49 | 0 |
| 09LH | 88438 | 13.121 | 01 8.45.20 | 16.367 | 01 9.40.20 | 15.082 | 1914.76 | 1225.51 | 0 |
| 09LJ | 72289 | 12.943 | 01 9.13.00 | 16.408 | 01 9.05.20 | 15.184 | 1560.86 | 1007.50 | 0 |
| 09LM | 10366 | 14.314 | 01 9.44.20 | 16.417 | 01 9.41.40 | 15.797 | 267.06 | 172.85 | 0 |
| P342 | 41275 | 12.546 | 01 8.46.00 | 16.400 | 01 9.05.20 | 15.008 | 375.71 | 117.90 | 0 |
| 1612 | 46633 | 12.575 | 01 8.46.00 | 16.512 | 01 9.33.20 | 14.999 | 551.21 | 372.15 | 0 |
| P741 | 88345 | 12.732 | 01 8.46.00 | 16.361 | 01 9.23.00 | 15.230 | 1600.02 | 115.47 | 0 |
| P361 | 40851 | 14.152 | 01 9.29.40 | 16.426 | 01 9.22.00 | 15.752 | 382.69 | 107.05 | 0 |

OSLO/GATTS SIMULATOR (JLJ04NSB)

OUTPUT OF ELECTRICAL RESULTS : MAXIMUM/MINIMUM VALUES FOR

NODE VOLTAGES

H06

| NODE | MINIMUM VOLTAGE (KV) | TIME OF MINIMUM VOLTAGE |
|------|----------------------|-------------------------|
| ND01 | 15.371 | 01 9.07.40 |
| ND02 | 14.968 | 01 9.07.40 |
| ND03 | 14.968 | 01 9.07.40 |
| ND04 | 12.865 | 01 9.13.40 |
| ND05 | 12.776 | 01 9.13.00 |
| ND06 | 12.774 | 01 8.46.00 |
| ND07 | 12.774 | 01 8.46.00 |
| ND20 | 13.168 | 01 8.46.00 |
| ND08 | 13.496 | 01 9.20.40 |
| ND09 | 12.534 | 01 9.37.20 |
| ND10 | 14.122 | 01 9.37.20 |
| ND11 | 14.122 | 01 9.37.20 |
| ND12 | 14.617 | 01 9.37.20 |
| ND16 | 12.575 | 01 9.00.20 |
| ND17 | 13.313 | 01 8.54.40 |
| ND13 | 12.760 | 01 8.54.40 |
| ND14 | 12.760 | 01 8.54.40 |
| ND21 | 12.393 | 01 8.54.40 |
| ND18 | 13.140 | 01 8.54.40 |
| ND19 | 12.503 | 01 9.00.20 |
| ND15 | 14.900 | 01 9.00.20 |

MAXIMUM FEEDER STATION INSTANTANEOUS CURRENTS

| FEEDER | NORMAL CURRENT (AMPS) | TIME |
|--------|-----------------------|------------|
| ND01 | 572.3 | 01 9.00.00 |
| ND12 | 827.3 | 01 9.37.20 |
| ND15 | 563.0 | 01 9.00.20 |

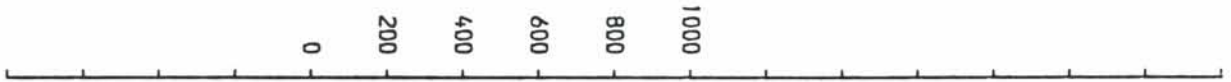
MAXIMUM BRANCH INSTANTANEOUS CURRENTS

| BRANCH | CURRENT (AMPS) * | TIME |
|--------|------------------|------------|
| BR01 | 572.3 | 01 9.00.00 |
| BR03 | 572.3 | 01 9.00.00 |
| BR04 | 636.5 | 01 8.50.00 |
| BR06 | 535.4 | 01 8.50.00 |
| BR08 | 366.3 | 01 8.45.40 |
| BR17 | 366.3 | 01 8.45.40 |
| BR09 | 366.3 | 01 8.45.40 |
| BR11 | 443.7 | 01 9.27.20 |
| BR13 | 535.9 | 01 8.45.20 |
| BR14 | 638.5 | 01 9.33.00 |
| BR18 | 542.5 | 01 9.00.20 |
| BR20 | 542.5 | 01 9.00.20 |
| BR16 | 362.0 | 01 9.06.40 |
| BR21 | 553.3 | 01 8.50.20 |
| BR22 | 553.3 | 01 8.50.20 |
| BR24 | 563.0 | 01 9.00.20 |

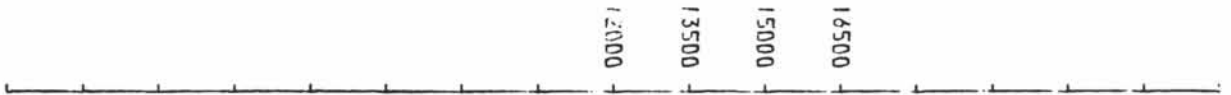
CURRENT AT START OF BRANCH BR01 (A)



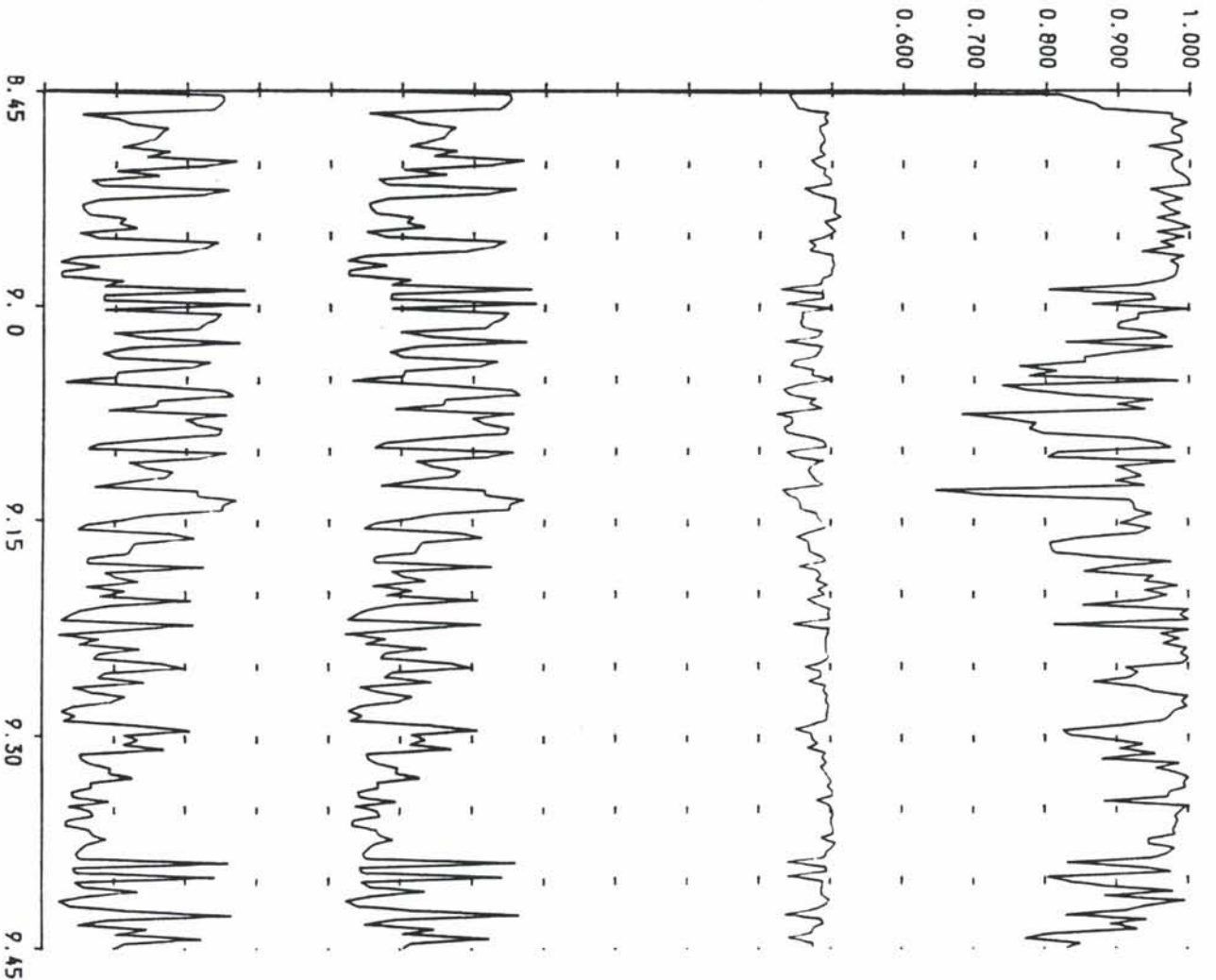
CURRENT IN FEEDER ND01 (A) LILLESTRØM



VOLTAGE AT NODE ND01 (V)



DISPLACEMENT FACTOR OF FEEDER ND01 AT RAILWAY BUS-BAR

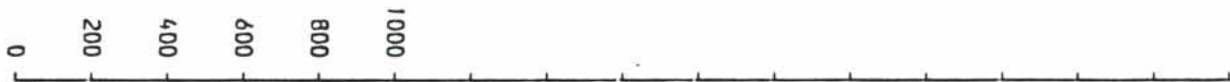


H06

L101

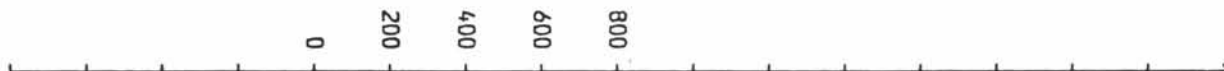
H06

CURRENT AT END OF BRANCH BR13 (A)



CURRENT IN FEEDER ND12 (A)

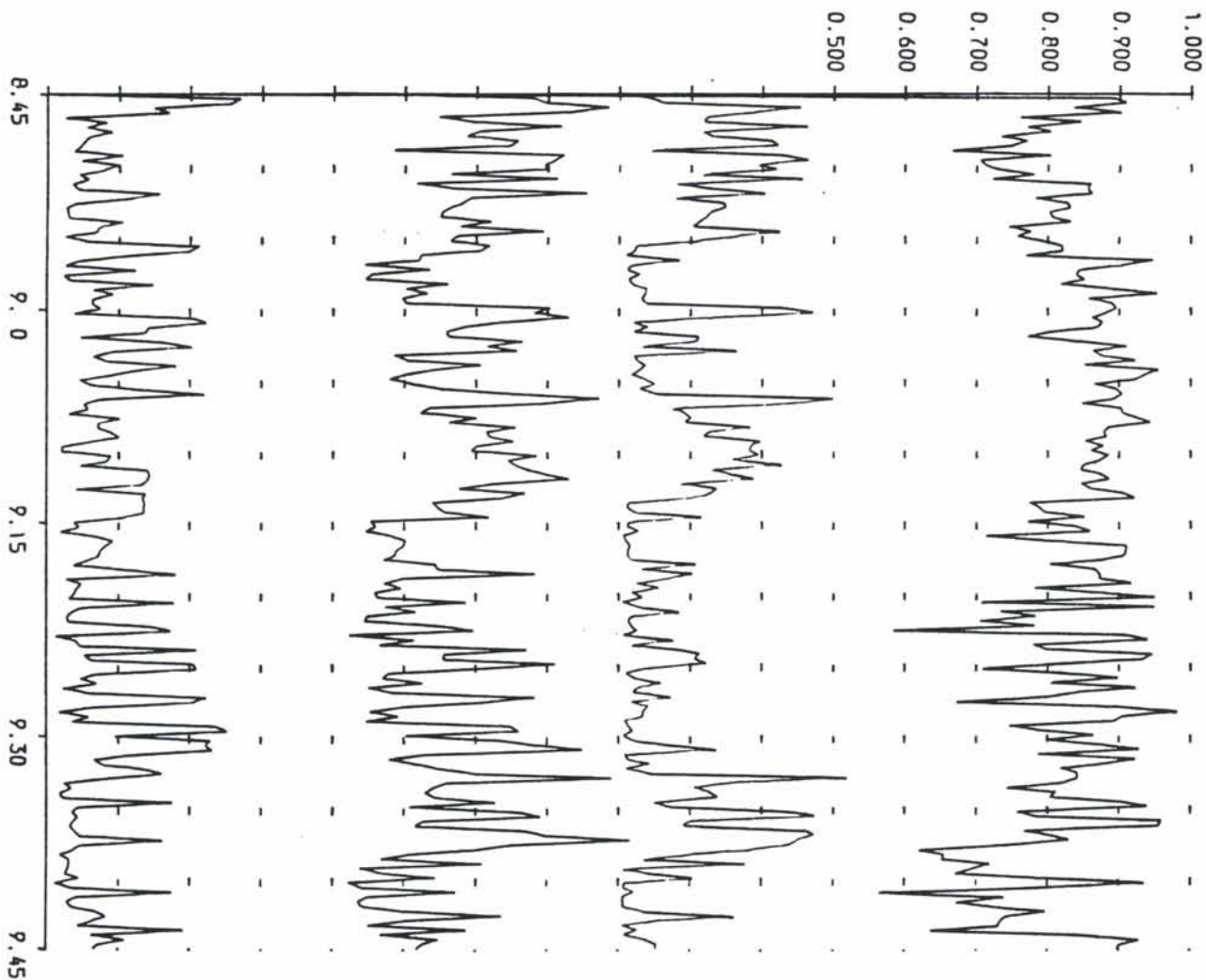
TANGEN



CURRENT AT START OF BRANCH BR14 (A)



DISPLACEMENT FACTOR OF FEEDER ND12 AT RAILWAY BUS-BAR



H06

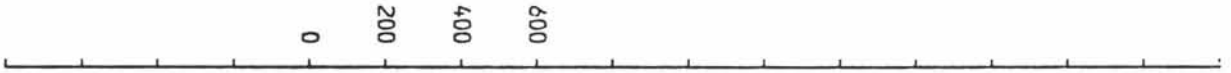
L101

H06

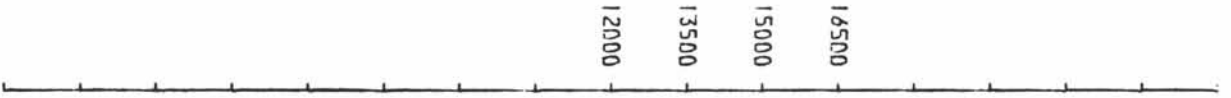
CURRENT AT END OF BRANCH BR24 (A)



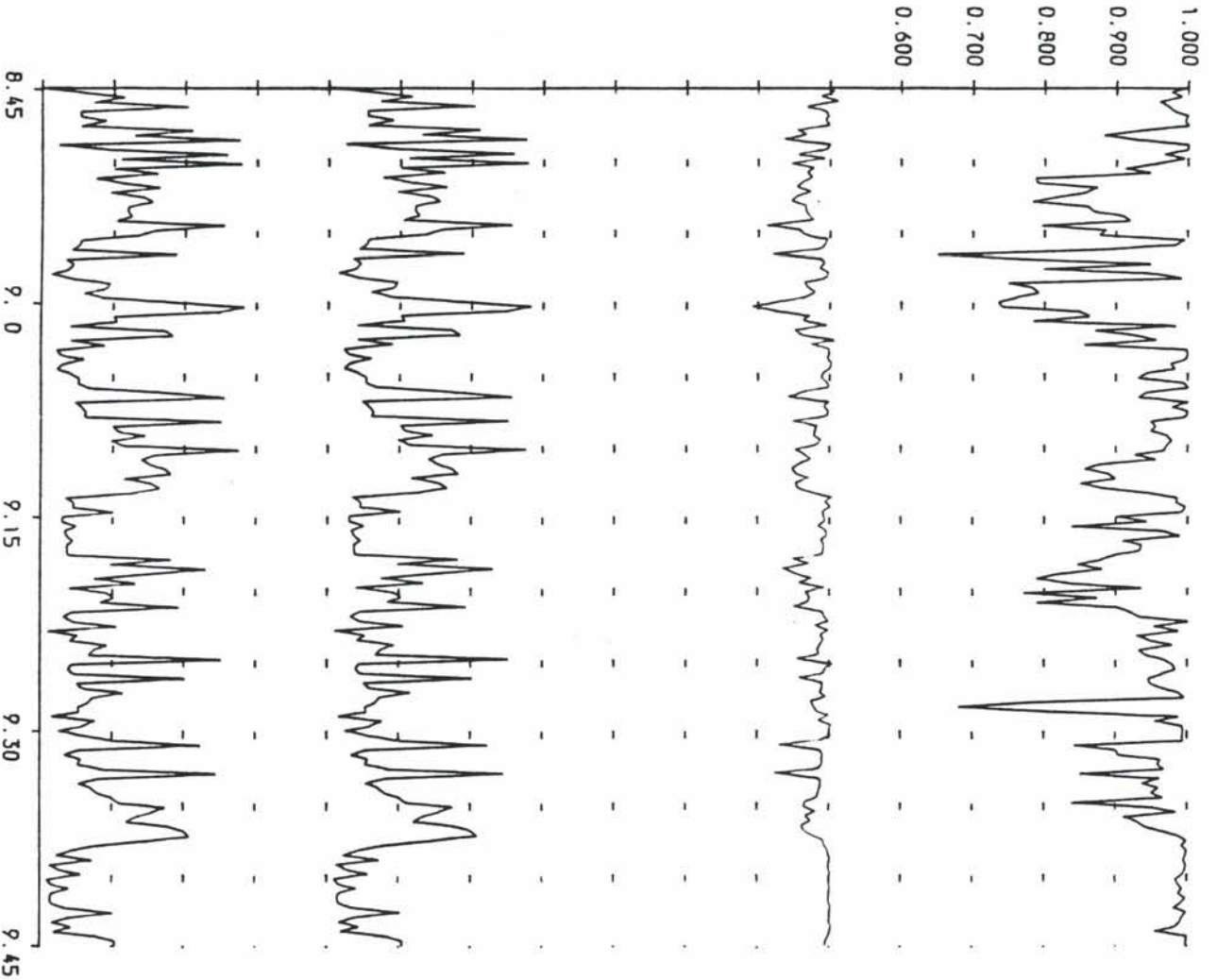
CURRENT IN FEEDER ND15 (A) FABERG



VOLTAGE AT NODE ND15 (V)



DISPLACEMENT FACTOR OF FEEDER ND15 AT RAILWAY BUS-BAR



H06

L101

H06

SIMULATOR (JLJO4NSB)

LILLESTROEM-LILLEHAMMER OLYMPIC GAMES SUNDAY (H09) L97A1

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 01 8.45.00 TO 01 9.00.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.298 | BR01 | 351.7 | 339.9 | ND01 | 351.6 |
| ND02 | 16.100 | BR03 | 339.9 | 297.0 | ND12 | 607.1 |
| ND03 | 16.100 | BR04 | 297.0 | 297.0 | ND15 | 339.6 |
| ND04 | 14.895 | BR06 | 297.0 | 126.1 | | |
| ND05 | 15.060 | BR08 | 126.1 | 144.8 | | |
| ND06 | 14.538 | BR17 | 144.8 | 145.7 | | |
| ND07 | 14.538 | BR09 | 145.7 | 145.7 | | |
| ND20 | 14.634 | BR11 | 145.7 | 240.5 | | |
| ND08 | 14.757 | BR13 | 240.5 | 283.0 | | |
| ND09 | 14.148 | BR14 | 360.0 | 164.5 | | |
| ND10 | 14.764 | BR18 | 164.5 | 164.5 | | |
| ND11 | 14.784 | BR20 | 164.5 | 151.6 | | |
| ND12 | 15.097 | BR16 | 151.6 | 147.3 | | |
| ND16 | 14.084 | BR21 | 147.3 | 285.9 | | |
| ND17 | 14.830 | BR22 | 285.9 | 285.9 | | |
| ND13 | 14.381 | BR24 | 285.9 | 339.6 | | |
| ND14 | 14.381 | | | | | |
| ND21 | 14.296 | | | | | |
| ND18 | 15.076 | | | | | |
| ND19 | 14.555 | | | | | |
| ND15 | 16.021 | | | | | |

SIMULATOR (JLJO4NSB)

LILLESTROEM-LILLEHAMMER OLYMPIC GAMES SUNDAY H09 L97A

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 9.00.00 TO 0: 9.15.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 15.991 | BR01 | 383.3 | 381.7 | ND01 | 383.3 |
| ND02 | 15.727 | BR03 | 381.7 | 189.1 | ND12 | 520.1 |
| ND03 | 15.727 | BR04 | 189.1 | 189.1 | ND15 | 347.9 |
| ND04 | 14.516 | BR06 | 189.1 | 148.1 | | |
| ND05 | 14.732 | BR08 | 148.1 | 173.4 | | |
| ND06 | 14.823 | BR17 | 173.4 | 173.4 | | |
| ND07 | 14.823 | BR09 | 173.4 | 173.4 | | |
| ND20 | 15.042 | BR11 | 173.4 | 187.2 | | |
| ND08 | 15.278 | BR13 | 187.2 | 209.7 | | |
| ND09 | 14.610 | BR14 | 367.9 | 272.7 | | |
| ND10 | 15.312 | BR18 | 272.7 | 272.7 | | |
| ND11 | 15.312 | BR20 | 272.7 | 133.5 | | |
| ND12 | 15.573 | BR16 | 133.5 | 125.2 | | |
| ND16 | 14.163 | BR21 | 125.2 | 215.9 | | |
| ND17 | 15.028 | BR22 | 215.9 | 215.9 | | |
| ND13 | 14.423 | BR24 | 215.9 | 347.9 | | |
| ND14 | 14.423 | | | | | |
| ND21 | 14.351 | | | | | |
| ND18 | 14.966 | | | | | |
| ND19 | 14.477 | | | | | |
| ND15 | 15.864 | | | | | |

SIMULATOR (JLJO4NSB)

LILLESTROEM-LILLEHAMMER OLYMPIC GAMES SUNDAY (H09) L97A

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 9.15.00 TO 0: 9.30.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.264 | BR01 | 267.1 | 244.8 | ND01 | 267.1 |
| ND02 | 16.108 | BR03 | 244.8 | 142.9 | ND12 | 373.4 |
| ND03 | 16.108 | BR04 | 142.9 | 142.9 | ND15 | 282.7 |
| ND04 | 15.433 | BR06 | 142.9 | 92.0 | | |
| ND05 | 16.547 | BR08 | 92.0 | 94.6 | | |
| ND06 | 15.321 | BR17 | 94.6 | 119.2 | | |
| ND07 | 15.321 | BR09 | 119.2 | 119.2 | | |
| ND20 | 15.367 | BR11 | 119.2 | 198.7 | | |
| ND08 | 16.410 | BR13 | 198.7 | 214.9 | | |
| ND09 | 15.037 | BR14 | 230.1 | 228.5 | | |
| ND10 | 16.525 | BR18 | 228.5 | 228.5 | | |
| ND11 | 15.525 | BR20 | 228.5 | 178.6 | | |
| ND12 | 16.780 | BR16 | 178.6 | 139.5 | | |
| ND16 | 14.790 | BR21 | 139.5 | 220.5 | | |
| ND17 | 16.336 | BR22 | 220.5 | 220.5 | | |
| ND13 | 14.732 | BR24 | 220.5 | 282.7 | | |
| ND14 | 14.732 | | | | | |
| ND21 | 14.642 | | | | | |
| ND18 | 16.372 | | | | | |
| ND19 | 14.805 | | | | | |
| ND15 | 16.006 | | | | | |

SIMULATOR (JLJO4NSB)

LILLESTROEM-LILLEHAMMER OLYMPIC GAMES SUNDAY (H09) L97A

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 9.30.00 TO 0: 9.45.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 15.982 | BR01 | 388.4 | 376.3 | ND01 | 388.4 |
| ND02 | 15.729 | BR03 | 376.4 | 157.3 | ND12 | 439.7 |
| ND03 | 15.729 | BR04 | 157.3 | 157.3 | ND15 | 282.2 |
| ND04 | 14.792 | BR06 | 157.3 | 108.1 | | |
| ND05 | 15.007 | BR08 | 108.1 | 130.6 | | |
| ND06 | 14.961 | BR17 | 130.6 | 156.6 | | |
| ND07 | 14.961 | BR09 | 156.6 | 156.6 | | |
| ND20 | 15.064 | BR11 | 156.6 | 182.5 | | |
| ND08 | 15.216 | BR13 | 182.5 | 225.6 | | |
| ND09 | 14.777 | BR14 | 271.1 | 106.2 | | |
| ND10 | 15.454 | BR18 | 106.2 | 106.2 | | |
| ND11 | 15.454 | BR20 | 106.2 | 99.8 | | |
| ND12 | 15.706 | BR16 | 99.8 | 103.2 | | |
| ND16 | 15.097 | BR21 | 103.2 | 193.7 | | |
| ND17 | 15.317 | BR22 | 193.7 | 193.7 | | |
| ND13 | 15.072 | BR24 | 193.7 | 282.2 | | |
| ND14 | 15.072 | | | | | |
| ND21 | 14.987 | | | | | |
| ND18 | 15.294 | | | | | |
| ND19 | 15.238 | | | | | |
| ND15 | 16.204 | | | | | |

GATT'S SIMULATOR (JLJ04NSB)

LILLESTROEM-LILLEHAMMER OLYMPIC GAMES SUNDAY (H05)

ELECTRICAL RESULTS : TRAIN SUMMARY RESULTS FOR TIME PERIOD 01 8.45.00 TO 01 9.45.00

| H/CODE | DISTANCE GONE (METRES) | MINIMUM VOLTAGE (KV) | TIME OF MINIMUM VOLTAGE | MAXIMUM VOLTAGE (KV) | TIME OF MAXIMUM VOLTAGE | AVERAGE VOLTAGE (KV) | ENERGY CONSUMPTION REAL (KWH) | ENERGY CONSUMPTION REACTIVE (KVARH) | TIME BELOW 12,500 KV (SECS) |
|--------|------------------------|----------------------|-------------------------|----------------------|-------------------------|----------------------|-------------------------------|-------------------------------------|-----------------------------|
| OSLB | 22661 | 12.322 | 01 8.54.40 | 16.177 | 01 8.58.00 | 14.715 | 452.52 | 333.27 | 20 |
| HALI | 37565 | 11.985 | 01 8.54.40 | 16.330 | 01 9.04.40 | 14.517 | 536.76 | 389.56 | 20 |
| OSLC | 52705 | 11.916 | 01 8.54.40 | 16.332 | 01 9.13.40 | 14.466 | 1066.46 | 678.15 | 40 |
| OSLE | 82707 | 12.321 | 01 8.55.00 | 16.240 | 01 9.38.20 | 14.662 | 1427.27 | 882.19 | 40 |
| OSLF | 91519 | 12.242 | 01 8.46.00 | 16.353 | 01 9.40.20 | 14.653 | 1944.79 | 1242.42 | 20 |
| OSLH | 88661 | 13.013 | 01 9.04.20 | 16.319 | 01 9.28.40 | 14.901 | 1903.34 | 1215.51 | 0 |
| OSLJ | 68126 | 12.909 | 01 9.30.00 | 16.552 | 01 8.58.20 | 15.000 | 1533.39 | 988.15 | 0 |
| OSLL | 29762 | 12.911 | 01 9.42.40 | 16.332 | 01 9.28.40 | 15.057 | 739.38 | 469.52 | 0 |
| OSLM | 10344 | 13.628 | 01 9.42.40 | 16.371 | 01 9.39.40 | 15.241 | 292.43 | 189.36 | 0 |
| P342 | 41276 | 12.103 | 01 8.46.00 | 16.403 | 01 9.15.40 | 14.806 | 378.39 | 120.02 | 20 |
| I612 | 46631 | 12.043 | 01 8.46.00 | 16.412 | 01 9.22.20 | 14.814 | 544.27 | 369.28 | 40 |
| PT41 | 88342 | 12.074 | 01 8.46.00 | 16.235 | 01 9.26.20 | 14.801 | 1522.01 | 38.03 | 20 |
| P351 | 40827 | 13.202 | 01 9.42.40 | 16.483 | 01 9.22.00 | 15.321 | 377.72 | 106.19 | 0 |

DSLO/GATTS SIMULATOR (JLJO4NSB)

2 OUTPUT OF ELECTRICAL RESULTS : MAXIMUM/MINIMUM VALUES PD

4 NODE VOLTAGES

H09

| 8 | | MINIMUM | TIME OF |
|----|------|---------|------------|
| 10 | NODE | VOLTAGE | MINIMUM |
| | | (KV) | VOLTAGE |
| 12 | ND01 | 14.927 | 01 9.30.00 |
| 14 | ND02 | 14.283 | 01 9.30.00 |
| | ND03 | 14.283 | 01 9.30.00 |
| | ND04 | 12.680 | 01 9.42.40 |
| 16 | ND05 | 12.768 | 01 9.13.20 |
| | ND06 | 12.105 | 01 8.46.00 |
| 18 | ND07 | 12.105 | 01 8.46.00 |
| | ND20 | 12.296 | 01 8.46.00 |
| 20 | ND08 | 12.516 | 01 8.46.00 |
| | ND09 | 12.037 | 01 8.46.00 |
| 22 | ND10 | 13.328 | 01 8.46.00 |
| | ND11 | 13.328 | 01 8.46.00 |
| 24 | ND12 | 13.891 | 01 8.46.00 |
| | ND16 | 11.748 | 01 9.08.20 |
| 26 | ND17 | 13.308 | 01 8.54.40 |
| | ND13 | 12.566 | 01 8.54.40 |
| 28 | ND14 | 12.566 | 01 8.54.40 |
| | ND21 | 12.047 | 01 8.54.40 |
| 30 | ND18 | 12.889 | 01 8.54.40 |
| | ND19 | 12.035 | 01 8.54.40 |
| 32 | ND15 | 14.827 | 01 9.00.20 |

34 MAXIMUM FEEDER STATION INSTANTANEOUS CURRENTS

| 36 | | | |
|----|--------|----------------|------------|
| 38 | FEEDER | NORMAL CURRENT | TIME |
| | | (AMPS) | |
| 40 | ND01 | 822.5 | 01 9.30.00 |
| 42 | ND12 | 1036.9 | 01 8.46.00 |
| | ND15 | 679.3 | 01 9.37.40 |

44 MAXIMUM BRANCH INSTANTANEOUS CURRENTS

| 46 | | | |
|----|--------|------------------|------------|
| 48 | BRANCH | CURRENT (AMPS) * | TIME |
| 50 | BR01 | 822.5 | 01 9.30.00 |
| | BR03 | 822.6 | 01 9.30.00 |
| 52 | BR04 | 573.1 | 01 8.50.00 |
| | BR06 | 573.1 | 01 8.50.00 |
| 54 | BR08 | 302.4 | 01 9.31.00 |
| | BR17 | 406.2 | 01 9.35.00 |
| 56 | BR09 | 406.2 | 01 9.35.00 |
| | BR11 | 489.6 | 01 8.51.20 |
| 58 | BR13 | 540.8 | 01 8.45.20 |
| | BR14 | 808.1 | 01 8.55.00 |
| 60 | BR18 | 617.2 | 01 9.08.20 |
| | BR20 | 617.2 | 01 9.08.20 |
| 62 | BR16 | 354.7 | 01 9.20.00 |
| | BR21 | 580.9 | 01 8.50.20 |
| 64 | BR22 | 580.9 | 01 8.50.20 |
| | BR24 | 679.3 | 01 9.37.40 |

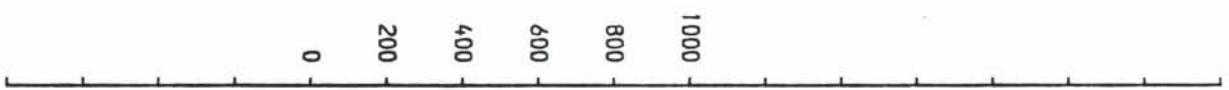
H09

L97

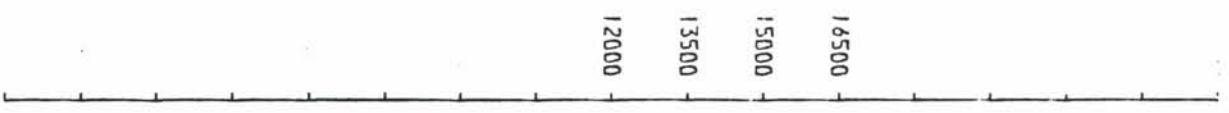
CURRENT AT START OF BRANCH BR01 (A)



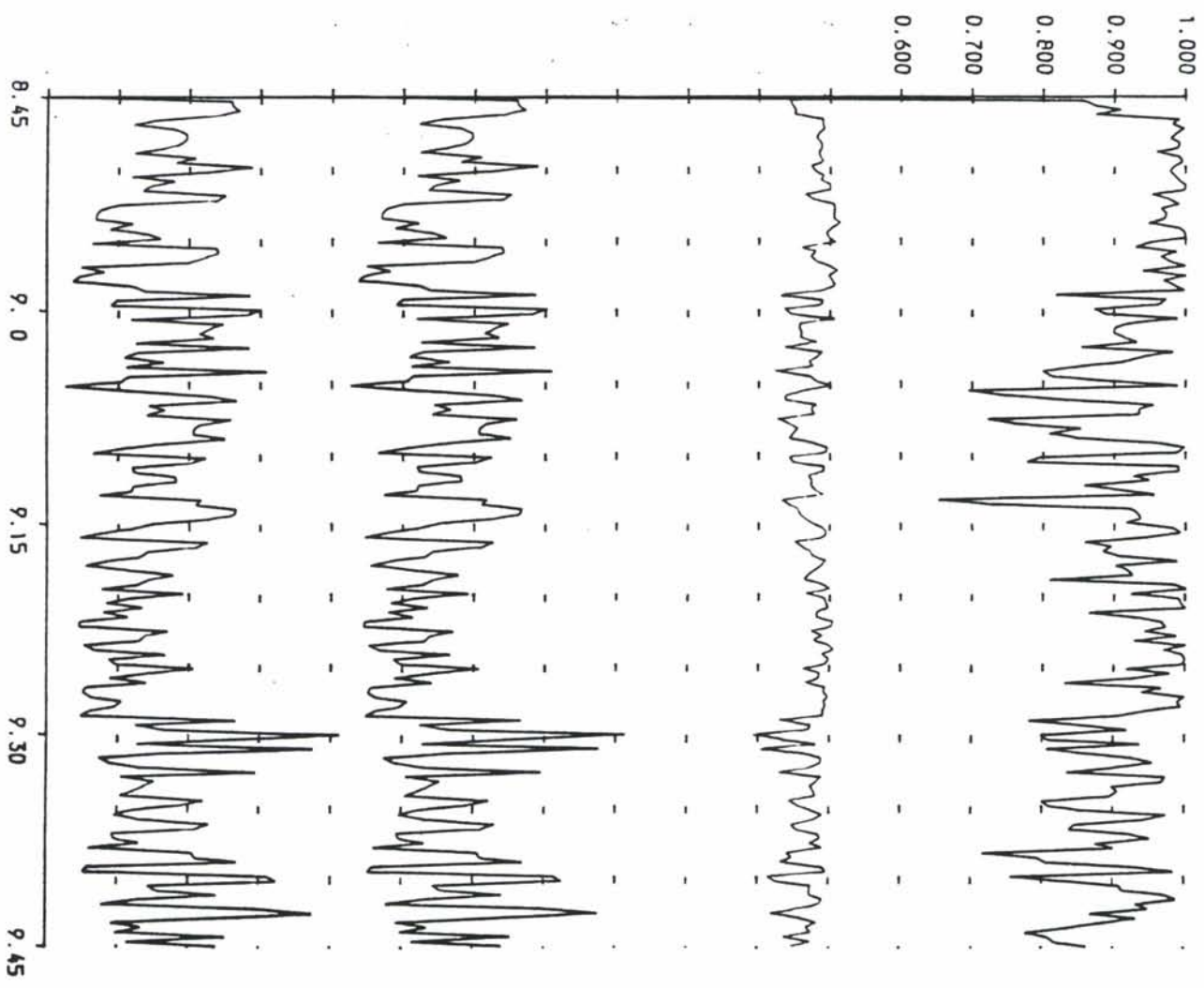
CURRENT IN FEEDER ND01 (A) LILLESTRØM



VOLTAGE AT NODE ND01 (V)



DISPLACEMENT FACTOR OF FEEDER ND01 AT RAILWAY BUS-BAR

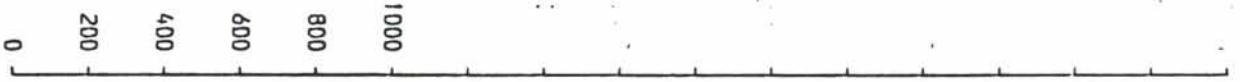


H09

H09

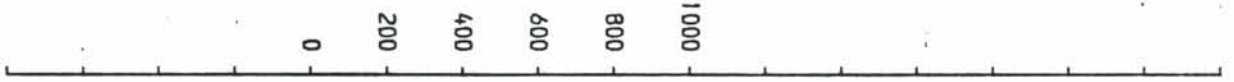
L97

CURRENT AT END OF BRANCH BR13 (A)

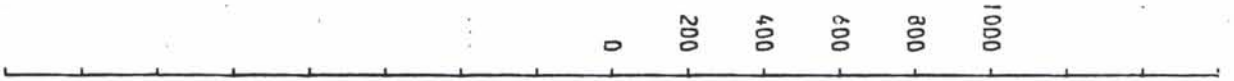


CURRENT IN FEEDER ND12 (A)

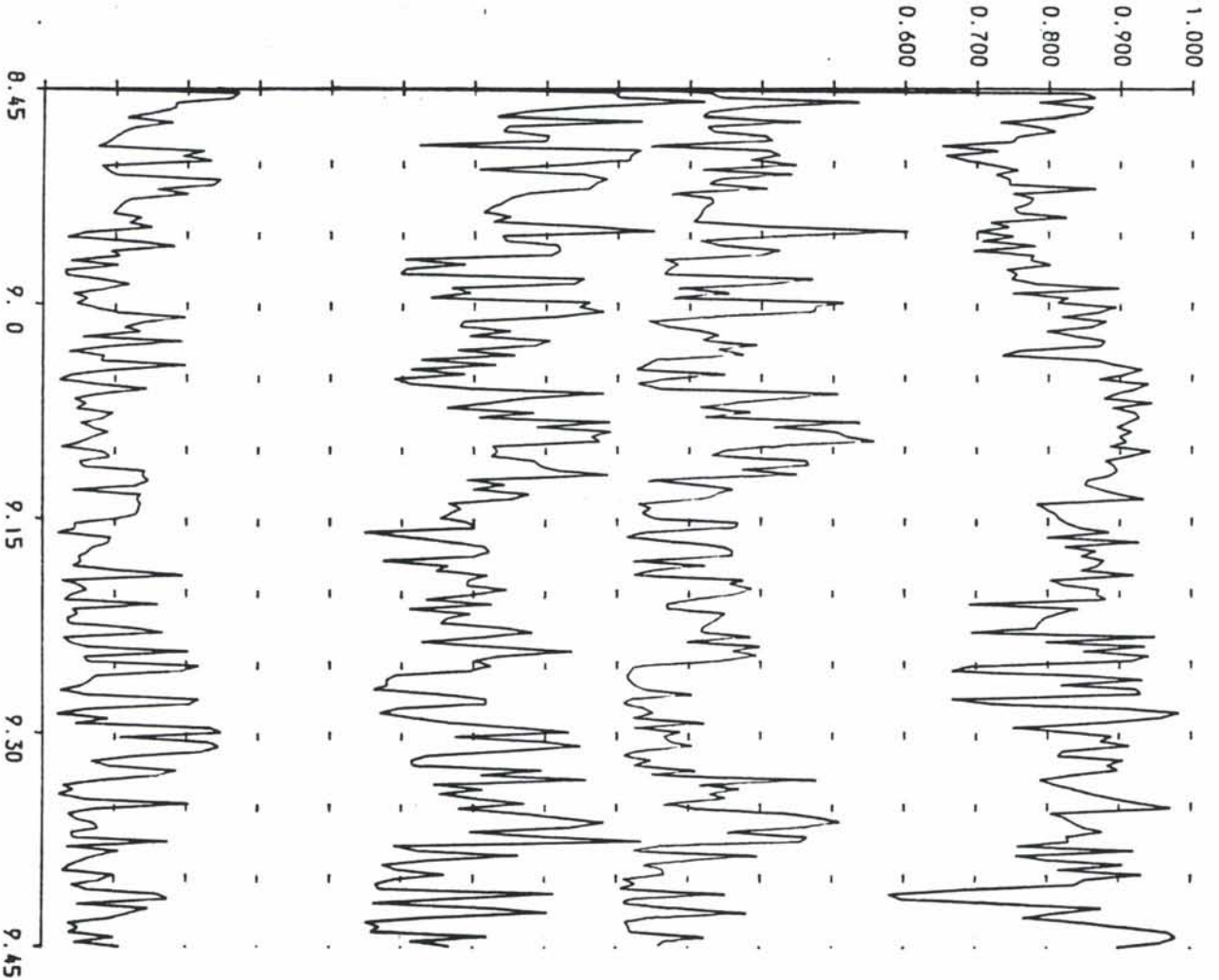
TANGEN



CURRENT AT START OF BRANCH BR14 (A)



DISPLACEMENT FACTOR OF FEEDER ND12 AT RAILWAY BUS-BAR



H09

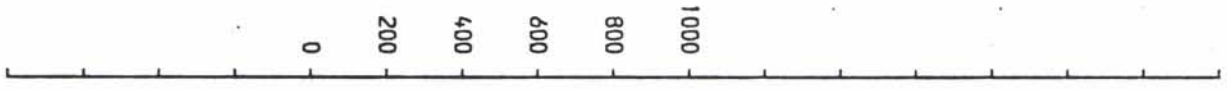
H09

L97

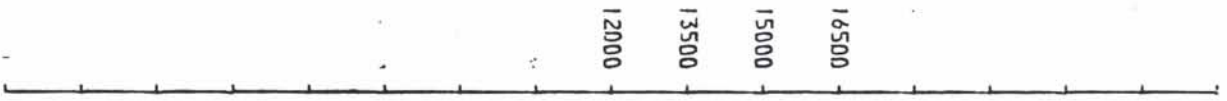
CURRENT AT END OF BRANCH BR24 (A)



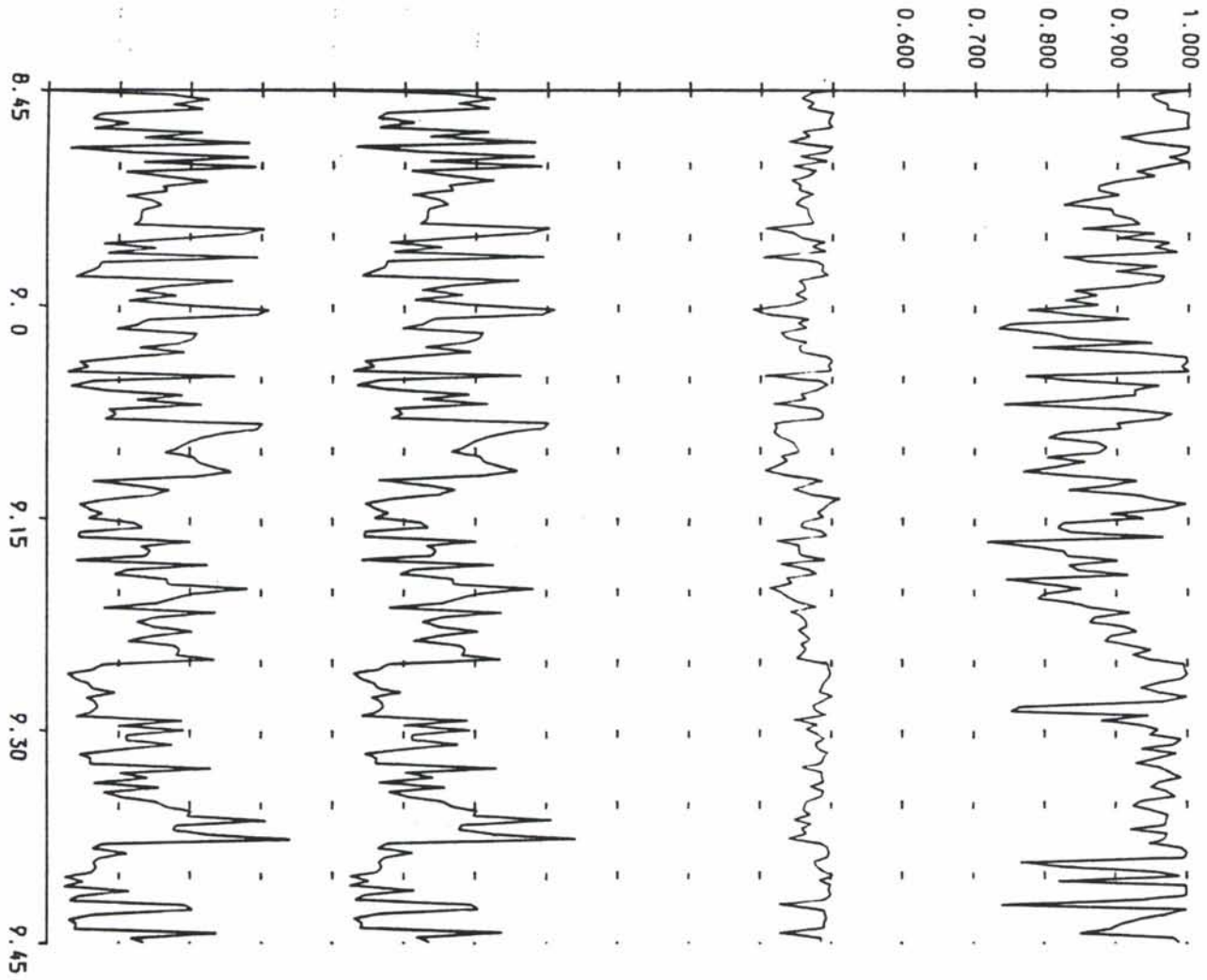
CURRENT IN FEEDER ND15 (A) FÄBERG



VOLTAGE AT NODE ND15 (V)



DISPLACEMENT FACTOR OF FEEDER ND15 AT RAILWAY BUS-BAR



H09

SIMULATOR (JLJ04NSB)

LILLESTROEN-LILLEHAMMER OLYMPIC GAMES SUNDAY J06 L86A)

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 8.45.00 TO 0: 9.00.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.328 | BR01 | 300.6 | 287.0 | ND01 | 300.6 |
| ND02 | 16.160 | BR03 | 287.0 | 242.9 | ND12 | 439.6 |
| ND03 | 16.160 | BR04 | 242.9 | 242.9 | ND16 | 256.1 |
| ND04 | 15.147 | BR06 | 242.9 | 107.1 | | |
| ND05 | 15.394 | BR08 | 107.1 | 149.4 | | |
| ND06 | 15.156 | BR17 | 149.4 | 163.5 | | |
| ND07 | 15.156 | BR09 | 163.5 | 163.5 | | |
| ND20 | 15.302 | BR11 | 163.5 | 197.0 | | |
| ND08 | 16.471 | BR13 | 197.0 | 213.6 | | |
| ND09 | 14.936 | BR14 | 288.3 | 158.7 | | |
| ND10 | 15.601 | BR18 | 158.7 | 158.7 | | |
| ND11 | 15.601 | BR20 | 158.7 | 140.9 | | |
| ND12 | 15.839 | BR16 | 140.9 | 124.6 | | |
| ND16 | 14.951 | BR21 | 124.5 | 212.1 | | |
| ND17 | 15.532 | BR22 | 212.1 | 212.1 | | |
| ND13 | 15.105 | BR24 | 212.1 | 255.1 | | |
| ND14 | 15.105 | | | | | |
| ND21 | 15.030 | | | | | |
| ND18 | 15.538 | | | | | |
| ND19 | 15.168 | | | | | |
| ND15 | 16.165 | | | | | |

SIMULATOR (JLJD4NSB)

LILLESTROEM-LILLEHAMMER OLYMPIC GAMES SUNDAY J06 (L85A)

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 9.00.00 TO 0: 9.15.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.085 | BR01 | 370.1 | 368.6 | ND01 | 370.1 |
| ND02 | 15.832 | BR03 | 368.6 | 182.3 | ND12 | 436.4 |
| ND03 | 15.832 | BR04 | 182.3 | 182.3 | ND16 | 262.8 |
| ND04 | 14.650 | BR06 | 182.3 | 143.7 | | |
| ND05 | 14.942 | BR08 | 143.7 | 169.7 | | |
| ND06 | 15.096 | BR17 | 169.7 | 169.7 | | |
| ND07 | 15.096 | BR09 | 169.7 | 169.7 | | |
| ND20 | 15.310 | BR11 | 169.7 | 198.1 | | |
| ND08 | 15.539 | BR13 | 198.1 | 220.6 | | |
| ND09 | 14.986 | BR14 | 275.0 | 200.1 | | |
| ND10 | 15.663 | BR16 | 200.1 | 200.1 | | |
| ND11 | 15.663 | BR20 | 200.1 | 152.0 | | |
| ND12 | 15.924 | BR16 | 152.0 | 114.8 | | |
| ND16 | 14.944 | BR21 | 114.8 | 217.3 | | |
| ND17 | 15.666 | BR22 | 217.3 | 217.3 | | |
| ND13 | 15.144 | BR24 | 217.3 | 262.8 | | |
| ND14 | 15.144 | | | | | |
| ND21 | 15.036 | | | | | |
| ND18 | 15.594 | | | | | |
| ND19 | 15.197 | | | | | |
| ND15 | 16.212 | | | | | |

SIMULATOR (JLJ04NSB)

LILLESTROEM=LILLEHAMMER OLYMPIC GAMES SUNDAY J06 L85A

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 9.15.00 TO 0: 9.30.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.315 | BR01 | 233.6 | 223.2 | ND01 | 233.6 |
| ND02 | 16.175 | BR03 | 223.2 | 137.4 | ND12 | 293.1 |
| ND03 | 16.176 | BR04 | 137.4 | 137.4 | ND15 | 166.2 |
| ND04 | 15.525 | BR06 | 137.4 | 92.7 | | |
| ND05 | 15.744 | BR08 | 92.7 | 92.8 | | |
| ND06 | 15.494 | BR17 | 92.8 | 138.6 | | |
| ND07 | 15.494 | BR09 | 138.6 | 138.6 | | |
| ND20 | 15.540 | BR11 | 138.6 | 211.8 | | |
| ND08 | 15.810 | BR13 | 211.8 | 234.3 | | |
| ND09 | 15.309 | BR14 | 97.4 | 96.9 | | |
| ND10 | 15.842 | BR18 | 96.9 | 96.9 | | |
| ND11 | 15.842 | BR20 | 96.9 | 60.4 | | |
| ND12 | 16.114 | BR16 | 60.4 | 60.4 | | |
| ND16 | 16.754 | BR21 | 60.4 | 127.8 | | |
| ND17 | 15.932 | BR22 | 127.8 | 127.8 | | |
| ND13 | 16.799 | BR24 | 127.8 | 166.2 | | |
| ND14 | 15.799 | | | | | |
| ND21 | 15.760 | | | | | |
| ND18 | 15.890 | | | | | |
| ND19 | 15.724 | | | | | |
| ND15 | 16.314 | | | | | |

SIMULATOR (JLJD4NSB)

LILLESTROEM=LILLEHAMMER OLYMPIC GAMES SUNDAY J06 L86A1

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 9.30.00 TO 0: 9.45.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.358 | BR01 | 210.7 | 194.0 | ND01 | 210.7 |
| ND02 | 16.246 | BR03 | 194.0 | 102.8 | ND12 | 366.1 |
| ND03 | 16.246 | BR04 | 102.8 | 102.8 | ND16 | 188.9 |
| ND04 | 15.820 | BR06 | 102.8 | 88.4 | | |
| ND08 | 15.871 | BR08 | 88.4 | 106.0 | | |
| ND06 | 15.573 | BR17 | 106.0 | 117.3 | | |
| ND07 | 15.573 | BR09 | 117.3 | 117.3 | | |
| ND20 | 15.597 | BR11 | 117.3 | 149.3 | | |
| ND08 | 15.669 | BR13 | 149.3 | 193.2 | | |
| ND09 | 15.360 | BR14 | 262.8 | 91.1 | | |
| ND10 | 15.775 | BR15 | 91.1 | 91.1 | | |
| ND11 | 15.775 | BR20 | 91.1 | 89.7 | | |
| ND12 | 15.957 | BR15 | 89.7 | 92.4 | | |
| ND16 | 15.473 | BR21 | 92.4 | 110.9 | | |
| ND17 | 15.562 | BR22 | 110.9 | 110.9 | | |
| ND13 | 15.431 | BR24 | 110.9 | 188.9 | | |
| ND14 | 16.481 | | | | | |
| ND21 | 15.438 | | | | | |
| ND18 | 15.797 | | | | | |
| ND19 | 15.815 | | | | | |
| ND15 | 16.372 | | | | | |

GATIS SIMULATOR (JLJ04NSB)

LILLESTROEM-LILLEHAMMER OLYMPIC GAMES SUNDAY J06

ELECTRICAL RESULTS - TRAIN SUMMARY RESULTS FOR TIME PERIOD 01 8.45.00 TO 01 9.45.00

| H/CODE | DISTANCE (METRES) | MINIMUM VOLTAGE (KV) | TIME OF MINIMUM VOLTAGE | MAXIMUM VOLTAGE (KV) | TIME OF MAXIMUM VOLTAGE | AVERAGE VOLTAGE (KV) | ENERGY CONSUMPTION REAL (KWH) | REACTIVE (KVARRH) | TIME BELOW 12.600 KV (SECS) |
|--------|----------------------|----------------------------|-------------------------------|----------------------------|-------------------------------|----------------------------|-------------------------------------|----------------------|-----------------------------------|
| 08LB | 22661 | 12.942 | 01 8.54.40 | 16.386 | 01 8.58.00 | 15.284 | 462.22 | 347.27 | 0 |
| 08LC | 52610 | 12.385 | 01 8.54.40 | 16.488 | 01 9.13.20 | 15.210 | 1081.94 | 688.21 | 20 |
| 08LE | 82825 | 12.989 | 01 8.54.40 | 16.379 | 01 9.23.00 | 15.387 | 1560.04 | 971.40 | 0 |
| 08LH | 83276 | 13.189 | 01 8.45.20 | 16.326 | 01 9.23.00 | 15.196 | 1923.16 | 1246.65 | 0 |
| 08LJ | 72350 | 13.007 | 01 9.13.00 | 16.405 | 01 9.05.20 | 15.313 | 1563.83 | 1008.30 | 0 |
| 08LM | 10367 | 14.456 | 01 9.44.20 | 16.425 | 01 9.41.40 | 15.862 | 268.65 | 174.14 | 0 |
| P342 | 41276 | 12.676 | 01 8.46.00 | 16.398 | 01 9.05.20 | 15.125 | 371.99 | 116.38 | 0 |
| 1612 | 46632 | 12.718 | 01 8.46.00 | 16.508 | 01 9.33.20 | 15.122 | 541.96 | 364.01 | 0 |
| PT41 | 88345 | 12.899 | 01 8.46.00 | 16.374 | 01 9.23.00 | 15.384 | 1623.88 | 147.37 | 0 |
| P351 | 40858 | 14.308 | 01 9.29.40 | 16.431 | 01 9.22.00 | 15.826 | 372.68 | 103.95 | 0 |

OSLO/GATTS SIMULATOR (JLJ04NSB)

OUTPUT OF ELECTRICAL RESULTS : MAXIMUM/MINIMUM VALUES FOR

J06

NODE VOLTAGES

| NODE | MINIMUM VOLTAGE (KV) | TIME OF MINIMUM VOLTAGE |
|------|----------------------|-------------------------|
| ND01 | 15.566 | 0: 9.07.40 |
| ND02 | 15.149 | 0: 9.07.40 |
| ND03 | 15.149 | 0: 9.07.40 |
| ND04 | 12.921 | 0: 8.52.00 |
| ND05 | 12.889 | 0: 9.13.00 |
| ND06 | 12.912 | 0: 8.46.00 |
| ND07 | 12.912 | 0: 8.46.00 |
| ND20 | 13.349 | 0: 8.46.00 |
| ND08 | 13.575 | 0: 9.20.40 |
| ND09 | 12.911 | 0: 9.16.00 |
| ND10 | 14.736 | 0: 9.25.00 |
| ND11 | 14.736 | 0: 9.25.00 |
| ND12 | 15.168 | 0: 8.49.40 |
| ND16 | 12.756 | 0: 9.00.20 |
| ND17 | 13.446 | 0: 8.54.40 |
| ND13 | 12.855 | 0: 8.54.40 |
| ND14 | 12.855 | 0: 8.54.40 |
| ND21 | 12.460 | 0: 8.54.40 |
| ND18 | 13.252 | 0: 8.54.40 |
| ND19 | 12.696 | 0: 9.00.20 |
| ND15 | 15.165 | 0: 9.00.20 |

MAXIMUM FEEDER STATION INSTANTANEOUS CURRENTS

| FEEDER | NORMAL CURRENT (AMPS) | TIME |
|--------|-----------------------|------------|
| ND01 | 568.9 | 0: 9.00.00 |
| ND12 | 812.5 | 0: 8.46.00 |
| ND15 | 574.1 | 0: 9.00.20 |

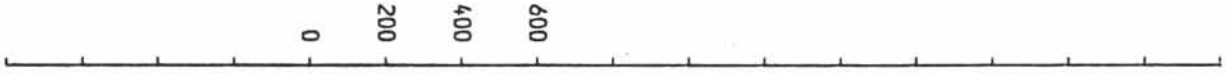
MAXIMUM BRANCH INSTANTANEOUS CURRENTS

| BRANCH | CURRENT (AMPS) | TIME |
|--------|----------------|------------|
| BR01 | 568.9 | 0: 9.00.00 |
| BR03 | 568.9 | 0: 9.00.00 |
| BR04 | 541.3 | 0: 8.52.00 |
| BR06 | 541.3 | 0: 8.52.00 |
| BR08 | 391.1 | 0: 8.46.40 |
| BR17 | 462.9 | 0: 9.16.00 |
| BR09 | 462.9 | 0: 9.16.00 |
| BR11 | 462.9 | 0: 9.16.00 |
| BR13 | 554.3 | 0: 8.46.20 |
| BR14 | 568.3 | 0: 9.35.40 |
| BR18 | 565.9 | 0: 9.00.20 |
| BR20 | 565.9 | 0: 9.00.20 |
| BR16 | 384.4 | 0: 9.06.40 |
| BR21 | 546.7 | 0: 8.48.40 |
| BR22 | 546.7 | 0: 8.48.40 |
| BR24 | 574.1 | 0: 9.00.20 |

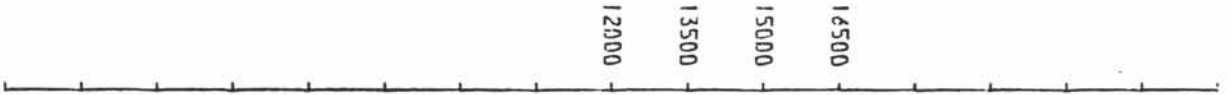
CURRENT AT START OF BRANCH BR01 (A)



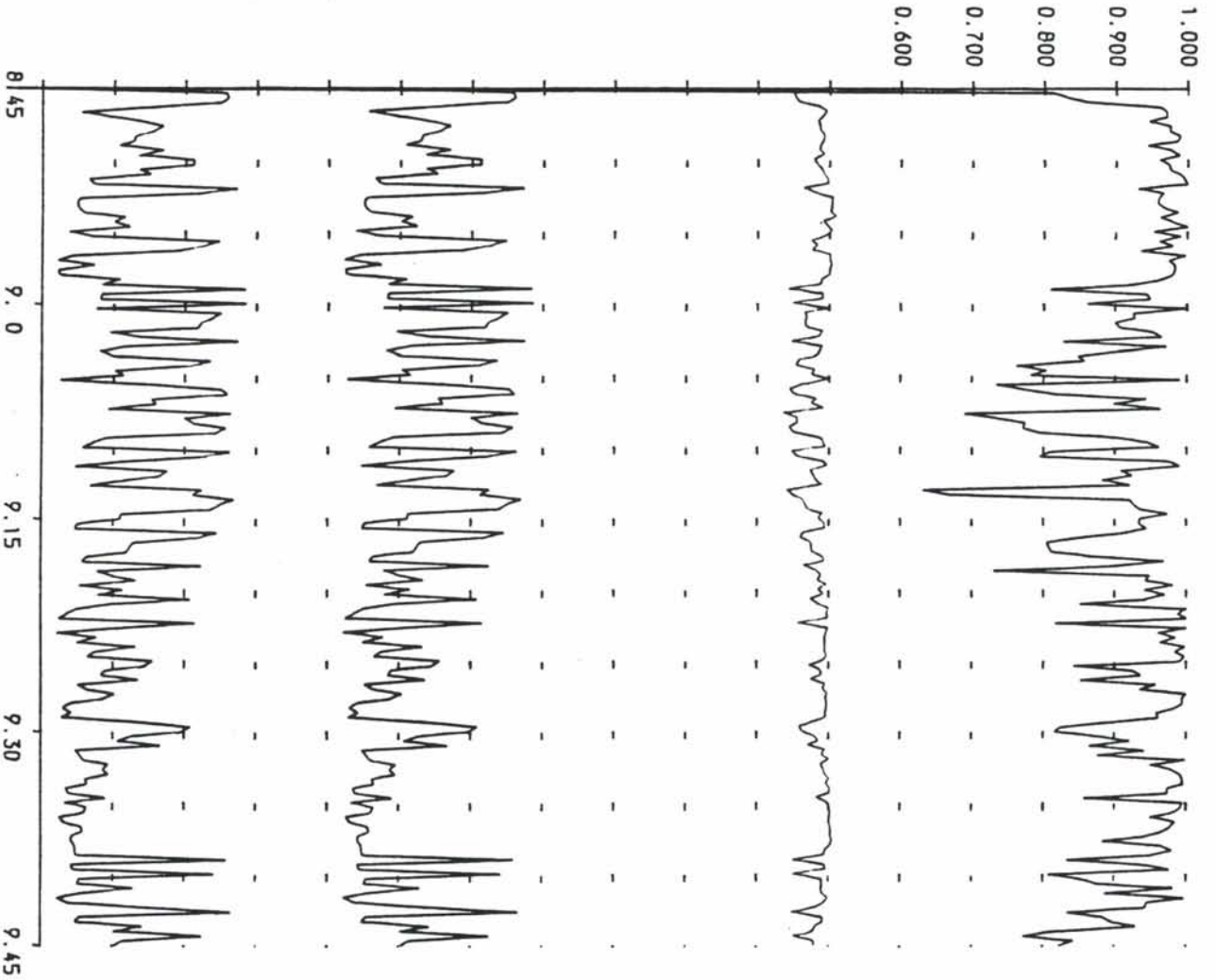
CURRENT IN FEEDER ND01 (A) LILLESTRØM



VOLTAGE AT NODE ND01 (V)



DISPLACEMENT FACTOR OF FEEDER ND01 AT RAILWAY BUS-BAR



506

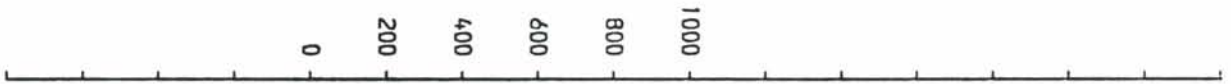
L85

506

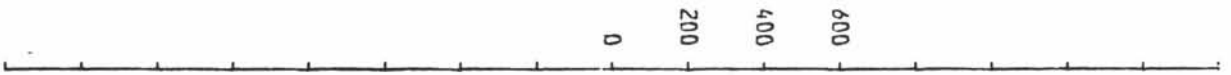
CURRENT AT END OF BRANCH BR13 (A)



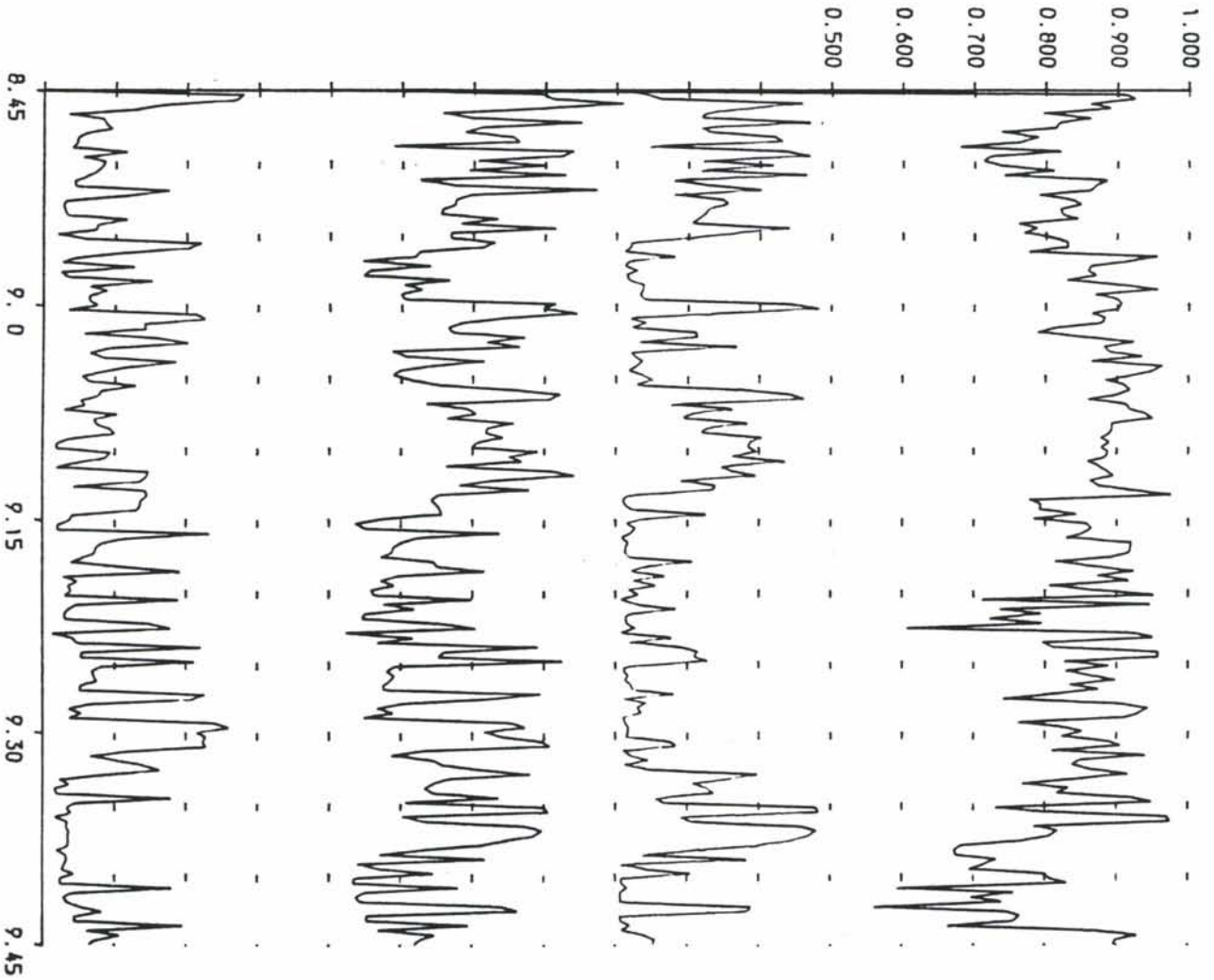
CURRENT IN FEEDER ND12 (A) TANGEN



CURRENT AT START OF BRANCH BR14 (A)



DISPLACEMENT FACTOR OF FEEDER ND12 AT RAILWAY BUS-BAR



506

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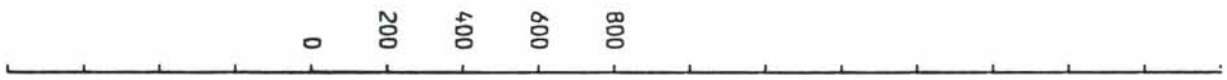
506

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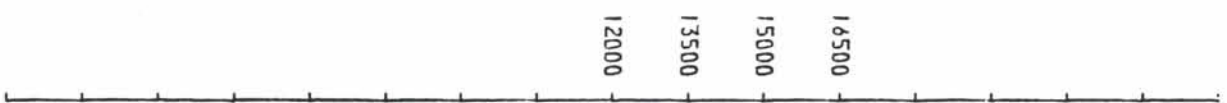
CURRENT AT END OF BRANCH BR24 (A)



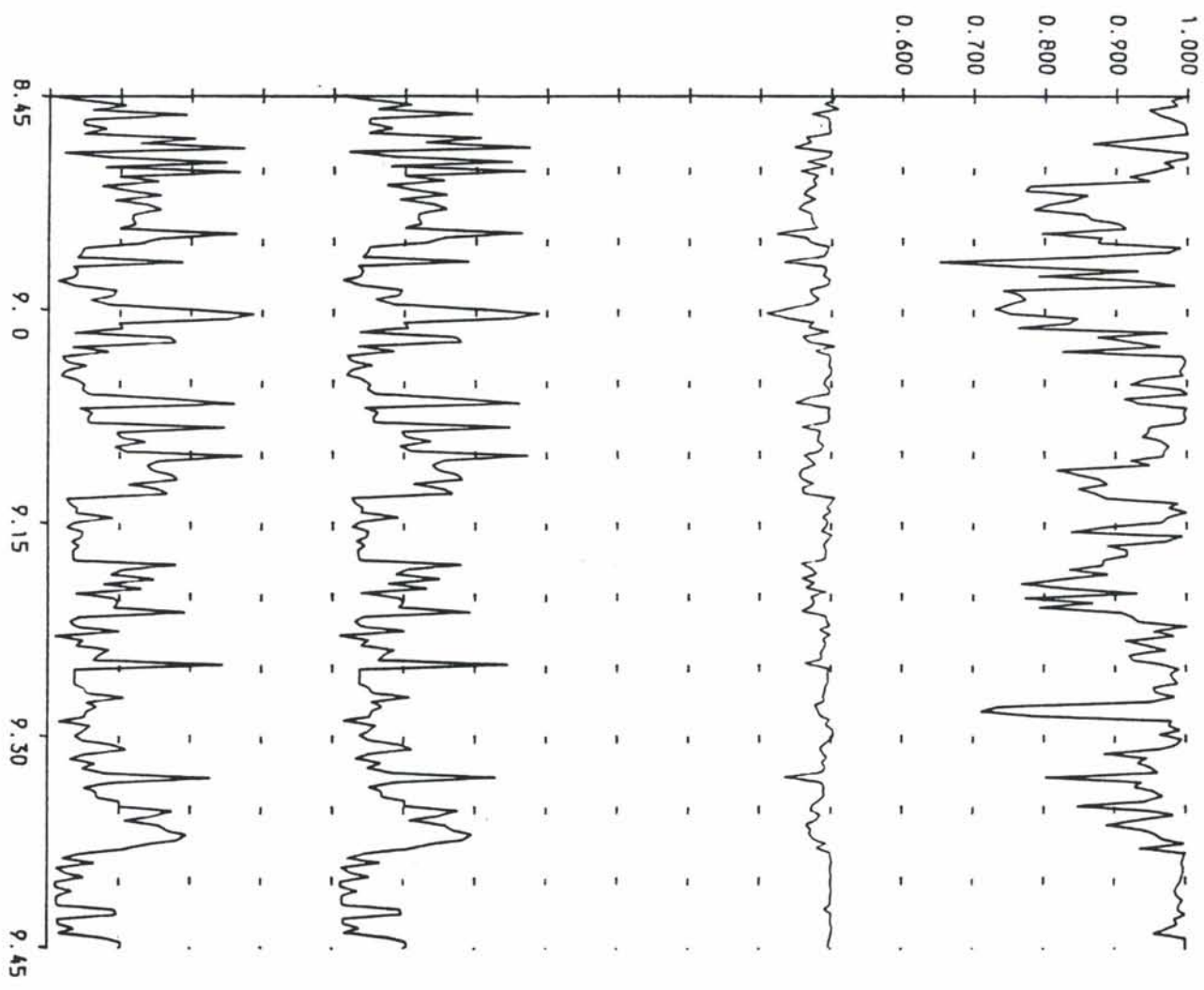
CURRENT IN FEEDER ND15 (A) FÄBERG



VOLTAGE AT NODE ND15 (V)



DISPLACEMENT FACTOR OF FEEDER ND15 AT RAILWAY BUS-BAR



506

SIMULATOR (JLJ04INSB)

LILLESTROEIN-LILLEHAMMER OLYMPIC GAMES SUNDAY J09 L90A

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 8.45.00 TO 0: 9.00.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.338 | BR01 | 337.9 | 325.6 | ND01 | 337.9 |
| ND02 | 16.149 | BR03 | 325.8 | 276.7 | ND12 | 631.6 |
| ND03 | 16.149 | BR04 | 276.7 | 276.7 | ND15 | 325.6 |
| ND04 | 15.012 | BR06 | 276.7 | 117.0 | | |
| ND05 | 15.176 | BR08 | 117.8 | 141.7 | | |
| ND06 | 14.768 | BR17 | 141.7 | 146.6 | | |
| ND07 | 14.768 | BR09 | 146.6 | 146.6 | | |
| ND20 | 14.880 | BR11 | 146.6 | 254.4 | | |
| ND06 | 15.014 | BR13 | 254.4 | 296.6 | | |
| ND09 | 14.415 | BR14 | 373.1 | 172.8 | | |
| ND10 | 15.063 | BR18 | 172.8 | 172.0 | | |
| ND11 | 15.063 | BR20 | 172.8 | 157.4 | | |
| ND12 | 15.406 | BR16 | 157.4 | 145.6 | | |
| ND16 | 14.309 | BR21 | 145.6 | 269.7 | | |
| ND17 | 15.071 | BR22 | 269.7 | 269.7 | | |
| ND13 | 14.584 | BR24 | 269.7 | 325.6 | | |
| ND14 | 14.584 | | | | | |
| ND21 | 14.475 | | | | | |
| ND18 | 15.219 | | | | | |
| ND19 | 14.700 | | | | | |
| ND15 | 16.109 | | | | | |

SIMULATOR (JLJO4NSB)

LILLESTROEM-LILLEHAMMER OLYMPIC GAMES SUNDAY J09 L90A

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 9.00.00 TO 0: 9.15.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.082 | BR01 | 385.3 | 363.8 | ND61 | 385.3 |
| ND02 | 15.820 | BR03 | 303.8 | 185.2 | ND12 | 626.7 |
| ND03 | 15.820 | BR04 | 165.2 | 165.2 | ND15 | 337.8 |
| ND04 | 14.581 | BR06 | 185.2 | 147.1 | | |
| ND05 | 14.846 | BR08 | 147.1 | 172.4 | | |
| ND06 | 15.016 | BR17 | 172.4 | 172.4 | | |
| ND07 | 15.016 | BR09 | 172.4 | 172.4 | | |
| ND20 | 15.239 | BR11 | 172.4 | 188.6 | | |
| ND08 | 15.475 | BR13 | 188.6 | 213.7 | | |
| ND09 | 14.834 | BR14 | 369.8 | 270.1 | | |
| ND10 | 15.537 | BR18 | 270.1 | 270.1 | | |
| ND11 | 15.537 | BR20 | 270.1 | 141.7 | | |
| ND12 | 15.799 | BR16 | 141.7 | 130.7 | | |
| ND16 | 14.372 | BR21 | 130.7 | 193.6 | | |
| ND17 | 15.193 | BR22 | 193.6 | 193.6 | | |
| ND13 | 14.569 | BR24 | 193.6 | 337.8 | | |
| ND14 | 14.569 | | | | | |
| ND21 | 14.489 | | | | | |
| ND18 | 15.131 | | | | | |
| ND19 | 14.612 | | | | | |
| ND15 | 15.960 | | | | | |

SIMULATOR (JLJO4NS9)

LILI ESTROEN-LILI CHAMMER OLYMPIC GAMES SUNDAY (J09) L90A

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 9.15.00 TO 0: 9.30.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.309 | BR01 | 261.5 | 237.1 | ND01 | 261.5 |
| ND02 | 16.159 | PR03 | 237.1 | 138.0 | ND12 | 382.0 |
| ND03 | 16.159 | BR04 | 138.0 | 138.0 | ND15 | 278.8 |
| ND04 | 15.522 | BR06 | 138.0 | 84.9 | | |
| ND05 | 15.663 | BR08 | 84.9 | 85.1 | | |
| ND06 | 15.430 | BR17 | 85.1 | 133.8 | | |
| ND07 | 15.430 | BR09 | 133.8 | 133.8 | | |
| ND20 | 15.470 | BR11 | 133.8 | 206.6 | | |
| ND08 | 15.534 | PR13 | 206.6 | 230.9 | | |
| ND09 | 15.176 | PR14 | 225.6 | 224.5 | | |
| ND10 | 15.694 | BR18 | 224.5 | 224.5 | | |
| ND11 | 15.694 | BR20 | 224.5 | 175.4 | | |
| ND12 | 15.956 | PR16 | 175.4 | 126.5 | | |
| ND16 | 14.989 | DR21 | 126.5 | 224.0 | | |
| ND17 | 15.526 | PR22 | 224.0 | 224.0 | | |
| ND13 | 14.942 | PR24 | 224.0 | 278.8 | | |
| ND14 | 14.942 | | | | | |
| ND21 | 14.648 | | | | | |
| ND18 | 15.495 | | | | | |
| ND19 | 14.931 | | | | | |
| ND15 | 16.101 | | | | | |

LILLESTRØM-LILLEHAMMER OLYMPIC GAMES SUNDAY

SIMULATOR (JLJ04MSB)

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD T: 9.30.00 TO 0: 9.45.00

| NODE | RMS VOLTAGE (KV) | MATCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|-------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.666 | BR01 | 391.5 | 379.8 | ND01 | 391.5 |
| ND02 | 15.834 | FR03 | 379.9 | 169.0 | ND12 | 436.7 |
| ND03 | 15.634 | BR04 | 169.0 | 169.0 | ND15 | 261.9 |
| ND04 | 14.911 | FR06 | 169.0 | 105.4 | | |
| ND05 | 15.126 | BR08 | 105.4 | 130.6 | | |
| ND06 | 15.097 | FR17 | 130.5 | 161.3 | | |
| ND07 | 15.097 | BR09 | 161.3 | 161.3 | | |
| ND26 | 15.195 | RR11 | 161.3 | 208.4 | | |
| ND08 | 15.341 | BR13 | 208.4 | 244.4 | | |
| ND09 | 14.933 | RR14 | 252.9 | 116.2 | | |
| ND10 | 15.631 | FR18 | 116.2 | 116.2 | | |
| ND11 | 15.631 | RR20 | 116.2 | 167.8 | | |
| ND12 | 15.909 | BR16 | 107.8 | 95.3 | | |
| ND16 | 15.331 | FR21 | 95.3 | 164.1 | | |
| ND17 | 15.528 | BR22 | 164.1 | 164.1 | | |
| ND13 | 15.266 | RR24 | 164.1 | 261.9 | | |
| ND14 | 15.266 | | | | | |
| ND21 | 15.171 | | | | | |
| ND18 | 15.431 | | | | | |
| ND19 | 15.386 | | | | | |
| ND15 | 15.266 | | | | | |

GATTS SIMULATOR (JLJD4NSB)

LILLESTROEN-LILJHAMMER OLYMPIC GAMES SUNDAY J09

ELECTRICAL RESULTS : TRAIN SUMMARY RESULTS FOR TIME PERIOD 0: 8.45.00 TO 0: 9.45.00

| H/ZONE | DISTANCE GONE (METRES) | MINIMUM VOLTAGE (KV) | TIME OF MINIMUM VOLTAGE | MAXIMUM VOLTAGE (KV) | TIME OF MAXIMUM VOLTAGE | AVERAGE VOLTAGE (KV) | ENERGY CONSUMPTION REAL (KWH) | REACTIVE (KVARH) | TIME BELOW 12.500 KV (SECS) |
|--------|------------------------------|----------------------------|-------------------------------|----------------------------|-------------------------------|----------------------------|-------------------------------------|---------------------|-----------------------------------|
| OSLE | 22661 | 12.421 | 0: 8.54.40 | 16.211 | 0: 8.49.00 | 14.674 | 454.68 | 336.32 | 20 |
| HALI | 37565 | 12.165 | 0: 8.54.40 | 16.216 | 0: 9.04.40 | 14.711 | 531.43 | 384.53 | 20 |
| OSLC | 52705 | 12.055 | 0: 8.54.40 | 16.219 | 0: 9.14.00 | 14.669 | 1633.17 | 664.36 | 20 |
| OSLE | 62786 | 12.507 | 0: 9.12.00 | 16.338 | 0: 9.29.00 | 14.849 | 1541.33 | 958.87 | 0 |
| OSLF | 91612 | 12.487 | 0: 8.46.00 | 16.365 | 0: 9.40.20 | 14.874 | 1876.38 | 1197.85 | 20 |
| OSLH | 86724 | 12.911 | 0: 9.04.20 | 16.252 | 0: 9.29.00 | 15.097 | 1814.44 | 1159.78 | 0 |
| OSLJ | 72271 | 13.005 | 0: 9.13.00 | 16.530 | 0: 8.58.20 | 15.133 | 1585.38 | 1022.60 | 0 |
| OSLL | 29784 | 13.173 | 0: 9.42.40 | 16.344 | 0: 9.28.20 | 15.142 | 744.71 | 473.02 | 0 |
| OSLI | 10349 | 13.745 | 0: 9.42.40 | 16.384 | 0: 9.39.40 | 15.327 | 294.78 | 190.44 | 0 |
| F342 | 41276 | 12.197 | 0: 8.46.00 | 16.446 | 0: 9.15.20 | 14.950 | 385.21 | 122.47 | 20 |
| 1612 | 46032 | 12.145 | 0: 8.46.00 | 16.430 | 0: 9.22.00 | 14.922 | 568.39 | 391.87 | 20 |
| FT41 | 88342 | 12.189 | 0: 8.46.00 | 16.247 | 0: 9.29.00 | 15.046 | 1477.80 | 78.69 | 20 |
| F351 | 40841 | 13.550 | 0: 9.42.40 | 16.479 | 0: 9.22.00 | 15.466 | 377.97 | 106.53 | 0 |

OSLO/GATTS SIMULATOR (JLJD4NSB)

OUTPUT OF ELECTRICAL RESULTS : MAXIMUM/MINIMUM VALUES FOR

J09

NODE VOLTAGES

=====

| NODE | MINIMUM VOLTAGE (KV) | TIME OF MINIMUM VOLTAGE |
|------|----------------------|-------------------------|
| ND01 | 15.367 | 0: 9.31.00 |
| ND02 | 14.786 | 0: 9.31.00 |
| ND03 | 14.780 | 0: 9.31.00 |
| ND04 | 12.663 | 0: 9.04.20 |
| ND05 | 12.856 | 0: 9.13.00 |
| ND06 | 12.210 | 0: 8.46.00 |
| ND07 | 12.210 | 0: 8.46.00 |
| ND20 | 12.425 | 0: 8.46.00 |
| ND08 | 12.669 | 0: 8.46.00 |
| ND09 | 12.226 | 0: 8.46.00 |
| ND10 | 13.710 | 0: 8.49.40 |
| ND11 | 13.710 | 0: 8.49.40 |
| ND12 | 14.381 | 0: 8.46.00 |
| ND16 | 12.423 | 0: 9.00.00 |
| ND17 | 13.466 | 0: 8.54.40 |
| ND13 | 12.669 | 0: 8.54.40 |
| ND14 | 12.669 | 0: 8.54.40 |
| ND21 | 12.110 | 0: 8.54.40 |
| ND18 | 12.981 | 0: 8.54.40 |
| ND19 | 12.100 | 0: 8.54.40 |
| ND15 | 15.047 | 0: 9.00.20 |

MAXIMUM FEEDER STATION INSTANTANEOUS CURRENTS

=====

| FEEDER | NORMAL CURRENT (AMPS) | TIME |
|--------|-----------------------|------------|
| ND01 | 761.4 | 0: 9.42.40 |
| ND12 | 1129.5 | 0: 8.46.00 |
| ND15 | 642.2 | 0: 9.00.20 |

MAXIMUM BRANCH INSTANTANEOUS CURRENTS

=====

| BRANCH | CURRENT (AMPS) * | TIME |
|--------|------------------|------------|
| BR01 | 761.4 | 0: 9.42.40 |
| BR03 | 761.4 | 0: 9.42.40 |
| BR04 | 573.7 | 0: 8.50.00 |
| BR06 | 573.7 | 0: 8.50.00 |
| BR08 | 316.6 | 0: 8.46.20 |
| BR17 | 499.4 | 0: 9.16.20 |
| BR09 | 499.4 | 0: 9.16.20 |
| BR11 | 520.6 | 0: 8.50.00 |
| BR13 | 694.2 | 0: 9.29.40 |
| BR14 | 764.7 | 0: 8.55.00 |
| BR16 | 574.8 | 0: 9.00.20 |
| BR20 | 574.8 | 0: 9.00.20 |
| BR16 | 362.1 | 0: 8.48.40 |
| BR21 | 554.1 | 0: 8.48.40 |
| BR22 | 554.1 | 0: 8.48.40 |
| BR24 | 642.2 | 0: 9.00.20 |

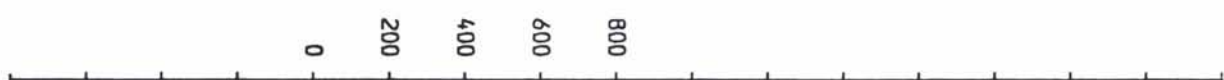
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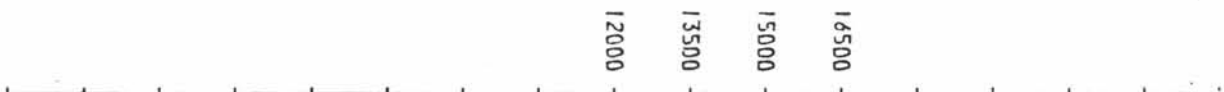
CURRENT AT START OF BRANCH BR01 (A)



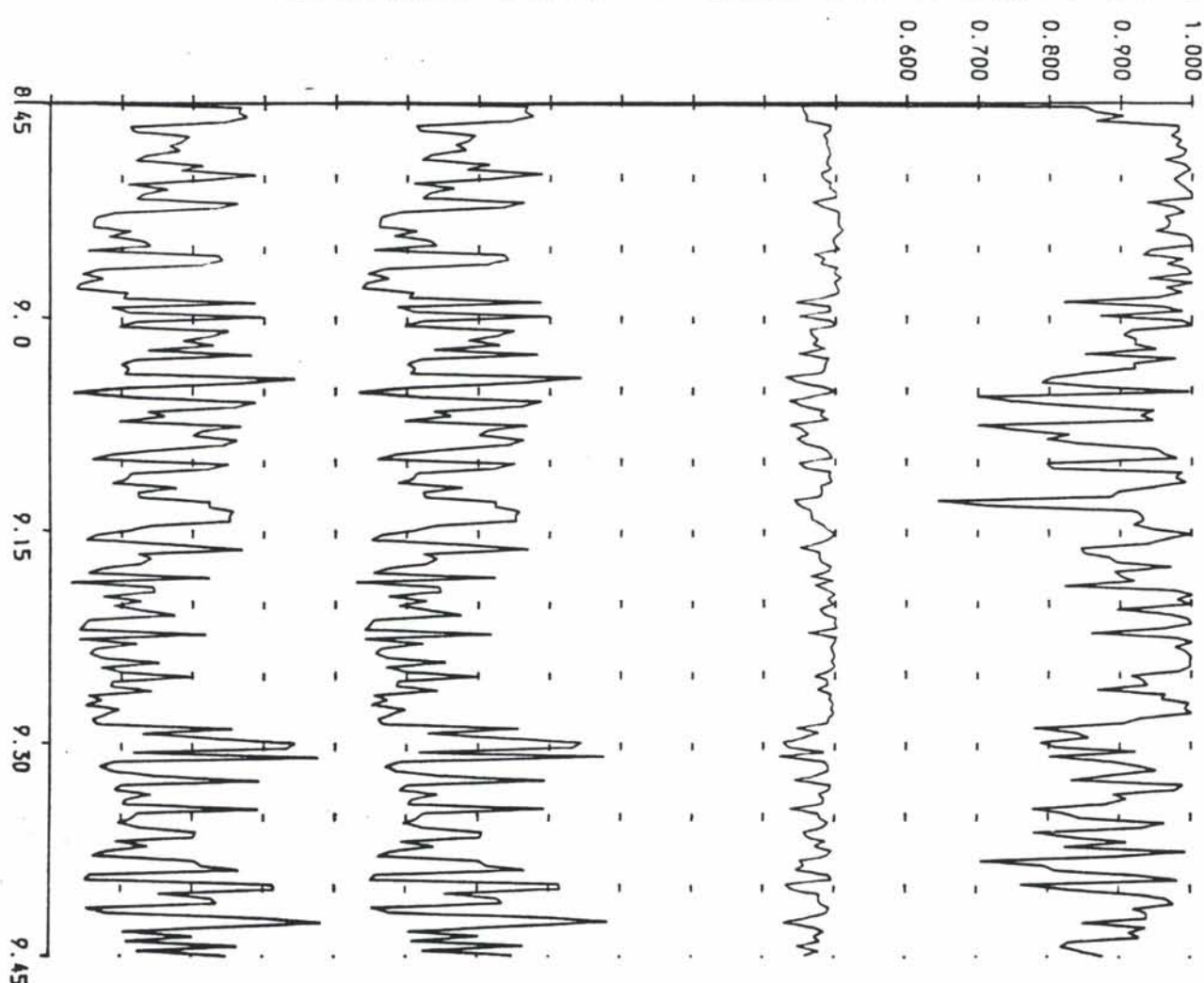
CURRENT IN FEEDER ND01 (A) LILLESTRØM



VOLTAGE AT NODE ND01 (V)



DISPLACEMENT FACTOR OF FEEDER ND01 AT RAILWAY BUS-BAR



509

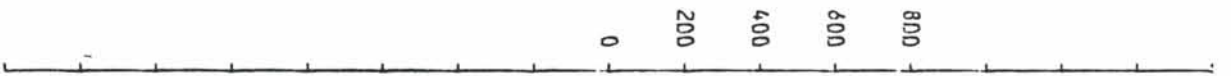
CURRENT AT END OF BRANCH BR13 (A) "UTG.L. TANGEN"



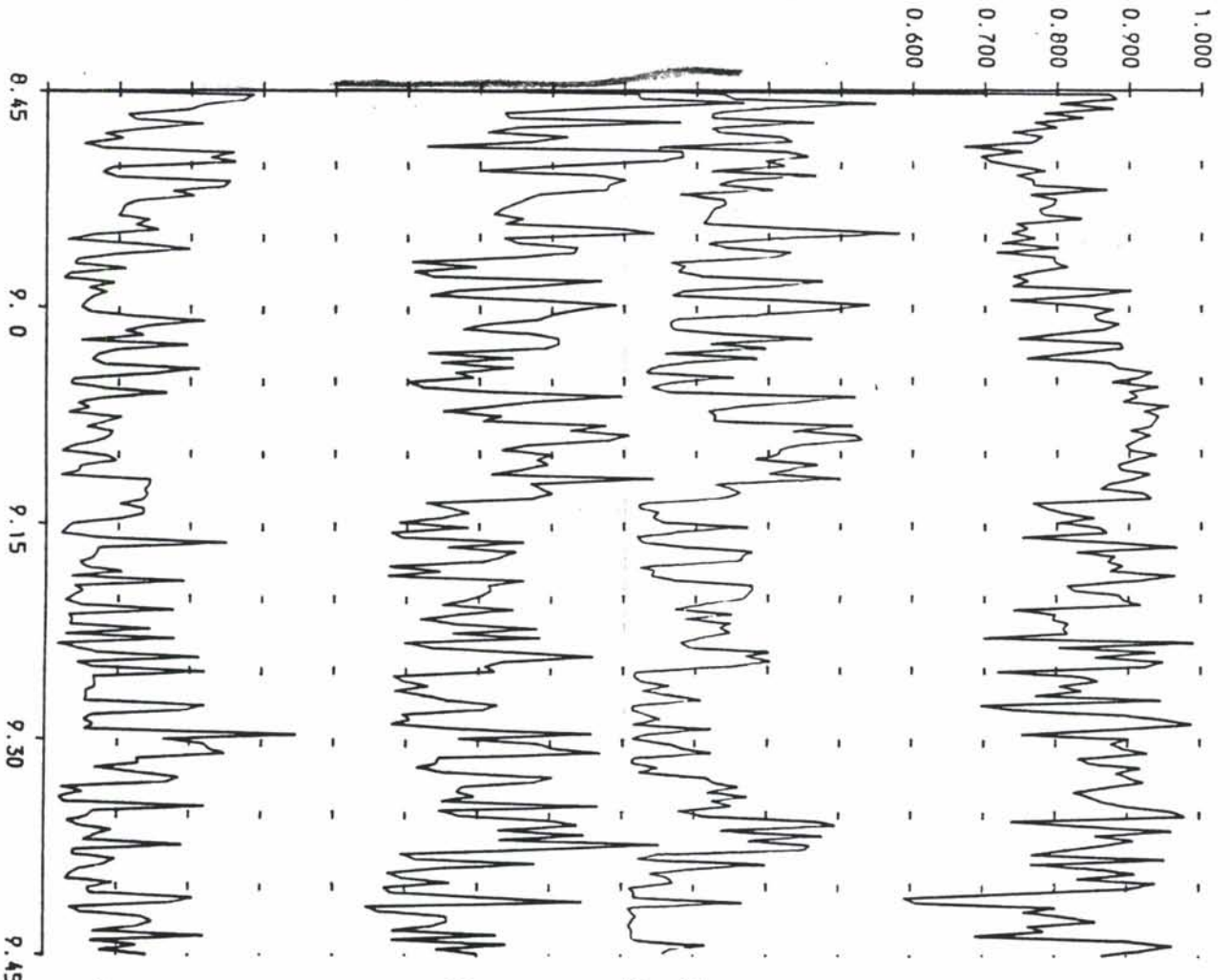
CURRENT IN FEEDER ND12 (A) TANGEN



CURRENT AT START OF BRANCH BR14 (A) "UTG.L. STEINSRUO"



DISPLACEMENT FACTOR OF FEEDER ND12 AT RAILWAY BUS-BAR



"TANGEN"
(HOT OSLO)

709

Z TANGEN
OFF. ST.

U STEINSR.
LØST ARBEID

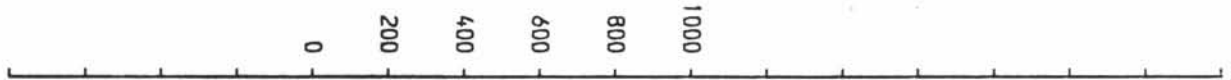
709

790

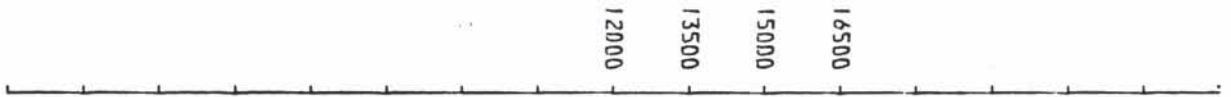
CURRENT AT END OF BRANCH BR24 (A)



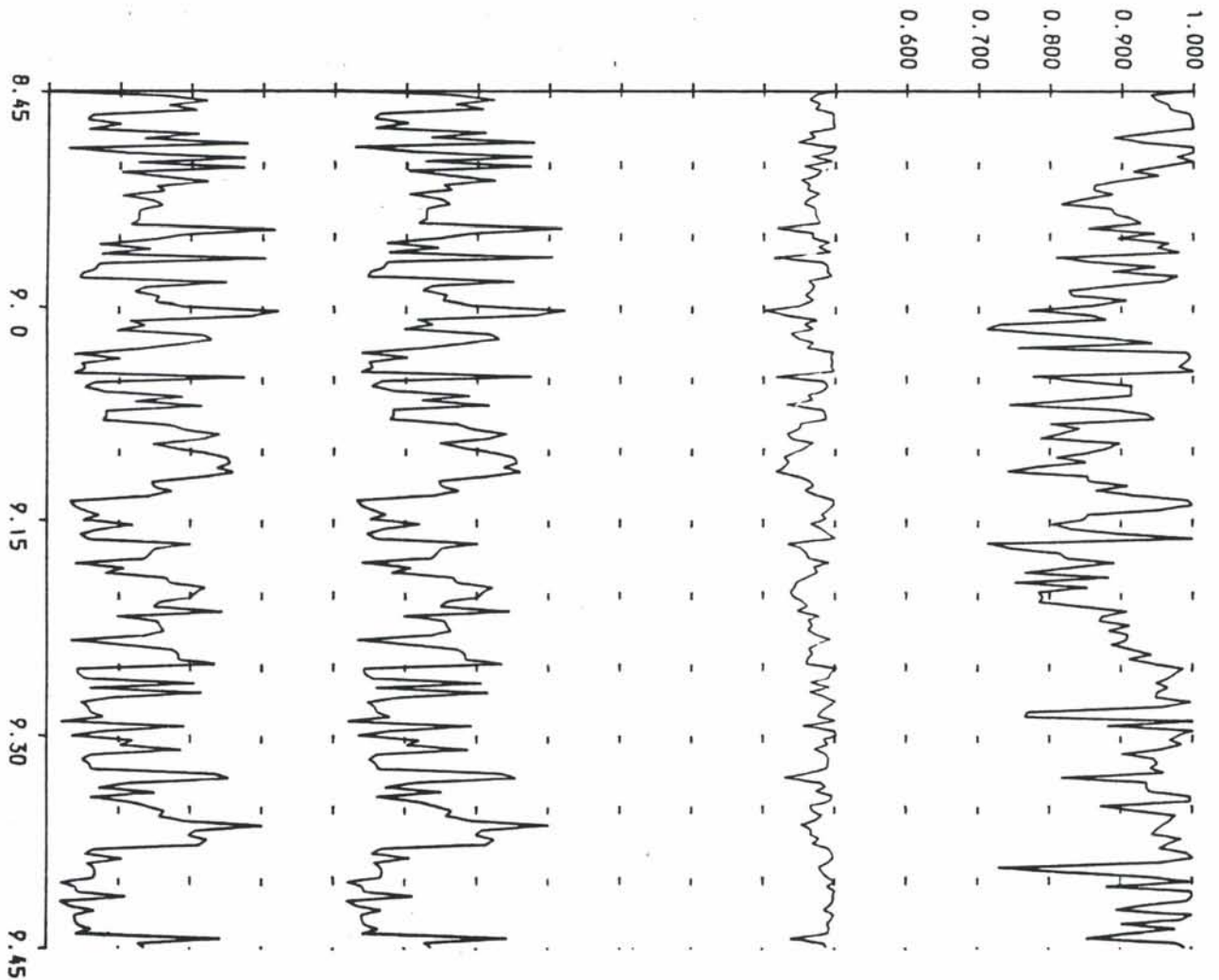
CURRENT IN FEEDER ND15 (A) FAABERG



VOLTAGE AT NODE ND15 (V)



DISPLACEMENT FACTOR OF FEEDER ND15 AT RAILWAY BUS-BAR



509

L90

509

SIMULATOR (JLJO4NSB)

LILLESTROEM-LILLEHAMMER OLYMPIC GAMES SUNDAY (K06) L132

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 8.45.00 TO 0: 9.00.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16,386 | BR01 | 260,2 | 246,7 | ND01 | 260,2 |
| ND02 | 16,254 | BR03 | 248,7 | 202,6 | ND20 | 189,3 |
| ND03 | 16,254 | BR04 | 202,6 | 202,6 | ND12 | 244,7 |
| ND04 | 15,487 | BR06 | 202,6 | 156,6 | ND21 | 214,2 |
| ND05 | 16,555 | BR08 | 156,6 | 205,5 | ND15 | 143,0 |
| ND06 | 15,753 | BR17 | 95,2 | 96,7 | | |
| ND07 | 15,753 | BR09 | 96,7 | 96,7 | | |
| ND20 | 15,999 | BR11 | 96,7 | 105,6 | | |
| ND08 | 16,016 | BR13 | 105,6 | 120,5 | | |
| ND09 | 15,928 | BR14 | 195,4 | 70,3 | | |
| ND10 | 16,129 | BR20 | 70,3 | 84,9 | | |
| ND11 | 16,129 | BR16 | 84,9 | 182,0 | | |
| ND12 | 16,217 | BR21 | 104,2 | 104,8 | | |
| ND16 | 15,841 | BR24 | 104,8 | 143,0 | | |
| ND17 | 15,841 | | | | | |
| ND13 | 15,773 | | | | | |
| ND14 | 15,773 | | | | | |
| ND21 | 15,955 | | | | | |
| ND18 | 15,831 | | | | | |
| ND19 | 15,831 | | | | | |
| ND15 | 16,324 | | | | | |

SIMULATOR (JLJO4NSB)

LILLESTROEM-LILLEHAMMER OLYMPIC GAMES SUNDAY K06 L132

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 9.00.00 TO 0: 9.15.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.145 | BR01 | 333.6 | 332.7 | ND01 | 333.6 |
| ND02 | 15.928 | BR03 | 332.7 | 159.9 | ND20 | 176.5 |
| ND03 | 15.928 | BR04 | 159.9 | 159.9 | ND12 | 241.5 |
| ND04 | 15.023 | BR06 | 159.9 | 186.1 | ND21 | 219.9 |
| ND05 | 15.106 | BR08 | 186.1 | 222.5 | ND15 | 135.5 |
| ND06 | 15.691 | BR17 | 90.1 | 90.2 | | |
| ND07 | 15.691 | BR09 | 90.2 | 90.2 | | |
| ND20 | 15.996 | BR11 | 90.2 | 119.9 | | |
| ND08 | 16.059 | BR13 | 119.9 | 135.7 | | |
| ND09 | 16.008 | BR14 | 159.1 | 90.6 | | |
| ND10 | 16.207 | BR20 | 90.6 | 87.9 | | |
| ND11 | 16.207 | BR16 | 87.9 | 172.6 | | |
| ND12 | 16.318 | BR21 | 127.0 | 99.7 | | |
| ND16 | 15.906 | BR24 | 99.7 | 135.5 | | |
| ND17 | 15.906 | | | | | |
| ND13 | 15.788 | | | | | |
| ND14 | 15.788 | | | | | |
| ND21 | 15.950 | | | | | |
| ND18 | 15.876 | | | | | |
| ND19 | 15.876 | | | | | |
| ND15 | 16.362 | | | | | |

SIMULATOR (JLJO4NSB)

LILLESTROEM-LILLEHAMMER OLYMPIC GAMES SUNDAY (K06) L132

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 9.15.00 TO 0: 9.30.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.398 | BR01 | 180.7 | 173.5 | ND01 | 180.7 |
| ND02 | 16.298 | BR03 | 173.5 | 106.7 | ND20 | 181.9 |
| ND03 | 16.298 | BR04 | 106.7 | 106.7 | ND12 | 172.9 |
| ND04 | 15.922 | BR06 | 106.7 | 118.1 | ND21 | 115.6 |
| ND05 | 15.901 | BR08 | 118.1 | 118.1 | ND15 | 99.3 |
| ND06 | 15.977 | BR17 | 149.1 | 156.1 | | |
| ND07 | 15.977 | BR09 | 156.1 | 156.1 | | |
| ND20 | 16.100 | BR11 | 156.1 | 143.0 | | |
| ND08 | 16.018 | BR13 | 143.0 | 160.4 | | |
| ND09 | 16.084 | BR14 | 59.0 | 58.9 | | |
| ND10 | 16.156 | BR20 | 58.9 | 61.5 | | |
| ND11 | 16.156 | BR16 | 61.5 | 61.5 | | |
| ND12 | 16.305 | BR21 | 102.6 | 68.2 | | |
| ND16 | 16.161 | BR24 | 68.2 | 99.3 | | |
| ND17 | 16.161 | | | | | |
| ND13 | 16.190 | | | | | |
| ND14 | 16.190 | | | | | |
| ND21 | 16.274 | | | | | |
| ND18 | 16.082 | | | | | |
| ND19 | 16.082 | | | | | |
| ND15 | 16.382 | | | | | |

SIMULATOR (JLJO4NSB)

LILLESTROEM-LILLEHAMMER OLYMPIC GAMES SUNDAY (K06) L132

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 01 9.30.00 TO 01 9.45.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.430 | BR01 | 164.8 | 149.5 | ND01 | 164.8 |
| ND02 | 16.356 | BR03 | 149.6 | 71.8 | ND20 | 155.6 |
| ND03 | 16.356 | BR04 | 71.8 | 71.8 | ND12 | 233.2 |
| ND04 | 16.195 | BR06 | 71.8 | 77.8 | ND21 | 145.8 |
| ND05 | 16.038 | BR08 | 77.8 | 110.8 | ND15 | 91.3 |
| ND06 | 16.139 | BR17 | 136.8 | 131.6 | | |
| ND07 | 16.139 | BR09 | 131.6 | 131.6 | | |
| ND20 | 16.223 | BR11 | 131.6 | 93.2 | | |
| ND08 | 16.141 | BR13 | 93.2 | 115.3 | | |
| ND09 | 16.110 | BR14 | 222.7 | 58.7 | | |
| ND10 | 16.093 | BR20 | 58.7 | 70.2 | | |
| ND11 | 16.093 | BR16 | 70.2 | 137.7 | | |
| ND12 | 16.145 | BR21 | 60.6 | 38.1 | | |
| ND16 | 15.974 | BR24 | 38.1 | 91.3 | | |
| ND17 | 15.974 | | | | | |
| ND13 | 16.063 | | | | | |
| ND14 | 16.063 | | | | | |
| ND21 | 16.235 | | | | | |
| ND18 | 16.238 | | | | | |
| ND19 | 16.238 | | | | | |
| ND15 | 16.440 | | | | | |

GATTS SIMULATOR (JLJ04NSB)

LILLESTROEM-LILLEHAMMER OLYMPIC GAMES SUNDAY

K061

ELECTRICAL RESULTS 1 TRAIN SUMMARY RESULTS FOR TIME PERIOD 01 8.45.00 TO 01 9.45.00

| H/ZONE | DISTANCE GONE (METRES) | MINIMUM VOLTAGE (KV) | TIME OF MINIMUM VOLTAGE | MAXIMUM VOLTAGE (KV) | TIME OF MAXIMUM VOLTAGE | AVERAGE VOLTAGE (KV) | ENERGY CONSUMPTION REAL (KWH) | REACTIVE (KVARH) | TIME BELOW 12,500 KV (SECS) |
|--------|------------------------|----------------------|-------------------------|----------------------|-------------------------|----------------------|-------------------------------|------------------|-----------------------------|
| 09L8 | 22661 | 14.010 | 01 8.54.40 | 16.450 | 01 8.58.00 | 15.787 | 467.68 | 359.78 | 0 |
| 09L0 | 52618 | 13.866 | 01 9.00.20 | 16.446 | 01 9.13.20 | 15.799 | 1058.79 | 670.87 | 0 |
| 09L6 | 82694 | 13.564 | 01 9.00.20 | 16.474 | 01 9.13.20 | 15.923 | 1478.52 | 917.74 | 0 |
| 09LH | 83276 | 13.491 | 01 9.01.00 | 16.438 | 01 9.44.00 | 15.603 | 2052.06 | 1331.50 | 0 |
| 09LJ | 73051 | 13.359 | 01 9.12.40 | 16.457 | 01 9.44.40 | 15.672 | 1608.36 | 1028.43 | 0 |
| 09LM | 10373 | 14.737 | 01 9.44.20 | 16.497 | 01 9.42.00 | 16.030 | 270.11 | 174.88 | 0 |
| P342 | 41277 | 13.357 | 01 8.45.40 | 16.457 | 01 9.05.20 | 15.412 | 390.04 | 122.33 | 0 |
| 1612 | 46633 | 13.428 | 01 9.12.40 | 16.556 | 01 9.33.20 | 15.467 | 546.93 | 367.06 | 0 |
| PT41 | 88347 | 13.967 | 01 8.45.40 | 16.466 | 01 9.05.00 | 16.007 | 1613.51 | 223.80 | 0 |
| P351 | 40866 | 15.090 | 01 9.42.40 | 16.491 | 01 9.18.40 | 16.108 | 372.98 | 103.61 | 0 |

OUTPUT OF ELECTRICAL RESULTS : MAXIMUM/MINIMUM VALUES FOR

K06

NODE VOLTAGES

| NODE | MINIMUM VOLTAGE (KV) | TIME OF MINIMUM VOLTAGE |
|------|----------------------|-------------------------|
| ND01 | 15.542 | 01 9.00.00 |
| ND02 | 14.991 | 01 9.00.00 |
| ND03 | 14.991 | 01 9.00.00 |
| ND04 | 13.446 | 01 9.12.40 |
| ND05 | 12.858 | 01 9.12.40 |
| ND06 | 13.832 | 01 8.45.20 |
| ND07 | 13.832 | 01 8.45.20 |
| ND20 | 14.761 | 01 8.45.20 |
| ND08 | 14.597 | 01 9.18.00 |
| ND09 | 14.538 | 01 9.18.00 |
| ND10 | 15.255 | 01 9.28.20 |
| ND11 | 15.255 | 01 9.28.20 |
| ND12 | 15.474 | 01 9.34.40 |
| ND16 | 13.896 | 01 8.54.40 |
| ND17 | 13.896 | 01 8.54.40 |
| ND13 | 13.974 | 01 8.48.40 |
| ND14 | 13.974 | 01 8.48.40 |
| ND21 | 14.350 | 01 8.54.40 |
| ND18 | 13.908 | 01 8.54.40 |
| ND19 | 13.908 | 01 8.54.40 |
| ND15 | 15.712 | 01 8.54.40 |

MAXIMUM FEEDER STATION INSTANTANEOUS CURRENTS

| FEEDER | NORMAL CURRENT (AMPS) | TIME |
|--------|-----------------------|------------|
| ND01 | 715.5 | 01 9.00.00 |
| ND20 | 459.6 | 01 8.46.00 |
| ND12 | 539.6 | 01 9.00.20 |
| ND21 | 588.6 | 01 8.54.40 |
| ND15 | 413.1 | 01 8.54.40 |

MAXIMUM BRANCH INSTANTANEOUS CURRENTS

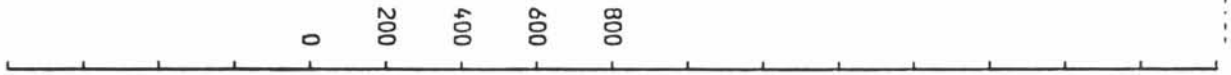
| BRANCH | CURRENT (AMPS) * | TIME |
|--------|------------------|------------|
| BR01 | 715.6 | 01 9.00.00 |
| BR03 | 715.6 | 01 9.00.00 |
| BR04 | 469.2 | 01 8.52.00 |
| BR06 | 469.2 | 01 8.52.00 |
| BR08 | 583.4 | 01 8.45.40 |
| BR17 | 442.1 | 01 9.20.00 |
| BR09 | 442.1 | 01 9.20.00 |
| BR11 | 442.1 | 01 9.20.00 |
| BR13 | 391.9 | 01 8.45.20 |
| BR14 | 482.6 | 01 9.34.40 |
| BR20 | 336.3 | 01 8.48.20 |
| BR16 | 524.5 | 01 8.54.40 |
| BR21 | 387.7 | 01 9.18.00 |
| BR24 | 413.1 | 01 8.54.40 |

* - BASED ON MAXIMUM CURRENT AT EITHER END OF BRANCH

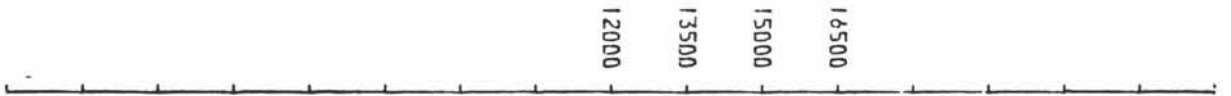
CURRENT AT START OF BRANCH BR01 (A)



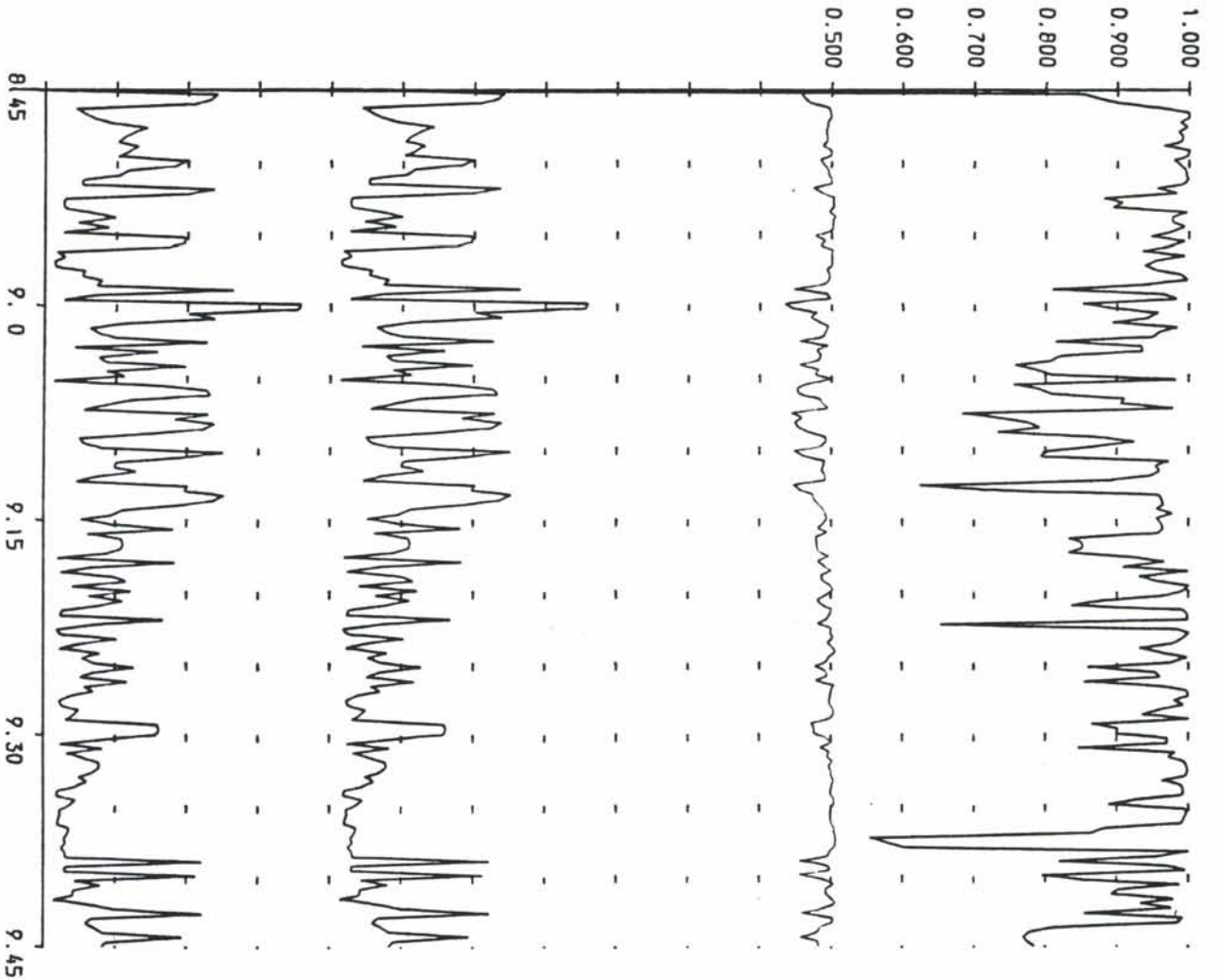
CURRENT IN FEEDER ND01 (A) LILLESTRØM



VOLTAGE AT NODE ND01 (V)



DISPLACEMENT FACTOR OF FEEDER ND01 AT RAILWAY BUS-BAR

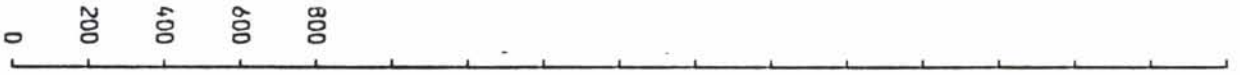


K06

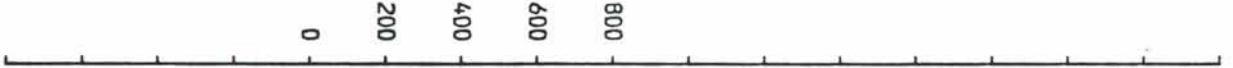
L/32

K06

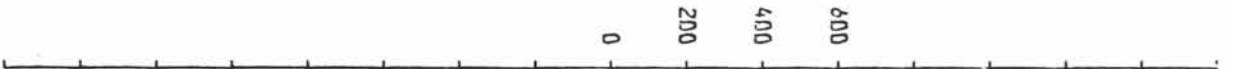
CURRENT AT END OF BRANCH BR08 (A)



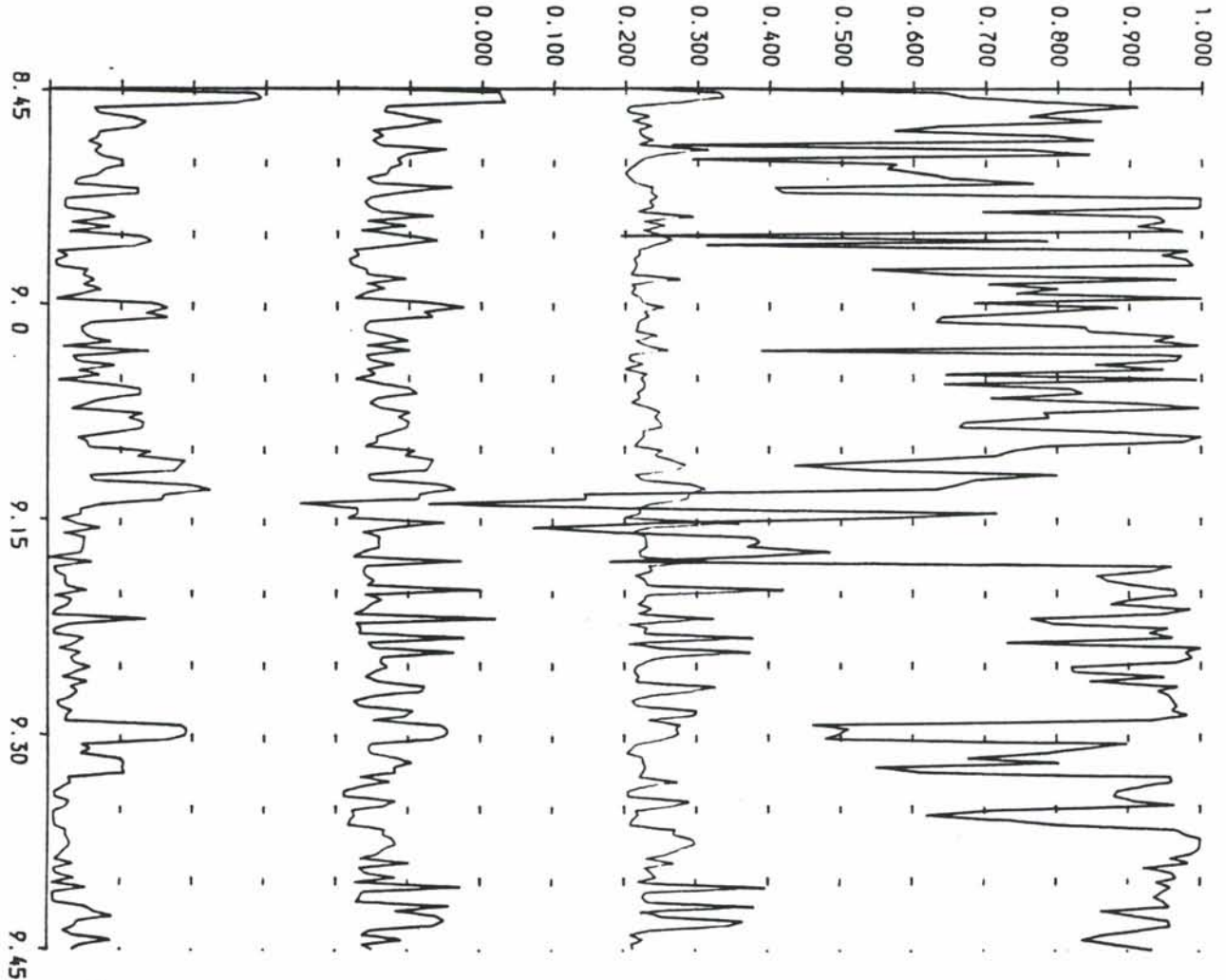
CURRENT IN FEEDER ND20 (A) MINNESUND



CURRENT AT START OF BRANCH BR17 (A)



DISPLACEMENT FACTOR OF FEEDER ND20 AT RAILWAY BUS-BAR



K06

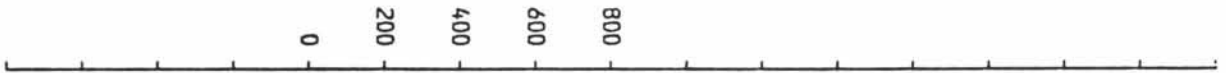
L132

K06

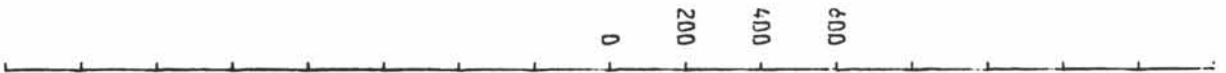
CURRENT AT END OF BRANCH BR13 (A)



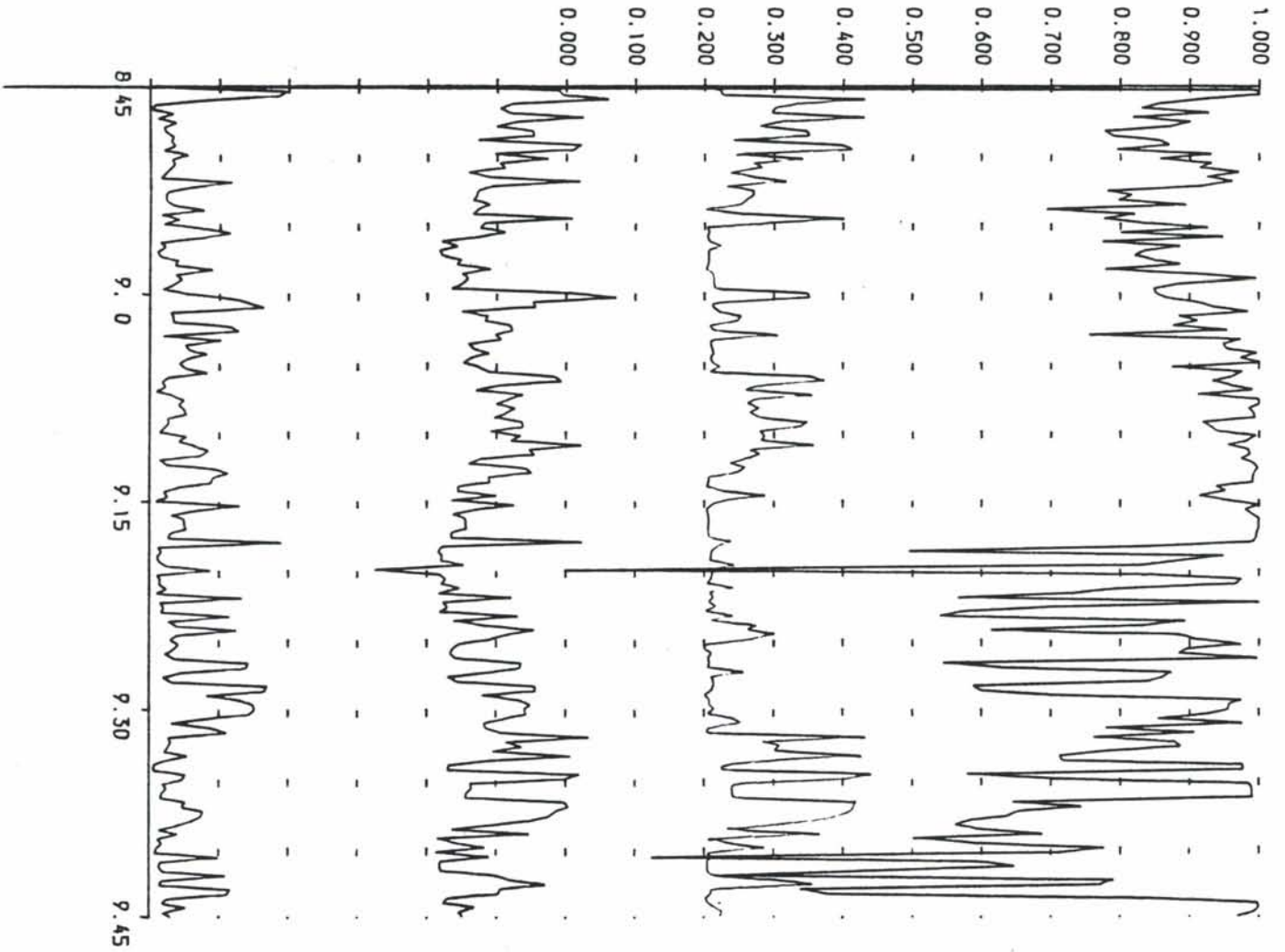
CURRENT IN FEEDER ND12 (A) TANGEN



CURRENT AT START OF BRANCH BR14 (A)



DISPLACEMENT FACTOR OF FEEDER ND12 AT RAILWAY BUS-BAR

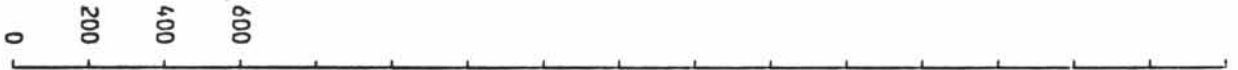


K06

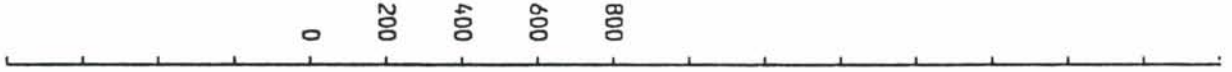
L132

K06

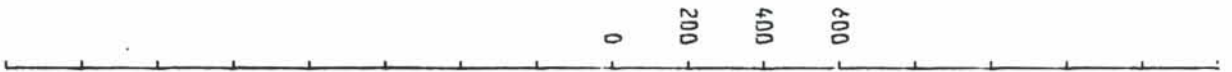
CURRENT AT END OF BRANCH BR16 (A)



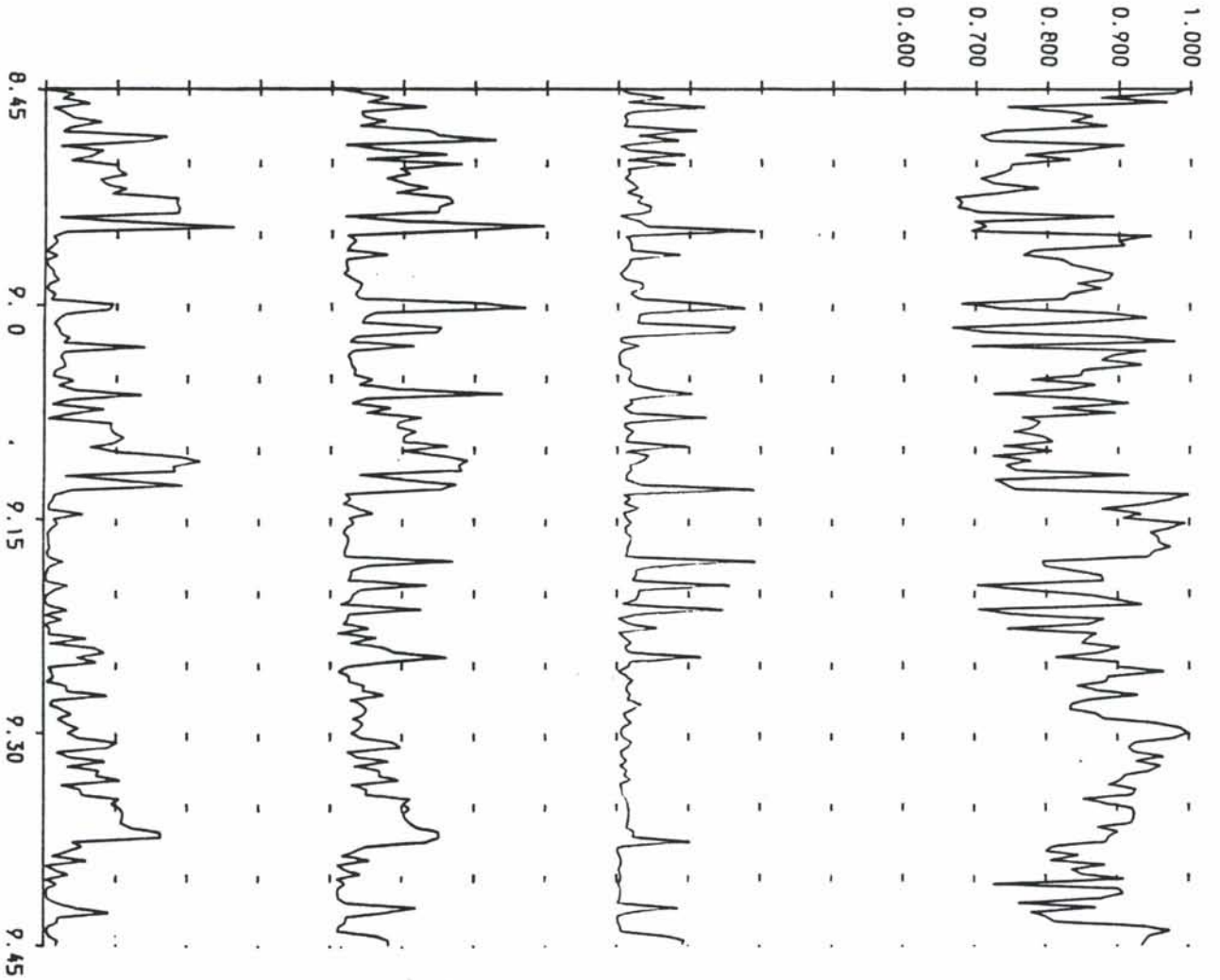
CURRENT IN FEEDER ND21 (A) RUDSHØGDA



CURRENT AT START OF BRANCH BR21 (A)



DISPLACEMENT FACTOR OF FEEDER ND21 AT RAILWAY BUS-BAR



K06

L132

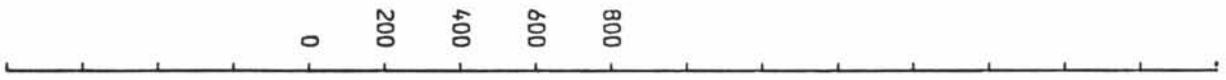
K06

CURRENT AT END OF BRANCH BR24 (A)

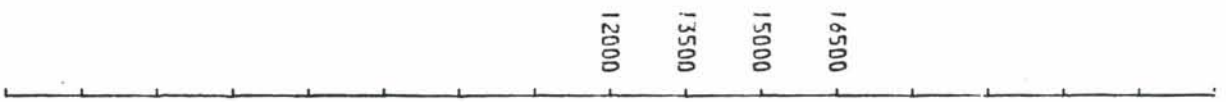


CURRENT IN FEEDER ND15 (A)

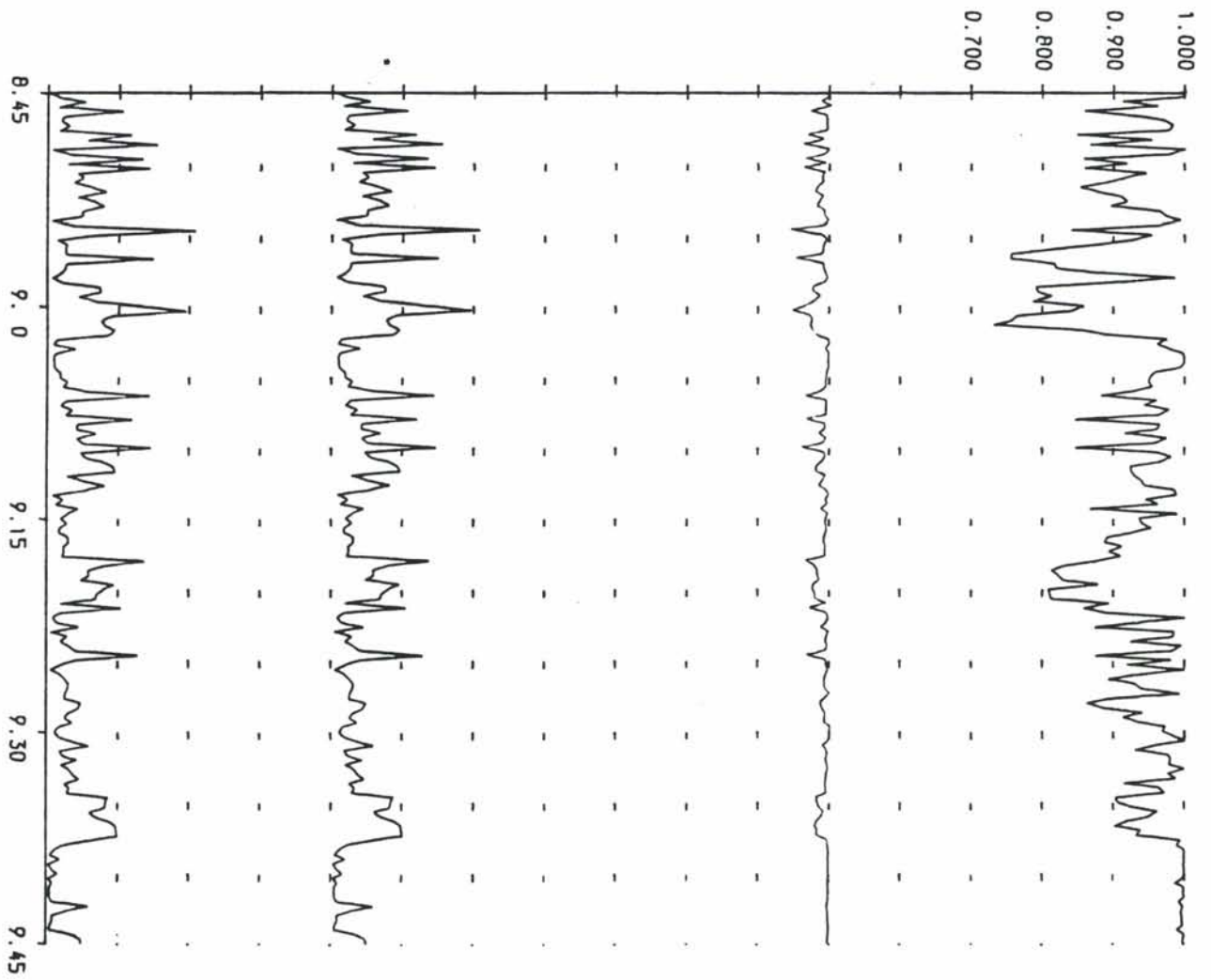
FÄBERG



VOLTAGE AT NODE ND15 (V)



DISPLACEMENT FACTOR OF FEEDER ND15 AT RAILWAY BUS-BAR



K06

L132

K06

SIMULATOR (JLJO4NSB)

LILLESTØEM-LILLEHAMMER OLYMPIC GAMES SUNDAY (K09) L12B

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 8.45.00 TO 0: 9.00.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.428 | BR01 | 271.5 | 258.7 | ND01 | 271.5 |
| ND02 | 16.297 | BR03 | 258.7 | 215.7 | ND20 | 261.3 |
| ND03 | 16.297 | BR04 | 215.7 | 215.7 | ND12 | 368.2 |
| ND04 | 15.548 | BR06 | 215.7 | 166.3 | ND21 | 283.9 |
| ND05 | 15.471 | BR08 | 166.3 | 208.0 | ND15 | 188.7 |
| ND06 | 15.695 | BR17 | 159.0 | 141.5 | | |
| ND07 | 15.695 | BR09 | 141.5 | 141.5 | | |
| ND20 | 15.948 | BR11 | 141.5 | 134.2 | | |
| ND08 | 15.882 | BR13 | 134.2 | 167.9 | | |
| ND09 | 15.705 | BR14 | 261.6 | 72.6 | | |
| ND10 | 15.759 | BR20 | 72.6 | 92.6 | | |
| ND11 | 15.759 | BR16 | 92.6 | 208.7 | | |
| ND12 | 15.902 | BR21 | 156.2 | 122.2 | | |
| ND16 | 15.478 | BR24 | 122.2 | 188.7 | | |
| ND17 | 15.478 | | | | | |
| ND13 | 15.468 | | | | | |
| ND14 | 15.468 | | | | | |
| ND21 | 15.700 | | | | | |
| ND18 | 15.554 | | | | | |
| ND19 | 15.554 | | | | | |
| ND15 | 16.262 | | | | | |

SIMULATOR (JLJOANSB)

LILLESTRUEN-LILLEHAMMER OLYMPIC GAMES SUNDAY K09 L128

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD : 9:00:00 TO 9:15:00

| NODE | RMS VOLTAGE (KV) | BRANCH | PHS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.162 | FR01 | 333.3 | 332.4 | ND01 | 333.3 |
| ND02 | 15.947 | FR03 | 332.4 | 166.6 | ND20 | 164.3 |
| ND03 | 15.847 | FR04 | 166.6 | 158.8 | ND12 | 294.0 |
| ND04 | 15.055 | FR06 | 158.8 | 185.0 | ND21 | 284.1 |
| ND05 | 15.111 | BR08 | 185.0 | 219.9 | ND15 | 213.2 |
| ND06 | 15.708 | BR17 | 89.1 | 89.2 | | |
| ND07 | 15.708 | BR09 | 89.2 | 89.2 | | |
| ND20 | 16.014 | BR11 | 89.2 | 110.3 | | |
| ND08 | 16.668 | BR13 | 110.3 | 126.0 | | |
| ND09 | 15.933 | BR14 | 227.4 | 133.4 | | |
| ND10 | 16.103 | BR20 | 133.4 | 112.4 | | |
| ND11 | 16.103 | BR16 | 112.4 | 219.1 | | |
| ND12 | 16.205 | BR21 | 148.9 | 96.8 | | |
| ND16 | 15.508 | BR24 | 96.8 | 213.2 | | |
| ND17 | 15.508 | | | | | |
| ND13 | 15.429 | | | | | |
| ND14 | 15.429 | | | | | |
| ND21 | 15.720 | | | | | |
| ND18 | 15.493 | | | | | |
| ND19 | 15.493 | | | | | |
| ND15 | 16.196 | | | | | |

SIMULATOR (JLJ04NSB)

LILLESTROEM-LILLEHAMMER OLYMPIC GAMES SUNDAY (K09) L128

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 9.15.00 TO 0: 9.30.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.379 | BR01 | 210.0 | 187.9 | ND01 | 210.0 |
| ND02 | 16.271 | BR03 | 187.9 | 107.2 | ND20 | 191.3 |
| ND03 | 16.271 | BR04 | 107.2 | 107.2 | ND12 | 206.9 |
| ND04 | 15.920 | BR05 | 107.2 | 124.6 | ND21 | 243.1 |
| ND05 | 15.867 | PR08 | 124.6 | 124.6 | ND15 | 138.4 |
| ND06 | 15.983 | BR17 | 167.3 | 161.3 | | |
| ND07 | 15.983 | BR09 | 161.3 | 161.3 | | |
| ND20 | 16.115 | PR11 | 161.3 | 143.2 | | |
| ND08 | 16.027 | PR13 | 143.2 | 160.7 | | |
| ND09 | 16.036 | BR14 | 113.0 | 111.8 | | |
| ND10 | 16.087 | BR20 | 111.8 | 103.4 | | |
| ND11 | 16.087 | BR16 | 103.4 | 207.6 | | |
| ND12 | 16.229 | BR21 | 116.6 | 97.6 | | |
| ND16 | 15.809 | BR24 | 97.6 | 138.4 | | |
| ND17 | 15.809 | | | | | |
| ND13 | 15.653 | | | | | |
| ND14 | 15.653 | | | | | |
| ND21 | 15.856 | | | | | |
| ND18 | 15.842 | | | | | |
| ND15 | 15.842 | | | | | |
| ND15 | 16.342 | | | | | |

SIMULATOR (JLJ041NSB)

LILLESTROEM-LILLIHAMNER OLYMPIC GAMES SUNDAY **K09** L12B

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 9.30.00 TO 0: 9.45.00

| NODE | RMS VOLTAGE (KV) | BRANCH | PHS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.198 | BR01 | 324.3 | 313.2 | ND01 | 324.3 |
| ND02 | 16.004 | BR03 | 313.3 | 127.6 | ND20 | 194.6 |
| ND03 | 16.004 | BR04 | 127.5 | 127.5 | ND12 | 268.2 |
| ND04 | 15.468 | ER06 | 127.5 | 126.1 | ND21 | 195.3 |
| ND05 | 15.367 | ER08 | 126.1 | 160.2 | ND15 | 155.0 |
| ND06 | 15.859 | ER17 | 123.1 | 119.2 | | |
| ND07 | 15.859 | ER09 | 119.2 | 119.2 | | |
| ND20 | 16.045 | ER11 | 119.2 | 102.4 | | |
| ND08 | 15.983 | ER13 | 102.4 | 123.2 | | |
| ND09 | 16.041 | BR14 | 233.1 | 62.4 | | |
| ND10 | 16.088 | BR20 | 62.4 | 71.8 | | |
| ND11 | 16.088 | BR16 | 71.8 | 128.8 | | |
| ND12 | 16.160 | BR21 | 118.3 | 82.3 | | |
| ND16 | 15.920 | BR24 | 82.3 | 155.0 | | |
| ND17 | 15.920 | | | | | |
| ND13 | 15.962 | | | | | |
| ND14 | 15.962 | | | | | |
| ND21 | 16.100 | | | | | |
| ND16 | 15.854 | | | | | |
| ND19 | 15.854 | | | | | |
| ND15 | 16.333 | | | | | |

OSLO/GATTS SIMULATOR (JLJD4NSB)

OUTPUT OF ELECTRICAL RESULTS : MAXIMUM/MINIMUM VALUES FOR

NODE VOLTAGES

K09

| NODE | MINIMUM VOLTAGE (KV) | TIME OF MINIMUM VOLTAGE |
|------|----------------------|-------------------------|
| ND01 | 15.429 | 0: 9.30.00 |
| ND02 | 14.858 | 0: 9.30.00 |
| ND03 | 14.858 | 0: 9.30.00 |
| ND04 | 13.313 | 0: 9.13.00 |
| ND05 | 12.843 | 0: 9.12.40 |
| ND06 | 13.764 | 0: 8.45.20 |
| ND07 | 13.764 | 0: 8.45.20 |
| ND20 | 14.521 | 0: 8.46.00 |
| ND08 | 14.087 | 0: 8.46.00 |
| ND09 | 14.530 | 0: 9.18.00 |
| ND10 | 14.667 | 0: 8.49.20 |
| ND11 | 14.667 | 0: 8.49.20 |
| ND12 | 15.110 | 0: 8.49.40 |
| ND16 | 13.430 | 0: 8.54.40 |
| ND17 | 13.430 | 0: 8.54.40 |
| ND13 | 13.515 | 0: 8.54.40 |
| ND14 | 13.515 | 0: 8.54.40 |
| ND21 | 13.658 | 0: 8.54.40 |
| ND18 | 12.904 | 0: 8.54.40 |
| ND19 | 12.904 | 0: 8.54.40 |
| ND15 | 15.370 | 0: 8.56.40 |

MAXIMUM FEEDER STATION INSTANTANEOUS CURRENTS

| FEEDER | NORMAL CURRENT (AMPS) | TIME |
|--------|-----------------------|------------|
| ND01 | 732.8 | 0: 9.30.00 |
| ND20 | 754.1 | 0: 8.46.00 |
| ND12 | 707.7 | 0: 8.46.00 |
| ND21 | 758.6 | 0: 8.54.40 |
| ND15 | 529.9 | 0: 8.54.40 |

MAXIMUM BRANCH INSTANTANEOUS CURRENTS

| BRANCH | CURRENT (AMPS) * | TIME |
|--------|------------------|------------|
| BR01 | 732.8 | 0: 9.30.00 |
| BR03 | 732.8 | 0: 9.30.00 |
| BR04 | 469.5 | 0: 8.52.00 |
| BR06 | 469.5 | 0: 8.52.00 |
| BR08 | 572.8 | 0: 8.45.40 |
| BR17 | 469.9 | 0: 8.49.20 |
| BR09 | 479.5 | 0: 9.20.00 |
| BR11 | 479.5 | 0: 9.20.00 |
| BR13 | 378.6 | 0: 8.45.20 |
| BR14 | 596.4 | 0: 8.55.00 |
| BR20 | 346.1 | 0: 9.09.00 |
| BR16 | 491.8 | 0: 8.54.40 |
| BR21 | 446.4 | 0: 8.56.40 |
| BR24 | 529.9 | 0: 8.54.40 |

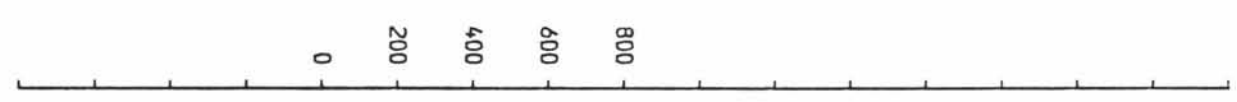
K09

L128

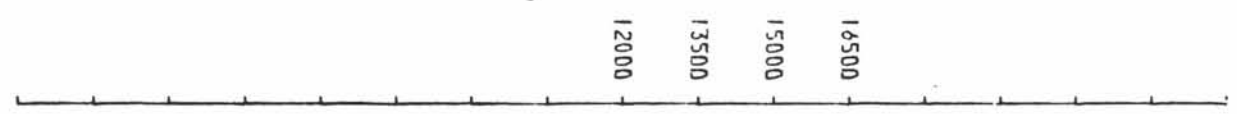
CURRENT AT START OF BRANCH BRO1 (A)



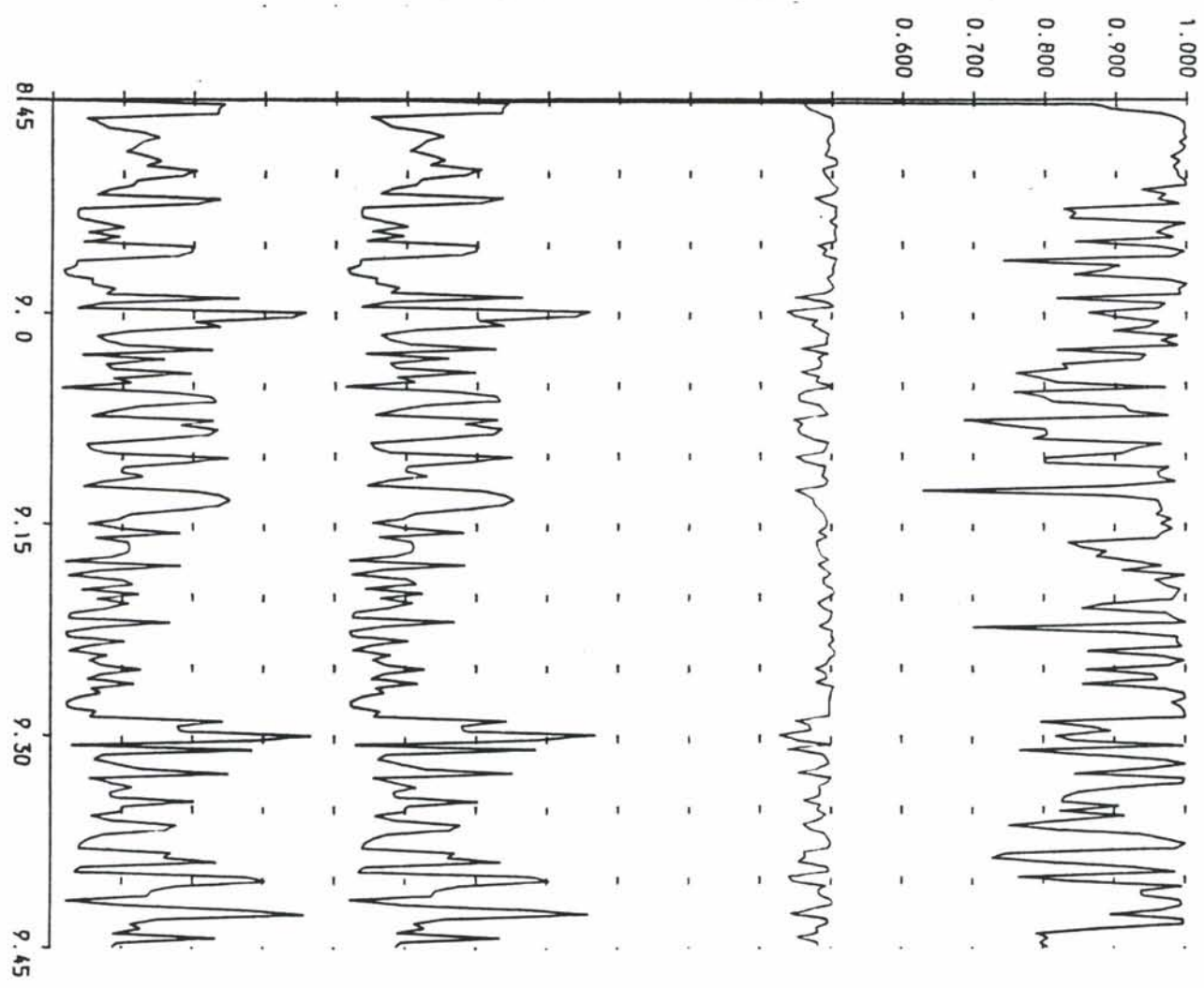
CURRENT IN FEEDER ND01 (A) LILLESTRØM



VOLTAGE AT NODE ND01 (V)



DISPLACEMENT FACTOR OF FEEDER ND01 AT RAILWAY BUS-BAR

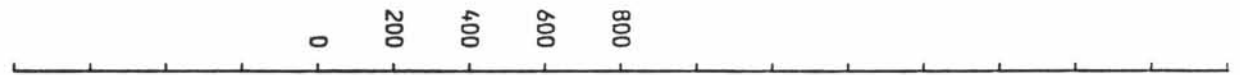


K09

CURRENT AT END OF BRANCH BR08 (A)



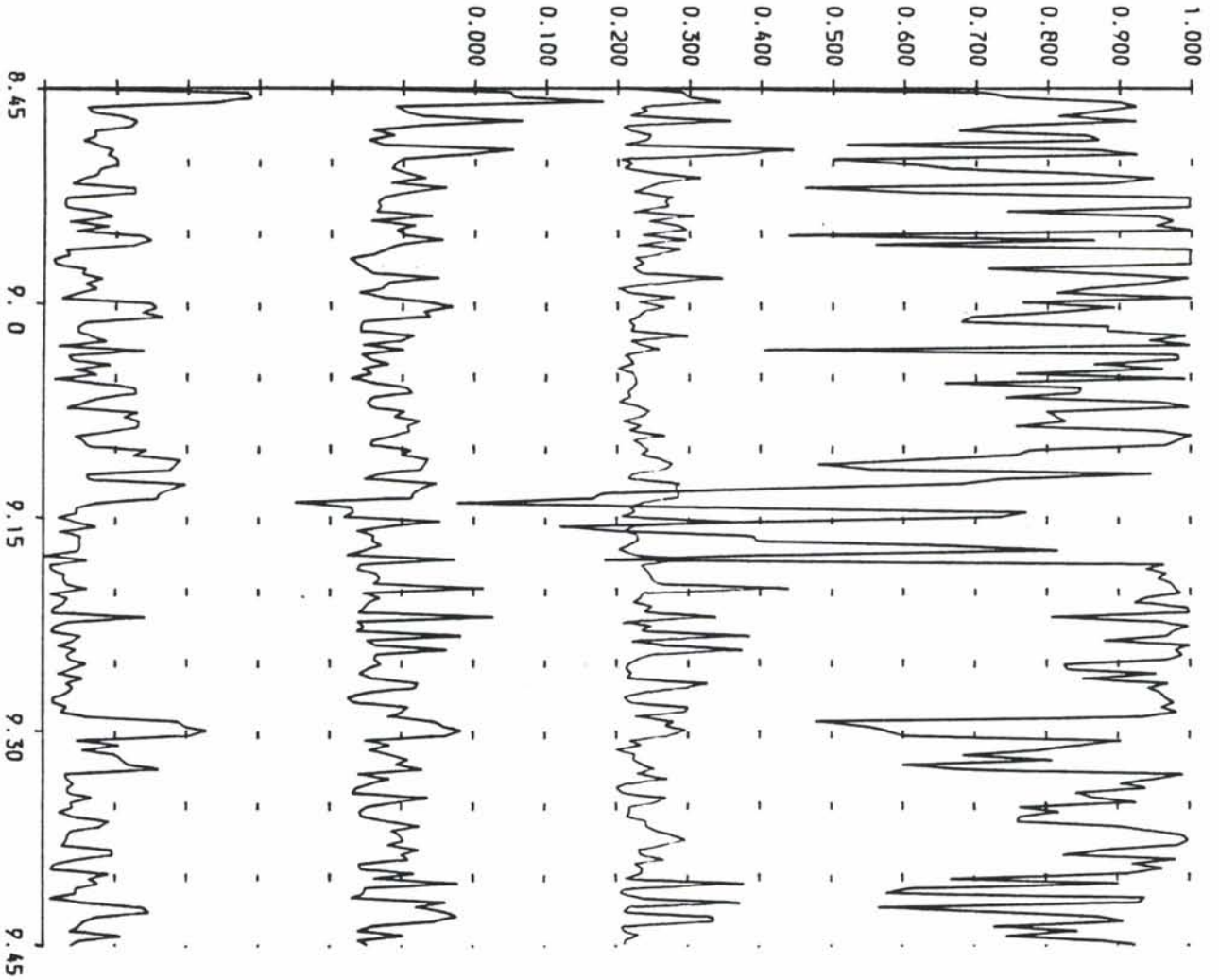
CURRENT IN FEEDER ND20 (A) MINNESUND



CURRENT AT START OF BRANCH BR17 (A)



DISPLACEMENT FACTOR OF FEEDER ND20 AT RAILWAY BUS-BAR



K09

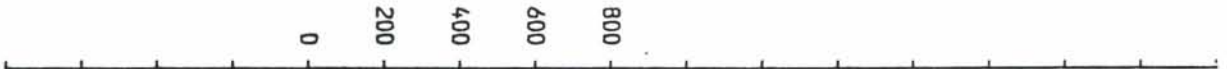
L128

K09

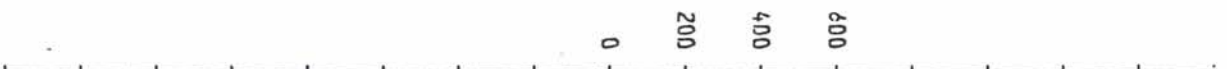
CURRENT AT END OF BRANCH BR13 (A)



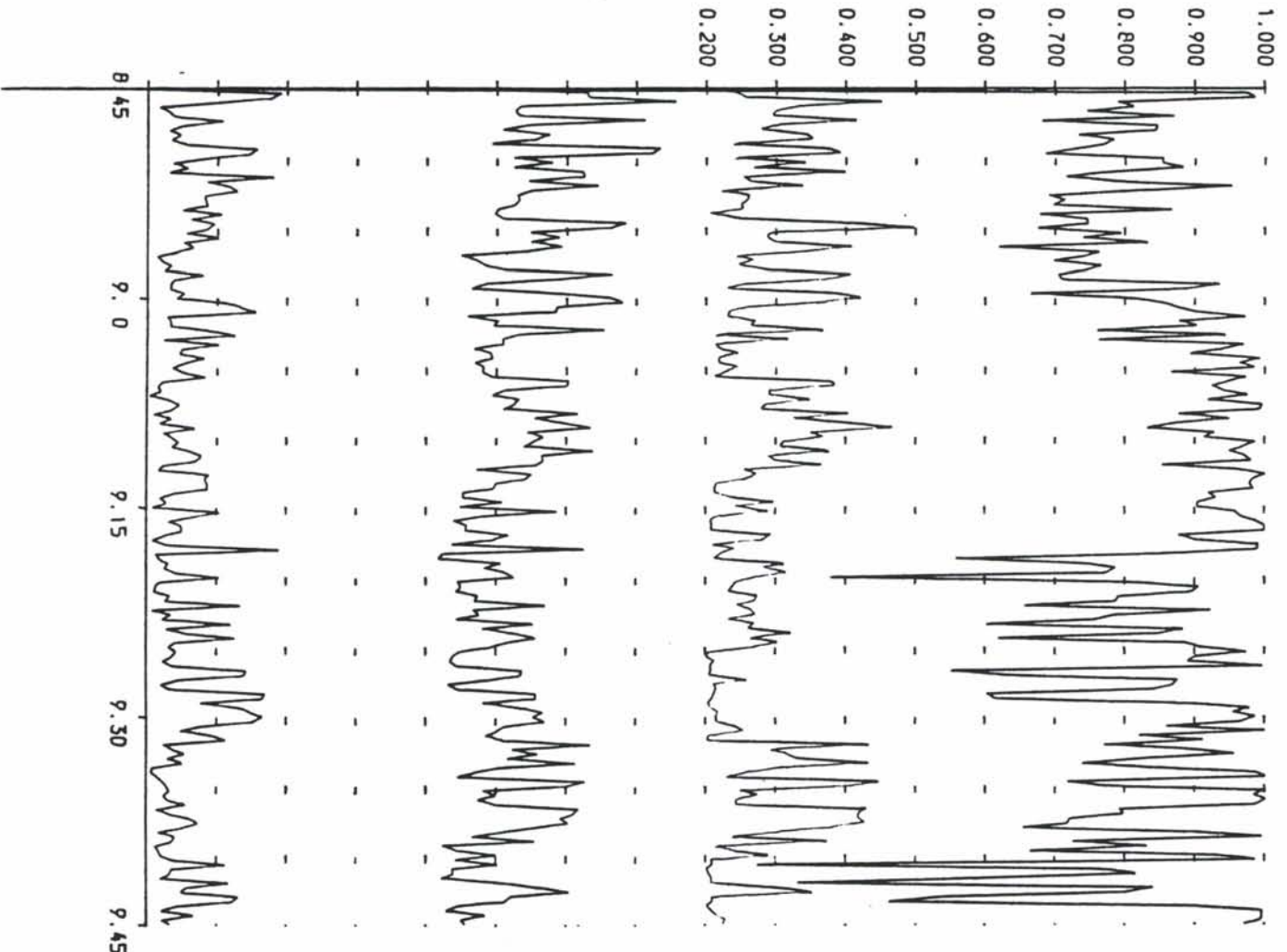
CURRENT IN FEEDER ND12 (A) TANGEN



CURRENT AT START OF BRANCH BR14 (A)



DISPLACEMENT FACTOR OF FEEDER ND12. AT RAILWAY BUS-BAR



K09

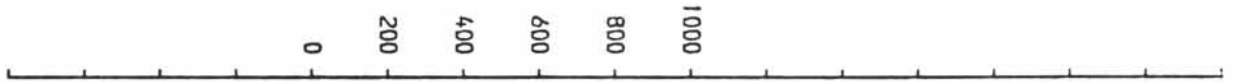
L128

K09

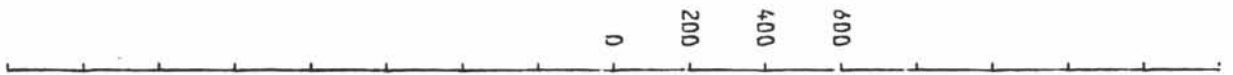
CURRENT AT END OF BRANCH BR16 (A)



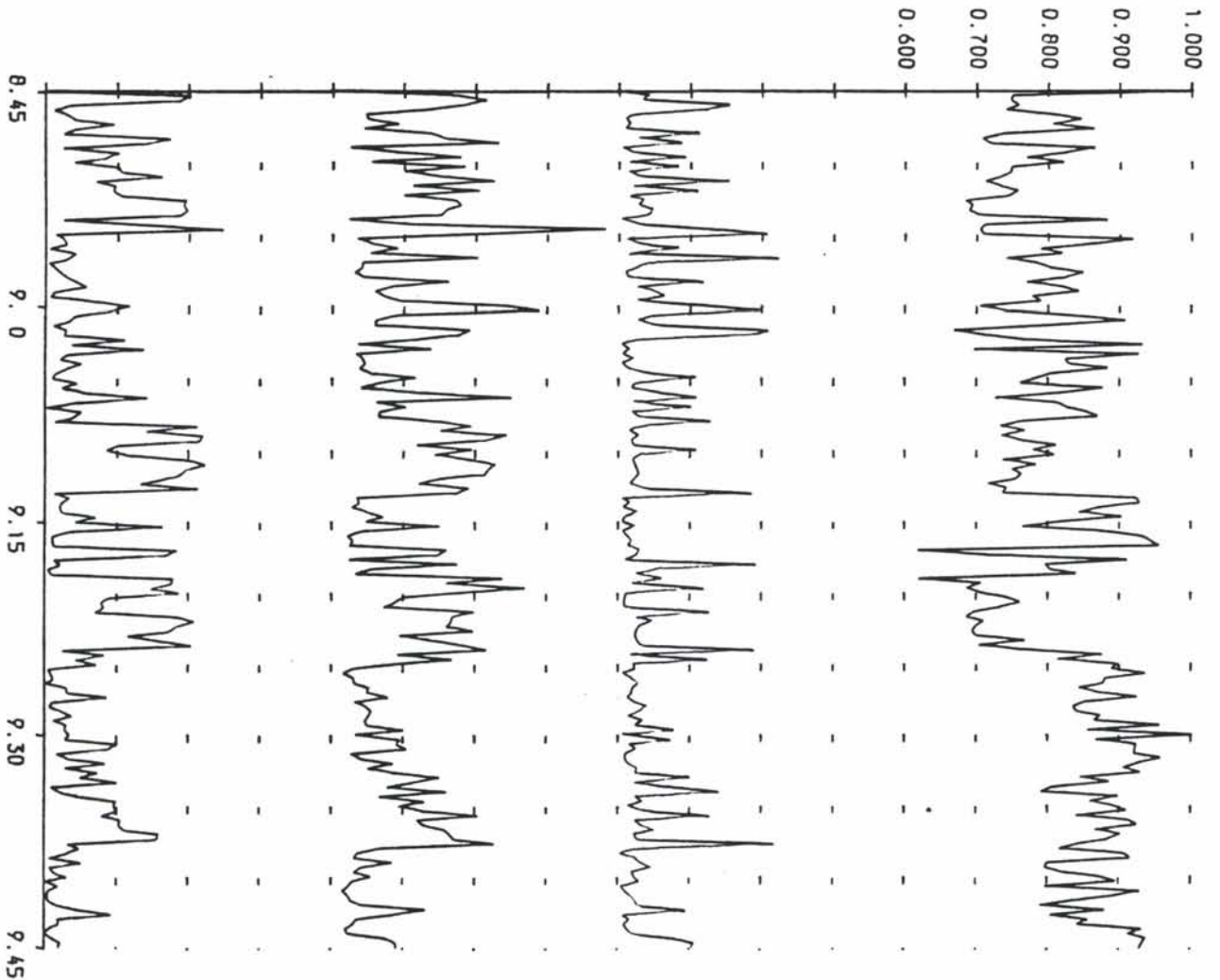
CURRENT IN FEEDER ND21 (A) RUDSHØGDA



CURRENT AT START OF BRANCH BR21 (A)



DISPLACEMENT FACTOR OF FEEDER ND21 AT RAILWAY BUS-BAR



K09

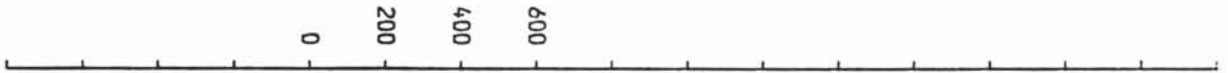
L128

K09

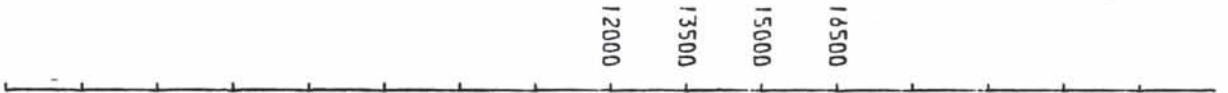
CURRENT AT END OF BRANCH BR24 (A)



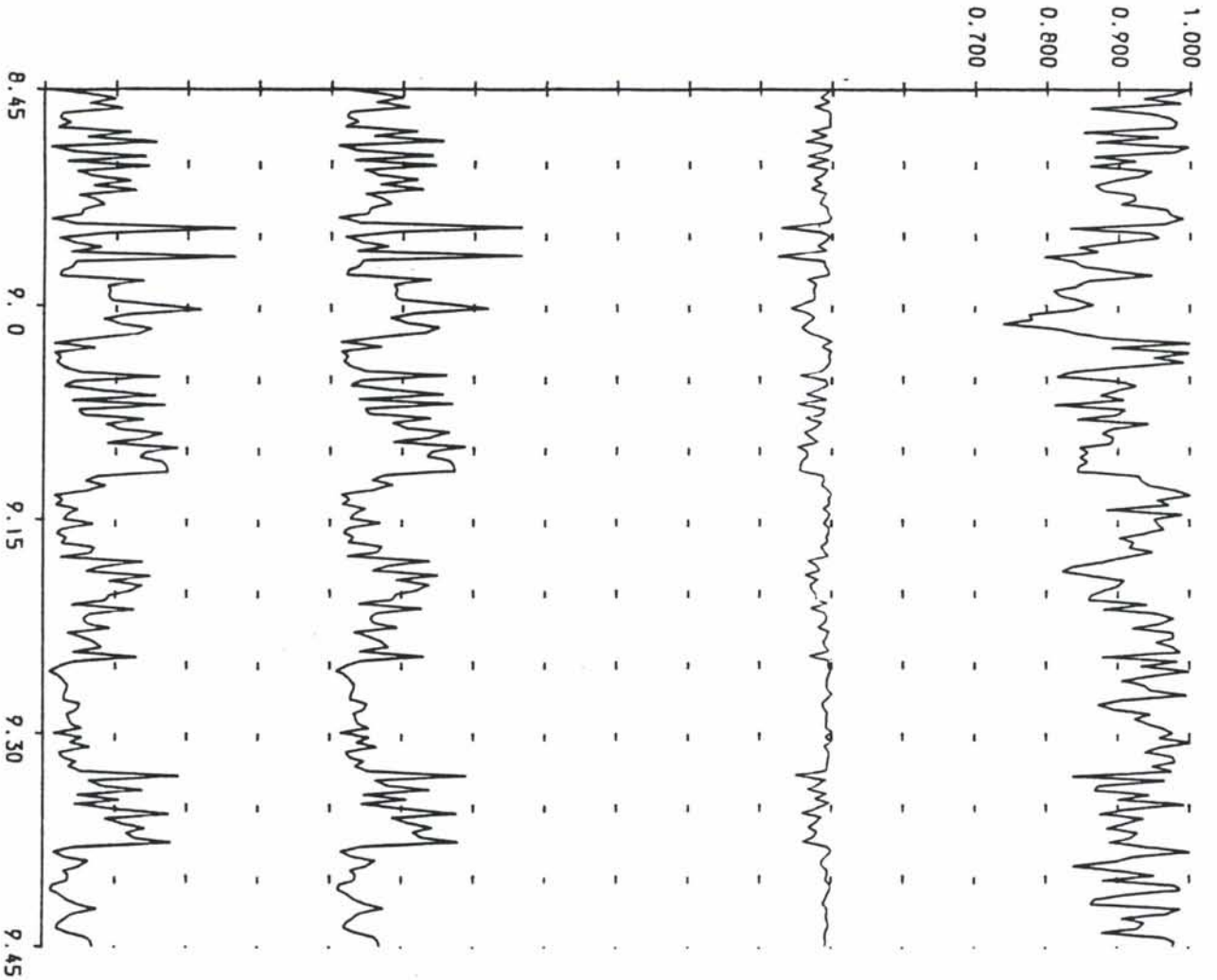
CURRENT IN FEEDER ND15 (A) FÄBERG



VOLTAGE AT NODE ND15 (V)



DISPLACEMENT FACTOR OF FEEDER ND15 AT RAILWAY BUS-BAR



K09

L128

K09

SI:ULATOR (JLJ04NSB)

LILLESTROE-LILLEHAMMER OLYMPIC GAMES SUNDAY K12/L124

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD OF 8.45.00 TO 01 9.00.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.389 | BR01 | 324.1 | 307.3 | ND01 | 324.1 |
| ND02 | 16.225 | BR03 | 307.3 | 263.7 | ND20 | 295.1 |
| ND03 | 16.225 | BR04 | 263.7 | 263.7 | ND12 | 403.0 |
| ND04 | 15.254 | BR06 | 239.2 | 239.2 | ND21 | 299.9 |
| ND05 | 15.287 | BR08 | 239.2 | 276.8 | ND15 | 225.6 |
| ND06 | 15.364 | BR17 | 166.2 | 141.7 | | |
| ND07 | 15.364 | BR09 | 141.7 | 141.7 | | |
| ND20 | 15.727 | BR11 | 141.7 | 153.7 | | |
| ND08 | 15.702 | BR13 | 153.7 | 194.7 | | |
| ND09 | 15.500 | BR14 | 262.0 | 74.8 | | |
| ND10 | 15.691 | BR20 | 74.8 | 91.9 | | |
| ND11 | 15.691 | BR16 | 91.9 | 207.7 | | |
| ND12 | 15.880 | BR21 | 163.9 | 110.9 | | |
| ND16 | 15.450 | BR24 | 110.9 | 225.6 | | |
| ND17 | 15.450 | | | | | |
| ND13 | 15.436 | | | | | |
| ND14 | 15.436 | | | | | |
| ND21 | 15.664 | | | | | |
| ND18 | 15.406 | | | | | |
| ND19 | 15.406 | | | | | |
| ND15 | 16.182 | | | | | |

SIMULATOR (JLJ04NSB)

LILLESTROE-LILLEHAMMER OLYMPIC GAMES SUNDAY K12L124

ELECTRICAL RESULTS : R1'S VALUES FOR TIME PERIOD 0: 9.00.00 TO 0: 9.15.00

| NODE | RMS VOLTAGE (KV) | BRANCH | R1'S CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|---------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.071 | FR01 | 415.0 | 398.4 | ND01 | 416.0 |
| ND02 | 15.811 | FR03 | 398.4 | 178.3 | ND20 | 262.2 |
| ND03 | 15.811 | FR04 | 178.3 | 178.3 | ND12 | 326.2 |
| ND04 | 14.898 | FR06 | 178.3 | 193.1 | ND21 | 287.4 |
| ND05 | 14.901 | BR08 | 193.1 | 245.9 | ND16 | 213.9 |
| ND06 | 15.471 | BR17 | 133.2 | 140.3 | | |
| ND07 | 15.471 | BR09 | 140.3 | 140.3 | | |
| ND20 | 15.787 | BR11 | 140.3 | 161.3 | | |
| ND08 | 15.778 | BR13 | 161.3 | 178.9 | | |
| ND09 | 15.753 | BR14 | 224.6 | 132.1 | | |
| ND10 | 15.987 | BR20 | 132.1 | 114.6 | | |
| ND11 | 15.987 | BR16 | 114.6 | 223.9 | | |
| ND12 | 16.148 | BR21 | 149.3 | 97.1 | | |
| ND16 | 15.474 | BR24 | 97.1 | 213.9 | | |
| ND17 | 15.474 | | | | | |
| ND13 | 15.413 | | | | | |
| ND14 | 15.413 | | | | | |
| ND21 | 15.717 | | | | | |
| ND18 | 15.493 | | | | | |
| ND19 | 15.493 | | | | | |
| ND15 | 16.198 | | | | | |

SIMULATOR (JLJ04NSB)

LILLESTROEM-LILLEHAMMER OLYMPIC GAMES SUNDAY **K12** L124

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD OF 9.15.00 TO OF 9.30.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.112 | BR01 | 372.4 | 348.8 | ND01 | 372.4 |
| ND02 | 15.864 | BR03 | 348.8 | 151.8 | ND20 | 274.0 |
| ND03 | 15.864 | BR04 | 151.8 | 151.8 | ND12 | 339.9 |
| ND04 | 15.004 | BR06 | 151.8 | 165.8 | ND21 | 250.3 |
| ND05 | 14.896 | BR08 | 165.5 | 165.6 | ND15 | 134.0 |
| ND06 | 15.608 | BR17 | 174.7 | 158.1 | | |
| ND07 | 15.608 | BR09 | 158.1 | 158.1 | | |
| ND20 | 15.857 | BR11 | 158.1 | 168.8 | | |
| ND08 | 15.728 | PR13 | 168.8 | 204.6 | | |
| ND09 | 15.796 | BR14 | 214.6 | 99.7 | | |
| ND10 | 15.754 | BR20 | 99.7 | 116.6 | | |
| ND11 | 15.754 | PR16 | 116.8 | 232.6 | | |
| ND12 | 15.948 | FR21 | 103.5 | 88.4 | | |
| ND16 | 15.521 | BR24 | 88.4 | 134.0 | | |
| ND17 | 15.621 | | | | | |
| ND13 | 15.505 | | | | | |
| ND14 | 15.506 | | | | | |
| ND21 | 15.816 | | | | | |
| ND18 | 15.666 | | | | | |
| ND19 | 15.868 | | | | | |
| ND15 | 16.359 | | | | | |

SIMULATOR (JLJ04NSB)

LILLESTROM-LILLEHAMMER OLYMPIC GAMES SUNDAY K12 L124

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0 : 9.30.00 TO 0 : 9.45.00

| NODE | RMS VOLTAGE (KV) | BUSCH | RMS CURRENT (AMPS) | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|-------|--------------------|--------|--------------------|
| | | | START | | END |
| ND01 | 16.158 | BR01 | 376.6 | ND01 | 376.6 |
| ND02 | 15.929 | BR03 | 365.6 | ND20 | 258.5 |
| ND03 | 15.929 | BR04 | 165.9 | ND12 | 345.1 |
| ND04 | 15.184 | BR05 | 165.9 | ND21 | 234.9 |
| ND05 | 15.143 | BR06 | 178.9 | ND15 | 165.6 |
| ND06 | 15.461 | BR17 | 141.0 | | |
| ND07 | 15.461 | BR09 | 133.9 | | |
| ND20 | 15.787 | BR11 | 133.9 | | |
| ND08 | 15.723 | BR13 | 132.4 | | |
| ND09 | 15.764 | BR14 | 272.0 | | |
| ND10 | 15.541 | BR20 | 76.6 | | |
| ND11 | 15.941 | BR16 | 127.5 | | |
| ND12 | 16.050 | BR21 | 115.4 | | |
| ND16 | 15.551 | BR24 | 90.9 | | |
| ND17 | 15.551 | | 90.9 | | |
| ND13 | 15.702 | | | | |
| ND14 | 15.702 | | | | |
| ND21 | 15.974 | | | | |
| ND18 | 15.786 | | | | |
| ND19 | 15.786 | | | | |
| ND15 | 16.323 | | | | |

GATTS SIMULATOR (JLJ04NSB)

LILLESTROFF-LILLEHÄMMER OLYMPIC GAMES SUNDAY K12

ELECTRICAL RESULTS : TRAIN SUMMARY RESULTS FOR TIME PERIOD 01 8.45.00 TO 01 9.45.00

| H/ZONE | DISTANCE GCNE (METRES) | MINIMUM VOLTAGE (KV) | TIME OF MINIMUM VOLTAGE | MAXIMUM VOLTAGE (KV) | TIME OF MAXIMUM VOLTAGE | AVERAGE VOLTAGE (KV) | ENERGY CONSUMPTION REAL (KWH) | REACTIVE (KVARH) | TIME PERIOD 12.500 KV (SECS) |
|--------|------------------------------|----------------------------|-------------------------------|----------------------------|-------------------------------|----------------------------|----------------------------------------|---------------------|------------------------------------|
| USLA | 7669 | 14.154 | 01 8.45.20 | 16.182 | 01 8.50.40 | 15.455 | 160.80 | 114.81 | 0 |
| 06LB | 22661 | 13.052 | 01 8.54.40 | 16.409 | 01 8.54.00 | 15.391 | 463.17 | 350.39 | 0 |
| HALI | 37608 | 12.651 | 01 8.54.40 | 16.396 | 01 9.04.00 | 15.445 | 573.71 | 421.22 | 0 |
| 06LC | 52613 | 13.626 | 01 9.00.20 | 16.427 | 01 9.13.20 | 15.492 | 1048.87 | 663.09 | 0 |
| USLE | 82656 | 13.398 | 01 9.00.00 | 16.419 | 01 9.13.20 | 15.572 | 1457.79 | 904.29 | 0 |
| 06LF | 92357 | 13.407 | 01 9.00.20 | 16.408 | 01 9.40.40 | 15.557 | 1660.91 | 1161.61 | 0 |
| USLG | 79162 | 12.108 | 01 8.46.00 | 16.426 | 01 9.13.20 | 15.432 | 1594.07 | 1204.55 | 60 |
| 06LH | 83276 | 13.064 | 01 8.46.20 | 16.488 | 01 9.34.40 | 15.337 | 1961.06 | 1269.92 | 0 |
| CSLJ | 72220 | 13.017 | 01 9.22.40 | 16.455 | 01 8.58.20 | 15.282 | 1553.36 | 1014.24 | 0 |
| 06Lk | 50369 | 12.992 | 01 9.31.00 | 16.413 | 01 9.41.40 | 15.167 | 1179.48 | 889.39 | 0 |
| USLL | 29806 | 13.179 | 01 9.42.40 | 16.365 | 01 9.41.40 | 15.264 | 710.25 | 456.70 | 0 |
| 06LI | 10355 | 13.981 | 01 9.44.20 | 16.459 | 01 9.39.20 | 15.486 | 291.77 | 189.16 | 0 |
| P342 | 41277 | 12.580 | 01 8.46.00 | 16.472 | 01 9.00.20 | 15.142 | 366.41 | 114.39 | 0 |
| 1612 | 46632 | 13.033 | 01 9.13.40 | 16.439 | 01 9.33.20 | 15.008 | 665.29 | 382.20 | 0 |
| PT41 | 85347 | 13.490 | 01 8.45.20 | 16.440 | 01 9.13.20 | 15.671 | 1630.84 | 207.52 | 0 |
| P351 | 49845 | 13.197 | 01 9.31.00 | 16.386 | 01 9.41.40 | 15.294 | 379.04 | 105.02 | 0 |

DSLO/GATTS SIMULATOR (JLJO4NSB)

OUTPUT OF ELECTRICAL RESULTS : MAXIMUM/MINIMUM VALUES FOR

NODE VOLTAGES

K12

| NODE | MINIMUM VOLTAGE (KV) | TIME OF MINIMUM VOLTAGE |
|------|----------------------|-------------------------|
| ND01 | 15.151 | 01 9.13.20 |
| ND02 | 14.596 | 01 9.13.20 |
| ND03 | 14.596 | 01 9.13.20 |
| ND04 | 12.658 | 01 9.14.00 |
| ND05 | 12.454 | 01 8.46.00 |
| ND06 | 13.340 | 01 8.46.00 |
| ND07 | 13.340 | 01 8.46.00 |
| ND20 | 14.199 | 01 9.16.00 |
| ND08 | 13.043 | 01 8.46.00 |
| ND09 | 14.183 | 01 9.37.20 |
| ND10 | 14.634 | 01 8.49.20 |
| ND11 | 14.634 | 01 8.49.20 |
| ND12 | 15.081 | 01 9.27.20 |
| ND16 | 13.189 | 01 9.42.40 |
| ND17 | 13.189 | 01 9.42.40 |
| ND13 | 13.487 | 01 8.54.40 |
| ND14 | 13.487 | 01 8.54.40 |
| ND21 | 13.631 | 01 8.54.40 |
| ND15 | 12.867 | 01 8.54.40 |
| ND19 | 12.867 | 01 8.54.40 |
| ND15 | 15.381 | 01 8.56.40 |

MAXIMUM FEEDER STATION INSTANTANEOUS CURRENTS

| FEEDER | NORMAL CURRENT (AMPS) | TIME |
|--------|-----------------------|------------|
| ND01 | 895.2 | 01 9.31.00 |
| ND20 | 780.4 | 01 8.46.00 |
| ND12 | 796.7 | 01 9.37.20 |
| ND21 | 762.9 | 01 8.54.40 |
| ND15 | 533.3 | 01 8.54.40 |

MAXIMUM BRANCH INSTANTANEOUS CURRENTS

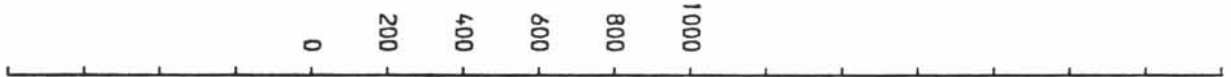
| BRANCH | CURRENT (AMPS) * | TIME |
|--------|------------------|------------|
| BR01 | 895.2 | 01 9.31.00 |
| BR03 | 895.2 | 01 9.31.00 |
| BR04 | 499.1 | 01 8.50.20 |
| BR06 | 499.1 | 01 8.50.20 |
| BR08 | 624.5 | 01 8.45.40 |
| BR17 | 486.5 | 01 8.49.20 |
| BR09 | 474.3 | 01 9.20.40 |
| BR11 | 503.3 | 01 9.16.00 |
| BR13 | 503.3 | 01 9.16.00 |
| BR14 | 633.0 | 01 9.37.20 |
| BR20 | 354.6 | 01 9.42.40 |
| BR16 | 516.4 | 01 9.37.20 |
| BR21 | 435.1 | 01 9.37.40 |
| BR24 | 533.3 | 01 8.54.40 |

CURRENT AT START OF BRANCH BR01 (A)

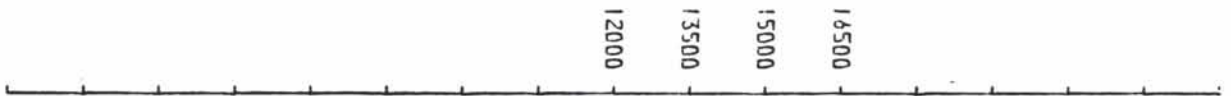


CURRENT IN FEEDER ND01 (A)

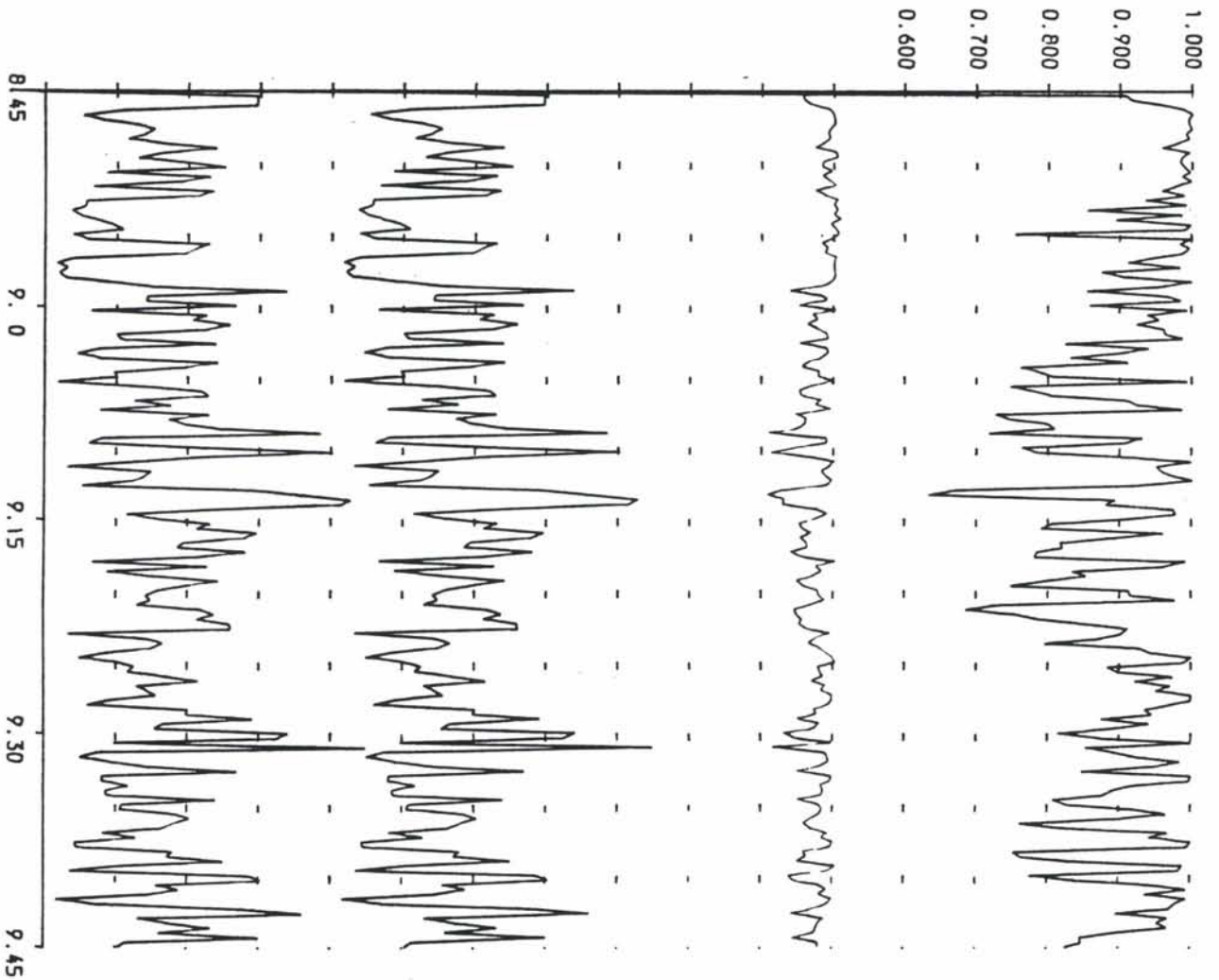
LILLESTRØM



VOLTAGE AT NODE ND01 (V)



DISPLACEMENT FACTOR OF FEEDER ND01 AT RAILWAY BUS-BAR



K12

L124

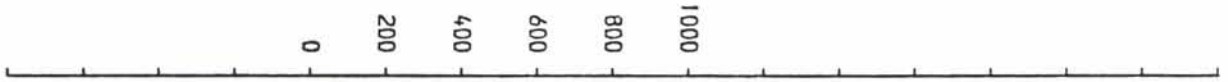
K12

CURRENT AT END OF BRANCH BR08 (A)

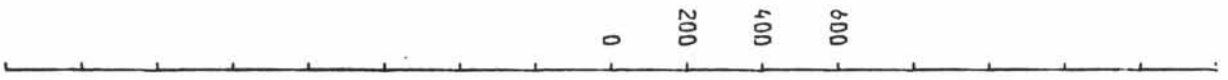


CURRENT IN FEEDER ND20 (A)

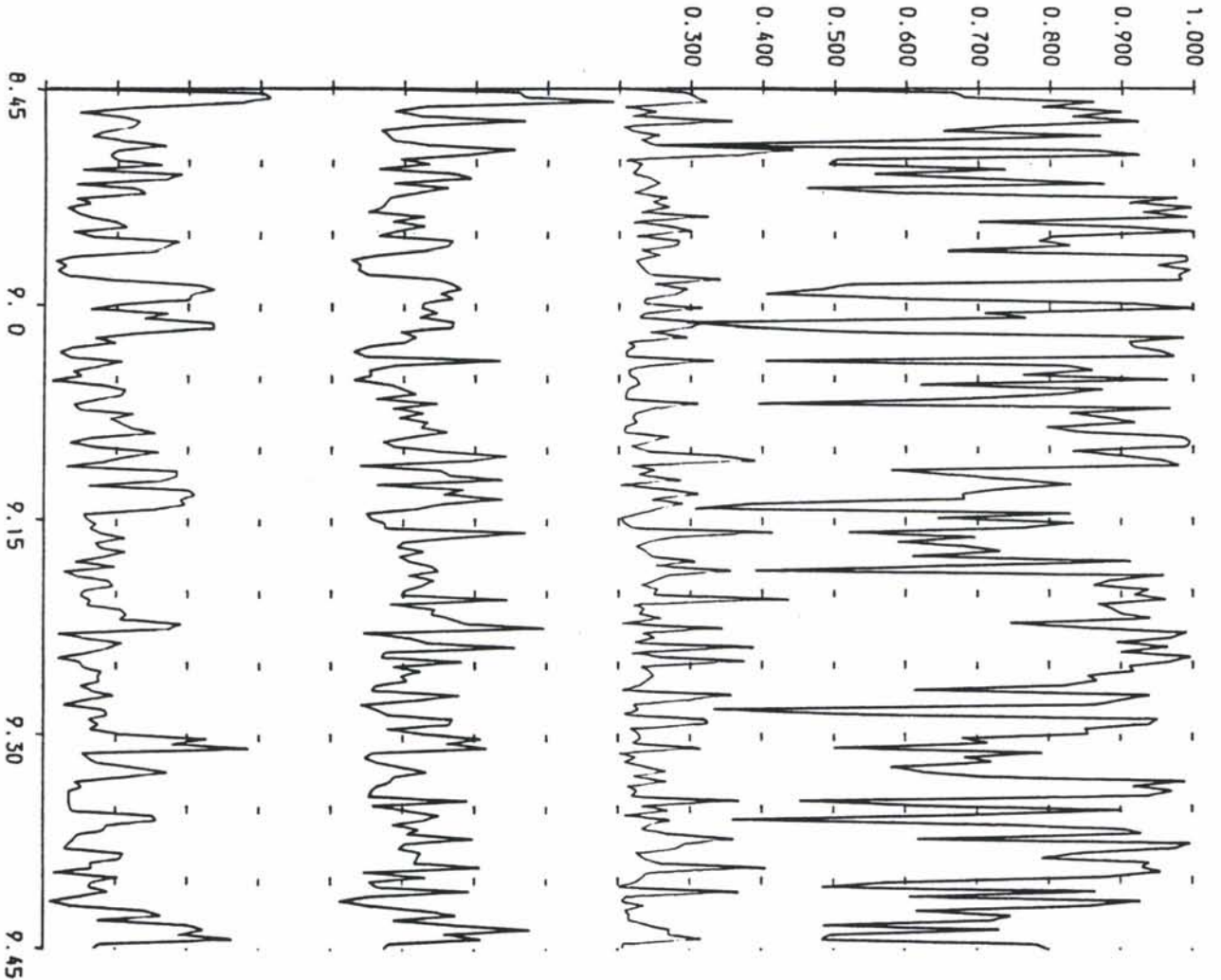
MINNESUND



CURRENT AT START OF BRANCH BR17 (A)



DISPLACEMENT FACTOR OF FEEDER ND20 AT RAILWAY BUS-BAR



K12

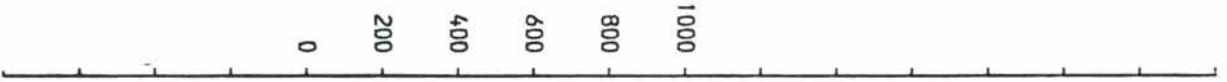
L124

K12

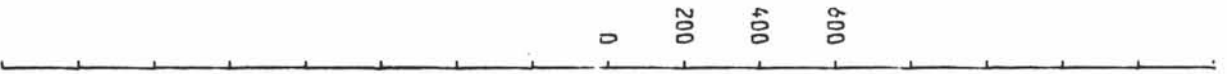
CURRENT AT END OF BRANCH BR13 (A)



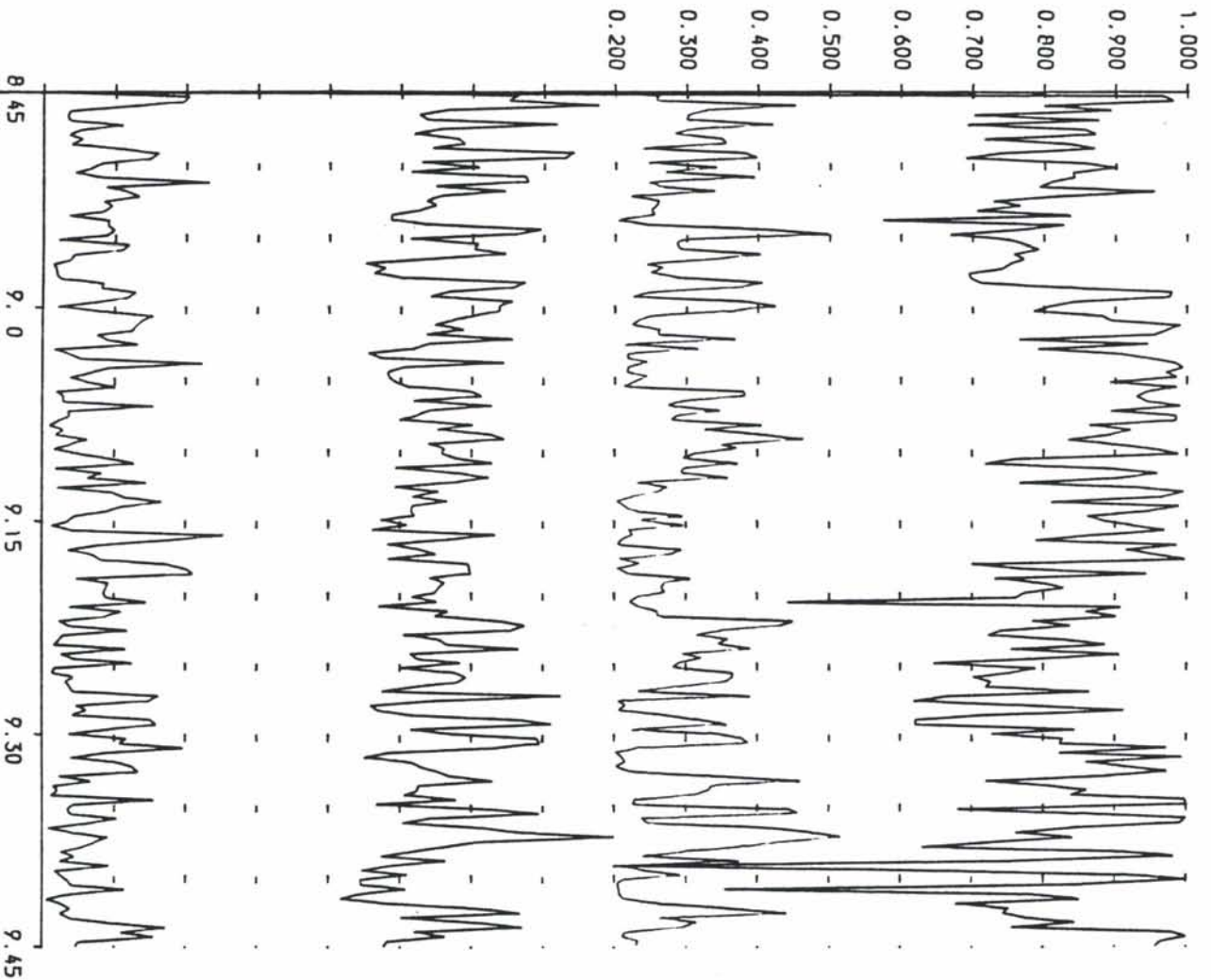
CURRENT IN FEEDER ND12 (A) TANGEN



CURRENT AT START OF BRANCH BR14 (A)



DISPLACEMENT FACTOR OF FEEDER ND12 AT RAILWAY BUS-BAR

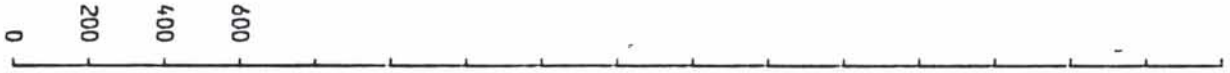


K12

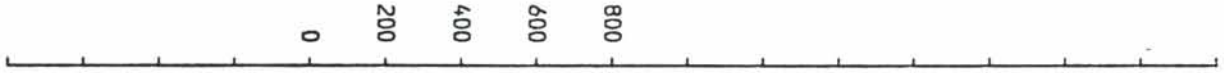
L124

K12

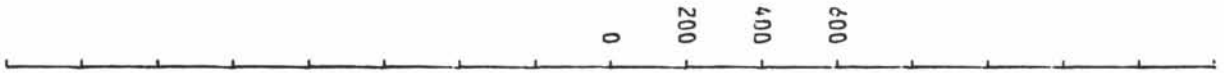
CURRENT AT END OF BRANCH BR16 (A)



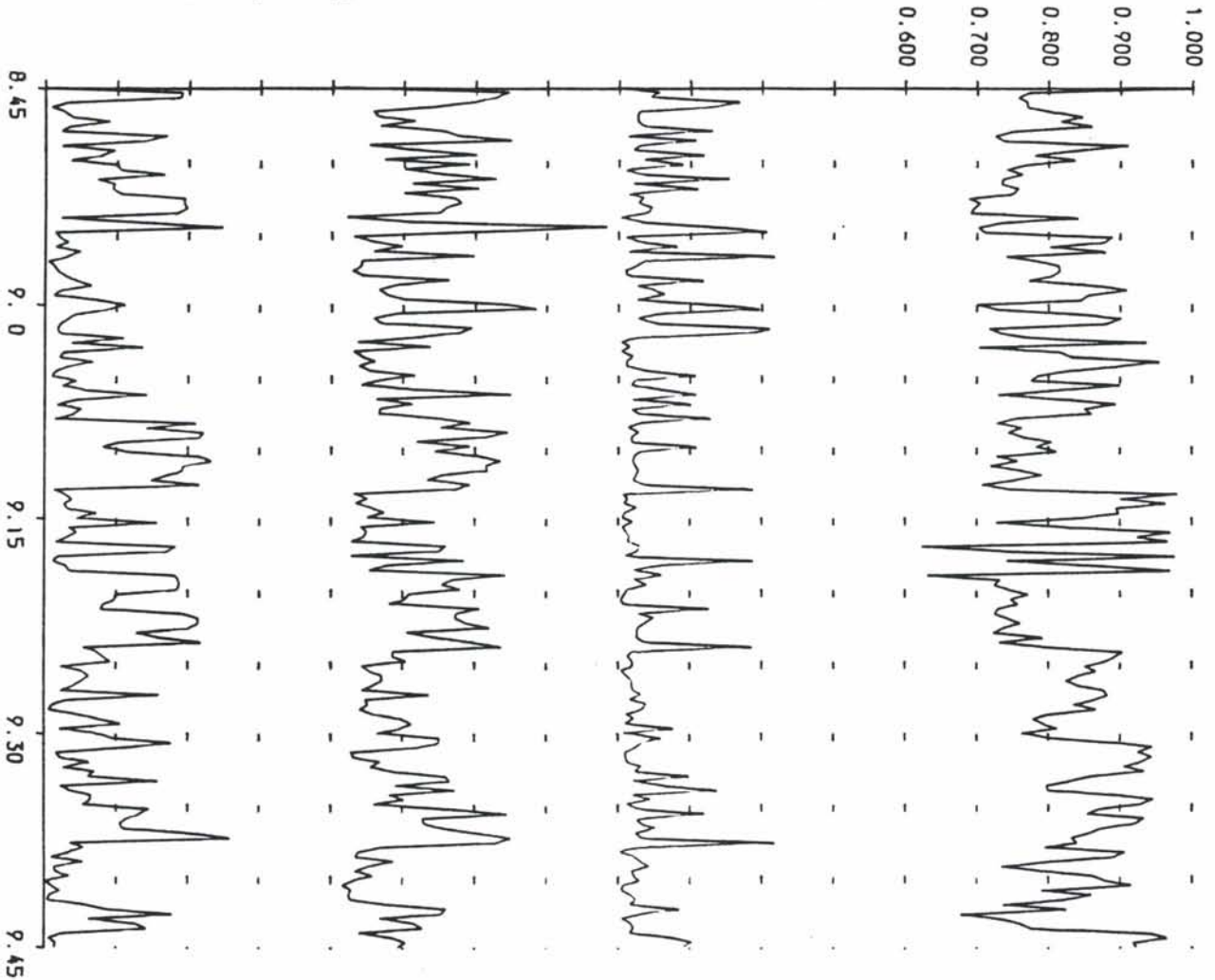
CURRENT IN FEEDER ND21 (A) RUDSHØGDA



CURRENT AT START OF BRANCH BR21 (A)



DISPLACEMENT FACTOR OF FEEDER ND21 AT RAILWAY BUS-BAR



K12

L124

K12

K12

L124

CURRENT AT END OF BRANCH BR24 (A)

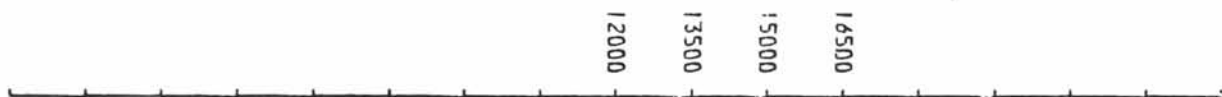


CURRENT IN FEEDER ND15 (A)

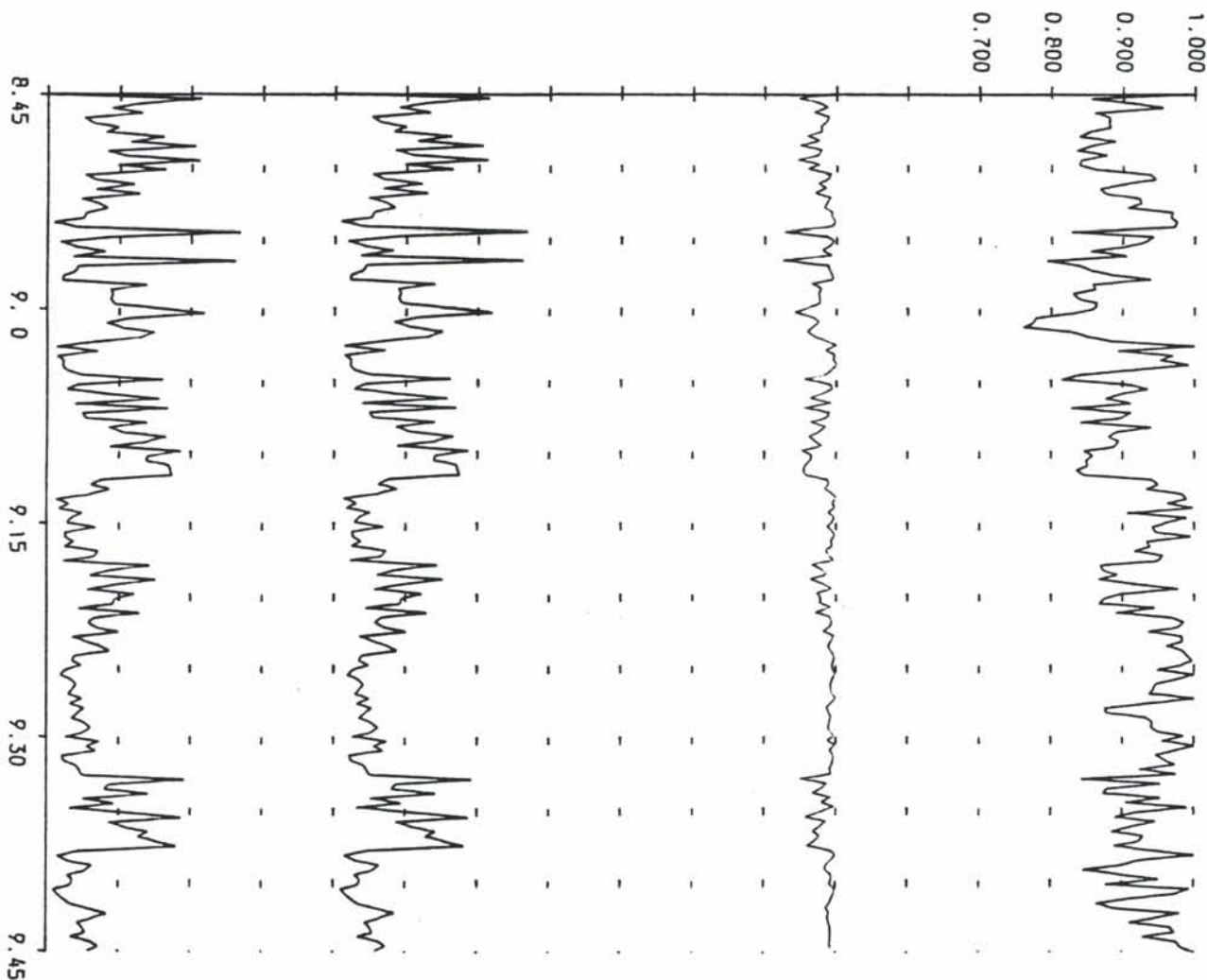
FÄBERG



VOLTAGE AT NODE ND15 (V)



DISPLACEMENT FACTOR OF FEEDER ND15 AT RAILWAY BUS-BAR



K12

SIMULATOR (JLJD4NSB)

LILLESTROEM-LILLHAMMER OLYMPIC GAMES SUNDAY (K15) L72A1

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 8.45.00 TO 0: 9.00.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.191 | BR01 | 425.7 | 391.9 | ND01 | 425.6 |
| ND02 | 15.941 | BR03 | 391.9 | 230.0 | ND20 | 330.0 |
| ND03 | 15.941 | BR04 | 230.0 | 230.0 | ND12 | 471.7 |
| ND04 | 14.829 | BR06 | 230.0 | 270.5 | ND21 | 407.7 |
| ND05 | 14.809 | BR08 | 270.5 | 304.5 | ND15 | 317.2 |
| ND06 | 15.199 | BR17 | 152.3 | 133.3 | | |
| ND07 | 15.199 | BR09 | 133.3 | 133.3 | | |
| ND20 | 15.633 | BR11 | 133.3 | 148.4 | | |
| ND08 | 15.602 | BR13 | 148.4 | 186.2 | | |
| ND09 | 15.433 | BR14 | 329.4 | 116.2 | | |
| ND10 | 15.610 | BR20 | 116.2 | 114.7 | | |
| ND11 | 15.610 | BR16 | 114.7 | 252.6 | | |
| ND12 | 15.793 | BR21 | 239.6 | 187.4 | | |
| ND16 | 14.999 | BR24 | 187.4 | 317.2 | | |
| ND17 | 14.999 | | | | | |
| ND13 | 14.924 | | | | | |
| ND14 | 14.924 | | | | | |
| ND21 | 15.261 | | | | | |
| ND18 | 14.764 | | | | | |
| ND19 | 14.764 | | | | | |
| ND15 | 16.014 | | | | | |

SIMULATOR (JLJ04NSB) LILLESTROEN-LILLEHAMMER OLYMPIC GAMES SUNDAY (K15) L72A

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 9.00.00 TO 0: 9.15.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 15.989 | BR01 | 500.8 | 486.7 | ND01 | 600.8 |
| ND02 | 15.669 | BR03 | 486.8 | 255.7 | ND20 | 300.6 |
| ND03 | 15.669 | BR04 | 255.7 | 255.7 | ND12 | 419.4 |
| ND04 | 14.306 | BR06 | 255.6 | 258.4 | ND21 | 486.7 |
| ND05 | 14.393 | BR08 | 258.4 | 312.8 | ND15 | 278.0 |
| ND06 | 15.127 | BR17 | 139.5 | 152.0 | | |
| ND07 | 15.127 | BR09 | 152.0 | 152.0 | | |
| ND20 | 15.572 | BR11 | 152.0 | 176.2 | | |
| ND08 | 15.609 | BR13 | 176.2 | 196.8 | | |
| ND09 | 15.466 | BR14 | 284.8 | 178.0 | | |
| ND10 | 15.823 | BR20 | 178.0 | 106.9 | | |
| ND11 | 15.823 | BR16 | 106.9 | 312.1 | | |
| ND12 | 16.021 | BR21 | 293.3 | 159.2 | | |
| ND15 | 14.945 | BR24 | 159.2 | 278.0 | | |
| ND17 | 14.945 | | | | | |
| ND13 | 14.630 | | | | | |
| ND14 | 14.630 | | | | | |
| ND21 | 14.905 | | | | | |
| ND18 | 14.972 | | | | | |
| ND19 | 14.972 | | | | | |
| ND15 | 16.103 | | | | | |

SIMULATOR (JLJQ4NSB)

LILLESTROEM-LILLEHAMMER OLYMPIC GAMES SUNDAY (K15) L72A

ELECTRICAL RESULTS - RMS VALUES FOR TIME PERIOD 0: 9.15.00 TO 0: 9.30.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.102 | BR01 | 400.1 | 376.8 | ND01 | 400.1 |
| ND02 | 15.836 | BR03 | 376.8 | 173.8 | ND20 | 332.6 |
| ND03 | 15.836 | BR04 | 173.8 | 173.8 | ND12 | 394.6 |
| ND04 | 14.849 | BR06 | 173.8 | 190.0 | ND21 | 317.5 |
| ND05 | 14.757 | BR08 | 190.0 | 220.0 | ND15 | 211.1 |
| ND06 | 15.324 | BR17 | 227.1 | 183.6 | | |
| ND07 | 15.324 | BR09 | 183.6 | 183.6 | | |
| ND20 | 15.627 | BR11 | 183.6 | 199.2 | | |
| ND08 | 15.514 | BR13 | 199.2 | 235.6 | | |
| ND09 | 15.568 | BR14 | 231.3 | 116.2 | | |
| ND10 | 15.582 | BR20 | 116.2 | 118.9 | | |
| ND11 | 15.682 | BR16 | 118.9 | 256.6 | | |
| ND12 | 15.913 | BR21 | 153.7 | 108.5 | | |
| ND16 | 15.368 | BR24 | 108.5 | 211.1 | | |
| ND17 | 15.368 | | | | | |
| ND13 | 15.269 | | | | | |
| ND14 | 15.269 | | | | | |
| ND21 | 15.602 | | | | | |
| ND18 | 15.448 | | | | | |
| ND19 | 15.448 | | | | | |
| ND15 | 16.231 | | | | | |

SIMULATOR (JLJ04NSB)

LILLESTROEM-LILLCHAMMER OLYMPIC GAMES SUNDAY (K16) (L72A)

ELECTRICAL RESULTS : RMS VALUES FOR TIME PERIOD 0: 9.30.00 TO 0: 9.45.00

| NODE | RMS VOLTAGE (KV) | BRANCH | RMS CURRENT (AMPS) | | FEEDER | RMS CURRENT (AMPS) |
|------|------------------|--------|--------------------|-------|--------|--------------------|
| | | | START | END | | |
| ND01 | 16.213 | BR01 | 377.9 | 367.1 | ND01 | 377.8 |
| ND02 | 15.987 | BR03 | 367.1 | 168.7 | ND20 | 321.2 |
| ND03 | 15.987 | BR04 | 168.7 | 168.7 | ND12 | 606.9 |
| ND04 | 15.237 | BR06 | 168.7 | 186.1 | ND21 | 320.1 |
| ND05 | 15.043 | BR08 | 186.1 | 244.2 | ND15 | 209.3 |
| ND06 | 15.398 | BR17 | 210.5 | 199.1 | | |
| ND07 | 15.398 | BR09 | 199.1 | 199.1 | | |
| ND20 | 15.708 | BR11 | 199.1 | 150.9 | | |
| ND08 | 15.578 | BR13 | 160.9 | 236.6 | | |
| ND09 | 15.489 | BR14 | 376.1 | 138.3 | | |
| ND10 | 15.457 | BR20 | 138.3 | 190.6 | | |
| ND11 | 15.457 | BR16 | 190.6 | 271.4 | | |
| ND12 | 15.613 | BR21 | 106.4 | 108.2 | | |
| ND16 | 14.844 | BR24 | 108.2 | 209.3 | | |
| ND17 | 14.844 | | | | | |
| ND13 | 15.124 | | | | | |
| ND14 | 15.124 | | | | | |
| ND21 | 15.678 | | | | | |
| ND18 | 15.555 | | | | | |
| ND19 | 15.555 | | | | | |
| ND15 | 16.254 | | | | | |

GATTS SIMULATOR (JLJDANSB)

LILLESTROEN-LILLEHAMMER OLYMPIC GAMES SUNDAY (K15)

OF ELECTRICAL RESULTS : TRAIN SUMMARY RESULTS FOR TIME PERIOD 0: 8.45.00 TO 0: 9.45.00

L79 L72

| H/ZONE | DISTANCE GONE (METRES) | MINIMUM VOLTAGE (KV) | TIME OF MINIMUM VOLTAGE | MAXIMUM VOLTAGE (KV) | TIME OF MAXIMUM VOLTAGE | AVERAGE VOLTAGE (KV) | ENERGY CONSUMPTION REAL (KWH) | REACTIVE (KVARH) | TIME BELOW 12.500 KV (SECS) |
|--------|------------------------------|----------------------------|-------------------------------|----------------------------|-------------------------------|----------------------------|-------------------------------------|---------------------|-----------------------------------|
| OSLA | 7663 | 12.945 | 0: 8.45.20 | 15.715 | 0: 8.48.40 | 14.755 | 188.19 | 120.46 | 0 |
| OSLB | 22654 | 12.593 | 0: 8.49.40 | 16.351 | 0: 8.54.00 | 14.826 | 434.96 | 319.25 | 0 |
| HALI | 37606 | 12.870 | 0: 8.51.20 | 16.291 | 0: 8.54.00 | 14.940 | 552.48 | 402.23 | 0 |
| OSLC | 52556 | 12.831 | 0: 9.03.00 | 16.282 | 0: 8.54.00 | 14.957 | 1082.83 | 686.40 | 0 |
| OSLD | 67705 | 12.961 | 0: 8.51.20 | 16.147 | 0: 9.29.00 | 15.053 | 1197.03 | 748.13 | 0 |
| OSLE | 82827 | 12.912 | 0: 9.00.40 | 16.241 | 0: 9.38.20 | 15.125 | 1512.41 | 940.45 | 0 |
| OSLF | 91824 | 13.072 | 0: 9.08.20 | 16.325 | 0: 9.41.00 | 15.292 | 1864.75 | 1186.52 | 0 |
| OSLG | 79087 | 12.104 | 0: 8.46.00 | 16.329 | 0: 9.03.40 | 15.171 | 1562.96 | 1166.38 | 60 |
| OSLH | 83276 | 12.611 | 0: 9.04.00 | 16.282 | 0: 9.40.20 | 14.962 | 1929.70 | 1242.58 | 0 |
| OSLI | 88340 | 12.597 | 0: 9.04.20 | 16.409 | 0: 9.00.20 | 15.031 | 1966.19 | 1263.58 | 0 |
| OSLJ | 68126 | 12.478 | 0: 9.22.40 | 16.411 | 0: 9.00.20 | 15.011 | 1545.68 | 991.19 | 20 |
| OSLK | 50376 | 12.819 | 0: 9.31.00 | 16.270 | 0: 9.09.40 | 15.070 | 1177.55 | 889.08 | 0 |
| OSLL | 29810 | 13.178 | 0: 9.42.40 | 16.467 | 0: 9.39.40 | 15.282 | 712.42 | 451.65 | 0 |
| OSLM | 10356 | 14.047 | 0: 9.44.20 | 16.690 | 0: 9.41.40 | 15.564 | 291.59 | 188.28 | 0 |
| L109 | 49572 | 12.534 | 0: 8.45.40 | 16.292 | 0: 8.54.00 | 14.556 | 1518.98 | 999.87 | 0 |
| P342 | 41275 | 12.579 | 0: 8.46.00 | 16.410 | 0: 9.00.20 | 14.711 | 360.76 | 113.02 | 0 |
| 1612 | 46631 | 12.584 | 0: 9.04.20 | 16.529 | 0: 9.33.00 | 14.768 | 553.38 | 378.36 | 0 |
| PT41 | 68345 | 13.482 | 0: 8.45.20 | 16.294 | 0: 9.40.20 | 15.475 | 1626.14 | 186.65 | 0 |
| P351 | 40845 | 12.988 | 0: 9.31.00 | 16.194 | 0: 9.20.20 | 15.248 | 379.72 | 105.21 | 0 |

OSLO/GATTS SIMULATOR (JLJO4NSB)

OUTPUT OF ELECTRICAL RESULTS : MAXIMUM/MINIMUM VALUES FOR

K15 L72

NODE VOLTAGES

L79

| NODE | MINIMUM VOLTAGE (KV) | TIME OF MINIMUM VOLTAGE |
|------|----------------------|-------------------------|
| ND01 | 15.077 | 0: 9.13.20 |
| ND02 | 14.494 | 0: 9.13.20 |
| ND03 | 14.494 | 0: 9.13.20 |
| ND04 | 12.380 | 0: 9.04.20 |
| ND05 | 12.286 | 0: 9.13.20 |
| ND06 | 13.240 | 0: 9.22.40 |
| ND07 | 13.240 | 0: 9.22.40 |
| ND20 | 13.608 | 0: 9.22.40 |
| ND08 | 13.261 | 0: 9.22.40 |
| ND09 | 13.804 | 0: 9.22.40 |
| ND10 | 13.770 | 0: 9.29.20 |
| ND11 | 13.770 | 0: 9.29.20 |
| ND12 | 14.521 | 0: 9.29.20 |
| ND16 | 12.998 | 0: 9.42.40 |
| ND17 | 12.998 | 0: 9.42.40 |
| ND13 | 13.051 | 0: 9.03.00 |
| ND14 | 13.051 | 0: 9.03.00 |
| ND21 | 13.596 | 0: 9.03.00 |
| ND18 | 12.592 | 0: 8.45.40 |
| ND19 | 12.592 | 0: 8.45.40 |
| ND15 | 15.278 | 0: 8.45.20 |

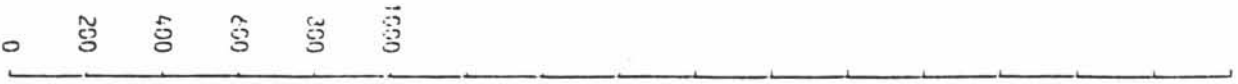
MAXIMUM FEEDER STATION INSTANTANEOUS CURRENTS

| FEEDER | NORMAL CURRENT (AMPS) | TIME |
|--------|-----------------------|------------|
| ND01 | 899.9 | 0: 9.31.00 |
| ND20 | 785.7 | 0: 9.22.40 |
| ND12 | 871.6 | 0: 9.36.00 |
| ND21 | 773.4 | 0: 9.03.00 |
| ND15 | 616.1 | 0: 8.45.40 |

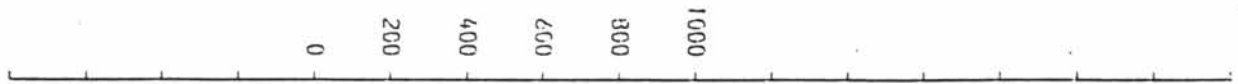
MAXIMUM BRANCH INSTANTANEOUS CURRENTS

| BRANCH | CURRENT (AMPS) | TIME |
|--------|----------------|------------|
| BR01 | 899.9 | 0: 9.31.00 |
| BR03 | 899.9 | 0: 9.31.00 |
| BR04 | 666.9 | 0: 9.02.00 |
| BR06 | 666.9 | 0: 9.02.00 |
| BR08 | 634.3 | 0: 8.45.40 |
| BR17 | 773.4 | 0: 9.27.20 |
| BR09 | 773.4 | 0: 9.27.20 |
| BR11 | 773.4 | 0: 9.27.20 |
| BR13 | 515.8 | 0: 9.29.20 |
| BR14 | 9780.2 | 0: 8.55.00 |
| BR20 | 411.4 | 0: 9.43.40 |
| BR16 | 609.3 | 0: 9.17.20 |
| BR21 | 704.9 | 0: 9.13.00 |
| BR24 | 616.1 | 0: 8.45.40 |

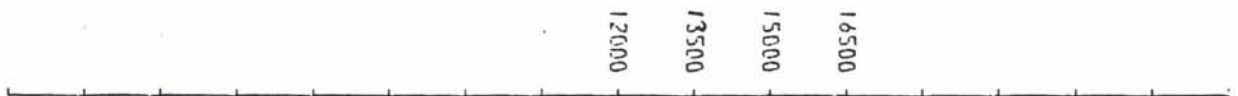
CURRENT AT START OF BRANCH BRO1 (A)



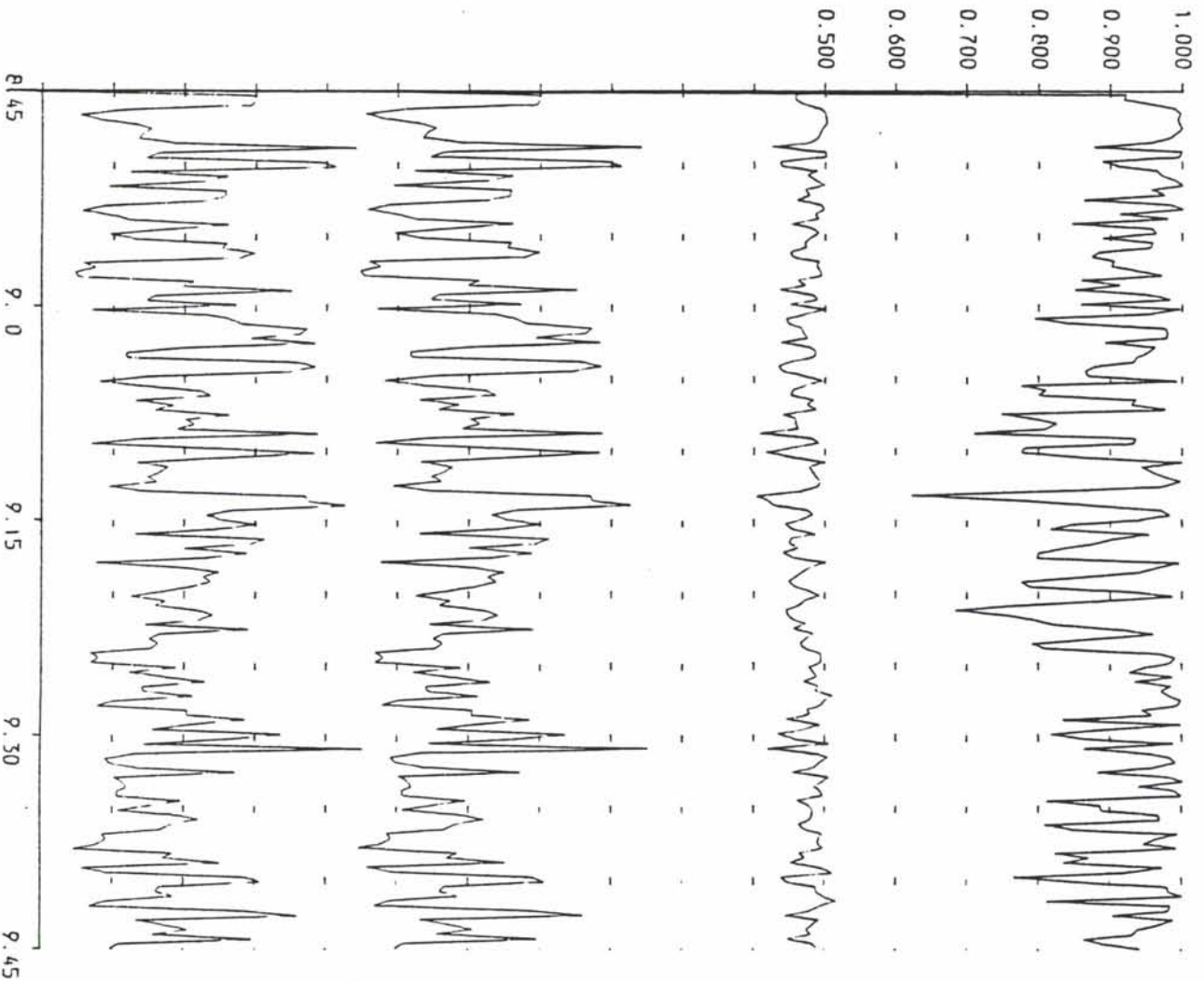
CURRENT IN FEEDER ND01 (A) LILLESTRØM



VOLTAGE AT NODE ND01 (V)



DISPLACEMENT FACTOR OF FEEDER ND01 AT RAILWAY BUS-BAR



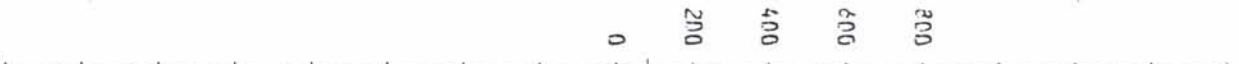
CURRENT AT END OF BRANCH BR13 (A)



CURRENT IN FEEDER ND12 (A) TANGEN



CURRENT AT START OF BRANCH BR14 (A)



DISPLACEMENT FACTOR OF FEEDER ND12 AT RAILWAY BUS-BAR



Max M/s Sharma Vidyalaya, N.S.K.V. Srigaon 16.7-16.54

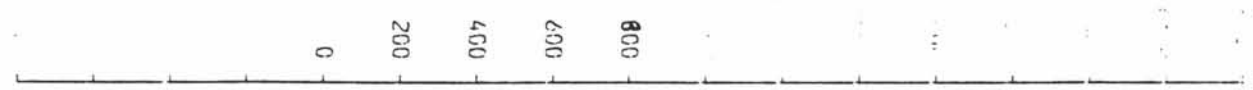
1150-850 850 300 8.45 9.0 9.15 9.30 9.45

401 811

CURRENT AT END OF BRANCH BR16 (A)



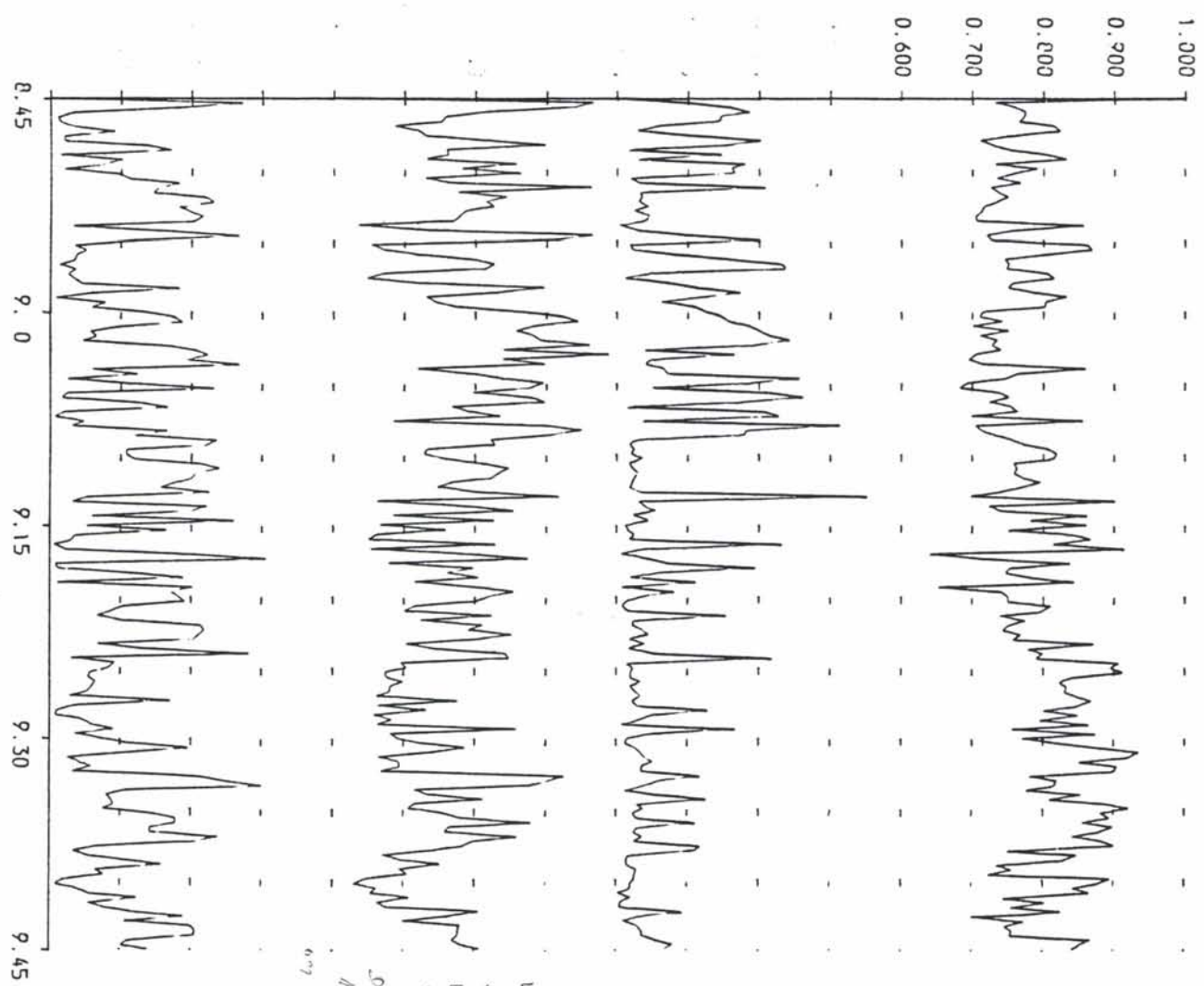
CURRENT IN FEEDER ND21 (A) RUDSHØGDA



CURRENT AT START OF BRANCH BR21 (A)



DISPLACEMENT FACTOR OF FEEDER ND21 AT RAILWAY BUS-BAR



V. 11 kV busbar
 Jua 1 = 1100 A
 Ved li skingude:
 Tman ca 750 A
 Dus ca busbar
 1100 - 800 = 300 A
 600 / 300 = 2 R = 100 A
 1000

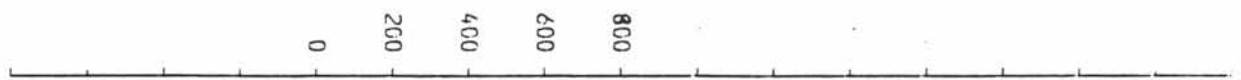
K15

K15
L77-L72

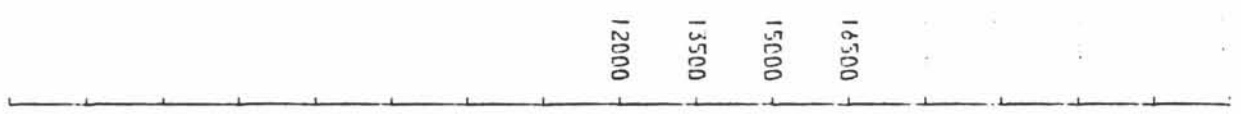
CURRENT AT END OF BRANCH BR24 (A)



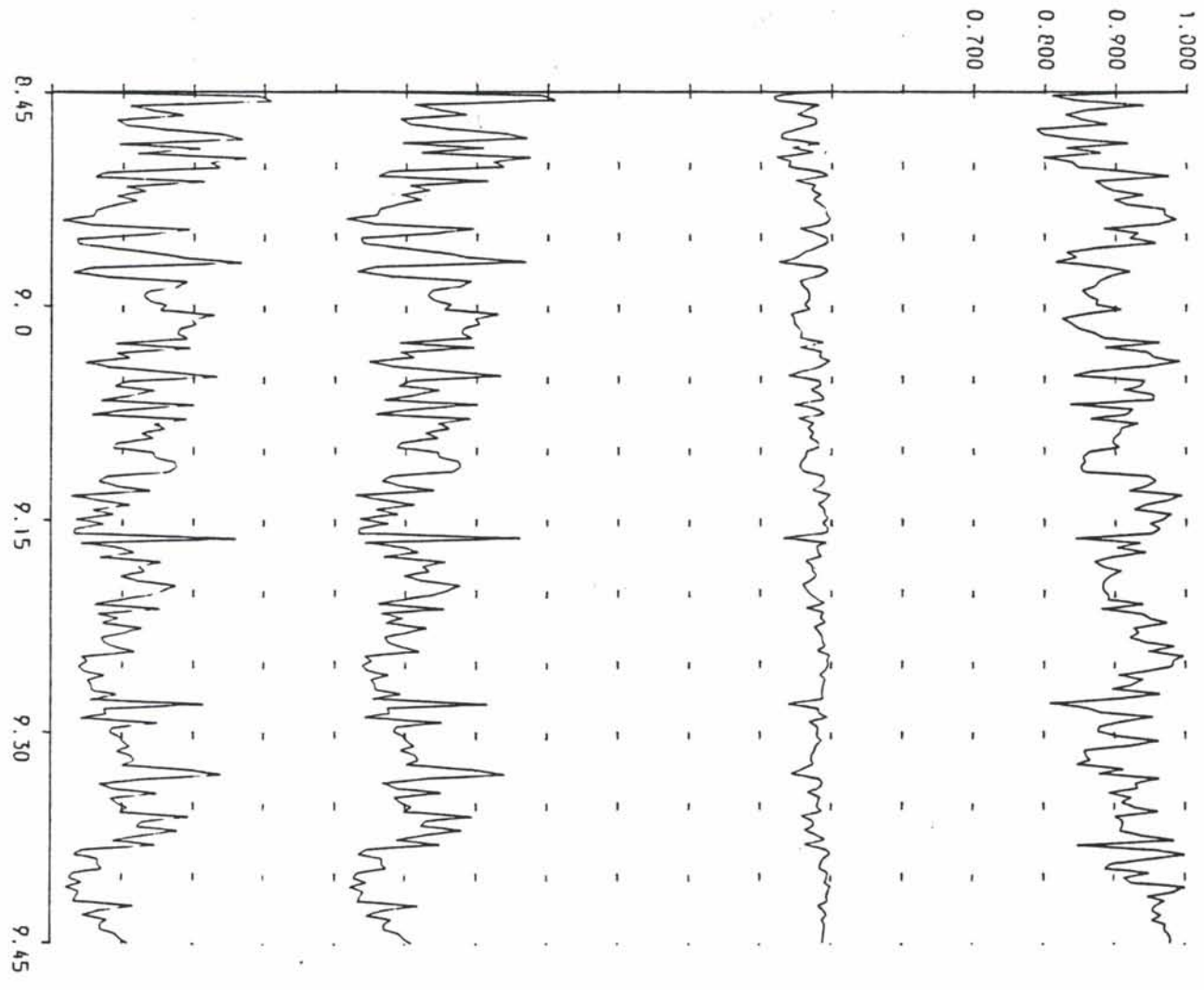
CURRENT IN FEEDER ND15 (A) FÄBERG



VOLTAGE AT NODE ND15 (V)



DISPLACEMENT FACTOR OF FEEDER ND15 AT RAILWAY BUS-BAR



K15

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